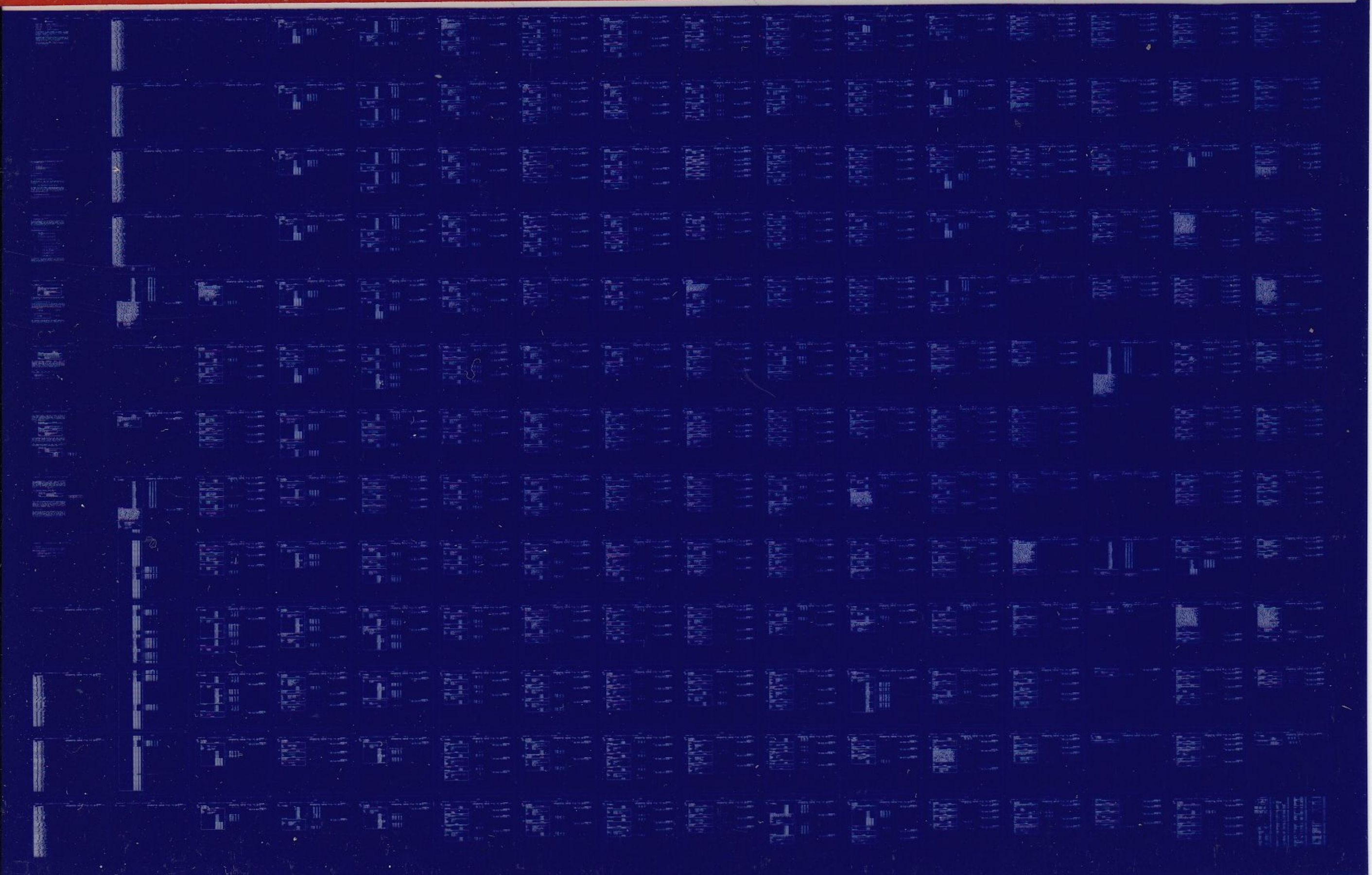


# PDP11/60

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MD-11-DQMCA-A

EP-DQMCA-A-DL-A  
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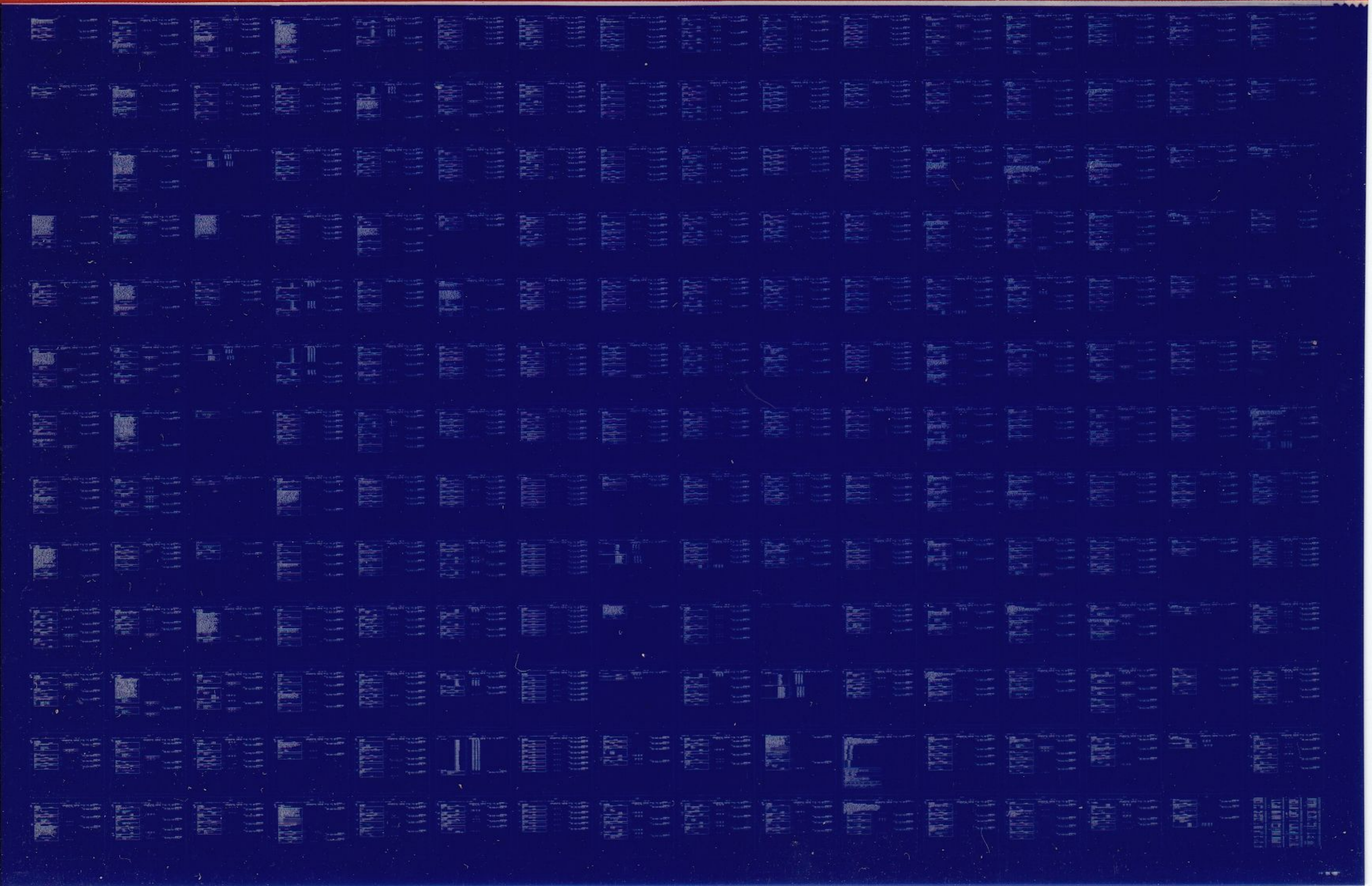


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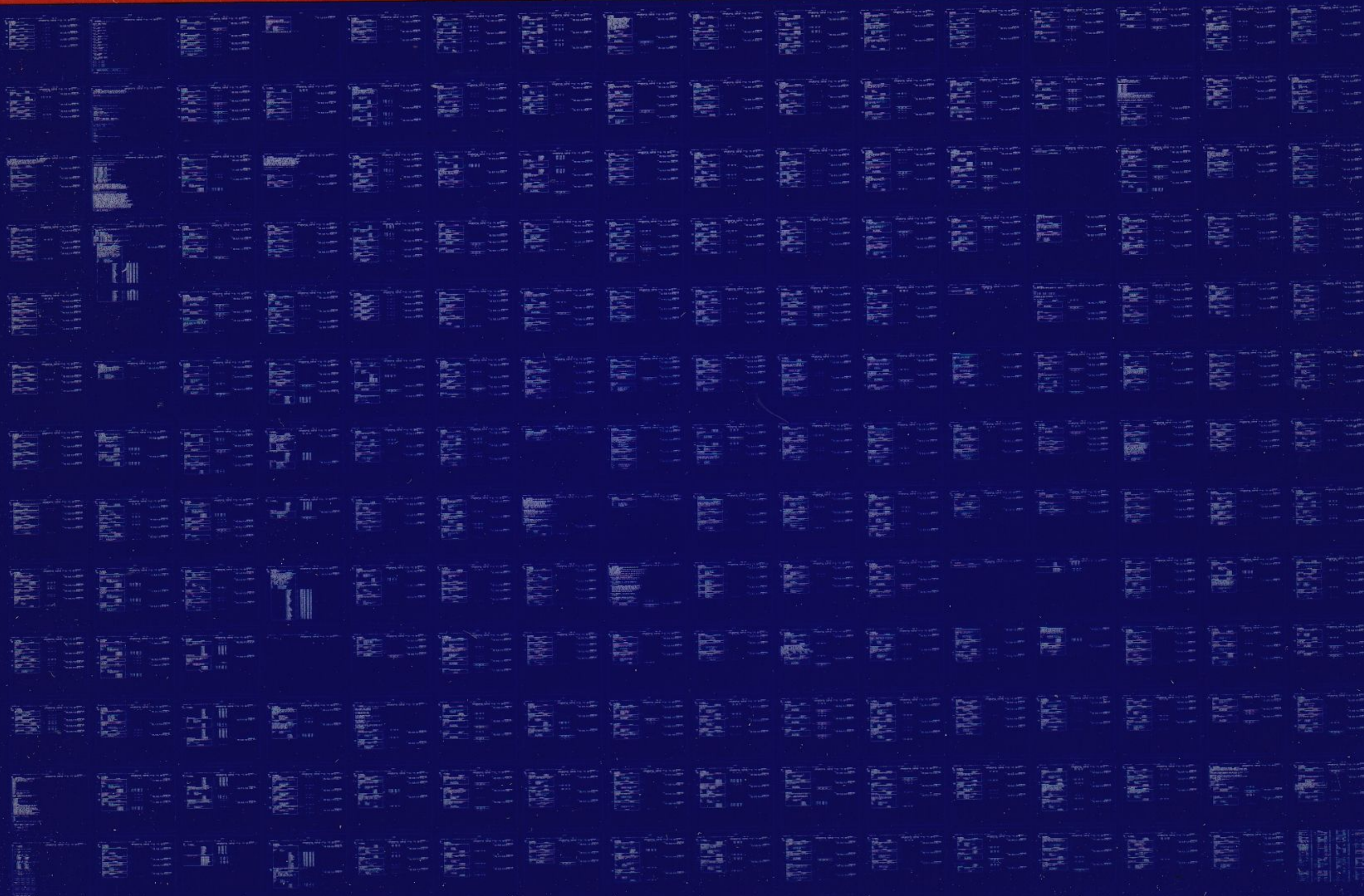


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801

EOF1DZPRBASEQ  
PDP10 411

00010000

770608

PDP10 411

10HDR10QMCAASEQ

00010000

770608

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-QMCA-A-D  
PRODUCT NAME: PDP11/60 11/70 ROM BOOTSTRAP/TEST PROG  
PRODUCT DATE: JULY 1977  
MAINTAINER: DIAGNOSTIC ENGINEERING

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CO1



## INTRODUCTION

This file is produced by the Autodocumentation System ADSYS. The file constitutes the microprogram documentation for the 11/60 MICROCODE system.

The file consists of four parts, namely:

1. Introduction
2. Microprogram Table Of Contents
3. Microprogram Definitions
4. Microprogram Flows

A brief description of each of these parts follows.

## 1. THE INTRODUCTION

The first part of the file, this introduction, describes the file.

## 2. THE MICROPROGRAM TABLE OF CONTENTS

The second part of the file, the microprogram table of contents, contains an entry for each .TOC line in the microprogram. A typical entry in this part of the file has the form:

12 \* LOGIC OPERATIONS ON FALU AND LOAD AR

The number, 23 in this example, indicates the page on which the .TOC entry with the text "LOGIC OPERATIONS ON FALU AND LOAD AR" can be found. The page number indicates the page in the third or fourth part of the file, depending on whether the entry appears in the first or second part of the microprogram table of contents.

## 3. THE MICROPROGRAM DEFINITIONS

The third part of the file, the microprogram definitions, contains the definitions exactly as they are given in the microprogram.



## 4. MICROPROGRAM FLOWS

The fourth part of the file contains the microprogram flows, constructed by ADSYS from the Assembler Output Listing. These flows resemble the one-to-one, hand-drawn flows that have previously accompanied a microprogram. They contain the cross-reference information that is necessary to interpret the microprogram.

## 4.1 Microinstruction Format

A microinstruction is represented in the following format in the microprogram flows:

```

box   tag, addr
      *****
      * comment ... *
      * ... *
      *-----*
      * time-state macro, macro *
      * ... *
      * ... *
      *****

```

where:

box	is an identifying number assigned to the box
tag	is the microinstruction tag
addr	is the microinstruction address
comment	is the text of comments associated with the micro instruction
time-state	is the name of a time state specified in the microinstruction
macro	is the name of a macro used in the microinstruction

The characters '...' indicate repetition. In the above box, the use of the repetition indicator shows that several comments can be given in a box, that a time-state can have many macros associated with it, and that a microinstruction can contain several time-states.



For example, consider the following excerpt from a microprogram flow:

```

104 LOADZ: 113
*****
*LOAD FIRB <5:3> = MO. TRANSFER FROM *
*AC[SF] TO AC[DF]. *
*-----*
*P2, AR←FSPAD[SF], ER←EB[SF] *
* SD←SCROUT, ENB←FPACK, ENB←PAUSE, *
* ENB←ABORT *
*NEXT, J/LOADZ, 02 *
*****
    
```

In this excerpt, box 104 is associated with the tag 'LOADZ' at address 113. A comment and two time-states, 'P2' and 'NEXT', are shown.

#### 4.2 Cross-Reference Information

For each microinstruction box, all the points from which control can pass to the box are indicated by arrows pointing into the box and all the points to which control can pass from the box are shown by arrows pointing from the box. The microinstruction box with cross-reference information has the following form:

```

F/from-tag1      <-- from-info
F/from-tag2      <-- from-info
...
*****
*                *
* J/to-tag1      * --> to-info
* J/to-tag2      * --> to-info
* ...           * ...
*****
    
```

The 'from-info' gives the address, box-number, page-number, and microfiche coordinates for the associated tag. The 'to-info' gives that information and, in addition, contains offset information if the transfer is an n-way branch.



Consider the following excerpt from a microprogram flow:

```

107 STSTZ: 115          F/PREP          <--          21   3   3   D 1
          F/ADDNZ.02    <--          254  80  30  G 3
*****
*!SYSYZ: ! STST INSTRUCTION IS EXECUTED *
*IN BM BY WARM FLOATING POINT MICROCODE. *
*-----*
*          ENB-FPACK,ENB-PAUSE,ENB-ABORT, *
*NEXT,      J/STST.02          * -->          336 108 39  D 4
*****

```

The cross-reference information shows that the microinstruction 'PREP', address 21 at box 3 on page 3 with microfiche coordinates D 1, and the microinstruction 'ADDNZ.02', address 254 at box 80 on page 30 with microfiche coordinates G 3, transfer to the box for microinstruction 'STSTZ'. Further, it shows that the microinstruction 'STSTZ' transfers to microinstruction 'STST.02', address 336 at box 108 on page 39 with microfiche coordinates D 4.

#### 4.3 Types of Flow

Three types of flow are distinguished by the Autodocumentation System, namely:

- Simple Transfer
- N-Way Branch Transfer
- Subroutine Call

The following sections give the method of representing each kind of flow.



4.3.1 Simple Transfer - A box that transfers directly to another box illustrates simple flow. If the box transfers to the next sequential box on the page, the 'to-info' is not given but instead the sequential flow is indicated by down pointers. Simple flow is shown in the following excerpt from a microprogram flow:

```

148 DIV.20: 46F          F/DIV.18          <-- VV
*****
*AR GETS DIVIDEND.
*-----*
*      AR+FSPAD[DF],ER+FPEMITE(352),
*NEXT,  J/DIV.22          * --> VV
*****
149 DIV.22: 470          F/DIV.20          <-- VV
*****
*FIRST DIVIDE STEP.
*-----*
*      AR+FSPAD[TMP1]-PLUS-AR,
*      INBUF+INBUF-LEFT-1
*NEXT,  J/DIV.24          * -->      471 150 51  D 5
*****

```

In this example, box 148 transfers to the next sequential box. Box 149 transfers to box 150, which is the next sequential box. However, since box 150 is on another page, the 'to-info' is given, showing a transfer to address 471, box 150 on page 51 with microfiche coordinates D 5.

4.3.2 N-Way Branch Transfer - A box that contains a branching-but illustrates n-way branch transfer. Consider the following excerpt from a microprogram flow:

```

111 CMPXNZ.02: 342
*****
*      AR+ZERO,
*      ER+EA[SF]-MINUS-EB[DF],
*      SD+SCROUT,
*NEXT,  BUT(EAEO'EBEQ), J/CMPXZ.02
*      J/CMPXZ.02          * -->      00 234 113 40  E 4
*      J/CMPXZ.22          * -->      01 235 123 43  H 4
*      J/CMPXZ.24          * -->      10 236 124 43  H 4
*      J/CMPXZ.26          * -->      11 237 125 44  I 4
*****

```



The microinstruction contains a branching-but 'BUT(EAEOO EBEOO)' to a branch base 'CMPXZ.02'. The four possible destinations of this box are shown. For the offset '00', tag 'CMPXZ.02', address 0234 at box 113 on page 40 with microfiche coordinates E 4, is the destination. For offset 'U1', tag 'CMPXZ.22', address 0235 at box 123 on page 43 with microfiche coordinates H 4, is the destination. And so on.

4.3.3 Subroutine Transfer - A box that calls a subroutine is illustrated in the following excerpt:

```

98  LOAD,30: 316          F/LOAD          <-- VV
*****
*          FSPAD-CD(6)+AR          *
*NEXT,          CALL(NZEROH,LOADNZERO)  *
***** -->
*****
442  339  107          L 9
*****
          VV
322  103  37          b 4

```

The 'to-info' for the subroutine called is given enclosed in a box. The 'to-info' for the return is shown below the subroutine. In the above excerpt, the subroutine 'NZEROH', address 442 at box 339 on page 107 with microfiche coordinates L 9, is called. Control is returned by the subroutine to 'LOADNZERO', address 322 at box 103 on page 37 with microfiche coordinates B 4.

#### 4.4 The Microword

The bits of the microword are displayed to the right of the microinstruction box. Usually, the bits are given in several formatted lines. At the top of each page, the abbreviated field names for each line of bits are given. The first line of the heading gives the field names for the first line of bits; the second line of the heading, the field names for the second line of bits; and so on.



## 5. CONCLUSION

This file was produced by the Auto Documentation SYSTEM,  
ADSYS. Further information on this system can be found in  
the following documents:

1. Autodocumentation System (ADSYS), System Specification, No. 010777-01
2. Autodocumentation System (ADSYS), User's Guide, No. 010777-02



# K01

XXPROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 1

BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF











BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA URF	EXTENSION RIF COUT UFF	CLOCKS
	BABSZM3 .BEGIN = 01							
	BMFRAC12 .BEGIN = 1011							
	BMOD1CLSS3 .BEGIN = 01							
	BMOD1CLSS10 .BEGIN = 10							
	BNROUND45 .BEGIN = 01							
	BLDCPM3 .BEGIN = 1110							
	BLEFTSHFSF .BEGIN = 10							
	BRMDLEFT10 .BEGIN = 00							
	BMOD1CLSS5 .BEGIN = 10							
	BFSOM6INT .BEGIN = 1110							
	BIA06 .BEGIN = 110							
	BIA207A .BEGIN = 01							
	BDIVDM5 .BEGIN = 1100							
	BMOD3CLSS27 .BEGIN = 11							
	BQUOLEFT10 .BEGIN = 10							
	BDFRAC18 .BEGIN = 10							
	BNROUND16 .BEGIN = 1110							
	BMFRAC .BEGIN = 10							
	BNROUND34 .BEGIN = 110							
	BRTSHFSF4 .BEGIN = 011							
	BMOD5CLSS3 .BEGIN = 01							
	BRTSHFDST4 .BEGIN = 011							
	BNROUND41 .BEGIN = 00							
	BRESTART4 .BEGIN = 00							
	BNROUND32 .BEGIN = 01							
	BLFSHFSF7 .BEGIN = 011							
	BDFRACSUB5 .BEGIN = 10							
	BMOD3CLSS9 .BEGIN = 1110							
	BRSHFDSTSN4 .BEGIN = 011							
	BMOD3CLSS15 .BEGIN = 1110							
	BMFAT09 .BEGIN = 01							
	BRTSHFDST .BEGIN = 10							
	BRTSHFSF .BEGIN = 10							
	BRTSHFSF3 .BEGIN = 1110							
	BEXPTST4 .BEGIN = 01							
	BLDCPM4 .BEGIN = 01							
	BMOD5CLSS9 .BEGIN = 10							
	BRTSHFDST3 .BEGIN = 1110							
	BDFRACADD .BEGIN = 10							
	BMOD3CLSS14 .BEGIN = 1110							
	BLFSHFSF2 .BEGIN = 011							
	BMFRACF11 .BEGIN = 011							
	BMOD3CLSS13 .BEGIN = 1110							
	BWORDCMP .BEGIN = 00							
	BRMDLEFT17 .BEGIN = 10							
	BCTANNZM2 .BEGIN = 1100							
	BRESTART17 .BEGIN = 0111							
	BWORDCMP6 .BEGIN = 01							
	BQUOLEFT8 .BEGIN = 011							
	BMOD1CLSS7 .BEGIN = 1110							
	BHULMOOM17 .BEGIN = 10							
	BRSHFDSTSN3 .BEGIN = 1110							
	BINIT03 .BEGIN = 1110							
	BINIT10 .BEGIN = 1101							
	BLDEXP16 .BEGIN = 10							







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
BADDW08	.BEGIN = 01						
BFSOM6FLT2	.BEGIN = 1110						
BLDCTW26	.BEGIN = 01						
BFSOMOFLT2	.BEGIN = 10						
BFSOMOFLT3	.BEGIN = 01						
BNZERO	.BEGIN = 1101						
BFSOM6FLT3	.BEGIN = 0001						
BWAIT02	.BEGIN = 10						
BWARMDIS2	.BEGIN = 10						
BADDSHDF	.BEGIN = 10						
BADDW02	.BEGIN = 1100						
BMOVFDSTSF	.BEGIN = 10						
BTRP15	.BEGIN = 0111						
BWCS02	.BEGIN = 01						
BLDCTW6	.BEGIN = 01						
BVDIS	.BEGIN = 10						
BLDCTW108	.BEGIN = 1001						
BFS2DM1FLT	.BEGIN = 0001						
BMODEALTER4	.BEGIN = 01						
BSF2SCMPF1	.BEGIN = 10						
BADDW11	.BEGIN = 10						
BTRAPEND	.BEGIN = 101						
BADDW21	.BEGIN = 10						
BFDST2SCF1	.BEGIN = 10						
BNROUNDEND	.BEGIN = 1011						
BHFPPTAP7	.BEGIN = 1000						
BFFLT4	.BEGIN = 10						
BNROUNDEND1	.BEGIN = 1100						
BDMOFLT	.BEGIN = 10						
BHOTSUNC	.BEGIN = 0101						
BSTFLT4	.BEGIN = 10						
BOPCODERR	.BEGIN = 10						
BFSOMOFLT	.BEGIN = 10						
BDISAB	.BEGIN = 1001						
BSTOREHOT3	.BEGIN = 10						
BHFPSPVC6	.BEGIN = 110						
BTRP06	.BEGIN = 01						
BTSTNZW5	.BEGIN = 1110						
BUVDIS	.BEGIN = 10						
BDIFP	.BEGIN = 10						
BFDW67FLT	.BEGIN = 10						
BSTOREHOT	.BEGIN = 1110						
BFETCHINTLG	.BEGIN = 011						
BSTIMM1	.BEGIN = 10						
BSTIMM4	.BEGIN = 1110						
BSTOREINTLG	.BEGIN = 011						
BLDCTW5	.BEGIN = 10						
BTSTNZW6	.BEGIN = 10						
BSTOREHOT20	.BEGIN = 01						
BSTCT4	.BEGIN = 10						
BLDCTW15	.BEGIN = 10						

.TOC "INSTRUCTION FETCH"  
 ;; IN FET03 THE UPDATING OF THE PC AND THE BUS CYCLE "DATI NOINT" ARE  
 .CASE 3 OF BCMPO1

F/FET02	<--	1	2	10
F/CMP01	<--	442	74	52
F/BIT01	<--	443	75	52
F/BIC01	<--	444	76	53



F/BIS01	<--	445	27	53
F/AD001	<--	446	78	54
F/SUB01	<--	456	79	54
F/CMP01	<--	452	80	55
F/BIT01	<--	453	81	55
F/BIC01	<--	454	82	56
F/BIS01	<--	455	83	56
F/CLR01	<--	550	117	70
F/COM01	<--	551	118	70
F/INC01	<--	552	119	71
F/DEC01	<--	553	120	71
F/ADC01	<--	555	123	72
F/TST01	<--	557	127	73
F/ROL01	<--	541	129	74
F/ASL01	<--	543	134	76
F/CLR01	<--	570	135	76
F/COM01	<--	571	136	77
F/INC01	<--	572	137	77
F/DEC01	<--	573	138	78
F/ADC01	<--	575	141	79
F/TST01	<--	577	145	80
F/ROL01	<--	561	147	81
F/ASL01	<--	563	152	83
F/MOV01	<--	741	188	95
F/BRA06	<--	210	284	126
F/MFAT15	<--	2034	583	223

702

FET01:0702

```

*****
*FETCH SOURCE DESTINATION RRM & RRB RRM &
*RRB RRM & MRB RRM & MRB RW & RB RW & MB
*MOV JSR & JMP BRANCH OTHER FSM ASH,
*ASHC, MUL, DIV FLT. PT. ENTRY SERVICE
*JAM UPP CONSOLE #OVERVIEW-FUNCTION FETCH
*FETCH FETCHES THE INSTRUCTION IN MEMORY
*POINTED TO BY THE PC, UPDATES THE PC,
*LOADS THE IR AND PARTIALLY DECODES THE
*INSTRUCTION. IF THE INSTRUCTION FETCHED
*WAS REGISTER ONLY ADDRESSING MODE (WITH
*SOME EXCEPTIONS) THE NEXT INSTRUCTION IS
*FETCHED ALSO. THIS IS CALLED FETCH
*OVERLAP. IF THE INSTRUCTION FETCHED HAD
*INDEX SOURCE MODE ADDRESSING OR REGISTER
*SOURCE MODE ADDRESSING AND INDEX MODE
*DESTINATION MODE ADDRESSING THEN THE
*INDEX IS FETCHED. IN BOTH OF THESE
*CONDITIONAL MEMORY CYCLES THE PC IS
*UPDATED. IN NO CASE DOES FETCH GET
*OPERANDS FOR INSTRUCTIONS USING
*IMMEDIATE MODE ADDRESSING.
-----
*P1,      BA+PC CURRENT MODE
*P2,      D+PC PLUS 2,D(C)+CIN,CLOCK CC,
*P3,      PC+D (A ADDR),
*P3,      U,DAT! CLKIR,
*NEXT,
*          J/FET02
*****

```

```

702      000000001011
1001 11 11 10 01 111 000 0101 0
10000 000110 11000 000000001

```

--> 1 2 10

G02

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 9

BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF



# H02

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 10

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD	CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		RIF	COUT	CLOCKS
			OFST	ADDR	BOX							PAGE	UBF			
		F/FETO1	<--	702	1	2										
		F/FETO1F2	<--	4233	1315	427										
2	FETO2:0001	F/FETO1F	<--	4722	1316	427										
	*****															
	* LATCH INSTRUCTION INTO IR WITH A COPY *															
	* IN THE MD CLEARS SHORT SHORT TERM FLAGS *															
	*(FLAGS<3:0>) GO TO															
	*DECODE															
	*-----*															
	*P2	U, IR+DATA,	*													
	*P3	MD+DATA	*													
	*NEXT,	BUT(CLEAR FLAGS),	*													
	*	J/FETO3	*	-->	700	3	11									
	*****															

```

1
0000 11 10 00 00 000 000 0000 0
00000 100000 1000 111000000
    
```

BOX NO. TAG:ADDRESS .CASE 1 OF BCMP01

SOURCE/DESTINATION OFST ADDR BOX PAGE MICROFICHE COORD CARD ADDR ALU BUS BUSP SP BUSA RIF COU' CLOCKS EXTENSION UPF

Table with columns for instruction name, source/destination, and microfiche coordinates. Includes instructions like F/FET02, F/CMP01, F/BIT01, etc.

3 FET03:0700

\*\*\*\*\*
\*OVERLAPPED INSTRUCTION FETCH ENTRY \*
\*POINT. DECODE INSTRUCTION AND PERFORM \*
\*WIDE BRANCH (INSTRUCTION 1) THIS BRANCH \*
\*CATEGORIZES ALL INSTRUCTIONS INTO ONE OF \*
\*EIGHT CLASSES; PC TO BA IN PREPARATION \*
\*FOR PREFETCH UPDATE PC IN PREPARATION \*
\*FOR PREFETCH (INSTRUCTION OR DATA) SETS \*
\*D(C) TO ZERO SINCE WHEN ADDING THE \*
\*CINMUX SELECTS ZERO. A ZERO IN D(C) IS \*
\*REQUIRED BY CERTAIN EXECUTE ROUTINES \*
\*(DEC) IF PREVIOUS INSTRUCTION (MACRO) \*
\*WAS 2 CYCLE (I.E., FAST) R-R OR \*
\*R \*
-----\*
\*P1, BA+PC, CURRENT MODE \*
\*P2, D+PC PLUS 2, D(C)+CIN, CLOCK CC, \*
\*P3, PC+D (A ADDR), \*
\*P3, U, DATI NOINT, \*
\*SETUP \*
\*SELECT 1 OR 2 (FIRST), \*
\*NEXT, BUT(INSTR 1), \*
\* J/400 \*
\* UNDEFINED CASE \*
\* UNDEFINED CASE \*
\* UNDEFINED CASE \*
\* UNDEFINED CASE \*

700 00000011011
1001 11 11 10 01 111 000 0101 0
10001 000110 00110 10000000





K02

UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
J/DST01	*	-->	01001001	511	39 35
J/DST02	*	-->	01001010	512	40 36
J/DST03	*	-->	01001011	513	41 36
J/DST04	*	-->	01001100	514	42 36
J/DST05	*	-->	01001101	515	43 37
J/DST06	*	-->	01001110	516	44 37
J/DST07	*	-->	01001111	517	45 37
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
J/ROR01	*	-->	01100000	540	128 74
J/ROL01	*	-->	01100001	541	129 74
J/ASR01	*	-->	01100010	542	130 74
J/ASL01	*	-->	01100011	543	134 76
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
J/CLR01	*	-->	01101000	550	117 70
J/COM01	*	-->	01101001	551	118 70
J/INC01	*	-->	01101010	552	119 71
J/DEC01	*	-->	01101011	553	120 71
J/NEG01	*	-->	01101100	554	121 71
J/ADC01	*	-->	01101101	555	123 72
J/SBC01	*	-->	01101110	556	124 72
J/TST01	*	-->	01101111	557	127 73
J/RORB01	*	-->	01110000	560	146 80
J/ROLB01	*	-->	01110001	561	147 81
J/ASRB01	*	-->	01110010	562	148 81
J/ASLB01	*	-->	01110011	563	152 83
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
UNDEFINED CASE	*				
J/CLRB01	*	-->	01111000	570	135 76
J/COMB01	*	-->	01111001	571	136 77
J/INCB01	*	-->	01111010	572	137 77
J/DECB01	*	-->	01111011	573	138 78
J/NEGB01	*	-->	01111100	574	139 78
J/ADCB01	*	-->	01111101	575	141 79
J/SBCB01	*	-->	01111110	576	142 79
J/TSTB01	*	-->	01111111	577	145 80
UNDEFINED CASE	*				
J/MOV07	*	-->	10000001	601	189 95
J/MOV12	*	-->	10000010	602	190 96
J/MOV19	*	-->	10000011	603	192 96







N02

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 12

BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
CFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COOT CLOCKS  
UPF

B03

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 13

BOX  
NO. TAG: ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
JBF

EXTENSION  
RIF COUT CLOCKS  
UPF

C03

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 14

BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF



D03

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 15

BOX  
NC. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF

# E03

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 16

BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF

# F03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 17

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
4	SRC01:0711	F/FET03	<-- 700 3 11	711			000000001000
	*****						
	*AT THIS POINT THE FLOW PROCEEDS TO ONE						
	*OF THE EIGHT CLASSES CLASS COMMENTS/NEXT						
	*LOCATION *****						
	*0 ALL INSTRUCTIONS WHICH DO NOT FALL IN						
	*ANY OF THE FOLLOWING CLASSES						
	*1 REGISTER-REGISTER IF DOP WORD AND						
	*BYTE (ALSO TESTS PRESENCE OF FAST						
	*FLOATING POINT) 2 DESTINATION						
	*CALCULATION 3 SINGLE OPERAND REGISTER						
	*WORD AND BYTE 4 MOVE INSTRUCTION (HAS A						
	*SEPARATE FLOW TO MAXIMIZE SPEED)						
	-----*						
	*P1, BA+R(SF), MF MODE,						
	*P3, U, DATIB,						
	*NEXT, BUTR(DMO * BYTE),						
	* J/SRC18						
	* J/SRC18		-->	010 462	19	22	
	* J/SRC20		-->	011 463	20	22	
	* J/SRC17		-->	110 466	21	23	
	* J/SRC19		-->	111 467	22	23	
	*****						

```

711
0000 00 00 10 11 000 000 0001 0
10011 000000 01001 100110010
    
```

# G03

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 5	203 OF BFET03 SRC02:0712	F/FET03	<--	700	3	11		
	*****							712
	*-----*							00000001000
	*P1, BA+R(SF), MF MODE,							1001 11 11 10 11 000 000 0101 0
	*P2, D+R(SF) PLUS (1 OR 2),							1001 000110 01001 100110010
	*P3, R(SF)+D (A ADDR),							
	*P3, U, DATIB,							
	*NEXT, BUTR(DM0 # BYTE),							
	* J/SRC18		-->	010	462	19	22	
	* J/SRC20		-->	011	463	20	22	
	* J/SRC17		-->	110	466	21	23	
	* J/SRC19		-->	111	467	22	23	
	*****							
.CASE 6	204 OF BFET03 SRC03:0713	F/FET03	<--	700	3	11		
	*****							713
	*-----*							00000001011
	*P1, BA+R(SF), CURRENT MODE,							1001 11 11 10 11 000 100 0101 0
	*P2, D+R(SF) PLUS 2,							10110 000110 11100 00000101
	*P3, R(SF)+D (A ADDR),							
	*P3, U, DATI,							
	*NEXT, BUT(GO TO), PAGE+4,							
	* J/SRC14		-->	4005	12	20		
	*****							
.CASE 7	205 OF BFET03 SRC04:0714	F/FET03	<--	700	3	11		
	*****							714
	* GO TO TOP OF THIS							00000001000
	*PAGE							1101 11 11 10 11 000 000 0100 0
	*-----*							00000 000110 11000 111001001
	*P2, D+R(SF) MINUS (1 OR 2),							
	*P3, R(SF)+D (A ADDR),							
	*NEXT,							
	* J/SRC01		-->	711	4	17		
	*****							



# H03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 19

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
8	.CASE 206 OF BFET03 SRC05:0715	F/FET03 <--	700 3 11	715	1101 00000	11 11 000110	10 11 11100	000000001000 000 100 0100 0 000000100
	*-----*							
	*P2, D+R(SF) MINUS 2, *P3, R(SF)+D (A ADDR) *NEXT, BUT(GO TO), PAGE+4, * J/SRC11	-->	4004 11 19					
9	.CASE 207 OF SFET03 SRC06:0716	F/FET03 <--	700 3 11	716	1010 00000	11 10 100000	00 00 11100	000000001000 000 100 0100 0 000001100
	*-----*							
	*P2, D+MD, MD+DATA, *NEXT, BUT(GO TO), PAGE+4, * J/SRC09	-->	4014 13 20					
10	.CASE 208 OF BFET03 SRC07:0717	F/FET03 <--	700 3 11	717	1010 00000	11 10 100000	00 00 11100	000000001000 000 100 0100 0 000001110
	*-----*							
	*P2, D+MD, MD+DATA, *NEXT, BUT(GO TO), PAGE+4, * J/SRC12	-->	4016 15 20					
11	SRC11:4004	F/SRC05 <--	715 8 19	4004	0000 10110	00 00 000000	10 11 11000	000000001011 000 000 0001 0 000000101
	*-----*							
	*P1, BA+R(SF), CURRENT MODE, *P3, U, DATI, *NEXT, J/SRC14	-->	4005 12 20					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION				MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BJSA UBF	EXTENSION		CLOCK'S
		OFST	ADDR	BOX	PAGE						RIF	COUT	
12	SRC14:4005	F/SRC03 F/SRC11 F/SRC13	<-- <-- <--	713 4004 4020	6 11 16	18 19 21	4005	0000 0000	11 10 100000	00 00 11000	000000001000 000000000000	0000 0 000010010	
	*P3, MD+DATA, *NEXT, J/SRC15			4022	17	21							
13	SRC09:4014	F/SRC06	<--	716	9	19	4014	1001 00010	10 10 011110	10 11 11100	110 000 000000100	0100 0 00000100	
	*P2, D+R(SF) PLUS MD(D), *P3, R(SRC X)+D (B ADDR), *NEXT, BUT(GO TO),PAGE+0, * J/SRC10												
14	SRC10:0004	F/SRC09	<-- VV				4	0000 10011	00 00 000000	11 00 01001	110 000 100110010	0001 0 000000100	
	*P1, BA+R(SRC X),MF MODE, *P3, U,DATIB, *NEXT, BUTR(DMO # BYTE), * J/SRC18 * J/SRC20 * J/SRC17 * J/SRC19			010 462 011 463 110 466 111 467	19 20 21 22	22 22 23 23							
15	SRC12:4016	F/SRC07	<--	717	10	19	4016	1001 00010	10 10 011110	10 11 11000	110 000 000010000	0100 0 000010000	
	*P2, D+R(SF) PLUS MD(D), *P3, R(SRC X)+D (B ADDR), *NEXT, J/SRC13			4020	16	21							

# J03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
								RIF	COUT	CLOCKS	
16	SRC13:4020	F/SRC12	<--	4016	15	20					
	*****							4020			000000001011
	*-----*							0000	00 00	11 00	110 000 0001 0
	*-----*							10110	000000	11000	000000101
	*P1, BA+R(SRC X),CURRENT MODE,										
	*P3 U,DATI,										
	*NEXT,										
	* J/SRC14		-->	4005	12	20					
17	SRC15:4022	F/SRC14	<--	4005	12	20					
	*****							4022			000000001000
	*-----*							1010	11 10	00 00	110 000 0100 0
	*-----*							00000	010010	11100	000000101
	*P2, D+MD										
	*P3 R(SRC I)+D (A ADDR),										
	*NEXT, BUT(GO TO),PAGE+0,										
	* J/SRC16		--> VV								
18	SRC16:0005	F/SRC15 F/STEXP4 F/IA111	<-- <-- <--	4022 620 3225	17 1755 682	21 570 250					
	*****							5			000000001000
	*-----*							0000	00 00	11 00	110 000 0001 0
	*-----*							10011	000000	01001	100110010
	*P1, BA+R(SRC I),MF MODE,										
	*P3 U,DATI8										
	*NEXT, BUTR(DMO # BYTE),										
	* J/SRC18		-->	010	462	19	22				
	* J/SRC20		-->	011	463	20	22				
	* J/SRC17		-->	110	466	21	23				
	* J/SRC19		-->	111	467	22	23				
*****											

K03

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 22

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	1 OF BSRC01	OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
		F/SRC01 <--		711	4	17		
		F/SRC02 <--		712	5	18		
		F/SRC10 <--		4	14	20		
		F/SRC16 <--		5	18	21		
		F/JAM25 <--		3013	415	171		
		F/MOV20 <--		673	214	103		
19	SRC18:0462	F/MOV40 <--		144	232	109		
	*****							
	*-----*							
	*P3, MD+DATA,							
	*NEXT, BUT(MOV # DM),							
	* J/660							
		UNDEFINED CASE						
		J/SRC21 * -->		0001	661	23	24	
		J/SRC32 * -->		0010	662	24	25	
		J/SRC33 * -->		0011	663	25	26	
		J/SRC34 * -->		0100	664	26	27	
		J/SRC35 * -->		0101	665	27	28	
		J/SRC36 * -->		0110	666	28	29	
		J/SRC37 * -->		0111	667	29	30	
		UNDEFINED CASE						
		J/MOV08 * -->		1001	671	211	102	
		J/MOV13 * -->		1010	672	212	102	
		J/MOV20 * -->		1011	673	214	103	
		J/MOV33 * -->		1100	674	215	103	
		J/MOV37 * -->		1101	675	216	103	
		J/MOV42 * -->		1110	676	217	104	
		J/MOV55 * -->		1111	677	219	104	
	*****							
.CASE	2 OF BSRC01							
		F/SRC01 <--		711	4	17		
		F/SRC02 <--		712	5	18		
		F/SRC10 <--		4	14	20		
		F/SRC16 <--		5	18	21		
		F/JAM25 <--		3013	415	171		
		F/MOV20 <--		673	214	103		
20	SRC20:0463	F/MOV40 <--		144	232	109		
	*****							
	*-----*							
	*P3, MD+DATA,							
	*NEXT, BUTR(MOV),							
	* J/SRC23							
		J/SRC23 * -->		0111	627	30	30	
		J/SRC38 * -->		1111	637	31	31	
	*****							

462  
 0000 11 10 00 00 00000001000  
 00000 100000 00101 110110000

463  
 0000 11 10 00 00 00000001000  
 00000 100000 00101 110010111

# L03

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 23

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
.CASE	3 OF BSRC01	F/SRC01	<--	711	4	17								
		F/SRC02	<--	712	5	18								
		F/SRC10	<--	4	14	20								
		F/SRC16	<--	5	18	21								
		F/JAM25	<--	3013	415	171								
		F/MOV20	<--	673	214	103								
		F/MOV40	<--	144	232	109								
21	SRC17:0466													
	*****													
	*-----*													
	*P3, MD+DATA,													
	*NEXT, BUT(DOP),													
	* J/620													
		UNDEFINED CASE	*											
		J/MOV05	* -->	0001	621	210	101							
		J/CMPO2	* -->	0010	622	84	57							
		J/BIT02	* -->	0011	623	86	57							
		J/BIC02	* -->	0100	624	87	58							
		J/BIS02	* -->	0101	625	88	58							
		J/ADD02	* -->	0110	626	89	59							
		UNDEFINED CASE	*											
		UNDEFINED CASE	*											
		J/MOV06	* -->	1001	631	221	105							
		J/CMPO2	* -->	1010	632	91	60							
		J/BIT02	* -->	1011	633	92	60							
		J/BIC02	* -->	1100	634	93	61							
		J/BIS02	* -->	1101	635	94	61							
		J/SUB02	* -->	1110	636	90	59							
		UNDEFINED CASE	*											
.CASE	4 OF BSRC01													
		F/SRC01	<--	711	4	17								
		F/SRC02	<--	712	5	18								
		F/SRC10	<--	4	14	20								
		F/SRC16	<--	5	18	21								
		F/JAM25	<--	3013	415	171								
		F/MOV20	<--	673	214	103								
		F/MOV40	<--	144	232	109								
22	SRC19:0467													
	*****													
	*-----*													
	*P3, MD+DATA,													
	*NEXT, J/SRC22													
			* -->	10	36	33								
	*****													

466  
 0000 11 10 00 00 000 000 0000 0  
 00000 100000 00001 110010000

467  
 0000 11 10 00 00 000 000 0000 0  
 00000 100000 11000 000001000







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
25	4 OF BSRC18 SRC33:0663	F/SRC18	<--	462	19	22	
	*****			663			000000101000
	*P2, D+MO	*		1010	11 10	00 00	110 000 0100 0
	*P3, R(SRC)+D (A ADDR),	*		0000	010110	00101	111100000
	*SETUP	*					
	*SELECT 1 OR 2 (SECOND),	*					
	*NEXT, BUT(MOV#DM),	*					
	J/740	*					
	J/SXT05	* -->	0000 740	300	34		
	J/DST11	* -->	0001 741	46	38		
	J/DST12	* -->	0010 742	47	39		
	J/DST13	* -->	0011 743	48	40		
	J/DST14	* -->	0100 744	49	40		
	J/DST15	* -->	0101 745	50	41		
	J/DST16	* -->	0110 746	51	41		
	J/DST17	* -->	0111 747	52	42		
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	*****						

BOX NO. .CASE	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
26	5 OF BSRC18 SRC34:0664	F/SRC18 <--	462 19 22	664				00000101000
	#P2, D+MD, *				1010	11 10	00 00	110 000 0100 0
	#P3, R(SRC)+D (A ADDR), *				00000	010110	00101	111100000
	*SETUP *							
	*SELECT 1 OR 2 (SECOND), *							
	*NEXT, BUT(MOV#DM), *							
	* J/740 *							
	* J/SXT05 * -->	0000 740	300 134					
	* J/DST11 * -->	0001 741	46 38					
	* J/DST12 * -->	0010 742	47 39					
	* J/DST13 * -->	0011 743	48 40					
	* J/DST14 * -->	0100 744	49 40					
	* J/DST15 * -->	0101 745	50 41					
	* J/DST16 * -->	0110 746	51 41					
	* J/DST17 * -->	0111 747	52 42					
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	* UNDEFINED CASE *							
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COCRD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
27	6 OF BSRC18 SRC35:0665	F/SRC18 <--	462 19 22				
	*****			665			000000:01000
	*P2, D+MD	*		1010	11 10	00 00	110 000 0100 0
	*P3, R(SRC)+D (A ADDR),	*		00000	010110	00101	111100000
	*SETUP	*					
	*SELECT 1 OR 2 (SECOND),	*					
	*NEXT, BUT(MOV#DM),	*					
	J/740	*					
	J/SXT05	* -->	0000 740 300 134				
	J/DST11	* -->	0001 741 46 38				
	J/DST12	* -->	0010 742 47 33				
	J/DST13	* -->	0011 743 48 40				
	J/DST14	* -->	0100 744 49 40				
	J/DST15	* -->	0101 745 50 41				
	J/DST16	* -->	0110 746 51 41				
	J/DST17	* -->	0111 747 52 42				
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	*****						

E04

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	RIF COUT	CLOCKS
28	SRC36:0666	F/SRC18 <--		462	19	22		
	*P2, D+MD	*						
	*P3, R(SRC)+D (A ADDR),	*						
	J/UP	*						
	ECT	1 OR 2 (SECOND),						
	J/T,	BUT(MOV#DM),						
		J/740						
		J/SXT05	-->	0000	740	300	134	
		J/DST11	-->	0001	741	46	38	
		J/DST12	-->	0010	742	47	39	
		J/DST13	-->	0011	743	48	40	
		J/DST14	-->	0100	744	49	40	
		J/DST15	-->	0101	745	50	41	
		J/DST16	-->	0110	746	51	41	
		J/DST17	-->	0111	747	52	42	
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					
		UNDEFINED CASE	*					

ADDR	ALU	BUSB	BUSA	EXTENSION
BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
666				00000101000
	1010	11 10	00 00	110 000 0100 0
	00000	010110	00101	111100000



# F04

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COU: CLOCKS
.CASE 29	8 OF BSRC18 SRC37:0667	F/SRC18 <--	462 19 22	667 1010 11 10 00 00 110 000 0100 0 00000 010110 00101 111100000
	*P2, D+MD *			
	*P3, R(SRC)+D (A ADDR), *			
	*SETUP *			
	*SELECT 1 OR 2 (SECOND), *			
	*NEXT, BUT(MOV#CM), *			
	J/740 *			
	J/SXT05 * -->	0000 740 300 134		
	J/DST11 * -->	0001 741 46 38		
	J/DST12 * -->	0010 742 47 39		
	J/DST13 * -->	0011 743 48 40		
	J/DST14 * -->	0100 744 49 40		
	J/DST15 * -->	0101 745 50 41		
	J/DST16 * -->	0110 746 51 41		
	J/DST17 * -->	0111 747 52 42		
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
	UNDEFINED CASE *			
.CASE 30	1 OF BSRC20 SRC23:0627	F/SRC20 <--	463 20 22	627 1010 11 10 00 00 000 000 0100 0 00000 000000 10C11 111111010
	*P2, D+MD *			
	*NEXT, BUTR(ODD ADDRESS), *			
	J/SRC30 *			
	J/SRC30 * -->	10 772 32 31		
	J/SRC31 * -->	11 773 33 32		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
31	2 OF BSRC20 SRC38:0637	F/SRC20 <--	463 20 22	637				000000001000
	*****							
	*-----*							
	*P2 D+MD							
	*NEXT, BUTR(ODD ADDRESS),							
	* J/SRC39							
	* J/SRC39	-->	10 12 34 32					
	* J/SRC40	-->	11 13 35 33					
	*****							
32	1 OF BSRC23 SRC30:0772	F/SRC23 <--	627 30 30	772				000000101000
	*****							
	*-----*							
	*+2, D+D(L0) * D(L0), D(C)+ALU07,							
	*P3 R(SRC)+D (B ADDR),							
	*SETUP							
	*SELECT 1 OR 2 (SECOND),							
	*NEXT, BUT(MOV * DM),							
	* J/740							
	* J/SXT05	-->	0000 740 300 134					
	* J/DST11	-->	0001 741 46 38					
	* J/DST12	-->	0010 742 47 39					
	* J/DST13	-->	0011 743 48 40					
	* J/DST14	-->	0100 744 49 40					
	* J/DST15	-->	0101 745 50 41					
	* J/DST16	-->	0110 746 51 41					
	* J/DST17	-->	0111 747 52 42					
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	* UNDEFINED CASE							
	*****							

```

1010 11 10 00 00 00000001000
00000 00000 10011 0000001010

```

```

1111 00 10 01 01 110 111 0100 0
00001 011110 00101 11100000

```



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLCKS
35	SRC40:0013	F/SRC38	<--	637	31	31		
	*****							
	*P2, D+D(HI) * D(HI), D(C)+ALU07.							
	*P3, R(SRC)+D (B ADDR),							
	*SETUP							
	*SELECT 1 OR 2 (SECOND),							
	*NEXT, BUT(MOV * DM),							
	J/150							
	*****							
	UNDEFINED CASE							
	J/MOV10	-->	1001	151	222	105		
	J/MOV15	-->	1010	152	223	106		
	J/MOV22	-->	1011	153	225	106		
	J/MOV35	-->	1100	154	226	107		
	J/MOV39	-->	1101	155	227	107		
	J/MOV44	-->	1110	156	228	107		
	J/MOV57	-->	1111	157	230	108		
	*****							
36	SRC22:0010	F/SRC19	<--	467	22	23		
	*****							
	*P2, D+MD							
	*NEXT, BUTR(ODD ADDRESS),							
	J/SRC24							
	J/SRC24	-->	10	752	37	34		
	J/SRC29	-->	11	753	38	35		
	*****							

13  
 1111 00 10 01 01 110 011 0100 0  
 00100 011110 00101 001101000

10  
 1010 11 10 00 00 000 000 0100 0  
 00000 000000 10011 111101010

# J04

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO. -CASE	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
37	1 OF BSRC22 SRC24:0752	F/SRC22 <--		10	36	33			
	*****								
	*-----*								
	*P2, D+D(L0) * D(L0, D(C)+ALU07,								
	*P3, R(SRC)+D (B ADDR),								
	*NEXT, BUT(DOP),								
	* J/620								
	* UNDEFINED CASE								
	* J/MOV05	* -->	0001	621	210	101			
	* J/CMPO2	* -->	0010	622	84	57			
	* J/BIT02	* -->	0011	623	86	57			
	* J/BIC02	* -->	0100	624	87	58			
	* J/BIS02	* -->	0101	625	88	58			
	* J/ADD02	* -->	0110	626	89	59			
	* UNDEFINED CASE								
	* UNDEFINED CASE								
	* J/MOV06	* -->	1001	631	221	105			
	* J/CMPO2	* -->	1010	632	91	60			
	* J/BITB02	* -->	1011	633	92	60			
	* J/BICB02	* -->	1100	634	93	61			
	* J/BISB02	* -->	1101	635	94	61			
	* J/SUB02	* -->	1110	636	90	59			
	* UNDEFINED CASE								
	*****								

752  
 1111 00 10 01 01 110 011 0100 0  
 00001 011110 00001 110010000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	RIF COUT	CLOCKS
38	SRC29:0753	F/SRC22 <--		753				000000001000
				1111	00 10	01 01	110 011	0100 0
				00100	011110	00001	110010000	
	*P2, D+D(HI) * D(HI) D(C)+ALU07,							
	*P3, R(SRC)+D (B ADDR),							
	*NEXT, BUT(DOF),							
	J/620							
	UNDEFINED CASE							
	J/MOV05	* -->	0001 621	210	101			
	J/CMP02	* -->	0010 622	84	57			
	J/BIT02	* -->	0011 623	86	57			
	J/BIC02	* -->	0100 624	87	58			
	J/BIS02	* -->	0101 625	88	58			
	J/ADD02	* -->	0110 626	89	59			
	UNDEFINED CASE							
	UNDEFINED CASE							
	J/MOV06	* -->	1001 631	221	105			
	J/CMP02	* -->	1010 632	91	60			
	J/BIT02	* -->	1011 633	92	60			
	J/BIC02	* -->	1100 634	93	61			
	J/BIS02	* -->	1101 635	94	61			
	J/SUB02	* -->	1110 636	90	59			
	UNDEFINED CASE							
.TOC	"DESTINATION CALCULATION"							
39	DST01:0511	F/FET03 <--		511				00000000111
				0000	00 00	10 10	000 000	0001 0
				10011	000000	01001	101010100	
	*P1, BA+R(DF), CURRENT MODE,							
	*ENABLE, MAINTENANCE,							
	*P3, L, DATIB(P),							
	*NEXT, BUTR(SMO * BYTE),							
	J/DST21	* -->	100 524	55	43			
	J/DST22	* -->	101 525	56	44			
	J/DST19	* -->	110 526	57	44			
	J/DST20	* -->	111 527	58	45			



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 40	75 OF BFET03 DST02:0512	F/FET03 <--	700 3 11	512				00000000111
	*****				1001	11 11	10 10	000 000 0101 0
	-----				10011	000110	01001	101010100
	*P1, BA+R(DF), CURRENT MODE,							
	*ENABLE, MAINTENANCE,							
	*P2, D+R(DF) PLUS (1 OR 2),							
	*P3, R(DF)+D (A ADDR),							
	*P3, U, DATIB(P),							
	*NEXT, BCTR(SMO # BYTE),							
	* J/DST21							
		* -->	100 524 55 43					
		* -->	101 525 56 44					
		* -->	110 526 57 44					
		* -->	111 527 58 45					
	*****							
.CASE 41	76 OF BFET03 DST03:0513	F/FET03 <--	700 3 11	513				000000001011
	*****				1001	11 11	10 10	000 000 0101 0
	-----				10110	000110	11000	110100101
	*P1, BA+R(DF), CURRENT MODE,							
	*P2, D+R(DF) PLUS 2,							
	*P3, R(DF)+D (A ADDR),							
	*P3, U, DATI,							
	*NEXT, J/DST38							
		* -->	645 63 46					
	*****							
.CASE 42	77 OF BFET03 DST04:0514	F/FET03 <--	700 3 11	514				000000001000
	*****				1101	11 11	10 10	000 000 0100 0
	-----				00000	000110	11000	000001001
	*P2, D+R(DF) MINUS (1 OR 2),							
	*P3, R(DF)+D (A ADDR),							
	*NEXT, J/DST08							
		* -->	11 53 42					
	*****							

M04

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 43	78 OF BFET03 DST05:0515	F/FET03 <--	700 3 11	515			000000001000 1101 11 11 10 10 000 000 0100 0 00000 000110 11000 000001100
	*-----*						
	*P2, D+R(DF) MINUS 2,*						
	*P3, R(DF)+D (A ADDR),*						
	*NEXT,*						
	J/DST09	-->	14 54 43				
.CASE 44	79 OF BFET03 DST06:0516	F/FET03 <--	700 3 11	516			000000001000 1010 11 10 00 00 000 000 0100 0 00000 100000 11000 000001101
	*-----*						
	*P2, D+MD,MD+DATA,*						
	*NEXT,*						
	J/DST29	-->	15 59 45				
.CASE 45	80 OF BFET03 DST07:0517	F/FET03 <--	700 3 11	517			000000001000 1010 11 10 00 00 000 000 0100 0 00000 100000 11000 000010010
	*-----*						
	*P2, D+MD,MD+DATA,*						
	*NEXT,*						
	J/DST35	-->	22 61 46				

# N04

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO. TAG: ADDRESS  
 .CASE 2 OF BSRC21

SOURCE/DESTINATION  
 OFST ADDR BOX PAGE

MICROFICHE  
 COORD CARD

ADDR ALU  
 BUS

BUSB  
 SP

BUSA  
 UBF

EXTENSION  
 RIF COUT UPF

CLOCKS

F/SRC21	<--	661	23	24
F/SRC32	<--	662	24	25
F/SRC33	<--	663	25	26
F/SRC34	<--	664	26	27
F/SRC35	<--	665	27	28
F/SRC36	<--	666	28	29
F/SRC37	<--	667	29	30
F/SRC30	<--	772	32	31
F/SRC31	<--	773	33	32
F/SWB03	<--	73	289	129
F/XOR02	<--	47	294	131
F/SXT03	<--	464	298	132
F/SXT04	<--	465	299	133

46 DST11:0741

741

```

0000 00 00 10 10 00000000111
10011 000000 01001 101010100
    
```

```

*****
*
*-----*
*P1      BA+R(DF) CURRENT MODE,
*ENABLE, MAINTENANCE,
*P3      U, DATIB(P),
*NEXT,   BUTR(SMO # BYTE),
*
*          J/DST21
*          J/DST22
*          J/DST19
*          J/DST20
*****
    
```

J/DST21	* -->	100	524	55	43
J/DST22	* -->	101	525	56	44
J/DST19	* -->	110	526	57	44
J/DST20	* -->	111	527	58	45

BOX NO. TAG: ADDRESS  
.CASE 3 OF BSRC21

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS BUS

BUSB  
SP

BUSA  
JBF

EXTENSION  
RIF COUT CLOCKS  
UPF

F/SRC21	<--	661	23	24
F/SRC32	<--	662	24	25
F/SRC33	<--	663	25	26
F/SRC34	<--	664	26	27
F/SRC35	<--	665	27	28
F/SRC36	<--	666	28	29
F/SRC37	<--	667	29	30
F/SRC30	<--	772	32	31
F/SRC31	<--	773	33	32
F/SMB03	<--	73	289	129
F/XOR02	<--	47	294	131
F/SXT03	<--	464	298	132
F/SXT04	<--	465	299	133

47 DST12:0742

```

*****
*
*-----*
*P1,      BA+R(DF) CURRENT MODE,
*ENABLE,  MAINTENANCE,
*P2,      D+R(DF) PLUS (1 OR 2),
*P3,      R(DF)+D (A ADDR),
*P3,      U, DATIB(P),
*NEXT,    BUTR(SMO # BYTE),
*          J/DST21
*
*          J/DST21
*          J/DST22
*          J/DST19
*          J/DST20
*****

```

J/DST21	* -->	100	524	55	43
J/DST22	* -->	101	525	56	44
J/DST19	* -->	110	526	57	44
J/DST20	* -->	111	527	58	45

742

```

00000000111
1001 11 11 10 10 000 000 0101 0
10011 000110 01001 101010100

```

BOX NO. TAG: ADDRESS  
.CASE OF BSRC21

SOURCE/DESTINATION OFST ADDR BOX PAGE

MICROFICHE COORD CARD

ADDR ALU BUS

RUSB SP

BUSA UBF

EXTENSION RIF COUT CLOCKS UPF

	F/SRC21	<--	661	24	24
	F/SRC32	<--	662	24	25
	F/SRC33	<--	663	25	26
	F/SRC34	<--	664	26	27
	F/SRC35	<--	665	27	28
	F/SRC36	<--	666	28	29
	F/SRC37	<--	667	29	30
	F/SRC30	<--	772	32	31
	F/SRC31	<--	773	33	32
	F/SW803	<--	73	289	129
	F/XOR02	<--	47	294	131
	F/SXT03	<--	464	298	132
48	F/SXT04	<--	465	299	133

DST13:0743

```

***** (*****
*
*-----*
*P1,      BA+R(DF), CURRENT MODE,
*P2,      D+R(DF) PLUS 2,
*P3,      R(DF)+D (A ADDR),
*P3,      U, DATI,
*NEXT,
*
*          J/DST38
*****

```

743

```

000000001011
1001 11 11 10 10 000 000 0101 0
10110 000110 11000 110100101

```

.CASE 5 OF BSRC21

	F/SRC21	<--	661	23	24
	F/SRC32	<--	662	24	25
	F/SRC33	<--	663	25	26
	F/SRC34	<--	664	26	27
	F/SRC35	<--	665	27	28
	F/SRC36	<--	666	28	29
	F/SRC37	<--	667	29	30
	F/SRC30	<--	772	32	31
	F/SRC31	<--	773	33	32
	F/SW803	<--	73	289	129
	F/XOR02	<--	47	294	131
	F/SXT03	<--	464	298	132
49	F/SXT04	<--	465	299	133

DST14:0744

```

*****
*
*-----*
*P2,      D+R(DF) MINUS (1 OR 2),
*P3,      R(DF)+D (A ADDR),
*NEXT,
*
*          J/DST08
*****

```

744

```

000000001000
1101 11 11 10 10 000 000 0100 0
00000 000110 11000 000001001

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	6 OF BSRC21	F/SRC21	<--	661	23	24		
		F/SRC32	<--	662	24	25		
		F/SRC33	<--	663	25	26		
		F/SRC34	<--	664	26	27		
		F/SRC35	<--	665	27	28		
		F/SRC36	<--	666	28	29		
		F/SRC37	<--	667	29	30		
		F/SRC30	<--	772	32	31		
		F/SRC31	<--	773	33	32		
		F/SWB03	<--	73	289	129		
		F/XOR02	<--	47	294	131		
		F/SXT03	<--	464	298	132		
		F/SXT04	<--	465	299	133		
50	DST15:0745							
	*****							
	*-----*							
	*P2, D+R(DF) MINUS 2,							
	*P3, R(DF)+D (A ADDR),							
	*NEXT,							
	* J/DST09	-->		14	54	43		
	*****							
.CASE	7 OF BSRC21	F/SRC21	<--	661	23	24		
		F/SRC32	<--	662	24	25		
		F/SRC33	<--	663	25	26		
		F/SRC34	<--	664	26	27		
		F/SRC35	<--	665	27	28		
		F/SRC36	<--	666	28	29		
		F/SRC37	<--	667	29	30		
		F/SRC30	<--	772	32	31		
		F/SRC31	<--	773	33	32		
		F/SWB03	<--	73	289	129		
		F/XOR02	<--	47	294	131		
		F/SXT03	<--	464	298	132		
		F/SXT04	<--	465	299	133		
51	DST16:0746							
	*****							
	*-----*							
	*P1, BA+PC CURRENT MODE,							
	*P2, D+PC PLUS 2,							
	*P3, PC+D (A ADDR),							
	*P3, U,DATI,							
	*NEXT,							
	* J/DST0E	-->		516	44	37		
	*****							

745 00000001000  
 1101 11 11 10 10 000 000 0100 0  
 00000 000110 11000 000001100

746 00000001011  
 1001 11 11 10 01 111 000 0101 0  
 10110 000110 11000 101001110

# E05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 42

BOX NO. .CASE	TAG: ADDRESS 8 OF BSRC21	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
		F/SRC21 <--	661 23 24				
		F/SRC32 <--	662 24 25				
		F/SRC33 <--	663 25 26				
		F/SRC34 <--	664 26 27				
		F/SRC35 <--	665 27 28				
		F/SRC36 <--	666 28 29				
		F/SRC37 <--	667 29 30				
		F/SRC30 <--	772 32 31				
		F/SRC31 <--	773 33 32				
		F/SWB03 <--	73 289 129				
		F/XOR02 <--	47 294 131				
		F/SXT03 <--	464 298 132				
52	DST17:0747	F/SXT04 <--	465 299 133				
	*****						
	*-----*						
	*P1, BA+PC CURRENT MODE,						
	*P2, D+PC PLUS 2,						
	*P3, PC+D (A ADDR),						
	*P3 U,DATI,						
	*NEXT,						
	* J/DST07	-->	517 45 37				
	*****						
		F/DST04 <--	514 42 36				
53	DST08:0011	F/DST14 <--	744 49 40				
	*****						
	*-----*						
	*P1 BA+R(DF) CURRENT MODE,						
	*ENABLE, MAINTENANCE,						
	*P3 U,DATI,						
	*NEXT, BUTR(SMO * BYTE),						
	* J/DST21	-->	100 524 55 43				
		-->	101 525 56 44				
		-->	110 526 57 44				
		-->	111 527 58 45				
	*****						

747 00000001011  
1001 11 11 10 11 111 000 010 0  
10110 000110 11000 101001111

11 00000001111  
0000 00 00 10 10 000 000 0001 0  
10011 000000 01001 101010100



# F05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 43

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION				CLOCKS												
				ADDR ALU BUS	BUSB SP	BUSA UBF	RIF UPF													
54	DST09:0014	F/DST05 F/DST15	<-- <--	515 745	43 50	37 41														
	*****						14								000000001011					
	*-----*														0000 00 00 10 10 000 000 0001 0					
	*P1, BA+R(DF), CURRENT MODE,														10110 000000 11000 110100101					
	*P3, U, DATI,																			
	*NEXT, J/DST38		-->	645	63	46														
	*****																			
.CASE	1 OF BOST01	F/DST01 F/DST02 F/DST11 F/DST12 F/DST08 F/DST30 F/DST40	<-- <-- <-- <-- <-- <-- <--	511 512 741 742 11 20 30	39 40 46 47 53 60 65	35 36 38 39 42 45 47														
55	DST21:0524	J/DST41	-->	0000	400	69	48													
	*****																			
	*-----*																			
	*P3, MD+DATA,																			
	*NEXT, BUT(DOP), J/DST41																			
	* J/DST41		-->	0010	402	106	66													
	* UNDEFINED CASE																			
	* J/CMPOS		-->	0011	403	107	66													
	* J/BIT04		-->	0100	404	108	66													
	* J/BIC04		-->	0101	405	109	67													
	* J/BIS04		-->	0110	406	110	67													
	* J/ADD04		-->	0111	407	295	131													
	* J/XOR03		-->																	
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	* UNDEFINED CASE																			
	*****																			

```

14
0000 00 00 10 10 000 000 0001 0
10110 000000 11000 110100101

524
0000 11 10 00 00 000 000 0000 0
00000 100000 00001 100000000
    
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
.CASE	2 OF BOST01												
		F/DST01	<--	511	39	35							
		F/DST02	<--	512	40	36							
		F/DST11	<--	741	46	38							
		F/DST12	<--	742	47	39							
		F/DST08	<--	11	53	42							
		F/DST30	<--	20	60	45							
56	DST22:0525	F/DST40	<--	30	65	47							
	*****												
	*-----*												
	*P3, MD+DATA,												
	*NEXT, BUT(DIAGNOSE),												
	* J/DST24	-->		31	56	47							
	*****												
.CASE	3 OF BOST01												
		F/DST01	<--	511	39	35							
		F/DST02	<--	512	40	36							
		F/DST11	<--	741	46	38							
		F/DST12	<--	742	47	39							
		F/DST08	<--	11	53	42							
		F/DST30	<--	20	60	45							
57	DST19:0526	F/DST40	<--	30	65	47							
	*****												
	*-----*												
	*P3, MD+DATA,												
	*NEXT, BUT(DOP),												
	* J/SWB04	-->		0000	720	290	129						
		UNDEFINED CASE											
		J/CMP04	-->	0010	722	95	62						
		J/BIT03	-->	0011	723	96	62						
		J/BIC03	-->	0100	724	97	63						
		J/BIS03	-->	0101	725	98	63						
		J/ADD03	-->	0110	726	99	63						
		UNDEFINED CASE											
		UNDEFINED CASE											
		UNDEFINED CASE											
		J/CMP03	-->	1010	732	102	64						
		J/BIT303	-->	1011	733	103	65						
		J/BIT803	-->	1100	734	104	65						
		J/BIS803	-->	1101	735	105	65						
		J/SUB03	-->	1110	736	100	64						
		UNDEFINED CASE											
	*****												

525  
 0000 11 10 00 00 000 000 0000 0  
 00000 100000 11011 000011001

526  
 0000 11 10 00 00 000 000 0000 0  
 00000 100000 00001 111010000

# H05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	EXTENSION
.CASE	4 OF BDST01	OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	RIF COUT CLOCKS
		F/DST01	<--	511	39	35	
		F/DST02	<--	512	40	36	
		F/DST11	<--	741	46	38	
		F/DST12	<--	742	47	39	
		F/DST08	<--	11	53	42	
		F/DST30	<--	20	60	45	
		F/DST40	<--	30	65	47	
58	DST20:0527						527
	*****						000000001000
	*-----*						0000 11 10 00 00 000 000 0000 0
	*P3, MD+DATA						0000 100000 11011 000011100
	*NEXT, BUT(DIAGNOSE,)						
	* J/DST23						
	*****						
59	DST29:0015	F/DST06	<--	516	44	37	
	*****						15
	*-----*						000000001000
	*P2, D+R(DF) PLUS MD(D)						1001 10 11 10 10 110 000 0100 0
	*P3, R(DST X)+D (B ADDR)						00010 011110 11000 000010000
	*NEXT, J/DST30						
	* --> VV						
	*****						
60	DST30:0020	F/DST29	<--	VV			20
	*****						00000000111
	*-----*						0000 00 00 11 01 110 000 0001 0
	*P1, BA+R(DST X), CURRENT MODE,						10011 000000 01001 101010100
	*ENABLE, MAINTENANCE,						
	*P3, U, DATIB(P)						
	*NEXT, BUTR(SMO # BYTE),						
	* J/DST21						
	* --> 100 524 55 43						
	* J/DST22						
	* --> 101 525 56 44						
	* J/DST19						
	* --> 110 526 57 44						
	* J/DST20						
	* --> 111 527 58 45						
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
61	DST35:0022	F/DST07	<--	517	45	37				
	*****									
	*-----*									
	*P2, D+R(DF) PLUS MD(D),									
	*P3, R(DST X)+D (B ADDR),									
	*NEXT,									
	J/DST36		-->							
62	DST36:0024	F/DST35	<-- VV							
	*****									
	*-----*									
	*P1, BA+R(DST X), CURRENT MODE,									
	*P3, U, DATI,									
	*NEXT,									
	J/DST38		-->							
	*****									
	F/DST03		<--	513	41	36				
	F/DST13		<--	743	48	40				
	F/DST09		<--	14	54	43				
63	DST38:0645	F/DST36	<-- VV							
	*****									
	*-----*									
	*P3, MD+DATA,									
	*NEXT,									
	J/DST39		-->							
64	DST39:0025	F/DST38	<-- VV							
	*****									
	*-----*									
	*P2, D+MD,									
	*P3, R(DST I)+D (A ADDR),									
	*NEXT,									
	J/DST40		-->	30	65	47				
	*****									

ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
22				000000001000		
	1001	10 11	10 10	110 000	0100	0
	00010	011110	11000	000010100		
24				000000001011		
	0000	00 00	11 01	110 000	0001	0
	10110	000000	11000	110100101		
645				000000001000		
	0000	11 10	00 00	000 000	0000	0
	00000	100000	11000	000010101		
25				000000001000		
	1010	11 10	00 01	110 000	0100	0
	00000	010010	11000	000011000		

# J05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION				
				ADDR ALU BUSB BUSA RIF COUT	ALU BUS SP UBF UPF	CLOCKS		
65	DST40:0030	F/DST39 <--	25 64 46	30				00000000111
					0000	00 00	11 01	110 000 0001 0
					10011	000000	01001	101010100
	*P1, BA+R(DST I), CURRENT MODE,							
	*ENABLE, MAINTENANCE,							
	*P3, U, DATIB(P),							
	*NEXT, BUTR(SMO # BYTE),							
	J/DST21							
		J/DST21 -->	100 524 55 43					
		J/DST22 -->	101 525 56 44					
		J/DST19 -->	110 526 57 44					
		J/DST20 -->	111 527 58 45					
66	DST24:0031	F/DST22 <--	525 56 44	31				000000001000
					1010	11 10	00 00	000 000 0100 0
					00000	000000	10011	111110010
	*P2, D+MD,							
	*NEXT, BUTR(ODD ADDRESS),							
	J/DST27							
		J/DST27 -->	10 762 67 47					
		J/DST28 -->	11 763 68 48					
.CASE 67	1 OF BDST24 DST27:0762	F/DST24 <-- VV		762				000000001000
					1111	00 11	01 01	110 001 0110 0
					00001	011110	00001	100001000
	*P2, D+D(LO) # D(LO),							
	SR+D(LO) # D(LO), D(C)+PS(C),							
	*P3, R(DST)+D (B ADDR),							
	*NEXT, BUT(DOP),							
	J/DST42							
		J/DST42 -->	1000 410 70 49					
	UNDEFINED CASE							
	J/CMPB04				1010	412	113	68
	J/BITB04				1011	413	114	68
	J/BICB04				1100	414	115	69
	J/BISB04				1101	415	116	69
	J/SUB05				1110	416	111	67
	J/OTH01				1111	417	285	127

# K05

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 48

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	RIF COUT	CLOCKS	
							UPF		
68	DST28:0763	F/DST24	<--	31	66	47			
	*****							763	000000001000
	*-----*							1111 00 11 01 01 110 001 0110 0	
	*P2, D+D(HI) # D(HI),								
	* SR+D(HI) # D(HI), D(C)+PS(C),								
	*P3, R(DST)+D (B ADDR),								
	*NEXT, BUT(DOP),								
	* J/DST42								
		J/DST42	-->	1000	410	70	49		
		UNDEFINED CASE							
		J/CMPB04	-->	1010	412	113	68		
		J/BITB04	-->	1011	413	114	68		
		J/BICB04	-->	1100	414	115	69		
		J/BISB04	-->	1101	415	116	69		
		J/SUB05	-->	1110	416	111	67		
		J/OTH01	-->	1111	417	285	127		
	*****								
69	DST41:0400	F/DST21	<--	524	55	43			
	*****							400	000000001000
	* FOR SOP'S TO MEMORY FOR SOP'S TO							1010 11 10 00 00 000 001 0110 0	
	* MEMORY FOR ROR, SBC							00000 000000 00100 100010000	
	*-----*								
	*P2, D+MD, SR+MD, D(C)+PS(C),								
	*NEXT, BUT(SOP),								
	* J/ASR06								
		J/ASR06	-->	0000	420	165	87		
		J/ROLO3	-->	0001	421	163	87		
		J/ASR05	-->	0010	422	164	87		
		J/ASLO3	-->	0011	423	168	88		
		UNDEFINED CASE							
		J/SXT06	-->	0101	427	301	134		
		UNDEFINED CASE							
		UNDEFINED CASE							
		J/CLR02	-->	1000	430	153	83		
		J/COM03	-->	1001	431	154	84		
		J/INC03	-->	1010	432	155	84		
		J/DEC03	-->	1011	433	156	84		
		J/NEG03	-->	1100	434	157	85		
		J/ADC03	-->	1101	435	159	85		
		J/SBC05	-->	1110	436	160	86		
		J/TST02	-->	1111	437	162	86		
	*****								

# L05

BOX NO. .CASE	TAG: ADDRESS 1 OF BOST27	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
70	DST42:0410	F/DST27 F/DST28	<-- <--	762 763	67 68	47 48				
				410				000000001000		
					1111	00 00	01 01	000 010	0100 0	
					00010	000000	00100	101010000		
	*P2 *NEXT,        D+D SIGN EXTENDED, D(C)+ALU00, BUT(SOP), J/ASRB11									
		J/ASRB11	* -->	0000	520	185	94			
		J/ROLB02	* -->	0001	521	179	92			
		J/ASRB05	* -->	0010	522	180	92			
		J/ASLB02	* -->	0011	523	187	94			
		UNDEFINED CASE								
		UNDEFINED CASE								
		UNDEFINED CASE								
		UNDEFINED CASE								
		J/CLRB02	* -->	1000	530	169	89			
		J/COMB02	* -->	1001	531	170	89			
		J/INCB02	* -->	1010	532	171	89			
		J/DECB02	* -->	1011	533	172	90			
		J/NEGB03	* -->	1100	534	173	90			
		J/ADCB02	* -->	1101	535	175	91			
		J/SBCB05	* -->	1110	536	176	91			
		J/TSTB02	* -->	1111	537	178	92			
71	DST23:0034	F/DST20	<--	527	58	45				
								000000001000		
					1010	11 10	00 00	000 000	0100 0	
					00000	000000	10011	110100010		
	*P2 *NEXT,        D+MD BUTR(ODD ADDRESS), J/DST25									
		J/DST25	* -->	10	642	72	50			
		J/DST26	* -->	11	643	73	51			



# M05

PROGRAM FLOWS

11/60 MICROCODE 04 09-Mar-77 BY ADSYS 020377

PAGE 50

BOX NO. .CASE	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION				
				ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	RIF UPF
72	DST25:0642	F/DST23 <--	34 71 49	642				000000001000
				1111	00 11	01 01	110 000	0100 0
				00001	011110	00001	111010000	
	*P2, D+D(L0) # D(L0)							
	*P3, R(DST)+D (B ADDR),							
	*NEXT, BUT(DOP),							
	J/SWB04	* -->	0000 720 290 129					
	UNDEFINED CASE							
	J/CMP04	* -->	0010 722 95 62					
	J/BIT03	* -->	0011 723 96 62					
	J/BIC03	* -->	0100 724 97 63					
	J/BIS03	* -->	0101 725 98 63					
	J/ADD03	* -->	0110 726 99 63					
	UNDEFINED CASE							
	UNDEFINED CASE							
	UNDEFINED CASE							
	J/CMPB03	* -->	1010 732 102 64					
	J/BITB03	* -->	1011 733 103 65					
	J/BICB03	* -->	1100 734 104 65					
	J/BISB03	* -->	1101 735 105 65					
	J/SUB03	* -->	1110 736 100 64					
	UNDEFINED CASE							

# N05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO. .CASE 73	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
	DST26:0643	F/DST23 <--		34 71 49						
	*****									
	*-----*									
	*P2, D=D(HI) # D(HI),									
	*P3, R(DST)+D (B ADDR),									
	*NEXT, BUT(DOP),									
	J/SW804									
	J/SW804	-->	0000	720 290 129						
	UNDEFINED CASE									
	J/CMP04	-->	0010	722 95 62						
	J/BIT03	-->	0011	723 96 62						
	J/BIC03	-->	0100	724 97 63						
	J/BIS03	-->	0101	725 98 63						
	J/RO003	-->	0110	726 99 63						
	UNDEFINED CASE									
	UNDEFINED CASE									
	UNDEFINED CASE									
	J/CMP803	-->	1010	732 102 64						
	J/BIT803	-->	1011	733 103 65						
	J/BIC803	-->	1100	734 104 65						
	J/BIS803	-->	1101	735 105 65						
	J/SUB03	-->	1110	736 100 64						
	UNDEFINED CASE									
	*****									

```

643
1111 00 11 01 01 110 000 0100 0
00100 011110 00001 111010000
    
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC "DOUBLE OPERAND EXECUTION"							
.TOC "REGISTER-REGISTER DOUBLE OPERAND - WORD"							
.CASE 74	35 OF BFET03 CMP01:0442	F/FET03	<--	700	3	11	
	*****						442 000000001000
	* PLACE DATA TO BE TESTED IN D SAVE						1101 00 00 10 11 000 110 0100 1
	* PREFETCHED INSTRUCTION IN IR COPY						00010 100000 10000 111000000
	* PREFETCHED INSTRUCTION INTO MD SET						
	* CONDITION CODES DURING NEXT						
	* MICROINSTRUCTION TEST FOR SERVICE AND						
	* RESET						
	-----						
	*P2, D+R(SF) MINUS R(DF),						
	* D(C)+COUT15,						
	*P2 U, IR+DATA,						
	*P3 MD(D)+DATA, RESET STATE,						
	* DEFER, SET CC,						
	* NEXT, BUT(FOV # SERVICE),						
	* J/FET03						
		J/FET03	-->	00 700	3	11	
		J/SER01	-->	01 701	385	160	
		J/FET01	-->	10 702	1	2	
		J/SER02	-->	11 703	387	162	
	*****						
.CASE 75	36 OF BFET03 BIT01:0443	F/FET03	<--	700	3	11	
	*****						443 000000001000
	*-----						1011 00 00 10 11 000 001 0100 1
	*P2, D+R(SF) AND R(DF), D(C)+PS(C),						00010 100000 10000 111000000
	*P2 U, IR+DATA,						
	*P3 MD(D)+DATA, RESET STATE,						
	* DEFER, SET CC,						
	* NEXT, BUT(FOV # SERVICE),						
	* J/FET03						
		J/FET03	-->	00 700	3	11	
		J/SER01	-->	01 701	385	160	
		J/FET01	-->	10 702	1	2	
		J/SER02	-->	11 703	387	162	
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								UPF
76	37 OF BFET03 BIC01:0444	F/FET03 <--		700 3 11				444 00000001000
	*****							0010 00 00 10 11 000 001 0100 1
	*-----*							00010 101110 10000 111000000
	*P2, D+-R(SF) * R(DF),D(C)+PS(C), *							
	*P2, U, IR+DATA, *							
	*P3, R(DF)+D (B ADDR),MD(D)+DATA, *							
	* RESET STATE, *							
	*DEFER, SET CC, *							
	*NEXT, BUT(FOV * SERVICE), *							
	* J/FET03 *							
		J/FET03 -->		00 700 3 11				
		J/SER01 -->		01 701 385 160				
		J/FET01 -->		10 702 1 2				
		J/SER02 -->		11 703 387 162				
	*****							
77	38 OF BFET03 BIS01:0445	F/FET03 <--		700 3 11				445 00000001000
	*****							1110 00 00 10 11 000 001 0100 1
	*-----*							00010 101110 10000 111000000
	*P2, D+R(SF) OR R(DF),D(C)+PS(C), *							
	*P2, U, IR+DATA, *							
	*P3, R(DF)+D (B ADDR),MD(D)+DATA, *							
	* RESET STATE, *							
	*DEFER, SET CC, *							
	*NEXT, BUT(FOV * SERVICE), *							
	* J/FET03 *							
		J/FET03 -->		00 700 3 11				
		J/SER01 -->		01 701 385 160				
		J/FET01 -->		10 702 1 2				
		J/SER02 -->		11 703 387 162				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 78	39 OF BFET03 A0001:0446	F/FET03 <--	700 3 11	446			000000001000
	*-----*						1001 00 00 10 11 000 110 0100 1
	*P2, D+R(SF) PLUS R(DF),						00010 101110 10000 111000000
	* D(C)+COUT15,						
	*P2 U IR+DATA						
	*P3, R(DF)+D (B ADDR),MD(D)+DATA,						
	* RESET STATE,						
	*DEFER, SET CC,						
	*NEXT, BUT(FOV # SERVICE),						
	* J/FET03						
	* J/FET03	* -->	00 700 3 11				
	* J/SER01	* -->	01 701 385 160				
	* J/FET01	* -->	10 702 1 2				
	* J/SER02	* -->	11 703 387 162				
.CASE 79	47 OF BFET03 SUB01:0456	F/FET03 <--	700 3 11	456			000000001000
	*-----*						1101 00 01 10 10 000 110 0100 1
	*P2, D+R(DF) MINUS R(SF),						00010 100110 10000 111000000
	* D(C)+COUT15,						
	*P2 U IR+DATA						
	*P3, R(DF)+D (A ADDR),MD(D)+DATA,						
	* RESET STATE,						
	*DEFER, SET CC,						
	*NEXT, BUT(FOV # SERVICE),						
	* J/FET03						
	* J/FET03	* -->	00 700 3 11				
	* J/SER01	* -->	01 701 385 160				
	* J/FET01	* -->	10 702 1 2				
	* J/SER02	* -->	11 703 387 162				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COLT CLOCKS UPF
.TOC "	REGISTER-REGISTER DOUBLE OPERAND - BYTE"							
.CASE 80	43 OF BFET03 CMPB01:0452 F/FET03	<--	700 3 11	452				000000001000
	*****							
	*-----*							
	*P2, D+R(SF) MINUS R(DF),							1101 00 00 10 11 000 101 0100 1
	* D(C)+COUT07,							00010 100000 10000 111000000
	*P2 U, IR+DATA,							
	*P3 MD(D)+DATA, RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03							
	* J/FET03	-->	00 700 3 11					
	* J/SER01	-->	01 701 385 160					
	* J/FET01	-->	10 702 1 2					
	* J/SER02	-->	11 703 387 162					
	*****							
.CASE 81	44 OF BFET03 BITB01:0453 F/FET03	<--	700 3 11	453				000000001000
	*****							
	*-----*							
	*P2, D+R(SF) AND R(DF), D(C)+PS(C),							1011 00 00 10 11 000 001 0100 1
	*P2 U, IR+DATA,							00010 100000 10000 111000000
	*P3 MD(D)+DATA, RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03							
	* J/FET03	-->	00 700 3 11					
	* J/SER01	-->	01 701 385 160					
	* J/FET01	-->	10 702 1 2					
	* J/SER02	-->	11 703 387 162					
	*****							

# F06

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUS A	EXTENSION		
								CFST	ADDR	BOX
.CASE 82	45 OF BFET03									
	BICB01:0454	F/FET03	<--	700	3	11				
	*****								454	000000111000
	*-----*								0010	00 00 10 11 000 000 010C 1
	*P2, D+-R(SF) * R(DF),								00010	101110 10000 111000000
	*P2, U, IR+DATA,									
	*P3, R(DF)(LO)+D (B ADDR)									
	* MD(D)+DATA, RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUT(FOV # SERVICE),									
* J/FET03										
* J/FET03								-->	00 700 3 11	
* J/SER01								-->	01 701 385 160	
* J/FET01								-->	10 702 1 2	
* J/SER02								-->	11 703 387 162	
*****										
.CASE 83	46 OF BFET03									
	BISB01:0455	F/FET03	<--	700	3	11				
	*****								455	000000111000
	*-----*								1110	00 00 10 11 000 001 010C 1
	*P2, D+R(SF) OR R(DF), D(C)+PS(C),								00010	101110 10000 111000000
	*P2, U, IR+DATA,									
	*P3, R(DF)(LO)+D (B ADDR)									
	* MD(D)+DATA, RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUT(FOV # SERVICE),									
* J/FET03										
* J/FET03								-->	00 700 3 11	
* J/SER01								-->	01 701 385 160	
* J/FET01								-->	10 702 1 2	
* J/SER02								-->	11 703 387 162	
*****										

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
.TOC " MEMORY-REGISTER DOUBLE OPERAND - WORD"									
.CASE 3 OF BSRC17									
84	CMPO2:0622	F/SRC17 F/SRC24 F/SRC29	<-- <-- <--	466 752 753	21 37 38	23 34 35			
	*****							622	000000001000
	*-----*								
	*P2, SR+MD,							1010 11 10 00 00 000 000 0010 0	
	*NEXT,							00000 000000 11000 000011101	
	* J/CMPO3		--> VV						
85	CMPO3:0035	F/CMPO2	<-- VV						
	*****							35	000000001000
	*-----*								
	*P2, D+SR MINUS R(DF),D(C)+COUT15,							1101 00 00 00 00 000 110 0100 1	
	*DEFER, SET CC,							00000 000000 10000 111000010	
	*NEXT, BUTR(SERVICE),								
	* J/FETO1								
	* J/FETO3		-->	00 700	3	11			
	* J/SERO1		-->	01 701	385	160			
	* J/FETO1		-->	10 702	1	2			
	* J/SERO2		-->	11 703	387	162			
*****									
.CASE 4 OF BSRC17									
86	BIT02:0623	F/SRC17 F/SRC24 F/SRC29	<-- <-- <--	466 752 753	21 37 38	23 34 35			
	*****							623	000000001000
	*-----*								
	*P2, D+R(DF) AND MD,D(C)+PS(C),							1011 11 10 10 10 000 001 0100 1	
	*DEFER, SET CC,							00000 000000 10000 111000010	
	*NEXT, BUTR(SERVICE),								
	* J/FETO1								
	* J/FETO3		-->	00 700	3	11			
	* J/SERO1		-->	01 701	385	160			
	* J/FETO1		-->	10 702	1	2			
	* J/SERO2		-->	11 703	387	162			
*****									



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	5 OF BSP <sup>17</sup>						
87	BIC02:0624	F/SRC17 <-- F/SRC24 <-- F/SRC29 <--	466 21 23 752 37 34 753 38 35				
	*****			624			000000001000
	*-----*						0000 0001 0100 1
	*P2, D+R(DF) AND NOT MD,D(C)+PS(C), *						0000 000110 1000 111000010
	*P3, R(DF)+D (A ADDR), *						
	*DEFER, SET CC, *						
	*NEXT, BUTR(SERVICE), *						
	* J/FETO1 *						
	* J/FETO3 * -->	00 700 3 11					
	* J/SERO1 * -->	01 701 385 160					
	* J/FETO1 * -->	10 702 1 2					
	* J/SERO2 * -->	11 703 387 162					
.CASE	6 OF BSRC17						
88	BIS02:0625	F/SR 7 <-- F/SRC24 <-- F/SRC29 <--	466 21 23 752 37 34 753 38 35				
	*****			625			000000001000
	*-----*						0000 0001 0100 1
	*P2, D+R(DF) OR MD,D(C)+PS(C), *						0000 000110 1000 111000010
	*P3, R(DF)+D (A ADDR), *						
	*DEFER, SET CC, *						
	*NEXT, BUTR(SERVICE), *						
	* J/FETO1 *						
	* J/FETO3 * -->	00 700 3 11					
	* J/SERO1 * -->	01 701 385 160					
	* J/FETO1 * -->	10 702 1 2					
	* J/SERO2 * -->	11 703 387 162					
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	7 OF BSRC17							
89	ADD02:0626	F/SRC17 <--	466 21 23					
		F/SRC24 <--	752 37 34					
		F/SRC29 <--	753 38 35					
	*****			626				000000001000
	*-----*				1001 10 00	10 10	000 110	0100 1
	*P2, D+R(DF) PLUS MD(D),				00010 000110	10000	111000010	
	* D(C)+COUT15,							
	*P3, R(DF)+D (A ADDR),							
	*DEFER, SET CC,							
	*NEXT, BUTR(SERVICE),							
	* J/FETO1							
	* J/FETO3 * -->	00 700	3 11					
	* J/SERO1 * -->	01 701	385 160					
	* J/FETO1 * -->	10 702	1 2					
	* J/SERO2 * -->	11 703	387 162					
	*****							
.CASE	15 OF BSRC17							
90	SUB02:0636	F/SRC17 <--	466 21 23					
		F/SRC24 <--	752 37 34					
		F/SRC29 <--	753 38 35					
	*****			636				000000001000
	*-----*				1101 11 10	10 10	000 110	0100 1
	*P2, D+R(DF) MINUS MD, D(C)+COUT15,				00000 000110	10000	111000010	
	*P3, R(DF)+D (A ADDR),							
	*DEFER, SET CC,							
	*NEXT, BUTR(SERVICE),							
	* J/FETO1							
	* J/FETO3 * -->	00 700	3 11					
	* J/SERO1 * -->	01 701	385 160					
	* J/FETO1 * -->	10 702	1 2					
	* J/SERO2 * -->	11 703	387 162					
	*****							

# JOB

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 60

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC " MEMORY-REGISTER DOUBLE OPERAND - BYTE"							
.CASE 11 OF BSRC17							
91	CMPB02:0632	F/SRC17 <--	466 21 23				
		F/SRC24 <--	752 37 34				
		F/SRC29 <--	753 38 35				
	*****			632			000000001000
	*-----*						
	*P2, D+R(SRC) MINUS R(DF),						1101 00 00 11 00 110 101 0100 1
	* D(C)+COUT07,						00000 000000 10000 111000010
	*DEFER, SET CC,						
	*NEXT, BUTR(SERVICE),						
	* J/FETO1						
		J/FETO3 *-->	00 700 3 1				
		J/SERO1 *-->	01 701 385 160				
		J/FETO1 *-->	10 702 1 2				
		J/SERO2 *-->	11 703 387 162				
*****							
.CASE 12 OF BSRC17							
		F/SRC17 <--	466 21 23				
		F/SRC24 <--	752 37 34				
		F/SRC29 <--	753 38 35				
92	BITB02:0633						
	*****			633			000000001000
	*-----*						
	*P2, D+R(SRC) AND R(DF),D(C)+PS(C),						1011 00 00 11 00 110 001 0100 1
	*DEFER, SET CC,						00000 000000 10000 111000010
	*NEXT, BUTR(SERVICE),						
	* J/FETO1						
		J/FETO3 *-->	00 700 3 11				
		J/SERO1 *-->	01 701 385 160				
		J/FETO1 *-->	10 702 1 2				
		J/SERO2 *-->	11 703 387 162				
*****							

# K06

PROGRAM FLOWS    11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377    PAGE 61

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
												RIF	COUT CLOCKS	
.CASE 13 OF BSRC17														
93	BICB02:0634	F/SRC17	<--	466	21	23								
		F/SRC24	<--	752	37	34								
		F/SRC29	<--	753	38	35								
*****													634	000000111000
*-----*														
	*P2,            D←R(SRC) * R(DF) D(C)+PS(C),	*											0010 00 00 11 00 110 001 0100 1	
	*P3,            R(DF)(LO)+D (B ADDR),	*											00000 001110 10000 111000010	
	*DEFER,        SET CC,	*												
	*NEXT,         BUTR(SERVICE),	*												
	*                J/FETO1	*												
		J/FETO3	* -->	00	700	3	11							
		J/SERO1	* -->	01	701	385	160							
		J/FETO1	* -->	10	702	1	2							
		J/SERO2	* -->	11	703	387	162							
*****														
.CASE 14 OF BSRC17														
		F/SRC17	<--	466	21	23								
		F/SRC24	<--	752	37	34								
		F/SRC29	<--	753	38	35								
*****													635	000000111000
*-----*														
	*P2,            D←R(SRC) OR R(DF) D(C)+PS(C),	*											1110 00 00 11 00 110 001 0100 1	
	*P3,            R(DF)(LO)+D (B ADDR),	*											00000 001110 10000 111000010	
	*DEFER,        SET CC,	*												
	*NEXT,         BUTR(SERVICE),	*												
	*                J/FETO1	*												
		J/FETO3	* -->	00	700	3	11							
		J/SERO1	* -->	01	701	385	160							
		J/FETO1	* -->	10	702	1	2							
		J/SERO2	* -->	11	703	387	162							
*****														

L06

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 62

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC	REGISTER-MEMORY DOUBLE OPERAND - WORD						
.CASE	3 OF BOST19						
95	CMP04:0722	F/DST19 <--	526 57 44				
		F/DST25 <--	642 72 50				
		F/DST26 <--	643 73 51				
	*****						
	* RELEASE BUS						
	-----						
	*P2, D+R(SF) MINUS MD,D(C)+COUT15,						
	*DEFER, SET CC,						
	*NEXT, BUTR(SERVICE),						
	* J/FET01						
		J/FET03 * -->	00 700 3 11				
		J/SER01 * -->	01 701 385 160				
		J/FET01 * -->	10 702 1 2				
		J/SER02 * -->	11 703 387 162				
	*****						
.CASE	4 OF BOST19						
96	BIT03:0723	F/DST19 <--	526 57 44				
		F/DST25 <--	642 72 50				
		F/DST26 <--	643 73 51				
	*****						
	* RELEASE BUS						
	-----						
	*P2, D+R(SF) AND MD,D(C)+PS(C),						
	*DEFER, SET CC,						
	*NEXT, BUTR(SERVICE),						
	* J/FET01						
		J/FET03 * -->	00 700 3 11				
		J/SER01 * -->	01 701 385 160				
		J/FET01 * -->	10 702 1 2				
		J/SER02 * -->	11 703 387 162				
	*****						

722 000000001000  
1101 11 10 10 11 000 110 0100 1  
00000 000000 10000 111000010

723 000000001000  
1011 11 10 10 11 000 001 0100 1  
00000 000000 10000 111000010

M06

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	5 OF BOST19						
97	BIC03:0724	F/DST19 F/DST25 F/DST26	<-- <-- <--	526 642 643	57 72 73	44 50 51	
	***** * PSZ01 SAME AS *BRAOS *-----* *P2, D+NOT R(SF) AND MD,D(C)+PS(C), * *P3, U,DATO, * *ENABLE, KJ * *DEFER, SET CC, * *NEXT, * * J/BRAOS * -->						724 0010 11 10 10 11 000 001 0100 1 10010 000000 11000 000000011
.CASE	6 OF BOST19						
98	BIS03:0725	F/DST19 F/DST25 F/DST26	<-- <-- <--	526 642 643	57 72 73	44 50 51	
	***** * PSZ01 SAME AS *BRAOS *-----* *P2, D+R(SF) OR MD,D(C)+PS(C), * *P3, U,DATO, * *ENABLE, KJ * *DEFER, SET CC, * *NEXT, * * J/BRAOS * -->						725 1110 11 10 10 11 000 001 0100 1 10010 000000 11000 000000011
.CASE	7 OF BOST19						
99	ADD03:0726	F/DST19 F/DST25 F/DST26	<-- <-- <--	526 642 643	57 72 73	44 50 51	
	***** * PSZ01 SAME AS *BRAOS *-----* *P2, D+R(SF) PLUS MD,D(C)+COUT15, * *P3, U,DATO, * *ENABLE, KJ * *DEFER, SET CC, * *NEXT, * * J/BRAOS * -->						726 1001 11 10 10 11 000 110 0100 1 10010 000000 11000 000000011

N06

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 64

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COOT	CLOCKS
.CASE	15 OF BOST19									
100	SUB03:0736	F/DST19 F/DST25 F/DST26	<-- <-- <--	526 642 643	57 72 73	44 50 51				
	*****									
	*-----*									
	*P2, SR+MD									
	* J/SUB04		-->	VV						
	*****									
101	SUB04:0045	F/SUB03	<--	VV						
	*****									
	* PSZ01 SAME AS									
	*BRA05									
	*-----*									
	*P2, D+SR MINUS R(SF),D(C)+COUT15,									
	*P3, U DATO,									
	*ENABLE, K↑									
	*DEFER, SET CC,									
	*NEXT,									
	* J/BRA05		-->	3	283	126				
	*****									
.TOC "	REGISTER-MEMORY DOUBLE OPERAND - BYTE"									
.CASE	11 OF BOST19									
		F/DST19 F/DST25 F/DST26	<-- <-- <--	526 642 643	57 72 73	44 50 51				
102	CMPB03:0732									
	*****									
	* RELEASE BUS									
	*-----*									
	*P2, D+R(SF) MINUS R(DST),									
	* D(C)+COUT07,									
	*DEFER, SET CC,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
	* J/FET03		-->	00	700	3	11			
	* J/SER01		-->	01	701	385	160			
	* J/FET01		-->	10	702	1	2			
	* J/SER02		-->	11	703	387	162			
	*****									

```

EXTENSION
RIF COOT CLOCKS
736 00000001000
1010 11 10 00 00 000 000 0010 0
00000 000000 11000 000100101
45 000001001000
1101 00 01 00 00 000 110 0100 1
10010 000000 11000 000000011
732 00000001000
1101 01 11 10 11 110 101 0100 1
00000 000000 10000 111000010

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 12 OF BOST19							
103	BITB03:0733	F/DST19 <--	526 57 44				
		F/DST25 <--	642 72 50				
		F/DST26 <--	643 73 51				
	* RELEASE BUS *			733			000000001000
					1011 01 11	10 11	110 001 0100 1
					00000 000000	10000	111000010
	*P2, D+R(SF) AND R(DST),D(C)+PS(C), *						
	*DEFER, SET CC, *						
	*NEXT, BUTR(SERVICE), *						
	* J/FETO1 *						
		J/FETO3 * -->	00 700 3 11				
		J/SERO1 * -->	01 701 385 160				
		J/FETO1 * -->	10 702 1 2				
		J/SERO2 * -->	11 703 387 162				
.CASE 13 OF BOST19							
104	BICB03:0734	F/DST19 <--	526 57 44				
		F/DST25 <--	642 72 50				
		F/DST26 <--	643 73 51				
	*P2, D+R(SF) * R(DST),D(C)+PS(C), *			734			000000001000
	*DEFER, SET CC, *				0010 01 11	10 11	110 001 0100 1
	*NEXT, BUTR(ODD ADDRESS), *				00000 000000	10011	000011010
	* J/BYTE01 *						
		J/BYTE01 * -->	10 32 253 116				
		J/BYTE02 * -->	11 33 254 116				
.CASE 14 OF BOST19							
105	BISB03:0735	F/DST19 <--	526 57 44				
		F/DST25 <--	642 72 50				
		F/DST26 <--	643 73 51				
	*P2, D+R(SF) OR R(DST),D(C)+PS(C), *			735			000000001000
	*DEFER, SET CC, *				1110 01 11	10 11	110 001 0100 1
	*NEXT, BUTR(ODD ADDRESS), *				00000 000000	10011	000011010
	* J/BYTE01 *						
		J/BYTE01 * -->	10 32 253 116				
		J/BYTE02 * -->	11 33 254 116				



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 106	3 OF BOST21	F/DST21	<--	524	55	43		
	CMPOS:0402							000000001000
	* RELEASE BUS							1101 11 10 11 00 110 110 0100 1
								00000 000000 10000 111000010
	*P2, D+R(SRC) MINUS MD,D(C)+COUT15,							
	*DEFER, SET CC,							
	*NEXT, BUTR(SERVICE),							
	* J/FETO1							
	* J/FETO3	* -->	00	700	3	11		
	* J/SERO1	* -->	01	701	385	160		
CASE 107	4 OF BOST21	F/DST21	<--	524	55	43		
	BIT04:0403							000000001000
	* RELEASE BUS							1011 11 10 11 00 110 001 0100 1
								00000 000000 10000 111000010
	*P2, D+R(SRC) AND MD,D(C)+PS(C),							
	*DEFER, SET CC,							
	*NEXT, BUTR(SERVICE),							
	* J/FETO1							
	* J/FETO3	* -->	00	700	3	11		
	* J/SERO1	* -->	01	701	385	160		
.CASE 108	5 OF BOST21	F/DST21	<--	524	55	43		
	BIC04:0404							000001001000
	* PSZ01 SAME AS							0010 11 10 11 00 110 001 0100 1
	*BRA05							10010 000000 11000 000000011
	*P2, D+NOT R(SRC) AND MD,							
	* D(C)+PS(C),							
	*ENABLE, KJ,							
	*P3, U DATO,							
	*DEFER, SET CC,							
	*NEXT, J/BRA05	* -->	3	283	126			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 109	6 OF BOST21 BIS04:0405 F/DST21	<--	524 55 43	405	1110 10010	11 10 000000	11 00 11000	000001001000 110 001 0100 1 000000011
	* PSZ01 SAME AS *BRA05							
	*P2, D+R(SRC) OR MD,D(C)+PS(C), *P3, U DATO, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRA05	-->	3 283 126					
.CASE 110	7 OF BOST21 AL004:0406 F/DST21	<--	524 55 43	406	1001 10010	11 10 000000	11 00 11000	000001001000 110 110 0100 1 000000011
	* PSZ01 SAME AS *BRA05							
	*P2, D+R(SRC) PLUS MD,D(C)+COUT15, *P3, U DATO, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRA05	-->	3 283 126					
.CASE 111	7 OF BOST27 SUB05:0416 F/DST27 F/DST28	<-- <--	762 67 47 763 68 48	416	1010 00000	11 10 000000	00 00 11000	00000001000 000 000 0010 0 000101010
	* SR+MD, *NEXT, * J/SUB06	-->	52 112 68					

# E07

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	F/SUBOS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA RIF COUT CLOCKS	EXTENSION UBF UPF
112	SUB06:0052	F/SUBOS	<--	416 111 67	52	000001001000
	* PSZ01 SAME AS				1101 01 10 00 00	110 110 0100 1
	*BRA05				10010 000000	11000 000000011
	*P2, D+SR MINUS R(SRC),D(C)+COUT15,					
	*P3, U DATO,					
	*ENACLE, KJ					
	*DEFER, SET CC,					
	*NEXT,					
	* J/BRA05		-->	3 283 126		
	*****					
113	MEMOR : MEMORY DOUBLE OPERAND - BYTE"					
	3 OF BOS:27					
	CMP604:0412	F/DST27	<--	762 67 47		
		F/DST28	<--	763 68 48	412	000000001000
	* RELEASE BUS				1101 01 11 11 00	110 101 0100 1
	*P2, D+R(SRC) MINUS R(DST),				00000 000000	10000 111000010
	* D(C)+COUT07,					
	*DEFER, SET CC,					
	*NEXT, BUTR(SERVICE),					
	* J/FET01					
	* J/FET03		-->	00 700 3 11		
	* J/SER01		-->	01 701 385 160		
	* J/FET01		-->	10 702 1 2		
	* J/SER02		-->	11 703 387 162		
	*****					
114	BITB04:0413	F/DST27	<--	762 67 47		
		F/DST28	<--	763 68 48	413	000000001000
	* RELEASE BUS				1011 01 11 11 00	110 001 0' 1
	*P2, D+R(SRC) AND R(DST),				00000 000000	10000 111000010
	* D(C)+PS(C),					
	*DEFER, SET CC,					
	*NEXT, BUTR(SERVICE),					
	* J/FET01					
	* J/FET03		-->	00 700 3 11		
	* J/SER01		-->	01 701 385 160		
	* J/FET01		-->	10 702 1 2		
	* J/SER02		-->	11 703 387 162		
	*****					

# F07

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	5 OF BDST27							
115	BIC804:0414	F/DST27 F/DST28	<-- <--	762 763	67 68	47 48		
	*****							
	* PSZ01 SAME AS							
	*BRAOS							
	-----							
	*P2, D+-R(SRC) * R(DST),D(C)+PS(C),							
	*P3, U, DATOB,							
	*ENABLE, KJ							
	*DEFER, SET CC,							
	*NEXT,							
	* J/BRAOS	-->		3	283	126		
	*****							
.CASE	6 OF BDST27							
116	BIS804:0415	F/DST27 F/DST28	<-- <--	762 763	67 68	47 48		
	*****							
	* PSZ01 SAME AS							
	*BRAOS							
	-----							
	*P2, D+R(SRC) OR R(DST),D(C)+PS(C),							
	*P3, U, DATOB,							
	*ENABLE, KJ							
	*DEFER, SET CC,							
	*NEXT,							
	* J/BRAOS	-->		3	283	126		
	*****							

```

414
0010 01 11 11 00 110 001 C100 1
10101 000000 11000 000000011
    
```

```

415
1110 01 11 11 00 110 001 0100 1
10101 000000 11000 000000011
    
```

# G07

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 70

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS	
.TOC "SINGLE OPERAND EXECUTION"									
.TOC "REGISTER SINGLE OPERAND - WORD"									
.CASE 105 OF BFET03									
117	CLR01:0550	F/FET03	<--	700	3	11			
	*****							550	00000001000
	*-----*								0011 11 10 00 10 000 010 0100 1
	*P2, D+D, D(C)+ALU00, *								00000 100110 10000 111000000
	*P2, U, IR+DATA, *								
	*P3, R(DF)+D (A ADDR), MD+DATA, *								
	* RESET STATE, *								
	*DEFER, SET CC, *								
	*NEXT, BUT(FOV # SERVICE), *								
	* J/FET03 * -->								00 700 3 11
	* J/SER01 * -->								01 701 385 160
	* J/FET01 * -->								10 702 1 2
	* J/SER02 * -->								11 703 387 162
*****									
.CASE 106 OF BFET03									
118	COM01:0551	F/FET03	<--	700	3	11			
	*****							551	000000001000
	* CIN = 1 WITH ALU FUNCTION A *								0000 11 10 10 10 000 000 0100 1
	*-----*								00000 100110 10000 111000000
	*P2, D+NOT R(DF) (A), D(C)+CIN, *								
	*P2, U, IR+DATA, *								
	*P3, R(DF)+D (A ADDR), MD+DATA, *								
	* RESET STATE, *								
	*DEFER, SET CC, *								
	*NEXT, BUT(FOV # SERVICE), *								
	* J/FET03 * -->								00 700 3 11
	* J/SER01 * -->								01 701 385 160
	* J/FET01 * -->								10 702 1 2
	* J/SER02 * -->								11 703 387 162
*****									

# H07

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 71

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 119	107 OF BFET03 INC01:0552	F/FET03 <--	700 3 11	552			000000001000
	* ALU IS A PLUS B PLUS 1, B IS 0			1100	01 11	10 10	101 001 0100 1
	-----*			00010	100110	10000	111000000
	*P2, D+R(DF) PLUS 1, D(C)+PS(C),						
	*P2, U, IR+DATA,						
	*P3, R(DF)+D (A ADDR), MD(D)+DATA,						
	* RESET STATE,						
	*DEFER, SET CC,						
	*NEXT, BUT(FOV # SERVICE),						
	* J/FET03						
		J/FET03 -->	00 700 3 11				
		J/SER01 -->	01 701 385 160				
		J/FET01 -->	10 702 1 2				
		J/SER02 -->	11 703 387 162				
	*****						
.CASE 120	108 OF BFET03 DEC01:0553	F/FET03 <--	700 3 11	553			000000001000
	* FET03 SETS D(C) TO 0, ALU IS A PLUS NOT			0101	01 11	10 10	101 001 0100 1
	*B PLUS D(C), B=0			00010	100110	10000	111000000
	-----*						
	*P2, D+R(DF) MINUS 1, D(C)+PS(C),						
	*P2, U, IR+DATA,						
	*P3, R(DF)+D (A ADDR), MD(D)+DATA,						
	* RESET STATE,						
	*DEFER, SET CC,						
	*NEXT, BUT(FOV # SERVICE),						
	* J/FET03						
		J/FET03 -->	00 700 3 11				
		J/SER01 -->	01 701 385 160				
		J/FET01 -->	10 702 1 2				
		J/SER02 -->	11 703 387 162				
	*****						
.CASE 121	109 OF BFET03 NEG01:0554	F/FET03 <--	700 3 11	554			000000001000
	* SR+0,			0011	00 00	00 00	000 000 0010 0
	*NEXT, J/NEG02			00000	000000	11000	000101100
		J/NEG02 -->	54 122 72				
	*****						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS	
125	SBC02:0065	F/SBC01	<--	556	124	72	65	000000001000 0101 11 01 11 00 110 100 0100 0 00000 000000 11000 000111010
	*-----*							
	*P2, D+R(SRC) MINUS 1 PLUS D(C),							
	* D(C)+ALU15,							
	*NEXT,							
	* J/SBC03		--> VV					
126	SBC03:0072	F/SBC02	<-- VV				72	000000001000 0101 11 01 10 10 000 110 0100 1 00000 000110 10000 111000010
	*-----*							
	*P2, D+R(DF) MINUS 1 PLUS D(C),							
	* D(C)+COUT15,							
	*P3, R(DF)+D (A ADDR),							
	*DEFER, SET CC,							
	*NEXT, BUTR(SERVICE),							
	* J/FET01							
	* J/FET03		-->	00	700	3	11	
	* J/SER01		-->	01	701	385	160	
	* J/FET01		-->	10	702	1	2	
	* J/SER02		-->	11	703	387	162	
	*-----*							
.CASE 127	TST01:0557	F/FET03	<--	700	3	11	557	000000001000 1010 00 00 00 00 000 000 0100 1 00010 100000 10000 111000000
	* CIN IS 0, D(C)+0							
	*-----*							
	*P2, D+R(DF) (B), D(C)+CIN,							
	*P2, U, IR+DATA,							
	*P3, MD(D)+DATA, RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03							
	* J/FET03		-->	00	700	3	11	
	* J/SER01		-->	01	701	385	160	
	* J/FET01		-->	10	702	1	2	
	* J/SER02		-->	11	703	387	162	
	*-----*							



# K07

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 128	97 OF BFET03 ROR01:0540	F/FET03 <--	700 3 11	540				000000001000
	*****				1111	00 00	10 10	000 001 0110 0
	*-----*				00000	000000	11000	000111101
	*P2, D+R(DF) (A),SR+R(DF) (A),							
	* D(C)+PS(C),							
	*NEXT,							
	* J/ASR02	-->	75 131 75					
	*****							
.CASE 129	98 OF BFET03 ROLO1:0541	F/FET03 <--	700 3 11	541				000000001000
	*****				0001	00 00	10 10	000 110 0100 1
	* R(DF) PLUS R(DF) PLUS PS(C)				00010	100110	10000	111000000
	*-----*							
	*P2, D+ 2 R(DF) PLUS PS(C),							
	* D(C)+COUT15,							
	*P2 U,IR+DATA,							
	*P3, R(DF)+D (A ADDR),MD(D)+DATA,							
	* RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03	-->	00 700 3 11					
	* J/SER01	-->	01 701 385 160					
	* J/FET01	-->	10 702 1 2					
	* J/SER02	-->	11 703 387 162					
	*****							
.CASE 130	99 OF BFET03 ASR01:0542	F/FET03 <--	700 3 11	542				000000001000
	*****				1111	00 00	10 10	000 100 0110 0
	*-----*				00000	000000	11000	000111101
	*P2, D+R(DF) (A),SR+R(DF) (A),							
	* D(C)+ALU15,							
	*NEXT,							
	* J/ASR02	-->	75 131 75					
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION				MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
		OFST	ADDR	BOX	PAGE					
131	ASR02:0075	F/ROR01	<--	540	128	74				
		F/ASR01	<--	542	130	74				
	*****						75			00000001000
	*-----*							1111	00 00	01 10 000 000 0100 0
	*P2, D+D RIGHT 1,						00000	001110	00000 000001110	
	*P3, R(DF)+D (B ADDR),									
	*NEXT, BUTR(SROO),									
	* J/ASR03									
		J/ASR03	-->	1110	16	132				
		J/ASR04	-->	1111	17	133				
	*****									
.CASE 132	1 OF BASR02									
	ASR03:0016	F/ASR02	<-- VV							
	*****						16			00000001000
	* MUST CLOCK D TO CLOCK D(C) *							1010	00 00	00 00 000 000 0100 1
	*-----*							00000	001110	10000 111000010
	*P2, D+R(DF) (B) D(C)+CIN,									
	*P3, R(DF)+D (B ADDR), RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
		J/FET03	-->	00	700	3				
		J/SER01	-->	01	701	385				
		J/FET01	-->	10	702	1				
		J/SER02	-->	11	703	387				
	*****									
.CASE 133	2 OF BASR02									
	ASR04:0017	F/ASR02	<--	75	131	75				
	*****						17			00000001000
	*-----*							1111	00 00	01 01 000 000 0100 1
	*P2, D+D, D(C)+CIN,						00000	001110	10000 111000010	
	*P3, R(DF)+D (B ADDR), RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
		J/FET03	-->	00	700	3				
		J/SER01	-->	01	701	385				
		J/FET01	-->	10	702	1				
		J/SER02	-->	11	703	387				
	*****									

# M07

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BIJSB SP	BUSA JBF	EXTENSION RIF COUT CLOCKS
.CASE 134	100 OF BFET03 ASL01:0543	F/FET03 <--	700 3 11	543				000000001000
	* R(DF) PLUS R(DF)				1001 00 00	10 10	000 110	0100 1
	-----				00010 100110	10000	111000000	
	*P2, D+ 2 R(DF), D(C)+COUT15,							
	*P2, U, IR+DATA							
	*P3, R(DF)+D (A ADDR), MD(D)+DATA,							
	* RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03							
		J/FET03 -->	00 700 3 11					
		J/SER01 -->	01 701 385 160					
		J/FET01 -->	10 702 1 2					
		J/SER02 -->	11 703 387 162					
	*****							
.TOC "	REGISTER SINGLE OPERAND - BYTE"							
.CASE 135	121 OF BFET03 CLR01:0570	F/FET03 <--	700 3 11	570				000000111000
	* R(DF)(LO)+D (A ADDR), MD+DATA,				0011 11 10	00 10	000 010	0100 1
	-----				00000 100110	10000	111000000	
	*P2, D+0, D(C)+ALU00,							
	*P2, U, IR+DATA							
	*P3, R(DF)(LO)+D (A ADDR), MD+DATA,							
	* RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03							
		J/FET03 -->	00 700 3 11					
		J/SER01 -->	01 701 385 160					
		J/FET01 -->	10 702 1 2					
		J/SER02 -->	11 703 387 162					
	*****							

# NO7

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA USF	EXTENSION RIF COU UPF	CLOCKS
.CASE 136	122 OF BFET03 COMB01:0571	F/FET03 <--	700 3 11	571	0000	11 10	10 10	000000111000	0100 1
	* ALU IS NOT A				00000	100110	10000	111000000	
	*P2, D+NOT R(DF) (A),								
	*P2, U, IR+DATA,								
	*P3, R(DF)(LO)+D (A ADDR), MD+DATA,								
	* RESET STATE,								
	*DEFER, SET CC,								
	*NEXT, BUT(FOV # SERVICE),								
	* J/FET03								
		J/FET03 -->	00 700 3 11						
		J/SER01 -->	01 701 385 160						
		J/FET01 -->	10 702 1 2						
		J/SER02 -->	11 703 387 162						
.CASE 137	123 OF BFET03 INCB01:0572	F/FET03 <--	700 3 11	572	1100	01 11	10 10	000000111000	0100 1
	* ALU IS A PLUS B PLUS 1, B IS R(ZERO)				00010	100110	10000	111000000	
	*P2, D+R(DF) PLUS 1, D(C)+PS(C),								
	*P2, U, IR+DATA,								
	*P3, R(DF)(LO)+D (A ADDR)								
	* MD(D)+DATA, RESET STATE,								
	*DEFER, SET CC,								
	*NEXT, BUT(FOV # SERVICE),								
	* J/FET03								
		J/FET03 -->	00 700 3 11						
		J/SER01 -->	01 701 385 160						
		J/FET01 -->	10 702 1 2						
		J/SER02 -->	11 703 387 162						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
.CASE 138	124 OF BFET03 DEC801:0573	F/FET03 <--	700 3 11	573 0101 01 11 10 10 101 001 0100 1 00010 100110 10000 111000000
	***** * ALU IS A PLUS NOT B PLUS D(C), D(C) * * WAS SET TO 0 IN FET03 B IS R(ZERO) * *-----* *P2, D+R(DF) MINUS 1, D(C)+PS(C), * *P2, U, IR+DATA, * *P3, R(DF)(LO)+D (A ADDR), * * M(D)+DATA, RESET STATE, * *DEFER, SET CC, * *NEXT, BUTR(SERVICE), * * J/FET03 * * J/FET03 --> 00 700 3 11 * * J/SER01 --> 01 701 385 160 * * J/FET01 --> 10 702 1 2 * * J/SER02 --> 11 703 387 162 * *****			
.CASE 139	125 OF BFET03 NEG801:0574	F/FET03 <--	700 3 11	574 0011 00 00 00 00 000 000 0010 0 00000 000000 11000 000111111
	***** *-----* *P2, SR+0, * *NEXT, * * J/NEG802 --> VV * *****			
140	NEG802:0077	F/NEG801 <-- VV		77 1101 00 00 00 00 000 101 0100 1 00000 001110 10000 111000010
	***** *-----* *P2, D+SR MINUS R(DF), D(C)+COUT07, * *P3, R(DF)(LO)+D (B ADDR), * * RESET STATE, * *DEFER, SET CC, * *NEXT, BUTR(SERVICE), * * J/FET01 * * J/FET03 --> 00 700 3 11 * * J/SER01 --> 01 701 385 160 * * J/FET01 --> 10 702 1 2 * * J/SER02 --> 11 703 387 162 * *****			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	F/JSA URF	EXTENSION R/F COUT CLOCKS
141	126 OF BFET03 AOCB01:0575	F/FET03 <--	700 3 11	575	0001 00010	01 11 100110	10 10 10000	000000111000 101 101 0100 1 111000000
	* ALU IS A PLUS B PLUS PS(C), B IS * *R(ZERO) (I.E., 0) *							
	*P2, D+R(DF) PLUS PS(C), * * D(C)+COUT07, *							
	*P2, U, IR+DATA, *							
	*P3, R(DF)(LO)+D (A ADDR) *							
	* MD(D)+DATA, RESET STATE, *							
	*DEFER, SET CC, *							
	*NEXT, BUT(FOV # SERVICE), *							
	* J/FET03 *							
	* J/FET03 * -->		00 700 3 11					
	* J/SER01 * -->		01 701 385 160					
	* J/FET01 * -->		10 702 1 2					
	* J/SER02 * -->		11 703 387 162					
142	127 OF BFET03 SBCB01:0576	F/FET03 <--	700 3 11	576	0011 00000	00 10 011110	00 00 11000	000000001000 110 001 0100 0 001000000
	*P2, D+D, D(C)+PS(C) *							
	*P3, R(SRC)+D (B ADDR), *							
	*NEXT, J/SBCB02 * --> VV							
143	SBCB02:0100	F/SBCB01 <-- VV		100	0101 00000	11 01 000000	11 00 11000	000000001000 110 011 0100 0 001000010
	* ALU IS A PLUS NOT B PLUS D(C), B IS 0 *							
	*P2, D+R(SRC) MINUS 1 PLUS D(C), *							
	* D(C)+ALU07, *							
	*NEXT, J/SBCB03 * -->		102 144 80					

BOX NO.	TAG: ADDRESS	EXTENSION	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA RIF COUT CLOCKS
					BUS SP UBF UPF
144	SBCB03:0102 F/SBCB02 ***** * ALU IS A PLUS NOT B PLUS D(C), B IS 0 * *-----* *P2, D+R(DF) MINUS 1 PLUS D(C), * * D(C)+COUT07, * *P3, R(DF)(LO)+D (A ADDR), * * RESET STATE, * *DEFER, SET CC, * *NEXT, BUTR(SERVICE), * * J/FET01 * * J/FET03 --> 00 700 3 11 * * J/SER01 --> 01 701 385 160 * * J/FET01 --> 10 702 1 2 * * J/SER02 --> 11 703 387 162 * *****	102 000000111000 0101 11 01 10 10 000 101 0100 1 00000 000110 10000 111000010			
CASE 128 OF BFET03 145	TSTB01:0577 F/FET03 ***** *-----* *P2, D+R(DF) (B), D(C)+CIN, * *P2, U, IR+DATA, * *P3, M0(D)+DATA, RESET STATE, * *DEFER, SET CC, * *NEXT, BUT(FOV # SERVICE), * * J/FET03 * * J/SER01 --> 00 700 3 11 * * J/FET01 --> 01 701 385 160 * * J/SER02 --> 10 702 1 2 * * J/SER02 --> 11 703 387 162 * *****	577 000000001000 1010 00 00 00 00 000 C00 0100 1 00010 100000 10000 111000000			
CASE 113 OF BFET03 146	RORB01:0560 F/FET03 ***** *-----* *P2, D+R(DF) (A), SR+R(DF) (A), * * D(C)+PS(C), * *NEXT, * * J/ASRB02 --> 104 149 81 * *****	560 000000001000 1111 00 00 10 10 000 001 0110 0 00000 000000 1 000 001000100			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
.CASE 147	114 OF BFET03 ROLB01:0561	F/FET03 <--	700 3 11	561				000000111000		
	***** *-----* *P2, D+ 2 R(DF) PLUS PS(C), * D(C)+COUT07, *P2 U, IR+DATA, *P3, R(DF)(LO)+D (A ADDR), * MD(D)+DATA, RESET STATE, * DEFER, SET CC, * NEXT, BUT(FOV # SERVICE), * J/FET03 * J/FET03 --> 00 700 3 11 * J/SER01 --> 01 701 385 160 * J/FET01 --> 10 702 1 2 * J/SER02 --> 11 703 387 162 *****							0001 00 00 10 10 000 101 0100 1 00010 100110 10000 111000000		
.CASE 148	115 OF BFET03 ASRB01:0562	F/FET03 <--	700 3 11	562				000000001000		
	***** *-----* *P2, D+R(DF) (A), SR+R(DF) (A), * D(C)+ALU07, * NEXT, J/ASRB02 * J/ASRB02 --> VV *****							1111 00 00 10 10 000 011 0110 0 00000 000000 11000 001033103		
149	ASRB02:0104	F/RORB01 <-- F/ASRB01 <-- VV	560 146 80	104				000000111000		
	***** *-----* *P2, D+D (EXTEND) (RIGHT 1), *P3, R(DF)(LO)+D (B ADDR), * NEXT, BUTR(SR00), * J/ASRB03 * J/ASRB03 --> 1110 36 150 82 * J/ASRB04 --> 1111 37 151 82 *****							1111 00 00 01 10 000 000 0100 0 00010 001110 00000 000011110		



# F08

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION				MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
		OFST	ADDR	BOX	PAGE					
.CASE 150	1 OF BASR802 ASR803:0036	F/ASR802	<--	104	149	81				
	*****						36			000000111000
	*-----*							1010	00 00	00 00 000 000 0100 1
	*P2, D+R(DF) (B),D(C)+CIN,						00000	001110	10000 111000010	
	*P3, R(DF)(LO)+D (B ADDR),									
	* RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
		J/FET03	-->	00	700	3	11			
		J/SER01	-->	01	701	385	160			
		J/FET01	-->	10	702	1	2			
		J/SER02	-->	11	703	387	162			
	*****									
.CASE 151	2 OF BASR802 ASR804:0037	F/ASR802	<--	104	149	81				
	*****						37			000000111000
	*-----*							1111	00 00	10 10 000 000 0100 1
	*P2, D+R(DF) (A),D(C)+CIN,						00000	000110	10000 111000010	
	*P3, R(DF)(LO)+D (A ADDR),									
	* RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
		J/FET03	-->	00	700	3	11			
		J/SER01	-->	01	701	385	160			
		J/FET01	-->	10	702	1	2			
		J/SER02	-->	11	703	387	162			
	*****									

# G08

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 152	116 OF BFET03 ASLB01:0563	F/FET03	<--	700	3	11		
	*****							563 000000111000
	*-----*							1001 00 00 10 10 000 101 0100 1
	*P2, D+ 2 R(DF),D(C)-COUT07,							00010 100110 10000 111070000
	*P2, U,IR+DATA,							
	*P3, R(DF)(LO)+D (A ADDR),							
	* MD(D)+DATA,RESET STATE,							
	*DEFER, SET CC,							
	*NEXT, BUT(FOV # SERVICE),							
	* J/FET03							
		J/FET03	-->	00	700	3	11	
		J/SER01	-->	01	701	385	167	
		J/FET01	-->	10	702	1	2	
		J/SER02	-->	11	703	387	162	
	*****							
.TOC "	MEMORY SINGLE OPERAND - "WORD"							
.CASE 153	9 OF BOST41 CLR02:0430	F/DST41 F/ASR05	<-- <--	400 422	69 164	48 87		
	*****							430 000001001000
	* PS701 SAME WS							0011 00 00 00 00 000 010 0100 1
	*BRAOS							10010 000000 11000 000700011
	*-----*							
	*P2, D+D, D(C)+ALU00,							
	*P3, U,DATA,							
	*ENABLE, KJ,							
	*DEFER, SET CC,							
	*NEXT,							
	* J/BRAOS							
		J/BRAOS	-->	3	283	126		
	*****							

H08

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE	10 OF BOST41							
154	COM03:0431	F/DST41 F/ASR05	<-- <--	400 69 48 422 164 87				
	***** * ALU IS NOT A PSZ01 SAME AS *BRA05 *-----* *P2, D+NOT SR, *P3, U,DATO, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRA05 *****						431 0000 00 00 00 00 000 000 0100 1 10010 000000 11000 000000011	
.CASE	11 OF JOST41							
155	INC03:0432	F/DST41 F/ASR05	<-- <--	400 69 48 422 164 87				
	***** * ALU IS A PLUS B PSZ01 SAME AS *BRA05 *-----* *P2, D+SR PLUS 1,D(C)+PS(C), *P3, U,DATO, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRA05 *****						432 1001 11 00 00 00 000 001 0100 1 10010 000000 11000 000000011	
.CASE	12 OF BOST41							
156	DEC03:0433	F/DST41 F/ASR05	<-- <--	400 69 48 422 164 87				
	***** * PSZ01 SAME AS *BRA05 *-----* *P2, D+SR MINUS 1,D(C)+PS(C), *P3, U,DATO, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRA05 *****						433 1101 11 00 00 00 000 001 0100 1 10010 000000 11000 000000011	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	13 OF BOST41	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
157	NEG03:0434	F/DST41 F/ASR05	<-- <--	400 422	69 164	48 87		
	*****							434
	*-----*							0011 00 00 00 00 000 000 0010 0
	*P2, SR+0, *							00000 000000 11000 001000110
	*NEXT, *							
	* J/NEG04 *							--> VV
158	NEG04:0106	F/NEG03	<-- VV					
	*****							106
	* PSZ01 SAME AS *							1101 11 10 00 00 000 110 0100 1
	*BRA05 *							10010 000000 11000 000000011
	*-----*							
	*P2, D+SR MINUS MD,D(C)+COUT15, *							
	*P3, U,DATO, *							
	*ENABLE, KJ, *							
	*DEFER, SET CC, *							
	*NEXT, *							
	* J/BRA05 *							-->
	*****							3 283 126
.CASE	14 OF BOST41	F/DST41 F/ASR05	<-- <--	400 422	69 164	48 87		
159	ADC03:0435	F/DST41 F/ASR05	<-- <--					
	*****							435
	* PSZ01 SAME AS *							0001 11 01 00 00 000 110 0100 1
	*BRA05 *							10010 000000 11000 000000011
	*-----*							
	*P2, D+SR PLUS PS(C),D(C)+COUT15, *							
	*P3, U,DATO, *							
	*ENABLE, KJ, *							
	*DEFER, SET CC, *							
	*NEXT, *							
	* J/BRA05 *							-->
	*****							3 283 126

# JOB

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE	15 OF BOST41									
160	SBC05:0436	F/DST41 F/ASR05	<-- <--	400 422	69 164	48 87				
	*****									
	* ALU IS A PLUS NOT B PLUS D(C), A IS									
	* R(DF), B IS R(DF)									
	*-----*									
	*P2,	D+MINUS 1 PLUS D(C),	*							
	*	D(C)+ALUIS,	*							
	*NEXT,		*							
	*	J/SBC07	* --> VV							
	*****									
161	SBC07:0110	F/SBC05	<-- VV							
	*****									
	* ALU IS A PLUS NOT E PLUS D(C), B IS 0									
	* PSZ01 SAME AS									
	*BRA05									
	*-----*									
	*P2,	D+SR MINUS 1 PLUS D(C),	*							
	*	D(C)+COUT15,	*							
	*P3	U DATO,	*							
	*ENABLE,	KJ	*							
	*DEFER,	SET CC,	*							
	*NEXT,		*							
	*	J/BRA05	* -->	3	283	126				
	*****									
.CASE	16 OF BOST41									
162	TST02:0437	F/DST41 F/ASR05	<-- <--	400 422	69 164	48 87				
	*****									
	* RELEASE BUS CIN IS ZERO									
	*-----*									
	*P2,	D+MD, D(C)+CIN,	*							
	*P3,	RESET STATE,	*							
	*DEFER,	SET CC	*							
	*NEXT,	BUTR(SERVICE),	*							
	*	J/FET01	*							
	*	J/FET03	* -->	00	700	3	11			
	*	J/SER01	* -->	01	701	385	160			
	*	J/FET01	* -->	10	702	1	2			
	*	J/SER02	* -->	11	703	387	162			
	*****									

```

436
0101 00 00 10 10 000 100 0100 0
00000 000000 11000 001001000

```

```

110
0101 11 01 00 00 000 110 0100 1
10010 000000 11000 00000011

```

```

437
1010 11 10 00 00 000 000 0100 1
00000 000000 10000 111000010

```

# K08

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
163	ROLO3:0421	F/DST41 F/ASR05	<-- <--	400 69 48 422 164 87			
	*****						421 00001001000
	* PSZ01 SAME AS						0001 11 10 00 00 000 110 0100 1
	*BRA05						10010 000000 11000 00000011
	-----						
	*P2, D+SR PLUS MD PLUS PS(C),						
	* D(C)+COUT15,						
	*P3 U DATO,						
	*ENABLE, KJ						
	*DEFER, SET CC,						
	*NEXT,						
	* J/BRA05	-->	3 283 126				
	*****						
164	ASR05:0422	F/DST41 F/ASR05	<-- <--	400 69 48 422 164 87			
	*****						422 000000001000
	*-----						1010 11 10 00 00 000 100 0110 0
	*P2, D+MD, SR+MD, D(C)+ALU15,						00000 000000 11000 100010000
	*NEXT,						
	* J/ASR06	--> VV					
	*****						
165	ASR06:0420	F/DST41 F/ASR05	<-- <-- VV	400 69 48			
	*****						420 000000001000
	*-----						1111 00 11 01 10 110 000 0100 0
	*P2, D+D RIGHT 1,						00000 011110 00000 001001110
	*P3, R(DST)+D (B ADDR),						
	*NEXT, BUTR(SR00),						
	* J/ASR07						
	* J/ASR07	-->	1110 116 166 88				
	* J/ASR08	-->	1111 117 167 88				
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUS3 SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 166	ASR07:0116 F/ASR06 ***** * PSZ01 SAME AS * *BRAOS * *-----* *P2, D+R(DST) (B),D(C)+CIN, * *P3, U,DATO, * *ENABLE, KJ * *DEFER, SET CC, * *NEXT, * * J/BRAOS * *****	<-- 420 165 87		116			000001001000
				1010 01 11 00 00		110 000 0100 1	
				10010 000000 11000 000000011			
.CASE 167	ASR08:0117 F/ASR06 ***** * PSZ01 SAME AS * *BRAOS * *-----* *P2, D+R(DST) (A),D(C)+CIN, * *P3, U,DATO, * *ENABLE, KJ * *DEFER, SET CC, * *NEXT, * * J/BRAOS * *****	<-- 420 165 87		117			000001001000
				1111 00 00 11 01		110 000 0100 1	
				10010 000000 11000 000000011			
.CASE 168	ASL03:0423 F/DST41 F/ASR05 ***** * PSZ01 SAME AS * *BRAOS * *-----* *P2, D+SR PLUS MD,D(C)+COUT15, * *P3, U,DATO, * *ENABLE, KJ * *DEFER, SET CC, * *NEXT, * * J/BRAOS * *****	<-- 400 69 48 <-- 422 164 87		423			000001001000
				1001 11 10 00 00		000 110 0100 1	
				10010 000000 11000 000000011			

# M08

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
.TOC " MEMORY SINGLE OPERAND - BYTE"								
.CASE 9 OF BOST42								
169	CLRB02:0530	F/DST42 F/ASRB08 F/ASRB10	<-- <-- <--	410 70 49 120 183 93 121 185 93				
	*****							
	* PSZ01 SAME AS							
	*BRA05							
	-----							
	*P2, D+0, D(C)+ALU00,							
	*P3, U, DAT0B,							
	*ENABLE, KJ							
	*DEFER, SET CC,							
	*NEXT,							
	* J/BRA05		-->	3 283 126				
	*****							
.CASE 10 OF BOST42								
170	COMB02:0531	F/DST42 F/ASRB08 F/ASRB10	<-- <-- <--	410 70 49 120 183 93 121 185 93				
	*****							
	* PSZ01 SAME AS							
	*BRA05							
	-----							
	*P2, D+NOT R(DST) (A),							
	*P3, U, DAT0B,							
	*ENABLE, KJ							
	*DEFER, SET CC,							
	*NEXT,							
	* J/BRA05		-->	3 283 126				
	*****							
.CASE 11 OF BOST42								
171	INCB02:0532	F/DST42 F/ASRB08 F/ASRB10	<-- <-- <--	410 70 49 120 183 93 121 185 93				
	*****							
	* J/BYTE01		-->	10 32 253 116				
	* J/BYTE02		-->	11 33 254 116				
	*****							

530  
0011 00 00 00 00 000 010 0100 1  
10101 000000 11000 000000011

531  
0000 00 00 11 01 110 000 0100 1  
10101 000000 11000 000000011

532  
1001 11 00 11 01 110 001 0100 1  
00000 000000 10011 000011010



# N08

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	12 OF BDST42						
172	DEC802:0533	F/DST42 F/ASR808 F/ASR810	<-- <-- <--	410 70 49 120 183 93 121 185 93			
	*****						533 000000001000
	*-----*						1101 11 00 11 01 110 001 0100 1
	*P2, D+R(DST) MINUS 1,D(C)+PS(C), *						00000 000000 10011 000011010
	*DEFER, SET CC, *						
	*NEXT, BUTR(ODD ADDRESS), *						
	* J/BYTE01 *						
	* J/BYTE01 -->	10 32 253 116					
	* J/BYTE02 -->	11 33 254 116					
	*****						
.CASE	13 OF BDST42						
173	NEG803:0534	F/DST42 F/ASR808 F/ASR810	<-- <-- <--	410 70 49 120 183 93 121 185 93			
	*****						534 000000001000
	*-----*						0011 00 00 00 00 000 000 0010 0
	*P2, SR+0, *						00000 000000 11000 001001001
	*NEXT, *						
	* J/NEG804 --> VV *						
	*****						
174	NEG804:0111	F/NEG803	<-- VV				
	*****						111 000000001000
	*-----*						1101 01 11 00 00 110 101 0100 1
	*P2, D+SR MINUS R(DST),D(C)+COUT07, *						00000 000000 10011 000011010
	*DEFER, SET CC, *						
	*NEXT, BUTR(ODD ADDRESS), *						
	* J/BYTE01 *						
	* J/BYTE01 -->	10 32 253 116					
	* J/BYTE02 -->	11 33 254 116					
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	14 OF BDST42						
175	ADCB02:0535	F/DST42 F/ASRB08 F/ASRB10	<-- <-- <--	410 70 49 120 183 93 121 185 93			
	***** * ALU IS A PLUS B PLUS PS(C), B IS 0 * *-----*						535 0001 11 01 11 01 110 101 0100 1 00000 000000 10011 000011010
	*P2, D+R(DST) PLUS PS(C), * * n(C)+COUT07, * *DEFER, SET CC, * *NEXT, BUTR(ODD ADDRESS), * * J/BYTE01 * * J/BYTE01 --> 10 32 253 116 * * J/BYTE02 --> 11 33 254 116 * *****						
.CASE	15 OF BDST42						
176	SBCB05:0536	F/DST42 F/ASRB08 F/ASRB10	<-- <-- <--	410 70 49 120 183 93 121 185 93			
	***** *P2, D+NOT D,D(C)+ALU15, * *NEXT, * * J/SBCB06 --> VV * *****						536 0000 00 00 01 01 000 100 0100 0 00000 000000 11000 001001100
177	SBCB06:0114	F/SBCB05	<-- VV				
	***** *-----*						114 0101 11 01 11 01 110 101 0100 1 00000 000000 10011 000011010
	*P2, D+R(DST) MINUS 1 PLUS D(C), * * D(C)+COUT07, * *DEFER, SET CC, * *NEXT, BUTR(ODD ADDRESS), * * J/BYTE01 --> 10 32 253 116 * * J/BYTE02 --> 11 33 254 116 * *****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	16 OF BOST42							
178	TSTB02:0537	F/DST42 <--	410 70 49					
		F/ASRB08 <--	120 183 93					
		F/ASRB10 <--	121 185 93					
	* RELEASE BUS			537	1010	01 11	00 00	000000001000
					00000	000000	10000	110 000 0100 1
								111000010
	*P2 D+R(DST) (B),D(C)+CIN,							
	*DEFER, SET CC							
	*NEXT, BUTR(SERVICE),							
	* J/FETO1							
		J/FETO3 -->	00 700 3 11					
		J/SER01 -->	01 701 385 160					
		J/FETO1 -->	10 702 1 2					
		J/SER02 -->	11 703 387 162					
.CASE	2 OF BOST42							
179	ROLB02:0521	F/DST42 <--	410 70 49					
		F/ASRB08 <--	120 183 93					
		F/ASRB10 <--	121 185 93					
	* ALU IS A PLUS B PLUS PS(C)			521	0001	01 11	11 01	000000001000
					00000	000000	10011	110 101 0100 1
								000011010
	*P2, D+ 2 R(DST) PLUS PS(C),							
	* D(C)+COUT07,							
	*DEFER, SET CC							
	*NEXT, BUTR(ODD ADDRESS),							
	* J/BYTE01							
		J/BYTE01 -->	10 32 253 116					
		J/BYTE02 -->	11 33 254 116					
.CASE	3 OF BOST42							
180	ASRB05:0522	F/DST42 <--	410 70 49					
		F/ASRB08 <--	120 183 93					
		F/ASRB10 <--	121 185 93					
	*P3 U,DATIBP,			522	0000	00 00	00 00	000000001000
	*NEXT,				10100	000000	11000	000 000 0000 0
		J/ASRB06 -->	115 181 93					001001101

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ACQ. BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
181	ASRB06:0115 ***** *P3 MD+DATA *NEXT, BUTR(000 ADDRESS), * J/ASRB07 * J/ASRB09 *****	F/ASRB05 <-- 522 180 92 10 112 182 93 11 113 184 93		115	0000 00000	11 10 100000	00 00 10011	00000000 001001010	1000 0000 0	0000 0
.CASE 182	1 OF BASRB06 ASRB07:0112 ***** *P2, D+MD, D(C)+ALU07, * J/ASRB08 *****	F/ASRB06 <-- VV --> VV		112	1010 00000	11 10 000000	00 00 11000	00000000 000 011 0100 0 001010000	1000 0100 0	0
183	ASRB08:0120 ***** *P2, D+D SIGN EXTENDED, D(C)+ALU00, *NEXT, * J/ASRB11 *****	F/ASRB07 <-- VV --> 520 186 94		120	1111 00010	00 00 000000	01 01 11000	00000000 000 010 0100 0 101010000	1000 0100 0	0
.CASE 184	2 OF BASRB06 ASRB09:0113 ***** *P2, D+MD, D(C)+ALU15, *NEXT, * J/ASRB10 *****	F/ASRB06 <-- 115 181 93 --> VV		113	1010 00000	11 10 000000	00 00 11000	00000000 000 100 0100 0 001010001	1000 0100 0	0
185	ASRB10:0121 ***** *P2, D+D RIGHT 8, D(C)+ALU00, *NEXT, * J/ASRB11 *****	F/ASRB09 <-- VV --> 520 186 94		121	1111 00110	00 00 000000	01 01 11000	00000000 000 010 0100 0 101010000	1000 0100 0	0

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	1 OF BOST42							
186	ASR811:0520	F/DST42 F/ASR808 F/ASR810	<-- <-- <--	410 120 121	70 183 185	49 93 93		
	*****							520 00000001000
	*P2, D+D RIGHT 1,D(C)+D(C),							1111 00 11 01 10 110 111 0100 1
	*P3, R(DST)+D (B ADDR),							00000 011110 10011 000C11010
	*DEFER, SET CC,							
	*NEXT, BUTR(ODD ADDRESS),							
	* J/BYTE01							
	* J/BYTE01		-->	10 32	253 116			
	* J/BYTE02		-->	11 33	254 116			
.CASE	4 OF BOST42							
187	ASLB02:0523	F/DST42 F/ASR808 F/ASR810	<-- <-- <--	410 120 121	70 183 185	49 93 93		
	*****							523 00000001000
	*-----*							1001 01 11 11 01 110 101 0100 1
	*P2, D+ 2 R(DST),D(C)+COUT07,							00000 000000 10011 000011010
	*DEFER, SET CC,							
	*NEXT, BUTR(ODD ADDRESS),							
	* J/BYTE01							
	* J/BYTE01		-->	10 32	253 116			
	* J/BYTE02		-->	11 33	254 116			
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	RUSA	EXTENSION RIF COUT CLOCKS UPF
.CASE 190	131 OF BFET03 MOV12:0602	F/FET03	<--	700	3	11		
	*****			602				000000001111
	*-----*							1001 11 11 10 10 000 000 0101 0
	*P1, BA+R(DF) CURRENT MODE,							00000 000110 11000 001010100
	*ENABLE, MAINTENANCE,							
	*P2, D+R(DF) PLUS 2,							
	*P3, R(DF)+D (A ADDR),							
	*NEXT, J/MOV16		-->	VV				
.CASE 191	132 OF BFET03 MOV16:0124	F/MOV12	<--	VV				
	*****			124				000001001000
	* PSZ01 SAME AS							1111 00 00 10 11 000 001 0100 1
	*BRA05							10010 000000 11000 000000011
	*-----*							
	*P2, D+R(SF) (A),D(C)+PS(C),							
	*P3, U,DAT0,							
	*ENABLE, KJ,							
	*DEFER, SET CC,							
	*NEXT, J/BRA05		-->	3	283	126		
.CASE 192	132 OF BFET03 MOV19:0603	F/FET03	<--	700	3	11		
	*****			603				000000001011
	*-----*							1001 11 11 10 10 000 000 0101 0
	*P1, BA+R(DF) CURRENT MODE,							10110 000110 11000 101110110
	*P2, D+R(DF) PLUS 2,							
	*P3, R(DF)+D (A ADDR),							
	*P3, U,DATI,							
	*NEXT, J/MOV23		-->	566	238	110		

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUF UPF	CLOCKS
.CASE 193	133 OF BFET03 MOV32:0604	F/FET03	<--	700	3	11			
	*****			604				000000001000	
	*-----*							1101 11 11 10 10 000 000 0100 0	
	*P2, D+R(DF) MINUS 2,							00000 000110 01100 001100101	
	*P3, R(DF)+D (A ADDR),								
	*NEXT, BUTR(MF INSTR),								
	* J/MOVF01								
	* J/MOVF01		-->	101	145	194	97		
	* J/MOVF02		-->	111	147	195	97		
	*****								
.CASE 194	1 OF BMOV32 MOVF01:0145	F/MOV32	<-- VV						
	*****			145				000000001000	
	*NEXT,							0000 00 00 00 00 000 000 0000 0	
	* J/MOV07		-->	601	189	95		00000 000000 11000 110000001	
	*****								
.CASE 195	2 OF BMOV32 MOVF02:0147	F/MOV32	<--	604	193	97			
	*****			147				000000001000	
	*P2, D+R(DF) PLUS 2, D(C)+PS(C),							1001 11 11 10 10 000 001 0100 0	
	*NEXT, J/MOVF03		--> VV					00000 000000 11000 001010110	
	*****								
196	MOVF03:0126	F/MOVF02	<-- VV						
	*****			126				000001001111	
	* SF=DF=6 AT THIS POINT CURRENT MODE =							0000 00 00 10 11 000 000 0001 1	
	*PREVIOUS							10010 000000 11000 000000011	
	*MODE								
	*-----*								
	*P1, BA+R(SF) CURRENT MODE,								
	*ENABLE, MAINTENANCE,								
	*P3, U, DATO,								
	*ENABLE, KJ,								
	*DEFER, SET CC,								
	*NEXT, J/BRA05		-->	3	283	126			
	*****								



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								UPF
.CASE 197	134 OF BFET03 MOV36:0605	F/FET03 <--		700 3 11				
	*****							605 000000001000
	*-----*				1101 11 11 10 10			000 000 0100 0
	*P2, D+R(DF) MINUS 2,				00000 000110 11000			001100100
	*P3, R(DF)+D (A ADDR),							
	*NEXT, J/MOV40	-->		144 232 109				
	*****							
.CASE 198	135 OF BFET03 MOV41:0606	F/FET03 <--		700 3 11				
	*****							606 000000001000
	*-----*				1010 11 10 00 00			000 000 0100 0
	*P2, D+MD, MD+DATA,				00000 100000 11000			001110100
	*NEXT, J/MOV45	-->		164 245 113				
	*****							
.CASE 199	136 OF BFET03 MOV54:0607	F/FET03 <--		700 3 11				
	*****							607 000000001000
	*-----*				1010 11 10 00 00			000 000 0100 0
	*P2, D+MD, MD+DATA,				00000 100000 11000			001100110
	*NEXT, J/MOV46	-->		146 233 109				
	*****							
.TOC "	MOV * BYTE * SMO"							
.CASE 200	42 OF BFET03 MOV02:0451	F/FET03 <--		700 3 11				
	*****							451 000000001000
	*-----*				1111 00 00 10 11			000 011 0100 0
	*P2, D+R(SF) (A), D(C)+ALU07,				00000 000000 11000			001011000
	*NEXT, J/MOV03	-->		130 201 99				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION					
				ADDR	ALU BUS	BUSB SP	BUSA UBF	RIF UPF	COUNT CLOCK
201	MOV03:0130 ***** *-----* *P2, D+D SIGN EXTENDED, D(C)+PS(C), * *P3, R(DF)+D (B ADDR), RESET STATE, * *DEFER, SET CC, * *NEXT, BUTR(SERVICE), * * J/FET01 * * J/FET03 * --> 00 700 3 11 * J/SER01 * --> 01 701 385 160 * J/FET01 * --> 10 702 1 2 * J/SER02 * --> 11 703 387 162 *****	<--	451 200 98	130	1111 00010	00 00 001110	01 01 10000	000 001 111000010	0100 1
.CASE 138 OF BFET03 202	MOV09:0611 ***** *-----* *P1, BA+R(DF), CURRENT MODE, * *ENABLE, MAINTENANCE, * *P2, D+R(SF) (B), D(C)+PS(C), * *NEXT, * * J/MOV62 * --> 166 250 115 *****	<--	700 3 11	611	1010 00000	00 01 000000	10 10 11000	000 001 001110110	0101 0
.CASE 139 OF BFET03 203	MOV14:0612 ***** *-----* *P1, BA+R(DF), CURRENT MODE, * *ENABLE, MAINTENANCE, * *P2, D+R(DF) PLUS (1 OR 2), * *P3, R(DF)+D (A ADDR), * *NEXT, * * J/MOV04 * --> 131 204 100 *****	<--	700 3 11	612	1001 00000	11 11 000110	10 10 11000	000 000 001011001	0101 0

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS	
								RIF	COUT		
204	MOV04:0131	F/MOV14	<--	612	203	99					
	*****							131		000000001000	
	*-----*									1111 00 00 10 11 000 001 0100 0	
	*P2, D+R(SF) (A),D(C)+PS(C),								00000 000000 11000 001110110		
	*NEXT, J/MOV62		-->	166	250	115					
CASE 205	140 OF BFET03 MOV21:0613	F/FET03	<--	700	3	11					
	*****							613		0000000010101	
	*-----*									1001 11 11 10 10 000 000 0101 0	
	*P1, BA+R(DF), MT MODE,								10110 000110 11000 101110111		
	*ENABLE, MAINTENANCE,										
	*P2, D+R(DF) PLUS 2,										
	*P3, R(DF)+D (A ADDR),										
	*P3, U,DATI,										
	*NEXT, J/MOV25		-->	567	239	111					
CASE 206	141 OF BFET03 MOV34:0614	F/FET03	<--	700	3	11					
	*****							614		000000001000	
	*-----*									1101 11 11 10 10 000 000 0100 0	
	*P2, D+R(DF) MINUS (1 OR 2),								00000 000110 11000 110001001		
	*P3, R(DF)+D (A ADDR),										
	*NEXT, J/MOV09		-->	611	202	99					
CASE 207	142 OF BFET03 MOV38:0615	F/FET03	<--	700	3	11					
	*****							615		000000001000	
	*-----*									1101 11 11 10 10 000 000 0100 0	
	*P2, D+R(DF) MINUS 2,								00000 000110 11000 001100100		
	*P3, R(DF)+D (A ADDR),										
	*NEXT, J/MOV40		-->	144	232	109					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 208	143 OF BFET03 MOV43:0616	F/FET03 <--	700 3 11	616			000000001000 1010 11 10 00 00 000 000 0100 0 00000 100000 11000 001110100
	*-----*						
	*P2, D+MD, MD+DATA,						
	*NEXT, J/MOV45	-->	164 245 113				
.CASE 209	144 OF BFET03 MOV56:0617	F/FET03 <--	700 3 11	617			000000001000 1010 11 10 00 00 000 000 0100 0 00000 100000 11000 001100110
	*-----*						
	*P2, D+MD, MD+DATA,						
	*NEXT, J/MOV46	-->	146 233 109				
.TOC CASE 210	2 OF BSRC17 MOV * WORD * -SMO MOV05:0621	F/SRC17 F/SRC24 F/SRC29 <-- <-- <--	466 21 23 752 37 34 753 38 35	621			000000001000 1010 11 10 00 10 000 001 0100 1 00000 000110 10000 111000010
	*-----*						
	*P2, D+MD, D(C)+PS(C),						
	*P3, R(DF)+D (A ADDR),						
	*DEFER, SET CC,						
	*NEXT, BUTR(SERVICE),						
	* J/FETO1						
	* J/FETO3	-->	00 700 3 11				
	* J/SERO1	-->	01 701 385 160				
	* J/FETO1	-->	10 702 1 2				
	* J/SERO2	-->	11 703 387 162				
	*-----*						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
211	10 OF BSRC18 MOV08:0671	F/SRC18 <--	462 19 22	671			000001001101
	* PSZ01 SAME AS						1010 11 10 10 10 000 001 0101 1
	*BRAOS						10010 000000 11000 000000011
	*P1 BA+R(DF), MT MODE,						
	*ENABLE, MAINTENANCE						
	*P2, D+MD D(C)+PS(C),						
	*P3, U, DATO,						
	*ENABLE, KJ						
	*DEFER, SET CC,						
	*NEXT,						
	* J/BRAOS	-->	3 283 126				
212	11 OF BSRC18 MOV13:0672	F/SRC18 <--	462 19 22	672			000000001101
	* PSZ01 SAME AS						1001 11 11 10 10 000 000 0101 0
	*BRAOS						00000 000110 11000 001011100
	*P1 BA+R(DF), MT MODE,						
	*ENABLE, MAINTENANCE						
	*P2, D+R(DF) PLUS 2,						
	*P3, R(DF)+D (A ADDR),						
	*NEXT,						
	* J/MOV17	--> VV					
213	MOV17:0134	F/MOV13 <-- VV		134			000001001000
	* PSZ01 SAME AS						1010 11 10 00 00 000 001 0100 1
	*BRAOS						10010 000000 11000 000000011
	*P2, D+MD D(C)+PS(C),						
	*P3, U, DATO,						
	*ENABLE, KJ						
	*DEFER, SET CC,						
	*NEXT,						
	* J/BRAOS	-->	3 283 126				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COOT CLOCKS
.CASE 214	12 OF BSRC18 MOV20:0673	F/SRC18 <--	462 19 22	673				000000001011
	*-----*				1001 11 11	10 10	000 000	0101 0
	*P1, BA+R(DF), CURRENT MODE,*				10110 000110	11000	101110100	
	*P2, D+R(DF) PLUS 2,*							
	*P3, R(DF)+D (A ADDR),*							
	*P3, U,DATI,*							
	*NEXT,*							
	* J/MOV24 * -->	564 236 110						
.CASE 215	13 OF BSRC18 MOV33:0674	F/SRC18 <--	462 19 22	674				000000001000
	*-----*				1101 11 11	10 10	000 000	0100 0
	*P2, D+R(DF) MINUS 2,*				00000 000110	11000	110111001	
	*P3, R(DF)+D (A ADDR),*							
	*NEXT,*							
	* J/MOV08 * -->	671 211 102						
.CASE 216	14 OF BSRC18 MOV37:0675	F/SRC18 <--	462 19 22	675				000000001000
	*-----*				1101 11 11	10 10	000 000	0100 0
	*P2, D+R(DF) MINUS 2,*				00000 000110	11000	001100100	
	*P3, R(DF)+D (A ADDR),*							
	*NEXT,*							
	* J/MOV40 * -->	144 232 109						

# B10

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 217	15 OF BSRC18	F/SRC18	<--	462 19 22				
	MOV42:0676			676	1001 11 11	10 01	111 000	0101 0
	*****				10110	000110	11000	001011101
	*-----*							
	*P1, BA+PC CURRENT MODE,							
	*P2, D+PC PLUS 2,							
	*P3, PC+D (A ADDR),							
	*P3, U, DATI,							
	*NEXT,							
	* J/MOV47		--> VV					
219	MOV47:0135	F/MOV42	<-- VV					
				135	1010 11 10	00 00	110 000	0100 0
	*****				00000	110110	11000	001110100
	*-----*							
	*P2, D+MD,							
	*P3, R(SRC)+D (A ADDR), MD+DATA,							
	*NEXT,							
	* J/MOV45		-->	164 245 113				
.CASE 219	16 OF BSRC18	F/SRC18	<--	462 19 22				
	MOV55:0677			677	1001 11 11	10 01	111 000	0101 0
	*****				10110	000110	11000	001011110
	*-----*							
	*P1, BA+PC CURRENT MODE,							
	*P2, D+PC PLUS 2,							
	*P3, PC+D (A ADDR),							
	*P3, U, DATI,							
	*NEXT,							
	* J/MOV58		--> VV					
220	MOV58:0136	F/MOV55	<-- VV					
				136	1010 11 10	00 00	110 000	0100 0
	*****				00000	110110	11000	001100110
	*-----*							
	*P2, D+MD,							
	*P3, R(SRC)+D (A ADDR), MD+DATA,							
	*NEXT,							
	* J/MOV46		-->	146 233 109				
	*****							

C10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	10 OF BSRC17						
221	MOV06:0631	F/SRC17 F/SRC24 F/SRC29	<-- <-- <--	466 752 753	21 37 38	23 34 35	
	*****						631 00000001000
	*-----*						1111 00 00 01 01 000 001 0100 1
	*P2, D+D SIGN EXTENDED, D(C)+PS(C),						00010 001110 10000 111000010
	*P3, R(DF)+D (B ADDR), RESET STATE,						
	*DEFER, SET CC,						
	*NEXT, BUTR(SERVICE).						
	* J/FETO1						
	* J/FETO3	J/FETO3	-->	00 700	3	11	
	* J/SERO1	J/SERO1	-->	01 701	385	160	
	* J/FETO1	J/FETO1	-->	10 702	1	2	
	* J/SERO2	J/SERO2	-->	11 703	387	162	
	*****						
.CASE	2 OF BSRC39						
222	MOV10:0151	F/SRC39 F/SRC40 F/MOV35	<-- <-- <--	12 13 154	34 35 226	32 33 107	
	*****						151 000001001111
	* PSZ01 SAME AS						1010 01 10 10 10 110 001 0101 1
	*BRAOS						10101 000000 11000 000000011
	*-----*						
	*P1, BA+R(DF), CURRENT MODE,						
	*ENABLE, MAINTENANCE						
	*P2, D+R(SRC) (B), D(C)+PS(C),						
	*P3, U, DATOB,						
	*ENABLE, KJ						
	*DEFER, SET CC,						
	*NEXT,						
	* J/BRAOS	J/BRAOS	-->	3 283	126		
	*****						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR 90X PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE	3 OF BSRC39							
223	MOV15:0152	F/SRC39 F/SRC40 F/MOV35	<-- <-- <--	12 13 154	34 35 226	32 33 107	152	000000001111 0000 000 0101 0 00000 000110 11000 001011111
	***** *-----* *P1, BA+R(DF), CURRENT MODE, *ENABLE, MAINTENANCE, *P2, D+R(DF) PLUS (1 OR 2), *P3, R(DF)+D (A ADDR), *NEXT, * J/MOV18							
224	MOV18:0137	F/MOV15	<-- VV				137	000001001000 1010 01 10 00 00 110 001 0100 1 10101 000000 11000 000000011
	***** * PSZ01 SAME AS *BRAOS *-----* *P2, D+R(SRC) (B),D(C)+PS(C), *P3, U,DATOB, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRAOS							
.CASE	4 OF BSRC39							
225	MOV22:0153	F/SRC39 F/SRC40 F/MOV35	<-- <-- <--	12 13 154	34 35 226	32 33 107	153	000000001011 1001 11 11 10 10 000 000 0101 0 10110 000110 11000 101110101
	***** *-----* *P1, BA+R(DF), CURRENT MODE, *P2, D+R(DF) PLUS 2, *P3, R(DF)+D (A ADDR), *P3, U,DATI, *NEXT, * J/MOV26							
				565	237	110		

# E10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	5 OF BSRC39							
226	MOV35:0154	F/SRC39 F/SRC40 F/MOV35	<-- <-- <--	12 34 32 13 35 33 154 226 107				
	*****							154 000000001000
	*-----*							1101 11 11 10 10 000 000 0100 0
	*P2, D+R(DF) MINUS (1 OR 2),							00000 000!10 11000 001101001
	*P3, R(DF)+D (A ADDR),							
	*NEXT,							
	* J/MOV10		-->	151 222 105				
.CASE	6 OF BSRC39							
227	MOV39:0155	F/SRC39 F/SRC40 F/MOV35	<-- <-- <-- VV	12 34 32 13 35 33				
	*****							155 000000001000
	*-----*							1101 11 11 10 10 000 000 0100 0
	*P2, D+R(DF) MINUS 2,							00000 000110 11000 001100100
	*P3, R(DF)+D (A ADDR),							
	*NEXT,							
	* J/MOV40		-->	144 232 109				
.CASE	7 OF BSRC39							
228	MOV44:0156	F/SRC39 F/SRC40 F/MOV35	<-- <-- <--	12 34 32 13 35 33 154 226 107				
	*****							156 000000001011
	*-----*							1001 11 11 10 01 111 000 0101 0
	*P1, BA+PC CURRENT MODE,							10110 000110 11000 001100000
	*P2, D+PC PLUS 2,							
	*P3, PC+D (A ADDR),							
	*P3, U,DATI,							
	*NEXT,							
	* J/MOV59		-->	140 229 108				



# G10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
232	MOV40:0144	F/MOV36 <--	605 197 98					
		F/MOV38 <--	615 207 100					
		F/MOV37 <--	675 216 103					
		F/MOV39 <--	155 227 107					
	*****							144 00000001011
	*-----*							0000 00 00 10 10 000 000 0001 0
	*PJ, BA+R(DF), CURRENT MODE, *							10110 000000 01001 101110100
	*P3, U, DATI, *							
	*NEXT, BUTR(SMO * BYTE), *							
	* J/MOV24 *	* -->	100 564 236 110					
	* J/MOV26 *	* -->	101 565 237 110					
	* J/MOV23 *	* -->	110 566 238 110					
	* J/MOV25 *	* -->	111 567 239 111					
	*****							
233	MOV46:0146	F/MOV54 <--	607 199 98					
		F/MOV56 <--	617 209 101					
		F/MOV58 <--	136 220 104					
		F/MOV60 <--	141 231 108					
	*****							146 00000001000
	*-----*							1001 10 11 10 10 110 000 0100 0
	*P2, D+R(DF) PLUS MD(D), *							00010 011110 11000 001101000
	*P3, R(DST X)+D (B ADDR), *							
	*NEXT, J/MOV48 *	* --> VV						
234	MOV48:0150	F/MOV46 <--	VV					
	*****							150 00000001011
	*-----*							0000 00 00 11 01 110 000 0001 0
	*P1, BA+R(DST X), CURRENT MODE, *							10110 000000 11000 001110000
	*P3, U, DATI, *							
	*NEXT, J/MOV49 *	* -->	160 235 110					
	*****							

# H10

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
235	MOV49:0160	F/MOV48	<--	150 234 109				
	*****			160	0000	11 10	00 00	00000001000
	*-----*				00000	100000	11000	000 000 0000 0
	*P3, MD+DATA,							001110001
	*NEXT,							
	* J/MOV27		-->	161 240 111				
	*****							
.CASE	1 OF BMOV40							
236	MOV24:0564	F/MOV20 F/MOV40	<-- <--	673 214 103 144 232 109				
	*****			564	1010	11 10	00 00	00000001000
	*-----*				00000	110110	11000	110 000 0100 0
	*P2, D+MD,							001110001
	*P3, R(SRC)+D (A ADDR), MD+DATA,							
	*NEXT,							
	* J/MOV27		-->	161 240 111				
	*****							
.CASE	2 OF BMOV40							
237	MOV26:0565	F/MOV20 F/MOV40	<-- <--	673 214 103 144 232 109				
	*****			565	0000	11 10	00 00	00000001000
	*-----*				00000	100000	11000	000 000 0000 0
	*P3, MD+DATA,							001110001
	*NEXT,							
	* J/MOV27		-->	161 240 111				
	*****							
.CASE	3 OF BMOV40							
238	MOV23:0566	F/MOV20 F/MOV40	<-- <--	673 214 103 144 232 109				
	*****			566	1010	11 10	00 00	00000001000
	*-----*				00000	100000	11000	000 000 0100 0
	*P2, D+MD, MD+DATA,							001110001
	*NEXT,							
	* J/MOV27		-->	161 240 111				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
239	MOV25:0567	F/MOV20 F/MOV40	<-- <--	673 214 103 144 232 109				
				567				000000001000
					1010 11 10 00 00			000 000 0100 0
					00000 100000 11000			001110001
	*P2, D+MD, MD+DATA,							
	*NEXT, J/MOV27		--> VV					
240	MOV27:0161	F/MOV49 F/MOV24 F/MOV26 F/MOV23 F/MOV25	<-- <-- <-- <-- <--	160 235 110 564 236 110 565 237 110 566 238 110				
			--> VV	161				000000001000
					1010 11 10 00 01			110 000 0100 0
					00000 010010 01001			111000100
	*P2, D+MD,							
	*P3, R(DST I)+D (A ADDR),							
	*NEXT, BUTR(SMD # BYTE),							
	J/MOV29		-->	100 704 241 111				
	J/MOV31		-->	101 705 242 112				
	J/MOV30		-->	110 707 244 112				
	UNDEFINED CASE							
.CASE 241	MOV29:0704	F/MOV27	<-- VV					
				704				000001001101
	* THIS REQUIRES R(SRC) AND R(DST) TO HAVE				1010 01 10 11 01			110 001 0101 1
	*THE SAME RIF FIELD PSZ01 SAME AS				10010 000000 11000			000000011
	*BRA05							
	*P1, BA+R(DST I), MT MODE,							
	*ENABLE, MAINTENANCE,							
	*P2, D+R(SRC) (B), D(C)+PS(C),							
	*P3, U, DATO,							
	*ENABLE, KJ,							
	*DEFER, SET CC,							
	*NEXT, J/BRA05		-->	3 283 126				

# J10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COOT CLOCKS UPF
.CASE 242	MOV31:0705	F/MOV27 <--	161 240 111	705			000000001101
	* PSZ01 SAME AS			1010 01 10	11 01	110 001	0101 1
	*BRA05			10101 000000	11000	000000011	
	*P1, BA+R(DST I), MT MODE,						
	*ENABLE, MAINTENANCE,						
	*P2, D+R(SRC) (B), D(C)+PS(C),						
	*P3, U, DAT08,						
	*DEFER, SET CC,						
	*NEXT,						
	* J/BRA05 -->	3 283 126					
.CASE 243	MOV28:0706	F/MOV27 <--	161 240 111	706			000000001101
	* PSZ01 SAME AS			1010 00 01	11 01	110 001	0101 1
	*BRA05			10010 000000	11000	000000011	
	*P1, BA+R(DST I), MT MODE,						
	*ENABLE, MAINTENANCE,						
	*P2, D+R(SF) (B), D(C)+PS(C),						
	*P3, U, DAT0,						
	*DEFER, SET CC,						
	*NEXT,						
	* J/BRA05 -->	3 283 126					
.CASE 244	MOV30:0707	F/MOV27 <--	161 240 111	707			000000001101
	*			1010 00 01	11 01	110 001	0101 0
	*			00000 000000	11000	001110110	
	*P1, BA+R(DST I), MT MODE,						
	*ENABLE, MAINTENANCE,						
	*P2, D+R(SF) (B), D(C)+PS(C),						
	*NEXT,						
	* J/MOV62 -->	166 250 115					

# K10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
		F/MOV41 <--	606 198 98						
		F/MOV43 <--	616 208 101						
		F/MOV47 <--	135 218 104						
245	MOV45:0164	F/MOV59 <--	140 229 108						
	*****			164				000000001000	
	*-----*				1001 10 11 10 10		110 000	0100 0	
	*P2, D+R(DF) PLUS MD(D),				00010	011110	01001	111110100	
	*P3, R(DST X)+D (B ADDR),								
	*NEXT, BUTR(SMD * BYTE),								
	* J/MOV51								
	* J/MOV51	* -->	100 764 246 113						
	* J/MOV53	* -->	101 765 247 114						
	* J/MOV50	* -->	110 766 248 114						
	* J/MOV52	* -->	111 767 249 114						
	*****								
CASE 246	1 OF BMOV45								
	MOV51:0764	F/MOV45 <-- VV		764				000001001101	
	*****								
	* PSZD1 SAME AS				1010 01 10 11 01		110 001	0101 1	
	*BRA05				10010	000000	11000	000000011	
	*-----*								
	*P1 BA+R(DST X), MT MODE,								
	*ENABLE, MAINTENANCE,								
	*P2, D+R(SRC) (B), D(C)+PS(C),								
	*P3, U, DATO,								
	*ENABLE, KJ,								
	*DEFER, SET CC,								
	*NEXT, J/BRA05	* -->	3 283 126						
	*****								





# M10

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
			OFST	ADDR	BOX						PAGE	RIF	
250	MOV62:0166	F/MOV09 F/MOV04 F/MOV30 F/MOV52	<-- <-- <-- <--	611 131 707 767	202 204 244 249	99 100 112 114					000000001000		
		***** * *-----* *NEXT, BUTR(ODD ADDRESS), * J/MOV11 * J/MOV11 * J/MOV61 *****					166				0000 00 00 00 00 000 000 0000 0 00000 000000 10011 000010110		
.CASE	1 OF BMOV62			10 11	26 27	251 252	115 115						
251	MOV11:0026	F/MOV62 F/MOV61	<-- <--	166 27	250 252	115 115					000000001000		
		***** * PSZ01 SAME AS *BRA05 *-----* *P3 U,DAT08, *ENABLE, KJ *DEFER, SET CC, *NEXT, * J/BRA05 *****					26				0000 00 00 00 00 000 000 0000 1 10101 000000 11000 000000011		
.CASE	2 OF BMOV62			3	283	126							
252	MOV61:0027	F/MOV62 F/MOV61	<-- <--	166 27	250 252	115 115					000000001000		
		***** * *-----* *P2 D←D(L0) # D(L0),D(C)+PS(C), *NEXT, * J/MOV11 *****					27				1111 00 00 01 01 000 001 0100 0 00001 000000 11000 000010110		
				26	251	115							

# N10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COOT CLOCKS
.CASE	1 OF BBIC803						
	F/BIC803	<--	734 104 65				
	F/BIS803	<--	735 105 65				
	F/INC802	<--	532 171 89				
	F/DEC802	<--	533 172 90				
	F/NEG804	<--	111 174 90				
	F/ADC802	<--	535 175 91				
	F/SBC806	<--	114 177 91				
	F/ROL802	<--	521 179 92				
	F/ASR811	<--	520 186 94				
	F/ASL802	<--	523 187 94				
253	BYTE01:0032						
	*****						
	*PAUSE PERIOD FOR DATO'S TO COMPLETE IF	*					
	*EXECUTION RESULT IS TO BE WRITTEN INTO	*					
	*MEMORY (RM, MM, M, MOV) PSZ01 SAME	*					
	*AS	*					
	*BRA05	*					
	-----*						
	*P3 U, DATOB,	*					
	*ENABLE, KJ,	*					
	*NEXT, BUT(DIAGNOSE),	*					
	* J/BRA05	* -->	3 283 126				
	*****						
.CASE	2 OF BBIC803						
	F/BIC803	<--	734 104 65				
	F/BIS803	<--	735 105 65				
	F/INC802	<--	532 171 89				
	F/DEC802	<--	533 172 90				
	F/NEG804	<--	111 174 90				
	F/ADC802	<--	535 175 91				
	F/SBC806	<--	114 177 91				
	F/ROL802	<--	521 179 92				
	F/ASR811	<--	520 186 94				
	F/ASL802	<--	523 187 94				
254	BYTE02:0033						
	*****						
	* SWAPPING BYTES AND DATOB HAVE SAME	*					
	*CODE IN BC FIELD PSZ01 SAME AS	*					
	*BRA05	*					
	-----*						
	*P2, D+D SWAPPED XOR D,D(C)+D(C),	*					
	*P3 U, DATOB,	*					
	*ENABLE, KJ,	*					
	*NEXT,	*					
	* J/BRA05	* -->	3 283 126				
	*****						

32  
 0000 00 00 00 00 000 000 0000 0  
 10101 000000 11011 000000011  
 000001001000

33  
 0110 11 01 01 01 000 111 0100 0  
 10101 000000 11000 000000011  
 000001001000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT LLOCKS UPF
.CASE 255	JUMP AND JSR 16 OF BOTH01 JSR01:0057	F/OTH01	<--	417	285	127	
	*****						57 000000001000
	-----						0000 00 00 00 30 000 000 0000 0 00000 000000 00101 110101000
	*NEXT, BUTR(DM), J/ILLO1	J/ILLO1	-->	1000	650	352 149	
	*****	UNDEFINED CASE					
	-----	UNDEFINED CASE					
	*****	UNDEFINED CASE					
	-----	UNDEFINED CASE					
	*****	UNDEFINED CASE					
	-----	UNDEFINED CASE					
	*****	UNDEFINED CASE					
.CASE 256	170 OF BFET03 JMP02:0651	F/FET03	<--	700	3	11	
	*****						651 000000001000
	-----						1111 00 00 10 10 000 000 0010 0 00000 000000 01110 101000001
	*P2, SR+R(DF) (A), *NEXT, BUTR(JSR), J/JMP23	J/JMP23	-->	01	501	278 124	
	*****	J/JMP20	-->	11	503	274 122	
	-----						
.CASE 257	171 OF BFET03 JMP03:0652	F/FET03	<--	700	3	11	
	*****						652 000000001000
	-----						1111 00 00 10 10 000 000 0010 0 00000 000000 11000 001111000
	*P2, SR+R(DF) (A), *NEXT, J/JMP04	J/JMP04	-->	170	258	118	
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
		OFST ADDR BOX PAGE					UPF
258	JMP04:0170	F/JMP03 <--	652 257 117	170			000000001000
	*****						
	*-----*						
	*P2, D+R(DF) PLUS 2,			1001	11 11	10 10	000 000 0100 0
	*P3, R(DF)+D (A ADDR),			00000	000110	01110	101000001
	*NEXT, BUTR(JSR),						
	* J/JMP23	* -->	01 501 278 124				
	* J/JMP20	* -->	11 503 274 122				
	*****						
.CASE 172 OF BFET03	JMP05:0653	F/FET03 <--	700 3 11	653			000000001011
259	*****						
	*-----*						
	*P1, BA+R(DF) CURRENT MODE,			1001	11 11	10 10	000 000 0101 0
	*P2, D+R(DF) PLUS 2,			10110	000110	11000	010000010
	*P3, R(DF)+D (A ADDR),						
	*P3, U, DATI,						
	*NEXT, J/JMP17	* -->	202 271 121				
	*****						
.CASE 173 OF BFET03	JMP06:0654	F/FET03 <--	700 3 11	654			000000001000
260	*****						
	*-----*						
	*P2, D+R(DF) MINUS 2,			1101	11 11	10 10	000 000 0110 0
	* SR+R(DF) MINUS 2,			00000	000110	01110	101000001
	*P3, R(DF)+D (A ADDR),						
	*NEXT, BUTR(JSR),						
	* J/JMP23	* -->	01 501 278 124				
	* J/JMP20	* -->	11 503 274 122				
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
CASE 174 OF BFET03 261	JMP07:0655 F/FET03	<-- 700 2 11		655	1101 00000	11 11 000110	10 10 11000	00000001000 000 000 0100 0 001111001
	*-----*							
	*P2, D+R(DF) MINUS 2,							
	*P3, R(DF)+D (A ADDR),							
	*NEXT, J/JMP08	--> VV						
262	JMP08:0171 F/JMP07	<-- VV		171	0000 10110	00 00 000000	10 10 11000	00000001011 000 000 0001 0 010000010
	*-----*							
	*P1, BA+R(DF), CURRENT MODE,							
	*P3, U, DATI,							
	*NEXT, J/JMP17	-->	202 271 121					
CASE 175 OF BFET03 263	JMP09:0656 F/FET03	<-- 700 3 11		656	1001 10110	11 11 000110	10 01 11000	00000001011 111 000 0101 0 001111100
	*-----*							
	*P1, BA+PC, CURRENT MODE,							
	*P2, D+PC PLUS 2,							
	*P3, PC+D (A ADDR),							
	*P3, U, DATI,							
	*NEXT, J/JMP10	--> VV						
264	JMP10:0174 F/JMP09	<-- VV		174	0000 00000	11 10 100000	00 00 01110	00000001000 000 000 0000 0 001000001
	*-----*							
	*P3, MD+DATA,							
	*NEXT, BUTR(JSR),							
	* J/JMP11	-->	01 101 265 120					
	* J/JMP12	-->	11 103 266 120					
	*-----*							

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 265	1 OF BJMP10 JMP11:0101	F/JMP10	<--	174	264	119	
	*****						101 000000001000
	*-----*						1001 10 11 10 10 111 000 0100 0
	*P2, D+R(DF) PLUS MD(D),						00010 001110 10000 111000010
	*P3, PC+D (B ADDR),						
	*NEXT, BUTR(SERVICE),						
	* J/FETO1						
	* J/FETO3	-->	00	700	3	11	
	* J/SERO1	-->	01	701	385	160	
	* J/FETO1	-->	10	702	1	2	
	* J/SERO2	-->	11	703	387	162	
	*****						
.CASE 266	2 OF BJMP10 JMP12:0103	F/JMP10	<--	174	264	119	
	*****						103 000000001000
	*-----*						1001 11 10 10 10 000 000 0010 0
	*P2, SR+R(DF) PLUS MD,						00000 000000 11000 101000011
	*NEXT, J/JMP20	-->	503	274	122		
	*****						
.CASE 267	176 OF BFETO3 JMP13:0657	F/FETO3	<--	700	3	11	
	*****						657 000000001011
	*-----*						1001 11 11 10 01 111 000 0101 0
	*P1, BA+PC CURRENT MODE,						10110 000110 11000 001111110
	*P2, D+PC PLUS 2,						
	*P3, PC+D (A ADDR),						
	*P3, U,DATI,						
	*NEXT, J/JMP14	-->	176	268	121		
	*****						

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COU' CLOCKS UPF
268	JMP14:0176 ***** * *-----* *P3, MD+DATA, *NEXT, * J/JMP15 *****	<--	657 267 120	176	0000 00000	11 10 100000	00 00 11000	00000001000 000 000 0000 0 010000000
269	JMP15:0200 ***** * *-----* *P2, D+R(DF) PLUS MD(D), *P3, R(DST X)+D (B ADDR), *NEXT, * J/JMP16 *****	<-- VV		200	1001 00010	10 11 011110	10 10 11000	00000001000 110 000 0100 0 010000001
270	JMP16:0201 ***** * *-----* *P1, BA+R(DST X), CURRENT MODE, *P3, U, DATI, *NEXT, * J/JMP17 *****	<-- VV		201	0000 10110	00 00 000000	11 01 11000	00000001011 110 000 0001 0 010000010
271	JMP17:0202 ***** * *-----* *P3, MD+DATA, *NEXT, BUTR(JSR), * J/JMP18 * J/JMP19 *****	<-- VV	653 259 118 171 262 119	202	0000 00000	11 10 100000	00 00 01110	00000001000 000 000 0000 0 001000101



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 272	1 OF BJMP17 JMP18:0105	F/JMP17 <--	202 271 121	105			000000001000
	*-----*			1010 11 10 00 01		111 000 0100 0	
	*P2, D+MD,			00000 000110 10000		111000010	
	*P3, PC+D (A ADDR),						
	*NEXT, BUTR(SERVICE),						
	* J/FET01						
	* J/FET03	* -->	00 700 3 11				
	* J/SER01	* -->	01 701 385 160				
	* J/FET01	* -->	10 702 1 2				
	* J/SER02	* -->	11 703 387 162				
.CASE 273	2 OF BJMP17 JMP19:0107	F/JMP17 <--	202 271 121	107			000000001000
	*-----*			1010 11 10 00 00		000 000 0010 0	
	*P2, SR+MD,			00000 000000 11000		101000011	
	*NEXT, J/JMP20	* --> VV					
.CASE 274	2 OF BJMP02 JMP20:0503	F/JMP02 <-- F/JMP04 <-- F/JMP06 <--	651 256 117 170 258 118 654 260 118	503			000010001000
	*-----*			1101 11 11 10 00		111 000 0100 0	
	*P2, D+SP MINUS 2,			00000 000110 11000		010000011	
	*P3, SP+D (A ADDR),						
	*NEXT, J/JMP21	* -->	203 275 123				

# H11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
							UPF	
275	JMP21:0203	F/MP20		203				000011001011
	*****				1010	00 01	10 00	111 000 0101 0
	*				10010	000000	11000	01000010C
	*-----*							
	*P1, BA+SP, CURRENT MODE,							
	*P2, D+R(SF) (B),							
	*P3, U, DATO,							
	*ENABLE, KJ,							
	*NEXT,							
	*	J/JMP24	--> VV					
276	JMP24:0204	F/JMP21		204				000000001000
	*****				0000	00 00	00 00	000 000 0000 0
	* A PAUSE WHILE D IS				00000	000000	11000	010000110
	*WRITTEN							
	*-----*							
	*NEXT,							
	*	J/JMP22	--> VV					
277	JMP22:0206	F/JMP24		206				000000001000
	*****				1111	00 01	10 01	111 000 0100 0
	*				00000	001110	10000	000000110
	*-----*							
	*P2, D+PC (A),							
	*P3, R(SF)+D (B ADDR),							
	*NEXT, BUTR(SERVICE),							
	*	J/BRA04	-->	10	6	281	125	
	*	J/BRA03	-->	11	7	282	125	
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	1 OF BJMP02						
278	JMP23:0501	F/JMP02 F/JMP04 F/JMP06	<-- <-- <--	651 256 117 170 258 118 654 260 118			
	*****						
	*P2, D+SR,	*					000000001000
	*P3, PC+D (B ADDR),	*					1111 00 11 00 00 111 000 0100 0
	*NEXT, BUTR(SERVICE),	*					00000 001110 10000 111000010
	* J/FETO1	*					
	* J/FETO3	* -->	00 700 3 11				
	* J/SER01	* -->	01 701 385 160				
	* J/FETO1	* -->	10 702 1 2				
	* J/SER02	* -->	11 703 387 162				
	*****						
.TOC "BRANCH"							
.CASE	239 OF BFETO3						
279	BRA01:0757	F/FETO3	<--	700 3 11			
	*****						
	*OVERVIEW-IMPLEMENTATION BRANCH THE	*					000000001000
	*SUCCESS OR FAILURE OF A BRANCH IS	*					1010 10 00 00 00 000 011 0100 0
	*DETERMINED BY A ROM WHICH DECODES THE	*					00010 010001 10110 000000010
	*CURRENT CONDITION CODES. THIS DECODE	*					
	*STARTS WHEN THE IR IS LOADED IN FETO2.	*					
	*THE OUTPUT OF THIS ROM IS TESTED IN	*					
	*BRA01 BY BUTR(BRANCH). THE INSTRUCTION	*					
	*WAS LOADED INTO MD BY FETO2 AND LOADED	*					
	*INTO RES BY BRA01. RES IS CONSTRUCTED	*					
	*SUCH THAT LOADING IT IN THIS WAY CAUSES	*					
	*THE LOW ORDER BIT OF THE SHIFT REGISTER	*					
	*IS LOADED WITH A ZERO IN BRA02. #0-I END	*					
	*****						
	*P2, D+MD(D), D(C)+ALU07, RES+MD(D),	*					
	*NEXT, BUTR(BRANCH),	*					
	* J/BRA02	* -->	10 2 280 125				
	* J/BRA05	* -->	11 3 283 126				
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
.CASE	1 OF BBRA01								
280	BRA02:0002	F/BRA01 F/S0B08	<-- <--	757 4075	279 331	124 143			
	*****							000000001000	
	*P3,							1001 00 11 01 00 111 000 1010 0	
	-----							00010 000000 10000 000000110	
	*SR+2 (D SIGN EXTENDED)								
	*PLUS PC,								
	*NEXT, BUTR(SERVICE),								
	J/BRA04								
		J/BRA04	-->	10	6	281	125		
		J/BRA03	-->	11	7	282	125		
.CASE	1 OF BJMP22								
281	BRA04:0006	F/JMP22 F/BRA02	<-- <-- VV	206	277	123			
	*****								
	*NO SERVICE FLAG ON, DO INSTRUCTION							000000001011	
	*FETCH							1001 11 11 00 00 000 000 0101 0	
	-----							10000 000000 11000 010001000	
	*P1, BA+SR, CURRENT MODE,								
	*P2, D+SR PLUS 2,								
	*P3, U, DATI CLKIR,								
	*NEXT, J/BRA06								
			-->	210	284	126			
.CASE	2 OF BJMP22								
282	BRA03:0007	F/JMP22 F/BRA02	<-- <--	206 2	277 280	123 125			
	*****								
	*SERVICE REQUEST PRESENT, RE-STORE							000000001000	
	*BRANCH ADDRESS INTO PC AND GO TO							1111 00 11 00 00 111 000 0100 0	
	*SERVICE -							00000 001110 11000 111000011	
	*SER02								
	-----								
	*P2, D+SR,								
	*P3, PC+D (B ADDR),								
	*NEXT, J/SER02								
			-->	703	387	162			
	*****								

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
283	BRA05:0003	F/BRA01 F/S0808	<-- <--	757 279 124 4075 331 143				
	*****			3				00000001000
	*-----*				0000	00 00	00 01	000 000 0000 0
	*SELECT, EMIT				11001	000000	10000	111000010
	*P3, RESET STATE							
	*NEXT, BUTR(SERVICE),							
	* J/FET01							
		J/FET03	-->	00 700	3	11		
		J/SER01	-->	01 701	385	160		
		J/FET01	-->	10 702	1	2		
		J/SER02	-->	11 703	387	162		
284	BRA06:0210	F/BRA04	<--	6 281 125				
	*****			210				00000001000
	* JAM FROM HERE IS ERROR ON INSTRUCTION				0000	11 10	00 01	111 000 0000 0
	*FETCH IN A BRANCH TAKEN WITH NO				00000	100110	11010	111000000
	*SERVICE REQUEST PENDING PUPP OF 171							
	*IMPLIES PC-2 IS LOCATION OF							
	*ERROR							
	*-----*							
	*P2	U, IR+DATA,						
	*P3,	PC+D (A ADDR), MD+DATA,						
	*NEXT,	BUT(CLEAR FLAGS),						
	* J/FET03		-->	700	3	11		
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
	.TOC "OTHER BASE INSTRUCTIONS"						
	.TOC "DECODE FOR OTHER INSTRUCTIONS"						
	.CASE 8 OF BOST27						
285	OTH01:0417	F/DST27 <--	762 67 47				
		F/DST28 <--	763 68 48				
	*****						
	* FOR RTI, RTT, FLPT						
	-----*						
	*P2, D+MD, SR+MD, D(C)+PS(C),						
	*NEXT, BUT(INSTR 5),						
	* J/40						
	* J/RSVD01 * -->	00000 40	1193 384				
	* J/FASTX1 * -->	00001 41	1192 384				
	* J/EIS01 * -->	00010 42	2331 771				
	* J/FIS01 * -->	00011 43	1191 384				
	* J/SXT01 * -->	00100 44	296 132				
	* UNDEFINED CASE *						
	* J/XOR01 * -->	00110 46	293 130				
	* J/XOR02 * -->	00111 47	294 131				
	* J/SO01 * -->	01000 50	325 141				
	* J/MARK00 * -->	01001 51	333 143				
	* UNDEFINED CASE *						
	* J/MFAT00 * -->	01011 53	571 220				
	* UNDEFINED CASE *						
	* J/EMT01 * -->	01101 55	351 149				
	* J/TRAP01 * -->	01110 56	350 148				
	* J/JSR01 * -->	01111 57	255 117				
	* J/RSVD02 * -->	10000 60	1194 384				
	* J/WAIT01 * -->	10001 61	338 144				
	* J/RTI01 * -->	10010 62	315 138				
	* J/BPT01 * -->	10011 63	349 148				
	* J/IOT01 * -->	10100 64	348 148				
	* UNDEFINED CASE *						
	* J/RTS01 * -->	10110 66	308 136				
	* J/RES01 * -->	10111 67	341 145				
	* J/SCC00 * -->	11000 70	302 135				
	* J/SW01 * -->	11001 71	286 128				
	* J/SW03 * -->	11010 73	289 129				
	* J/HALT01 * -->	11011 74	345 147				
	* UNDEFINED CASE *						
	* J/RTT01 * -->	11101 76	312 137				
	* UNDEFINED CASE *						
	* UNDEFINED CASE *						
	*****						

417  
 1010 11 10 00 00 000 001 0110 0  
 00000 000000 00010 000100000



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
289	SWB03:0073	F/OTH01	<--	417 285 127			000000001000
	* GOES TO DST ENTRY POINT FROM INSTR 1						0000 00 00 00 00 000 000 0000 0
	*BRANCH						00000 000000 0010! 111100000
	*NEXT, BUTR(DM), J/740						
	J/SXT05	-->		0000 740 300 134			
	J/DST11	-->		0001 741 46 38			
	J/DST12	-->		0010 742 47 39			
	J/DST13	-->		0011 743 48 40			
	J/DST14	-->		0100 744 49 40			
	J/DST15	-->		0101 745 50 41			
	J/DST16	-->		0110 746 51 41			
	J/DST17	-->		0111 747 52 42			
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
290	SWB04:0720	F/DST19	<--	526 57 44			000000001000
		F/DST25	<--	642 72 50			1010 11 10 00 00 000 000 0100 0
		F/DST26	<--	643 73 51			00000 000000 11000 010001011
	*P2, D+MD,						
	*NEXT, J/SWB05	-->	VV				
291	SWB05:0213	F/SWB04	<--	VV			000000001000
	* D(C) GETS 0						1001 11 01 01 01 000 000 1100 1
	*P2, D+D SWAPPED PLUS 0,						00101 000000 11000 010001100
	*DEFER, SET CC,						
	*NEXT, J/SWB06	-->		214 292 130			



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
292	SWB06:0214	F/SWB05	<--	213	291	129				
	* PSZ01 SAME AS			214				000001001000		
	*BRA05				0000	00 00	00 00	000 000	0000	0
					10010	000000	11000	000000011		
	*P3 U, DATO,									
	*ENABLE, KJ,									
	*NEXT,									
	* J/BRA05		-->	3	283	126				
.TOC	XOR									
.CASE	7 OF BOTH01									
293	XOR01:0046	F/OTH01	<--	417	285	127				
				46				000000001000		
					0110	00 00	10 11	000 001	0100	1
					00000	001110	10000	111000010		
	*P2, D+R(SF) XOR R(DF), D(C)+PS(C),									
	*P3, R(DF)+D (B ADDR), RESET STATE,									
	*DEFER, SET CC,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
		J/FET03	-->	00	700	3	11			
		J/SER01	-->	01	701	385	160			
		J/FET01	-->	10	702	1	2			
		J/SER02	-->	11	703	387	162			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 294	8 OF BOTH01 XOR02:0047	F/OTH01 <--	417 285 127	47			00000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 00101 111100000
	* GOES TO DST ENTRY POINT FROM INSTR 1 *BRANCH						
	*NEXT, BUTR(DM), J/740						
	J/SXT05	* -->	0000 740 300 134				
	J/DST11	* -->	0001 741 46 38				
	J/DST12	* -->	0010 742 47 39				
	J/DST13	* -->	0011 743 48 40				
	J/DST14	* -->	0100 744 49 40				
	J/DST15	* -->	0101 745 50 41				
	J/DST16	* -->	0110 746 51 41				
	J/DST17	* -->	0111 747 52 42				
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
	UNDEFINED CASE						
.CASE 295	8 OF BOST21 XOR03:0407	F/DST21 <--	524 55 43	407			000001001000 0110 11 10 10 11 000 001 0100 1 10010 000000 11000 000000011
	* PSZ01 SAME AS *BRA05						
	*P2, D+R(SF) XOR MD,D(C)+PS(C), *P3 U,DAT0, *ENABLE, KJ *DEFER, SET CC, *NEXT, J/BRA05	* -->	3 283 126				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC .CASE 296	SXT 5 OF BOTH01 SXT01:0044	F/OTH01 <--	417 285 127				
	*****						44 0011 00 00 00 00 000 010 0010 0 00000 000000 11000 010001110
	*-----*						
	*P2 SR+0, *SETUP, TEST PS(N), *NEXT, J/SXT02	--> VV					
297	SXT02:0216	F/SXT01 <-- VV					216 0000 00 00 00 00 000 010 0000 0 00000 000000 01100 100110100
	*-----*						
	*NEXT, BUTM(PS(N)), * J/SXT03	--> VV					
.CASE 298	1 OF BSXT02 SXT03:0464	F/SXT02 <-- VV					464 1111 00 10 00 00 110 001 0100 1 00000 011110 00101 111100000
	*-----*						
	*P2, D+SR, D(C)+PS(C), *P3, R(SRC)+D (B ADDR), *DEFER, SET CC, *NEXT, BUTR(DM), * J/740						
	J/SXT05	-->	0000 740 300 134				
	J/DST11	-->	0001 741 46 38				
	J/DST12	-->	0010 742 47 39				
	J/DST13	-->	0011 743 48 40				
	J/DST14	-->	0100 744 49 40				
	J/DST15	-->	0101 745 50 41				
	J/DST16	-->	0110 746 51 41				
	J/DST17	-->	0111 747 52 42				
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	*****						

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 293	2 OF BSXT02 SXT04:0465	F/SXT02 <--	216 297 132				
	*****			465			00000001000
	*-----*			0000 00 10 00 00		110 001	0100 1
	*P2, D+NOT SR,D(C)+PS(C),			00000 011110	00101	111100000	
	*P3, R(SRC)+D (B ADDR),						
	*DEFER, SET CC,						
	*NEXT, BUTR(0M),						
	J/740						
	J/SXT05	* -->	0000 740 300 134				
	J/DST11	* -->	0001 741 46 38				
	J/DST12	* -->	0010 742 47 39				
	J/DST13	* -->	0011 743 48 40				
	J/DST14	* -->	0100 744 49 40				
	J/DST15	* -->	0101 745 50 41				
	J/DST16	* -->	0110 746 51 41				
	J/DST17	* -->	0111 747 52 42				
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	UNDEFINED CASE	*					
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BSRC21	F/SRC21 <--	661 23 24				
		F/SRC32 <--	662 24 25				
		F/SRC33 <--	663 25 26				
		F/SRC34 <--	664 26 27				
		F/SRC35 <--	665 27 28				
		F/SRC36 <--	666 28 29				
		F/SRC37 <--	667 29 30				
		F/SRC30 <--	772 32 31				
		F/SRC31 <--	773 33 32				
		F/SWB03 <--	73 289 129				
		F/XOR02 <--	47 294 131				
		F/SXT03 <--	464 298 132				
300	SXT05:0740	F/SYT04 <--	465 299 133				
	*****						
	* MODE 0						740 0000 00 00 00 00 00000001000
	-----						00000 001110 10000 111000010
	*P3, R(DF)+D (B ADDR),						
	*NEXT, BUTR(SERVICE),						
	* J/FET01						
		J/FET03 * -->	00 700 3 11				
		J/SER01 * -->	01 701 385 160				
		J/FET01 * -->	10 702 1 2				
		J/SER02 * -->	11 703 387 162				
	*****						
.CASE	6 OF BDST41	F/DST41 <--	400 69 48				
301	SXT06:0427	F/ASR05 <--	422 164 87				
	*****						
	* NOT MODE 0 BRAOS IS SAME AS						427 1111 00 00 11 00 000001001000
	*PSZ01						10010 000000 11000 000000011
	-----						
	*P2, D+R(SRC) (A),						
	*P3, U,DATO,						
	*ENABLE, KJ,						
	*NEXT,						
		J/BRAOS * -->	3 283 126				
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC "	SET AND CLEAR CONDITION CODES"							
.CASE	25 OF BOTH01							
302	SCC00:0070 F/OTH01	<--	417 285 127					
	*****			70				000000001000
	*NEXT, BUT(GO TO),PAGE+4,				0000	00 00	00 00	000 100 0000 0
	* J/SCC01	-->	VV		0000C	000000	11100	000010100
	*****							
303	SCC01:4024 F/SCC00	<--	VV					
	*****			4024				000000001000
	*-----*				1111	00 00	01 01	000 010 0100 0
	*P2, D+D RIGHT 4,D(C)+ALU00,				01000	000000	11000	00001010
	*NEXT, J/SCC02	-->	VV					
	*****							
304	SCC02:4026 F/SCC01	<--	VV					
	*****			4026				000000001000
	*-----*				1000	00 00	10 01	000 000 0000 0
	*SELECT, PS(CC),				11001	000000	11000	000011000
	*NEXT, J/SCC03	-->	VV					
	*****							
305	SCC03:4030 F/SCC02	<--	VV					
	*****			4030				000000001000
	*SCC03 IS DOCUMENTED IN THE CPU				0000	11 10	00 00	000 000 0000 0
	*DIAGNOSTICS AS BEING 4030				00000	100000	10011	010010001
	*-----*							
	*P3, MD+PS							
	*NEXT, BUTR(D(C)),							
	* J/SCC04	-->	01 4221 306 136					
	* J/SCC05	-->	11 4223 307 136					
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 306	1 OF BSCC03 SCC04:4221	F/SCC03	<--	4030 305 135			
	* CLEAR						
	*J/SCC11						
	-----						
	*P2, D+NOT SR AND MD,						
	*NEXT, BUT(GO TO),PAGE+4,						
	* J/RTI09		-->	4065 323 140			
.CASE 307	2 OF BSCC03 SCC05:4223	F/SCC03	<--	4030 305 135			
	* SET						
	*J/SCC11						
	-----						
	*P2, D+SR OR MD,						
	*NEXT, BUT(GO TO),PAGE+4,						
	* J/RTI09		-->	4065 323 140			
.TOC CASE 308	RTS 23 OF BOTH01 RTS01:0066	F/OTH01	<--	417 285 127			
	*-----						
	*P2, D+R(DF) (A),						
	*P3, PC+D (B ADDR),						
	*NEXT, BUT(GO TO),PAGE+4,						
	* J/RTS02		--> VV				
309	RTS02:4034	F/RTS01	<-- VV				
	*-----						
	*P1, BA+SP CURRENT MODE,						
	*P2, D+SP PLUS 2,						
	*P3, SP+D (A ADDR),						
	*P3, U, DATI,						
	*NEXT, BUT(DIAGNOSE),						
	* J/RTS03		-->	4035 310 137			

4221  
0010 11 10 00 00 000 100 0100 0  
00000 000000 11100 000110101

4223  
1110 11 10 00 00 000 100 0100 0  
00000 000000 11100 000110101

66  
1111 00 11 10 10 111 100 0100 0  
00000 001110 11100 000011100

4034  
1001 11 11 10 00 111 000 0101 0  
10110 000110 11011 000011101





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
314	RTT03:4042 ***** *-----* * RETURN+RTI01, *NEXT, BUT(GO TO),PAGE+1, * J/FLGSO1 *****	<--	4040 313 137	4042	0000 00000	00 00 000000	01 10 11100	010 001 010110000	000000001000	0300 0
		-->	***** 1260 568 218 ***** VV 62 315 138							
.CASE 315	19 OF BOTH01 RTI01:0062 ***** *-----* *P1, BA+SP,CURRENT MODE, *P2, D+SP PLUS 2, *P3, SP+D (A ADDR), *P3, U,DATI, *NEXT, BUT(GO TO),PAGE+4, * J/RTI02 *****	<--	417 285 127	62	1001 10110	11 11 000110	10 00 11100	111 100 000100100	000010001011	0101 0
316	RTI02:4044 ***** *-----* *P3, MD+DATA, *NEXT, J/RTI03 *****	<-- VV		4044	0000 00000	11 10 100000	00 00 11000	000 000 000100101	000000001000	0000 0
317	RTI03:4045 ***** *-----* *P2, D+MD, *P3, PC+D (A ADDR), *NEXT, J/RTI04 *****	<-- VV		4045	1010 00000	11 10 000110	00 01 11000	111 000 000101100	000000001000	0100 0
		-->	4054 318 139							

# K12

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
318	RTI04:4054	F/RTI03 F/LDCPW1 F/UNDEFINED F/LOG27 F/MOV52	<-- <-- <-- <-- <--	4045 377 -1 3625 767	317 1889 -1 974 249	138 610 -1 321 114	2 1 1	4054		000010001011 1001 11 11 10 00 111 000 0101 0 10110 000110 11000 000101101
	***** * *-----* *P1, BA+SP CURRENT MODE, *P2, D+SP PLUS 2 *P3, SP+D (A ADDR), *P3, U,DATI, *NEXT, J/RTI05 *****									
319	RTI05:4055	F/RTI04	<-- VV	4055						000000001000 0000 11 10 00 00 000 000 0000 0 00000 100000 11000 000110100
	***** * *-----* *P3, MD+DATA, *NEXT, J/RTI06 *****									
320	I06:4064	F/RTI05	<-- VV	4064						000000001000 1010 11 10 00 00 000 000 0100 0 00000 000000 01110 011010010
	***** * *-----* *P2, D+MD *NEXT, BUTR(PS15), * J/RTI07 * J/RTI08 *****									
		J/RTI07 J/RTI08	--> -->	10 11	4322 4323	321 322	140 140			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
.CASE 321	RTI07:4322 F/RTI06	<--	4064 320 139	4322 1000 00 00 10 01 010 010 0000 0 11001 000000 11000 000110101
	* IF KERNEL MODE, RTI AND RTT MUST HAVE * *0 IN BIT * *11 * *-----*			
	*SELECT, PS, *NEXT, * J/RTI09	-->	4065 323 140	
.CASE 322	RTI08:4323 F/RTI06	<--	4064 320 139	4323 1000 00 00 10 01 010 000 0000 0 11001 000000 11000 000110101
	* IF USER * *MODE * *-----*			
	*SELECT, PS(LO), *NEXT, * J/RTI09	--> VV		
	*-----*			
	F/SCC04 <-- 4221 306 136 F/SCC05 <-- 4223 307 136 F/RTI07 <-- 4322 321 140 F/RTI08 <-- VV			
323	RTI09:4065	<-- VV		4065 0000 00 00 00 00 000 000 0000 0 11010 000000 11100 011000001
	* IF KERNEL MODE PS+D, IF USER MODE * *PS(LO)+D IF COMPLETING SET OR CLEAR * *CC'S THEN * *PS(CC)+D * *-----*			
	* NEXT, DATTB, BUT(GO TO), PAGE+D, * J/RTI10	-->	301 324 141	
	*-----*			

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF UPF	COUT	
324	RTI10:0301	F/RTI09 F/STCPW29 F/LOG03N	<-- <-- <--	4065 4157 3556	323 1832 942	140 593 314				
	*****							301	000000001000	
	* NULL TO ALLOW PS TO								0000 00 00 00 00 000 000 0000 0	
	*SETTLE								00000 000000 11000 011000111	
	*-----*									
	*NEXT,									
	*                    J/RES02		-->	307	342	146				
	*****									
.TOC "	SOB"									
.CASE	9 OF BOTH01									
325	SOB01:0050	F/OTH01	<--	417	285	127				
	*****							50	000000001000	
	*#OVERVIEW-IMPLEMENTATION SOB THE								0000 10 00 00 00 111 111 0000 0	
	*TECHNIQUE USED TO TEST FOR ZERO USED IN								00010 100000 11000 011000010	
	*SOB WAS DONE TO SAVE BRANCH TARGETS. IT									
	*WORKS AS FOLLOWS. 1 IS SUBTRACTED FROM									
	*THE SOURCE REGISTER AND BIT<00> OF THE									
	*RESULT IS PUT INTO D(C). NOW TO THE									
	*CONTENTS OF THE SOURCE REGISTER IS ADDED									
	*NOT 0 PLUS D(C). COUT15 IS PUT INTO									
	*D(C). NOW IF D(C) IS 0 THE CONTENTS OF									
	*THE SOURCE REGISTER WAS 0, OTHERWISE IT									
	*WAS NOT. IF THE BRANCH IS TO BE TAKEN									
	*THEN THE SUCCESSFUL BRANCH FLOW IS USED									
	*TO COMPLETE THE INSTRUCTION. #0-I END									
	*-----*									
	*P2,                MD+77,									
	*NEXT,									
	*                    J/SOB02		-->	VV						
	*****									
326	SOB02:0302	F/SOB01	<--	VV						
	*****							302	000000001000	
	*P2,                D+SR AND MD (BC),							1011 10 11 00 00 110 100 0100 0		
	*P3,                R/(DST)+D (B ADDR),							00010 011110 11100 000111000		
	*NEXT,             BUT(GO TO),PAGE+4,									
	*                    J/SOB03		-->	4070	327	142				
	*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COU	
327	S0B03:4070 ***** *P2, D+R(SF) MINUS 1,D(C)+ALU00, *P3, R(SF)+D (A ADDR), *NEXT, * J/S0B04 *****	<--	302 326 141	4070				00000000	1000	
					1101 11 00 10 11	000 010 0100 0				
					00000 000110 11000 000111001					
328	S0B04:4071 ***** *P2, D+R(SF) PLUS NOT 0 PLUS D(C), * D(C)+COUT15, *NEXT, * J/S0B05 *****	<-- VV		4071				00000000	1000	
					0101 10 00 10 11	000 110 0100 0				
					00001 000000 11000 000111100					
329	S0B05:4074 ***** *P2, D+NOT R(DST) (A),D(C)+D(C), *P3, R(DST)+D (A ADDR), *NEXT, BUTR(D(C)), * J/S0B07 * J/S0B06 *****	<-- VV	01 4261 332 143 11 4263 330 142	4074				00000000	1000	
					0000 00 00 11 01 110 111 0100 0					
					00000 010110 10011 010110001					
CASE 330	2 OF BS0B05 S0B06:4263 ***** *P2, D+R(DST) PLUS 1,D(C)+D(C), *NEXT, * J/S0B08 *****	<-- VV		4263				00000000	1000	
					1001 11 00 11 01 110 111 0100 0					
					00000 000000 11000 000111101					
					4075 331 143					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION				CLOCK	
				ADDR BUS	ALU BUS	BUSB SP	BUSA UBF		RIF UPF
331	S0808:4075 ***** *NEXT, BUT(GO TO),PAGE+0, * J/BRA02 *****	F/S0806 <--	4263 330 142	4075	0000 00000	00 00 000000	00 00 11100	000 000 000000010	0000 0 0000010
.CASE 332	1 OF BS0805 S0807:4261 ***** *NEXT, BUT(GO TO),PAGE+0, * J/BRA05 *****	F/S0805 <--	4074 329 142	4261	0000 00000	00 00 000000	00 00 11100	000 000 000000010	0000 0 00000011
.TOC " MARK" .CASE 333	1G OF BOTH01 MARK00:0051 ***** *P2, D+D,D(C)+ALU07, *NEXT, J/MARK01 *****	F/OTH01 <--	417 285 127	51	1111 00000	00 00 000000	01 01 11000	000 011 011000011	0100 0 01100011
334	MARK01:0303 ***** *P3, * D+PC PLUS (D SIGN EXTE * NO LEFT 1), *NEXT, BUT(GO TO),PAGE+4, * J/MARK02 *****	F/MARK00 <-- VV	4104 335 144	303	1001 00010	00 11 000000	01 00 11100	111 100 001000100	0100 0 00100100



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BWAIT02							
339	WAIT02:4402	F/WAIT01 F/WAIT02	<-- <--	61 338 144 4402 339 145				4402 0000 00 00 00 00 00000001000 00000 000000 1000C 100000010
	*NEXT, BUTR(SERVICE), * J/WAIT02			10 4402 339 145 11 4403 340 145				
.CASE	2 OF BWAIT02							
340	WAIT03:4403	F/WAIT01 F/WAIT02	<-- <-- VV	61 338 144				4403 0000 10 00 01 10 001 000 0000 0 00010 100000 11100 011010010
	*P3, MD+DATA (BC), RETURN+WAIT01, *NEXT, BUT(GO TO), PAGE+0, * J/SER03			322 388 163 VV 51 338 144				
.TOC "	RESET"							
.CASE	24 OF BOTH01							
341	RES01:0067	F/BOTH01	<--	417 285 127				67 0000 00 00 00 01 000 000 0000 0 11001 000000 01110 011000110
	*SELECT, EMIT *NEXT, BUTR(PS15), * J/RES03			10 306 343 146 11 307 342 146				



E13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 342	2 OF BRES01 RES02:0307	F/RES01	<--	67	341	145		
	***** * ALSO USED BY RTI10 TO COMPLETE * RTI *-----* * NEXT, BUTR(SERVICE), * J/FET01 * J/FET03 * J/SER01 * J/FET01 * J/SER02 *****							307 0000 00 00 00 00 000 000 0000 0 00000 000000 10000 111000010
.CASE 343	1 OF BRES01 RES03:0306	F/RES01	<--	67	341	145		
	***** * RETURN+BRAS * NEXT, BUT(GO TO),PAGE+3, * J/RES04 *****							306 0000 00 00 00 00 011 011 0000 0 00000 000000 11100 000000110
			-->	3006	344	147		
				VV	3	283	126	



G13

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344 RES04:3006
*****
* INIT ROUTINE WILL INITIALIZE STACK *
* LIMIT, MMRO, AND UNIBUS THEN GO TO *
* BRA05 *
*-----*
* P3, MD+120030, *
* NEXT, *
* J/INIT00 * --> 3420 834 284
*****

.TOC " HALT"
.CASE 28 OF BOTH01
345 HALT01:0074 F/OTH01 <-- 417 285 127
*****
*-----*
* NEXT, BUTR(PS15), *
* J/HALT02 *
* J/HALT02 * --> 10 132 346 147
* J/HALT03 * --> 11 133 347 148
*****

.CASE 1 OF BHALT01
346 HALT02:0132 F/HALT01 <-- VV
*****
* GO TO CONSOLE IF KERNEL MODE *
*-----*
* NEXT, BUT(GO TO),PAGE+1, *
* J/CON99 * --> 1040 382 159
*****

```

```

3006 000000001000
      1010 10 00 00 00 011 000 0000 0
      00010 100000 11000 100010000

```

```

74 000000001000
     0000 00 00 00 00 000 000 0000 0
     00000 000000 01110 001011010

```

```

132 000000001000
     0000 00 00 00 00 000 001 0000 0
     00000 000000 11100 000100000

```

# H13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BC	BUSB SP	BUSB UBF	EXTENSION RIF COUT CLOCKS
		OFST	ADDR	BOX					
.CASE 347	2 OF BHALT01 HALT03:0133	F/HALT01	<--	74	345	147			
	***** * TRAP TO 10 IF USER *MODE *-----* *P3, MD+10 (BC), *NEXT, * J/TRPOO *****						133	0000 10 00 00 00 00010 100000 11000	000000001000 001 000 0000 0 001010111
.TOC " .TOC " .CASE 348	TRAPS" IOT" 21 OF BOTH01 IOT01:0064	F/OTH01	<--	417	285	127			
	***** *-----* *P3, MD+20 (BC), *NEXT, * J/TRPOO *****						64	0000 10 00 00 00 00010 100000 11000	000000001000 010 000 0000 0 001010111
.TOC " .CASE 349	BPT" 20 OF BOTH01 BPT01:0063	F/OTH01	<--	417	285	127			
	***** *-----* *P3, MD+14 (BC), *NEXT, * J/TRPOO *****						63	0000 10 00 00 00 00010 100000 11000	000000001000 001 100 0000 0 001010111
.TOC " .CASE 350	TRAP" 15 OF BOTH01 TRAP01:0056	F/OTH01	<--	417	285	127			
	***** *-----* *P3, MD+34 (BC), *NEXT, * J/TRPOO *****						56	0000 10 00 00 00 00010 100000 11000	000000001000 011 100 0000 0 001010111

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC " 351	EMT" 14 OF BOTH01 EMT01:0055	F/OTH01 <--	417 285 127				
	*****						000000001000
	*-----*						0000 10 00 00 00 011 000 0000 0
	*P3, MD+30 (BC),						00010 100000 11000 001010111
	*NEXT, J/TRPOO	-->	127 357 151				
	*****						
.TOC " 352	ILLEGAL INSTRUCTIONS" 1 OF BJSR01 ILLO1:0650	F/JSR01 <--	57 255 117				
	*****						000000001000
	*-----*						0000 10 00 00 00 000 100 0000 0
	*P3, MD+4 (BC),						00010 100000 11000 001010111
	*NEXT, J/TRPOO	-->	127 357 151				
	*****						

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COC UPF	CLOCKS
353	YTRP00:0304	F/YZ03		1155 497 195					
	***** *OVERVIEW-FUNCTION SHARED TRAP FLOW THE * *SHARED TRAP FLOW REPLACES THE CURRENT PS * *AND PC WITH THE PS AND PC POINTED TO BY * *THE TRAP VECTOR (WHICH IS INTERPERTED AS * *A VIRTUAL ADDRESS IN KERNEL SPACE) * *PASSED TO IT. IT ALSO PUSHES THE * *REPLACED PS AND PC ON THE STACK * *SPECIFIED BY THE NEW PS. THE PREVIOUS * *MODE BITS OF THE NEW PS ARE MODIFIED SO * *THAT THEY ARE EQUAL TO THE CURRENT MODE * *BITS OF THE REPLACED PS. WHEN THE SHARED * *TRAP FLOW IS USED FOR YELLOW ZONE * *ERRORS, YELLOW ZONE ERRORS ARE * *INHIBITED. WHEN THE SHARED TRAP IS USED * *FOR RED ZONE AND ERROR ON ERROR'S * *CHECKING OF STACK OVERFLOWS IS * *INHIBITED. AT THE END OF THE SHARED TRAP * *FLOW THE ERROR TRAP IN PROGRESS BIT * *(WHAMI<09>) IS CLEARED. AT THE END OF * *THE SHARED TRAP FLOW CONTROL IS PASSED * *WHICH CASE CONTROL IS PASSED * *-----* *SELECT, * *                   EMIT AND * *ENABLE        CLKIR, * *NEXT, * *                   J/YTRP01 * --> VV ***** 354 YTRP01:0305                   F/YTRP00       <-- VV ***** *P3,            IR+100706, * *NEXT, * *                   J/TRP02 * -->       316 359 152 *****								
				304	0000 00 00	00 01	000 100	0000 0000 1000	0000 0
					11001 000000	11000	011000101		
				305	1000 00 00	01 11	000 110	0000 0000 1000	0000 0
					11010 000000	11000	011001110		

# K13

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
355	NTRP00:0310 F/RZ12 ***** * ENTRY POINT FOR NO KJ * * TRAPS * *-----* *P3, * *SELECT, * * * EMIT AND CLKIR * *ENABLE, * *NEXT, * * * J/NTRP01 * --> VV *****	<--		310	0000 00 00	00 01	000 100	0000 0 011001010
356	NTRP01:0312 F/NTRP00 ***** * BECAUSE IR<2:0> = 0 THE KJ CANNOT BE * *ENABLED * *-----* *P2, IR+700, * *NEXT, * * * J/TRP02 * --> 316 359 152 *****	<-- VV		312	0000 00 00	01 11	000 000	0000 0 011001110
CASE 357	2 OF BINTRO3 TRP00:0127 F/INTRO3 ***** * ENTRY POINT FOR KJ * * TRAPS * *-----* *P3, * *SELECT, * * * EMIT AND CLKIR * *ENABLE, * *NEXT, * * * J/TRP01 * --> 314 358 152 *****	<--		127	0000 00 00	00 01	000 100	0000 0 011001100









BOX NO	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
368	TRP09:4124 ***** *P3 *SELECT, PS(HI), *NEXT, * J/TRP10A *****	F/TRP08 ----- ----- ----- ----- -----	-- ----- ----- ----- -----	4122 367 154	4124	0000 00 00 00 01 11001 000000 11000	000000001000 000 010 0000 0 001010101	
369	TRP10A:4125 ***** *P2, SR+SP MINUS 2, *NEXT, * J/TRP10 *****	F/TRP09 ----- ----- ----- -----	-- VV ----- ----- -----		4125	1101 11 11 10 00 00000 000000 11000	000010001000 111 000 0010 0 001011100	
370	TRP10:4134 ***** * OLD PS IS PUSHED ON *STACK ----- *P1, BA+SR, CURRENT MODE, *ENABLE, KJ, *P2, SR+SR MINUS 2, *P3, U,DATO, *NEXT, * J/TRP12 *****	F/TRP10A ----- ----- ----- ----- ----- ----- ----- ----- -----	-- VV ----- ----- ----- ----- ----- ----- -----		4134	1101 11 11 00 00 10010 000000 11000	000001001011 000 000 1011 0 001011110	
371	TRP12:4136 ***** * D(15)+D(C) WHICH IS THE NEW STATUS (SEE *TRP07) D(13)+D(14) WHICH IS OLD *STATUS ----- *P3, D+D RIGHT 1 (P3), *NEXT, * J/TRP13 *****	F/TRP10 ----- ----- ----- ----- ----- ----- -----	-- VV ----- ----- ----- ----- ----- -----		4136	1111 00 00 01 10 00000 000000 11000	000000001000 000 000 1100 0 001100000	
			-->	4140 372 156				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
372	TRP13:4140 ***** * THIS WRITES PS<15> AND *PS<13> *-----*	F/TRP12 <--	4136 371 155	4140	0000 11010	00 00 000000	00 00 11000	000 000 001100010	000000001000	0000 0
373	TRP14:4142 ***** * PUSH OLD PC ON *STACK *-----*	J/TRP14 F/TRP13 <-- VV <-- VV		4142	1010 10010	00 11 000000	00 00 11000	111 000 000011001	000001001011	0101 0
374	TRP15A:4031 ***** * TRP15A MUST BE IN LOC 4031 NULL FOR *DATO *-----*	J/TRP15A F/TRP14 <-- VV <-- VV		4031	0000 00000	00 00 000000	00 00 11000	000 000 001100100	000000001000	0000 0
375	TRP15:4144 ***** *P2, D+SR, *P3, SP+D (A ADDR), *NEXT, BUTR(IR15), * J/TRP16 *-----*	J/TRP15 F/TRP15A <-- VV <-- VV		4144	1111 00000	00 00 000110	00 00 00001	111 000 100010111	000010001000	0100 0
	***** * J/TRP16 * UNDEFINED CASE *-----*	J/TRP16 <--	0111 4427 376 157							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
.CASE	2 OF BTRP06	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS	
379	WCS01:4633	F/TRP06 F/WCS05	<-- <--	4120 4431	365 381	154 158			
	***** * PREPARATION TO TEST TO SEE IF WCS/ECS * IS ENABLED IN * WCS03 *-----*							4633	000000001000
	*P2, D+WHAMI,D(C)+ALU07, *NEXT, * J/WCS02							1111 00 00 11 00 101 011 0100 0	
	*-----*							00000 000000 11000 001100101	
380	WCS02:4145	F/WCS01	<-- VV						
	***** * D GETS NEW * PS *-----*							4145	000000001000
	*P2, D+MD,D(C)+D(C), *NEXT, BUTR(D(C)), * J/WCS05							1010 11 10 00 00 000 111 0100 0	
	*-----*							00000 000000 10011 100011001	
	* J/WCS05							01 4431 381 158	
	* J/WCS00DPC01							11 4433 1223 392	
	*****								
.CASE 381	1 OF BWCS02 WCS05:4431	F/WCS02	<-- VV						
	***** * WCS/ECS NOT ENABLED, RETORED D AND * RETURN TO TRAP * FLOW *-----*							4431	000000001000
	*P2, D+R(VECT), *NEXT, * J/TRP07							1111 00 00 11 00 110 000 0100 0	
	*-----*							00000 000000 11000 110011001	
	*****								
	* J/TRP07							4631 366 154	
	*****								

# F14

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BOX NO.	TAG: ADDRESS "CONSOLE"	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
382	CON99:1040	F/HA102 F/PST23 F/UB12	<-- <-- <--	132 346 147 1655 439 177 1721 555 213	1040		000000001000	
	*P3, MD+200 (BC),				0000 17 00 00 10	000 000 0000 0		
	*NEXT,				00010 107000 11000	000000000		
	* J/CON99B		--> VV					
383	CON99B:1000	F/CON99 F/JDEF03	<-- <--	1040 382 159 1735 1227 393	1000		000000001000	
	*P2, SR+R(CNTL),				1010 01 11 00 00	111 000 0010 0		
	*NEXT,				00000 000000 11000	000000100		
	* J/CON99C		--> VV					
384	CON99C:1004	F/CON99B	<-- VV		1004		000000001000	
	*P2, D+SR OR MD(D),				1110 10 11 00 00	111 000 0100 0		
	*P3, R(CNTL)+D,				00010 011100 11000	110110100		
	*NEXT,							
	* J/CSRO1		-->	1664 980 323				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
---------	--------------	---------------------------------------	-----------------------	--------------	---------	----------	-------------------------------

.TOC "SERVICE (INCLUDING INTERRUPT)"

::#0-I END

.CASE 2 OF BCMP01

F/FET02	<--	1	2	10			
F/CMP01	<--	442	74	52			
F/BIT01	<--	443	75	52			
F/BIC01	<--	444	76	53			
F/BIS01	<--	445	77	53			
F/ADD01	<--	446	78	54			
F/SUB01	<--	456	79	54			
F/CMPB01	<--	452	80	55			
F/BITB01	<--	453	81	55			
F/BICB01	<--	454	82	56			
F/BISB01	<--	455	83	56			
F/CLR01	<--	550	117	70			
F/COM01	<--	551	118	70			
F/INC01	<--	552	119	71			
F/DEC01	<--	553	120	71			
F/ADC01	<--	555	123	72			
F/TST01	<--	557	127	73			
F/ROL01	<--	541	129	74			
F/ASL01	<--	543	134	76			
F/CLRB01	<--	570	135	76			
F/COMB01	<--	571	136	77			
F/INCB01	<--	572	137	77			
F/DECB01	<--	573	138	78			
F/ADCB01	<--	575	141	79			
F/TSTB01	<--	577	145	80			
F/ROLB01	<--	561	147	81			
F/ASLB01	<--	563	152	83			
F/MOV01	<--	441	188	95			
F/BRA06	<--	210	284	126			
F/MFAT15	<--	2034	583	223			

385 SER01:0701

```

*****
*#OVERVIEW-FUNCTION SERVICE DISPATCH *
*SERVICE DISPATCH DETERMINES THE HIGHEST *
*PRIORITY EVENT THAT CAUSED SERVICE TO BE *
*REQUESTED AND THEN PASSES CONTROL TO THE *
*ROUTINE THAT HANDLES THAT EVENT EACH *
*EVENT THAT CAUSES SERVICE TO BE *
*REQUESTED SETS A FLAG THAT LATER READ BY *
*SERVICE DISPATCH TO DETERMINE WHICH *
*EVENT REQUESTED SERVICE. IF ANY OF *
*THESE FLAGS ARE SET, ANY OF THE BUT'S *
*WHICH TEST SERVICE WILL BE TRUE. A BUT *
*ON SERVICE IS DONE AT THE END OF EVERY *
*MACRO INSTRUCTION AND AT THE END OF THE *
*SHARED TRAP FLOW. #0-F END *
*#OVERVIEW-IMPLEMENTATION SERVICE *
*DISPATCH THERE ARE TWO ENTRY POINTS TO *
*SERVICE DISPATCH. SER01 BACKS UP THE PC *
*AND ABORTS THE HFP. SER02 DOES NOT *
*BACK UP THE PC. SER01 IS USED WHEN *
*SERVICE IS REQUESTED AT THE END OF A *
*MACRO INSTRUCTION *
*-----*
*P2, C+PC MINUS 2, *
*P3, PC+D (A ADDR), *
```

```

701 000000001000
1101 11 11 10 01 111 000 0100 0
00000 000110 11000 011010001
```



\*NEXT,

\*

J/SERO2A

\*

-->

H14  
321 386 161

\*\*\*\*\*



BOX NO. TAG:ADDRESS .CASE 4 OF BCMP01

SOURCE/DESTINATION OFST ADDR BOX PAGE MICROFICHE COORD CARD ADDR ALU BUS BUSB SP BUSA UBF EXTENSION PIF COUT CLOCKS UPF

Table listing microcode instructions: F/FET02, F/CMP01, F/BIT01, F/BIC01, F/BIS01, F/ADD01, F/SUB01, F/CMPB01, F/BITB01, F/BICB01, F/BISB01, F/CLR01, F/COM01, F/INC01, F/DECO1, F/ADCO1, F/TST01, F/RCL01, F/ASL01, F/CLRB01, F/COMB01, F/INCB01, F/DECB01, F/ADCB01, F/TSTB01, F/ROLB01, F/ASLB01, F/MOV01, F/BRA06, F/MFAT15. Includes source/destination and page information.

387 SER02:0703

\*\*\*\*\*
\*
\*-----\*
\* RETURN+SER04,
\* NEXT, BUT(GO TO), PAGE+0,
\* J/SER03
\*\*\*\*\* -->

\*\*\*\*\*
322 388 163
\*\*\*\*\*
VV
21 394 165

703
0000 00 00 00 10 001 000 0000 0
00000 000000 11100 011010010

K14

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BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
		F/WAIT03	<--	4403	340	145						
		F/SER02	<--	703	387	162						
		F/SER02F	<--	4723	1317	428						
*****												
*	SUBROUTINE SER03		*									
		RETURN/WAIT01	* -->	61	338	144						
		RETURN/SER04	* -->	21	394	165						
		RETURN/SER04	* -->	21	394	165						
*****												

L14

388

SER03:0322

```
*****  
*  
*-----*  
*SELECT,      EMIT,      *  
*NEXT,        BUTR(INTERRUPT IS HIGHEST), *  
*              J/SER04   *  
*              J/SER04   * -->  
*              J/INTRO1  * -->  
*****
```

```
01 21 394 165  
11 23 389 164
```

322

```
000000001000  
0000 00 00 00 01 000 000 0000 0  
11001 000000 10110 000010001
```



```

389  INTRO1:0023
*****
*P3      MD+40000,
*NEXT,
*      J/INTRO1A      * --> VV
*****
390  INTRO1A:0323      F/INTRO1      <-- VV
*****
*-----*
*      ALLOW BUS GRANT,
*NEXT,
*      J/INTRO2      * --> VV
*****
391  INTRO2:0324      F/INTRO1A      <-- VV
*****
* GET
*VECTOR
*-----*
*P2,      RES+MD,
*P3,      MD+VECTOR ADDRESS,
*NEXT,
*      J/INTRO3      * --> VV
*****
392  INTRO3:0325      F/INTRO2      <-- VV
*****
*-----*
*NEXT,      BUT(INTERRUPT VALID),
*      J/INTRO4
*      J/INTRO4      * -->
*      J/TRPOD      * -->
*****

```

```

23      000000001000
0100  10 00  00 00  000 000  0000 0
00010 100000 11000 011010011

```

```

323     000000001000
0100  00 01  10 00  000 000  0000 0
11011 000000 11000 011010100

```

```

324     000000001000
0000  11 10  00 00  000 000  0000 0
00000 110001 11000 011010101

```

```

325     000000001000
0000  00 00  00 00  000 000  0000 0
00000 000000 10001 001010101

```

```

01 125 393 165
11 127 357 151

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
CASE		CFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
393	INTRO4:0125 F/INTRO3	<-- 325 392 164		125				000000001000
	* MAY WANT TO REPORT THESE * * * *			0000	00 00	00 01	000 000	0000 0
	*NYI			11001	000000	11111	000000000	
	*-----*							
	*SELECT, EMIT,							
	*NEXT,							
	* BUT(RETURN)	--> VV						
394	SER04:0021 F/SER03	<-- 322 388 163		21				000000001000
	*P3, MD+40000,			0100	10 00	00 00	000 000	0000 0
	*NEXT,			00010	100000	11000	011010110	
	* J/SER05	--> VV						
395	SER05:0326 F/SER04	<-- VV		326				000000001000
	* DONE TO INITIALIZE RES WITHOUT DOING			0000	11 10	00 00	000 001	0000 0
	*BUT CLEAR			00000	010001	11100	000000101	
	*FLAGS							
	*-----*							
	*P2, RES+MD,							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/SER06	--> VV						
396	SER06:1005 F/SER05	<-- VV		1005				000000001000
	* USED TO MASK ON UPPER BITS OF SERVICE			0001	10 11	11 11	100 000	0000 0
	*REGISTER			00010	100000	11000	000001000	
	*-----*							
	*P3, MD+17740,							
	*NEXT,							
	* J/SER07	--> 1010 397 166						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
397	SER07:1010	F/SER06	<--	1005 396 165	1010	0100	01 00 00 00	000000001000
	*SELECT, KBUS(STATUS),					11001	000000 11000	000 000 0000 0
	*NEXT, J/SER08		--> VV					000001001
398	SER08:1011	F/SER07	<-- VV		1011	1010	11 10 00 00	000000001000
	*SETUP, TEST MASKED PS(T),					00000	100000 11000	000 000 0010 0
	*P2, SR+MD,							000001100
	*P3, MD+KBUS(STATUS),							
	*NEXT, J/SER09		--> VV					
399	SER09:1014	F/SER08	<-- VV		1014	0000	00 00 00 00	000000001000
	*NEXT, BUTH(MASKED PS(T)),					00000	000000 01100	000 000 0000 0
	* J/SER10		--> VV					000100110
.CASE 400	1 OF BSER09							
400	SER10:1046	F/SER09	<-- VV		1046	0001	00 00 00 01	000000001000
	* RETURN+SER11,					00000	000000 11100	110 001 0000 0
	*NEXT, BUT(GO TO),PAGE+1,							001011100
	* J/DISPO1		-->					
				*****				
				1134 485 191				
				*****				
				VV				
				1016 401 167				



E15

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
402	JAM01:0777			777	0000 00 00	00 00	000 001	00000001000 0000 0
	*#OVERVIEW-FUNCTION JAM DISPATCH JAM				0000 00 00	1100	00001000	
	*DISPATCH DETERMINES THE HIGHEST PRIORITY							
	*EVENT THAT CAUSED A JAM IN THE MACHINE							
	*AND THEN PASSES CONTROL TO THE ROUTINE							
	*THAT SERVICES THAT EVENT. A JAM IS A							
	*HARDWARE FORCED TRANSFER OF CONTROL TO							
	*LOCATION 777, WHICH IS THE BEGINNING OF							
	*THE JAM DISPATCH ROUTINE. EACH OF THE							
	*EVENTS WHICH CAUSE A JAM, WITH THE							
	*EXCEPTION OF INTERNAL ADDRESS, ALSO SET							
	*A FLAG WHICH IS LATER READ BY JAM							
	*DISPATCH TO DETERMINE WHICH EVENT CAUSED							
	*THE JAM. IN GENERAL THOSE EVENTS (EXCEPT							
	*INTERNAL ADDRESS) WHICH CAUSE A JAM							
	*CANNOT BE RECOVERED FROM AND THEREFORE							
	*CAUSE THE MACRO INSTRUCTION CURRENTLY							
	*BEING EXECUTED TO BE ABORTED. #0-F END							
	*#OVERVIEW-IMPLEMENTATION JAM DISPATCH							
	*THE FIRST THING JAM DISPATCH CHECKS IS							
	*TO SEE IF A POWER UP OCCURED. IF ONE							
	*THE MACHINE							
	*-----*							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/JAM01A		-->	VV				
403	JAM01A:1020	F/JAM01	<--	VV	1020	0000 00 00	00 00	000 000 0000 0
	*SELECT, NULL UCON,					11001 000000	11000	000010100
	*NEXT,							
	* J/JAM01B		-->	VV				
404	JAM01B:1024	F/JAM01A	<--	VV	1024	0000 00 00	00 00	000 111 0000 0
	* TEST INIT,					00000 000000	11000	000010101
	*NEXT,							
	* J/JAM02		-->		1025 405 169			







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
418	JAM17:1035 ***** *P2, D+D RIGHT 1,D(C)+ALU00, *NEXT, * J/JAM18 *****	<--	1207 417 171	1035	1111 00 00 00000	01 10 000000	000 010 11000	000000001000 000100001	0100 0	
419	JAM18:1041 ***** *P2, D+WHAMI OR 2,D(C)+D(C), *P3, WHAMI+D (A ADDR), *NEXT, BUTR(D(C)), * J/JAM06 * J/E0E01 *****	<-- VV		1041	1110 11 11 00000	11 00 010010	101 111 10011	000000001000 100011001	0100 0	
		-->	01 1431 420 172							
		-->	11 1433 519 202							
CASE 420	1 OF BJAM18 JAM06:1431 ***** *SELECT, EMIT, *NEXT, * J/JAM07 *****	<-- VV		1431	0000 00 00 11001	00 01 000000	000 000 11000	000000001000 000100100	0000 0	
421	JAM07:1044 ***** *P3, MD+177000, *NEXT, * J/JAM08 *****	<-- VV		1044	1111 10 11 00010	10 00 100000	000 000 11000	000000001000 000100101	0000 0	
422	JAM08:1045 ***** *SELECT, KBUS(JAM), *NEXT, * J/JAM09 *****	<-- VV		1045	1100 00 00 11001	00 00 000000	000 000 11000	000000001000 000101000	0000 0	
		-->	1050 423 173							

# J15

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS	
							RIF	COUT		
423	JAM09:1050	F/JAM08	<--	1045 422 172						
	*****				1050			00000000	1000	
	*P2, SR+MD,	*			1010	11 10	00 00	000 000	0010 0	
	*P3, MD+KBUS(JAM),	*			00000	100000	11000	000101001		
*NEXT,	J/JAM10		--> VV							
424	JAM10:1051	F/JAM09	<-- VV							
	*****				1051			00000000	1000	
	* RETURN+JAM11,	*			0001	10 00	01 01	100 001	0000 0	
	*P2, COUNTER+0(D),	*			00001	000101	11100	001011100		
*NEXT, BUT(GO TO),PAGE+1,										
* J/DISPO1			-->	*****						
*****				1134 485 191						
*****				VV						
*****				1054 425 173						
425	JAM11:1054									
	*****				1054			00000000	1000	
	*NEXT, BUT(CASE),	*			0000	00 00	00 00	000 000	0000 0	
	* J/UBO1	*			00000	000000	00.00	011010000		
	* J/UBO1	* -->	0000	1320	546	211				
	* J/CSPEO1	* -->	0001	1321	545	210				
	* J/GAO1	* -->	0010	1322	518	201				
	* J/RZO1	* -->	0011	1323	522	203				
	* J/KTO1	* -->	0100	1324	527	204				
	* J/IIAAO1	* -->	0101	1325	533	207				
	* J/JCPEO1	* -->	0110	1326	528	205				
	* J/SSTO1	* -->	0111	1327	530	206				
	* J/MPEO1	* -->	1000	1330	531	206				
	* J/JDEFO1	* -->	1001	1331	532	206				
	* UNDEFINED CASE	*								
	* UNDEFINED CASE	*								
	* UNDEFINED CASE	*								
* UNDEFINED CASE	*									
* UNDEFINED CASE	*									
* UNDEFINED CASE	*									
*****										



# K15

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.TOC	POWER UP**	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
426	PST01:1056			1056				000000001000
	*****			0011	00 00	00 00	111 000	0100 0
	*OVERVIEW-FUNCTION *POWER UP THE POWER *			00000	010010	11000	000110000	
	*UP ROUTINE DETERMINES WHETHER THE *							
	*MACHINE WILL RUN (TRAP TO 24) BOOT (TRAP *							
	*TO 777224) OR GO TO THE CONSOLE LOOP. *							
	*IT DOES THIS BY CHECKING FOR THE *							
	*PRESENCE OF THE CONSOLE, POSITION OF THE *							
	*SLIDE SWITCH, WHETHER THE CONSOLE IS *							
	*LOCKED OR NOT, AND THE CONDITION OF THE *							
	*BACK-UP BATTERY IF THERE IS ONE. IF NO *							
	*CONSOLE IS PRESENT THEN THE MACHINE *							
	*TRAPS TO 24. IF THE CONSOLE IS PRESENT *							
	*BUT IS LOCKED, THEN THE MACHINE TRAPS TO *							
	*24 UNLESS THE BACK-UP BATTERY IS BAD, IN *							
	*WHICH CASE THE MACHINE WILL BOOT (TRAP *							
	*TO 777224). IF THE CONSOLE IS PRESENT *							
	*AND THE SLIDE IS IN THE HALT POSITION *							
	*THEN THE MACHINE WILL GO TO THE CONSOLE *							
	*LOOP. IF THE CONSOLE IS PRESENT AND THE *							
	*SLIDE SWITCH IS IN THE RUN POSITION THE *							
	*MACHINE WILL TRAP TO 24. IF THE CONSOLE *							
	*THE BOOT *							
	-----							
	*P2, D+D, *							
	*P3, R(SW)+D, *							
	*NEXT, *							
	* J/PST01A --> VV *							
427	PST01A:1060 F/PST01 <-- VV			1060				000000001000
	*****			0100	00 00	00 00	000 000	0000 0
	*SELECT, CONSOLE DATA, *			11001	000000	11000	000110001	
	*NEXT, *							
	* J/PST02 --> VV *							
428	PST02:1061 F/PST01A <-- VV			1061				000000001000
	*****			0000	11 10	00 00	000 000	0000 0
	*P3, MD+DATA, *			00000	100000	11000	000110100	
	* J/PST03 --> *	1064	429	175				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
429	PST03:1064 ***** *P2, D+MD, *NEXT, * J/PST04 *****	<--	1061 428 174	1064				00000000	1000	
					1010 11 10 00 00		000 000	0100	0	
					00000 000000 11000		000110101			
430	PST04:1065 ***** * SR<2:0> GETS CONSOLE *DATA<7:5> ----- *P2, SR+D RIGHT 5, *NEXT, * J/PST05 *****	<-- VV		1065				00000000	1000	
					1111 00 00 01 10		000 000	0010	0	
					01000 000000 11000		000111000			
431	PST05:1070 ***** * JAM<9>=BATTERY BACKUP POWER GOOD BRANCH *ON PANEL *LOCK ----- *SELECT, JAM REG, *NEXT, BUTR(SR0), * J/PST06 * J/PST07 *****	<-- VV		1070				00000000	1000	
					1100 00 00 00 00		000 000	0000	0	
					11001 000000 00000		100111110			
			1110 1476 432 175							
			1111 1477 437 177							
CASE 432	1 OF BPST05 PST06:1476 ***** * PANEL *LOCKED ----- *P3, MD+DATA, *NEXT, * J/PST08 *****	<-- VV		1476				00000000	1000	
					0000 11 10 00 00		000 000	0000	0	
					00000 100000 11000		000111010			
			1072 433 176							

# M15

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 176

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
								RIF	UPF	
433	PST08:1072 ***** *P2 D+MD, *NEXT, * J/PST09 *****	<--	1476 432 175	1072	1010 00000	11 10 000000	00 00 11000	000 000 000111100	0100 0	0
434	PST09:1074 ***** *P2 D+D RIGHT 2,D(C)+ALU07, *NEXT, * J/PST10 *****	<-- VV		1074	1111 00000	00 00 000000	01 11 11000	000 011 000111101	0100 0	0
435	PST10:1075 ***** * EITHER BOOT(BACKUP POWER FAILED) OR *TRAP TO 24(BACKUP POWER *OK) *-----* *SELECT, EMIT *NEXT, BUTR(D(C)), * J/PST11 * J/PST12 *****	<-- VV		1075	0000 11001	00 00 000000	00 01 10011	000 000 101000001	0000 0	0
.CASE 436	1 OF BPST10 PST11:1501 ***** * BACKUP POWER WAS BAD, GO TO *BOOT *-----* *NEXT, * J/BOOT04 *****	<-- VV	01 1501 436 176 11 1503 441 178	1501	0000 00000	00 00 000000	00 00 11000	000 000 110101011	0000 0	0
		<--	1653 456 181							

# N15

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 177

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
							RIF UPF	COUT CLOCKS	
.CASE 437	2 OF BPST05	F/PST05	<--	1070 431 175					
	PST07:1477						1477	000000001000	
	* PANEL NOT LOCKED TEST POSITION OF SLIDE							0000 00 00 00 01 000 000 0000 0	
	* SWITCH							11001 000000 00000 110101001	
	-----*								
	* SELECT, EMIT,								
	* NEXT, BUTR(SR2#SR1),								
	* J/PST21								
	* J/PST21		-->	1001 1651 438 177					
	* J/BOOT04		-->	1011 1653 456 181					
.CASE 438	1 OF BPST07	F/PST07	<-- VV						
	PST21:1651						1651	000000001000	
	* SWITCH RUN POSITION, TRAP TO							0000 00 00 00 00 000 000 0000 0	
	* 24							00000 000000 11000 101000011	
	-----*								
	* NEXT,								
	* J/PST12		-->	1503 441 178					
	-----*								
	.CASE 439	3 OF BPST07	F/PST07	<--	1477 437 177				
		PST23:1655						1655	000000001000
* SWITCH IN HALT POSITION, GO TO								0000 00 00 00 00 000 000 0000 0	
* CONSOLE								00000 000000 11000 000100000	
-----*									
* NEXT,									
* J/CON99			-->	1040 382 159					
-----*									
.CASE 440		4 OF BPST07	F/PST07	<--	1477 437 177				
		PST24:1657						1657	000000001000
	* NO CONSOLE PRESENT, TRAP TO							0000 00 00 00 00 000 000 0000 0	
	* 24							00000 000000 11000 101000011	
	-----*								
	* NEXT,								
	* J/PST12		-->	1503 441 178					
	-----*								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSE SP	RUSA LBF	EXTENSION RIF COUT CLOCKS UPF
441	PST12:1503 *TRAP TO 24 FOR POWER UP *P3, MD+24, *NEXT, J/PST13	F/PST10 <--	1075 435 176	1503	0000	10 00	00 00	010 100 0000 0 00010 100000 11000 000111110
442	PST13:1076 *P2, D+MD, SR+MD, *NEXT, J/PST14	F/PST12 F/BOOT05 <--	1503 441 178 1120 457 181	1076	1010	11 10	00 00	000 000 0110 0 00000 000000 11000 000111111
443	PST14:1077 * PSW WAS INITIALIZED TO #0 *P1, BA+SR, CURRENT MODE, *P2, SR+SR, PLUS 2, *P3, U, DATA, *NEXT, J/PST15	F/PST13 <-- VV		1077	1001	11 11	00 00	000 000 0011 0 10110 000000 11000 001000000
444	PST15:1100 * MD GETS POWER UP *PC *P3, MD+DATA, *NEXT, J/PST16A	F/PST14 <-- VV		1100	0000	11 10	00 00	000 000 0000 0 00000 100000 11000 001000010
			1102 445 179					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
445	PST16A:1102	F/PST15	<--	1100	444	178		
	*P2, D+MD,			1102				000000001000
	*NEXT,				1010	11 10	00 00	000 000 0100 0
	* J/PST16		--> VV		00000	000000	11000	001000100
446	PST16:1104	F/PST16A	<-- VV					
	* CURRENT MODE IS KERNEL PC IS LOADED			1104				000000001011
	*FOR POWER				0000	00 11	00 00	111 000 0001 0
	*UP				10110	001110	11000	001000101
	*P1, BA+SR, CURRENT MODE,							
	*P3, PC+D (B ADDR),							
	*P3, U, DATI,							
	*NEXT,							
	* J/PST17A		--> VV					
447	PST17A:1105	F/PST16	<-- VV					
	* MD GETS POWER UP			1105				000000001000
	*PSW				0000	11 10	00 00	000 000 0000 0
	*P3, MD+DATA,				00000	100000	11000	001000110
	*NEXT,							
	* J/PST17		--> VV					
448	PST17:1106	F/PST17A	<-- VV					
	*SELECT, PSW,			1106				000000001000
	*NEXT,				1000	00 00	10 01	010 010 0000 0
	* J/PST18		-->	1107	449	180		001000111

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
								PIF	COUT	
449	PST18:1107 ***** *P2, D+MD, *NEXT, * J/PST19 *****	<-- F/PST17	1106 448 179	1107	1010 00000	11 10 000000	00 00 11000	000 000 00100	00000000	1000 0
450	PST19:1110 ***** * PSM IS LOADED FOR POWER *UP ----- *P2, PS+D, *NEXT, * J/PST19A *****	<-- VV --> VV		1110	0000 11010	00 00 000000	00 00 11000	000 000 00100	00000000	1000 0
451	PST19A:1111 ***** *NEXT, BUT(GO TO),PAGE+0, * J/FET01 *****	<-- VV -->	702 1 2	1111	0000 00000	00 00 000000	00 00 11100	000 000 1110000	00000000	1000 0
.TOC 452	"BOOT" BOOT01:1112 ***** *#OVERVIEW-FUNCTION BOOT BOOT INITIALIZES *THE MACHINE THEN POWERS UP THE MACHINE *WITH THE PC AND PS IN MEMORY LOCATIONS *773224 AND 773226. #0-F END *#OVERVIEW-IMPLEMENTATION BOOT FIRST BOOT *INITIALIZES THE MACHINE USING INIT, THEN *IT PASSES 173224 TO THE FLOW IN PST THAT *STARTS THE MACHINE. #0-I END ----- *SELECT, EMIT, *NEXT, * J/BOOT02 *****			1112	0000 11001	00 00 000000	00 01 11000	000 000 00100	00000000	1000 0
		-->	1114 453 181							





F16

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADCR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
458	CONDIA01:3613 F/JAM04 ***** *#OVERVIEW-FUNCTION CONSOLE DIAGNOSTIC * *THE CONSOLE DIAGNOSTIC IS MEANT TO BE * *USED TO VERIFY THE HARDWARE IN THE * *CONSOLE. IN PARTICULAR IT CAN BE USED * *TO TEST AND VERIFY THAT THE CONSOLE * *SWITCHES ARE GENERATING THE CORRECT * *CODES AND THE DISPLAYS ARE GENERATING * *THE CORRECT CHARACTERS. IT IS MEANT TO * *BE USED ONLY AFTER IT HAS BEEN VERIFIED * *THAT INITIALIZATION IS WORKING. THIS * *DIAGNOSTIC WILL NOT WORK IF * *INITIALIZATION WILL NOT WORK. WHEN * *INVOKED, THIS DIAGNOSTIC CONTINUOUSLY * *MOVES THE TEMPORARY SWITCH REGISTER TO * *THE DISPLAY. WHENEVER A CONSOLE BUTTON * *IS DEPRESSED THE SEVEN DIGIT CODE * *GENERATED BY THE KEY PAD IS READ. THIS * *CODE IS THEN CONCATENATED WITH A ZERO IN * *BIT POSITION <5> AND LEFT SHIFTED INTO * *THE TEMPORARY SWITCH REGISTER. THE * *DIAGNOSTIC THEN GOES BACK TO CONTINUOUSLY * *-----* * RETURN+CONDIAG02, * *NEXT, BUT(GO TO),PAGE+1, * * J/PWRSUB01 * ***** -->	<--	3007 411 170				3613 00000001000 0011 00 00 00 10 001 001 0000 0 00000 000000 11100 001010001
459	CONDIA02:3021 ***** *P2 D+0 * *NEXT, BUTR(SR1) * * J/CONDIAG03 * * J/CONDIAG03 * --> 1101 3575 460 183 * J/CONDIAG04 * --> 1111 3577 461 183 *****		3021 459 182				3021 000000001000 0011 00 00 00 00 000 000 0100 0 00000 000000 00000 101111101

# G16

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
							RIF	COUT	
.CASE 460	1 OF BCONDIAG02 CONDIAG03:3575	F/CONDIAG02	<--	3021 459 182					
	***** * PUTS ALL 1'S IN THE *SR *-----* *F2,            SR+NOT D, *NEXT, *                    J/CONDIAG05								
			-->	3022 462 183					
.CASE 461	2 OF BCONDIAG02 CONDIAG04:3577	F/CONDIAG02	<--	3021 459 182					
	***** *NEXT, *                    J/CONDIAG01								
			-->	3613 458 182					
462	CONDIAG05:3022	F/CONDIAG03	<--	3575 460 183					
	***** *            RETURN+CONDIAG06, *NEXT,        BUT(GO TO),PAGE+3, *            J/INIT01								
	*****		-->	3412 835 285					
				VV					
				3023 463 183					
463	CONDIAG06:3023								
	***** *F2,            D+D, *P3,            R(DISPLAY)+D, *NEXT, *                    J/CONDIAG07								
	*****		-->	3025 464 184					

```

3575          000000001000
0000 00 00 01 01 000 000 1010 0
00000 000000 11000 000010010

3577          000000001000
0000 00 00 00 00 000 000 0000 0
00000 000000 11000 110001011

3022          000000001000
0011 00 00 00 10 011 011 0000 0
00000 000000 11100 100001010

3023          000000001000
0011 00 00 00 01 101 000 0100 0
00000 010110 11000 000010101
    
```





# J16

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION	
					BUS	SP	UBF	RIF	COUT
472	CONDIAG15:4150	F/CONDIAG14	<--	3042 471 185	4150			00000000	1000
	*P2, D+SR OR R(DISPLAY)	*			:110	01 11	00 00	101 011	0100 0
	*P3, R(DISPLAY)+D (B ADDR),	*			00000	011110	11100	000100011	
	*NEXT, BUT(GO TO), PAGE+3,	*							
	* J/CONDIAG16A	* --> VV							
473	CONDIAG16A:3043	F/CONDIAG15	<-- VV		3043			00000000	1000
	* CLEAR CSR,	*			0100	00 00	00 00	110 011	0000 0
	*NEXT, J/CONDIAG16	* --> VV			11011	000000	11000	10110010	
.CASE	1 OF BCONDIAG09								
474	CONDIAG16:3502	F/CONDIAG09 F/CONDIAG16A	<-- <-- VV	3027 466 184	3502			00000000	1000
	* RETURN+CONDIAG07	*			0011	00 00	00 10	101 001	0000 0
	*NEXT, BUT(GO TO), PAGE+1,	*			00000	000000	11100	101000101	
	* J/SBRAD1	*							
	*****	*****	-->	1505 1132 367					
	*****	*****		VV					
	*****	*****		3025 464 184					

# K16

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
475	NOSWPO1:3615	F/JAM04	<--	3007 411 170				
	*****							
	*#OVERVIEW-FUNCTION NO SWEEP POWER UP THE *							
	*NO SWEEP POWER UP, WHEN INVOKED, WILL *							
	*CAUSE THE MACHINE TO SKIP THE *							
	*INITIALIZATION OF CACHE, WCS, AND THE *							
	*WAIT FOR THE POWER FAIL LOGIC. IT IS *							
	*MEANT TO BE USED WHEN, IN THE PROCESS OF *							
	*LOOKING FOR THE CAUSE FOR A MACHINE *							
	*FAILURE, IT IS NECESSARY TO SINGLE *							
	*MICROSTEP THROUGH THE POWER UP *							
	*INITIALIZATION TO GET TO CONSOLE. THE *							
	*SECTIONS OF INITIALIZATION MENTIONED *							
	*ABOVE ARE SKIPPED BECAUSE TO GO THROUGH *							
	*THEM WOULD REQUIRE MANY THOUSANDS OF *							
	*MICROSTEPS. #0-F END *							
	*#OVERVIEW-IMPLEMENTATION NO SWEEP POWER *							
	*UP THE DIRECTIONS FOR INVOKING NO SWEEP *							
	*POWER UP ARE GIVEN BELOW. 1. TURN OFF *							
	*THE MACHINE (USE KEY SWITCH). 2. PUT *							
	*CONSOLE SLIDE SWITCH IN HALT POSITION. *							
	*3. PUT CLOCK IN SINGLE MICROSTEP MODE. *							
	*4. JUMPER BUS DIN<14> TO GROUND. *							
	*-----*							
	RETURN+NOSWPO2							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/PWRSUB01							
	*****							
			-->	1121 480 189				
	*****							
				VV				
				3045 476 187				
476	NOSWPO2:3045							
	*****							
	*NEXT, BUTR(SR2),							
	* J/NOSWPO3							
		J/NOSWPO3	* -->	1011 3653 477 188				
		J/NOSWPO4	* -->	1111 3657 478 188				
	*****							

```

3615 0011 00 00 01 00 101 001 0000 0
      0000 000000 11100 001010001
    
```

```

3045 0000 00 00 00 00 000 000 0000 0
      00000 000000 00000 110101011
    
```

# L16

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
				UBF UPF
.CASE 477	1 OF BNOSWP02 NOSWP03: 3653	F/NOSWP02 <--	3045 476 187	3653 0000 00 00 00 01 000 000 0000 0 11001 000000 11000 000100110
	*SELECT, EMIT, *NEXT, * J/NOSWP05 *	-->	3046 479 188	
.CASE 478	2 OF BNOSWP02 NOSWP04: 3657	F/NOSWP02 <--	3045 476 187	3657 0000 00 00 00 00 000 000 0000 0 00000 000000 11000 110001101
	*NEXT, * J/NOSWP01 *	-->	3615 475 187	
479	NOSWP05: 3046	F/NOSWP03 <--	3653 477 188	3046 1101 10 10 11 01 111 111 0000 0 00010 100000 11000 000001011
	*P3, MD+155577, *NEXT, * J/JAM25 *	-->	3013 415 171	

M16

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 189

BOX NO.	TAG: ADDRESS .TOC - PWRSUB		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX						PAGE	RIF	COUT
		F/JAMC3	<--	1037	410	170							
		F/CONDIAG01	<--	3613	458	182							
		F/NOSWPO1	<--	3615	475	187							
*****													
*	SUBROUTINE PWRSUB01		*										
		RETURN/JAM04	* -->	3007	411	170							
		RETURN/CONDIAG02	* -->	3021	459	182							
		RETURN/NOSWPO2	* -->	3045	476	187							
*****													



B01

```
480 PWRSUB01:1121
*****
*#OVERVIEW-IMPLEMENTATION PWRSUB PWRSUB *
*READS BUS DIN AND MOVES BUS DIN<14:13> *
*DOWN TO SHIFT REGISTER<2:1> SO THAT JAM, *
*CONDIAG, AND NOSWP CAN TEST FOR JUMPERS. *
*#0-I END *
*-----*
*P3, MD+DATA, *
*NEXT, *
* J/PWRSUB02A * --> VV
*****
481 PWRSUB02A:1124 F/PWRSUB01 <-- VV
*****
*P2, D+D, *
*P3, R(DST)+D (A ADDR), *
*NEXT, *
* J/PWRSUB02B * --> VV
*****
482 PWRSUB02B:1126 F/PWRSUB02A <-- VV
*****
*P2, RES+R(DST), *
*NEXT, *
* J/PWRSUB02 * -->
*****
```

```
1121 0000 11 10 00 00 00000001000
00000 100000 11000 001010100
```

```
1124 0011 00 00 00 01 00000001000
00000 010110 11000 001010110
```

```
1126 0000 01 11 00 00 00000001000
00000 010001 11000 001011000
```

1130 483 190



D01

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 191

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UB	RIF COUT	CLOCKS
							UPF	
	F/SER10	<--	1046	400	166			
	F/JAM10	<--	1051	424	173			
*****								
*	SUBROUTINE DISPO1	*						
	RETURN/SER11	* -->	1016	401	167			
	RETURN/JAM11	* -->	1054	425	173			
*****								

E01

```

485 DISPO1:1134
*****
*#OVERVIEW-IMPLEMENTATION DISPATCHER FOR *
*ERRORS DISPATCH IS USED BY JAM DISPATCH *
*AND SERVICE DISPATCH TO FIND THE LOWEST *
*ORDER BIT SET IN THE JAM AND SERVICE *
*REGISTERS IN BUS CONTROL. FIRST DISPATCH *
*OR'S THE MASK IN MD WITH THE SHIFT *
*REGISTER AND PLACES THE RESULT INTO D. *
*JAM DISPATCH USES 177000 FOR A MASK AND *
*SERVICE DISPATCH USES 177760. JAM *
*DISPATCH CLEARS THE COUNTER EXPLICITLY *
*BY LOADING IT WITH 0. BUT(SERVICE) *
*CLEARS THE COUNTER FOR SERVICE DISPATCH. *
*THE COUNTER IS INCREMENTED EVERY TIME J *
*IS RIGHT SHIFTED UNTIL ITS' LOW ORDER *
*BIT IS 1. THEN THE COUNTER IS PUT INTO *
*THE LOW ORDER BYTE OF THE SHIFT *
*REGISTER. JAM DISPATCH OR SERVICE *
*DISPATCH THEN DO A BUT(CASE). NOTE THAT *
*IF NO ERROR BITS ARE SET IN THE JAM OR *
*SERVICE REGISTERS, THE SHIFTING WILL *
*UPPER *
*-----*
*P2          D+SR OR MD,D(C)+ALU00, *
*NEXT, *
*          J/DISPO2 * --> VV
*****

```

```

1134          000000001000
1110 11 10 00 00 000 010 0100 0
00000 000000 11000 000000001

```

```

486 DISPO2:1001          F/DISPO1 <-- 1134 485 191
          F/DISPO3 <-- 1211 487 192
*****
*SELECT,      EMIT *
*NEXT,        BUTR(D(C)), *
*          J/DISPO3 *
*          J/DISPO3 * --> 01 1211 487 192
*          J/DISPO4 * --> 11 1213 488 192
*****

```

```

1001          000000001000
0000 00 00 00 01 000 000 0000 0
11001 000000 10011 010001001

```

# F01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
487	DISP03:1211	F/DISP02	<--	1001	486	191				
	*****			1211				000000001000		
	* DONE ONLY TO INCREMENT COUNT NO				1111	00 00	01 10	000 010	0100	0
	* BRANCH IS TO BE				00000	000000	10101	000000001		
	* DONE									
	-----									
	*P2, D+D RIGHT 1, D(C)+ALU00,									
	*NEXT, BUT(COUNT IS -1),									
	* J/DISP02									
	BRANCHING-BUT USED WITH TAG NOT IDENTIFIED AS .CASE			--	BOX	487				
	*****									
488	DISP04:1213	F/DISP02	<--	1001	486	191				
	*****			1213				000000001000		
	*P2, D+COUNTER,				1111	00 00	01 01	000 000	0100	0
	*NEXT, J/DISPOS				00011	000000	11000	001011110		
	* --> VV									
	*****									
489	DISPOS:1136	F/DISP04	<--	VV						
	*****			1136				000000001000		
	*P2, SR+D(HI) * D(HI),				1111	00 00	01 01	000 000	0010	0
	*NEXT, BUT(RETURN)				00100	000000	11111	000000000		
	* --> VV									
	*****									

G01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC	"SERVICE FLAGS - ERRORS AND OTHER FLAGS - INDIVIDUAL T BIT"							
.CASE	2 OF BSER09							
490	TBIT01:1047	F/SER09	<--	1014	399	166		
	*****			1047				000000001000
	*#OVERVIEW-IMPLEMENTATION T-BIT THE T-BIT							0001 00 00 11 00 000 001 0000 0
	*FLOW FIRST SETS THE T-BIT MASK IN THE							00000 000000 11100 010101100
	*FLAG REGISTER SO THAT WHEN SERVICE IS							
	*CHECKED AT THE END OF THE SHARED TRAP							
	*FLOW SO THAT NO ANOTHER T-BIT TRAP WILL							
	*NOT OCCUR UNTIL THE FIRST WORD IN THE							
	*SUBROUTINE IS EXECUTED. NOTE THAT WHEN							
	*OTHER ERRORS ARE PENDING (LIKE YELLOW							
	*ZONE) THE FIRST INSTRUCTION EXECUTED MAY							
	*NOT BE IN THE T-BIT SUBROUTINE. THE MD							
	*IS LOADED WITH 14 AND THE SHARED TRAP							
	*FLOW IS USED TO MAKE THE TRAP OCCUR.							
	*#0-I END							
	-----							
	* RETURN+TBIT02							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/FLGD1							
	*****							
			-->	1254	564	216		
	*****							
				VV				
				1140	491	193		
491	TBIT02:1140							
	*****							
	*-----							
	*P3, MD+TMASK (BC),							
	*NEXT, J/TBIT03		-->					
	*****							
492	TBIT03:1142	F/TBIT02	<--					
	*****							
	* SET T BIT MASK							
	-----							
	* RETURN+TBIT04							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/FLGS01							
	*****							
			-->	1260	568	218		
	*****							
				VV				
				1144	493	194		

H01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
493	TBIT04:1144 ***** * SAME AS BPT ???, EVEN UNTO TRAP ENTRY * *???* *-----*			1144	0000 00010	10 00 100000	00 00 11000	000000001000 001 100 0000 0 001100110
	*P3, MD+14 (BC), *NEXT, J/TBIT05 *-----*		--> VV					
494	TBIT05:1146 ***** *-----*		<-- VV	1146	0000 00000	00 00 000000	00 00 11100	000000001000 000 000 0000 0 001010111
	*NEXT BUT(GO TO),PAGE+0, * J/TRPOD *-----*		-->	127 357 151				
495	YELLOW ZONE 1 OF BSER11 YZ0!:1660 ***** *OVERVIEW-IMPLEMENTATION YELLOW ZONE * *YELLOW ZONE FIRST LOGS THEN LOADS THE MD * *WITH  *OCCURED. THE YELLOW ZONE ERROR FLAG IS * *NOT CLEARED BECAUSE THE SHARED TRAP FLOW * *CLEARS IT BECAUSE IT IS ENTERED VIA * *YTRPOD. #0-I END * *-----*		<--	1016 401 167				
	*P2, RETURN+YZ02,PAGE+3, *NEXT, BUT(GO TO), * J/LOG01 *-----*		-->	3534 926 310 VV 1154 496 195				
				1660	0001 00000	00 00 000000	11 01 11100	000000001000 100 011 0000 0 101011100

# I01

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
496	YZ02:1154			1154				000000001000
	* MOVE TO PAGE 0 AND SAVE ONE				0000	10 00	00 00	000 100 0000 0
	*WORD				00010	100000	11000	001101101
	*P3, MD+4,							
	*NEXT, J/YZ03	-->	VV					
497	YZ03:1155	F/YZ02	<--	VV				000000001000
	*P2, PAGE+0,				0000	00 00	00 00	000 000 0000 0
	*NEXT, BUT(GO TO),				00000	000000	11100	011000100
	* J/YTRPO0	-->	304 353 150					
.TOC CASE 498	POWER FAIL 3 OF BSER11	F/SER11	<--					000000001000
	PF01:1662			1662				0100 00 01 00 00 000 000 0000 0
	*OVERVIEW-IMPLEMENTATION POWER FAIL				11011	00 000	11000	001110000
	*POWER FAIL CLEARS THE POWER FAIL FLAG							
	*THEN USES THE SHARED TRAP FLOW TO MAKE							
	*THE TRAP OCCUR. #0-I END							
	* CLEAR POWER FAIL FLAG,							
	*NEXT, J/PFO4	-->	VV					
499	PFO4:1160	F/PFO1	<--	VV				000000001000
	* TRAP TO				0000	00 00	00 01	000 000 0000 0
	*24				11001	000000	11000	010100111
	*SELECT, EMIT,							
	* J/ETRPO4	-->	1247 561 215					



J01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION RIF COUT UPF	CLOCKS	
.10C .CASE 500	SERVICE CACHE PARITY ERROR" 2 OF BSER11 SCPE01:1661	F/SER11	<-- 1016 401 167	1661	1111 00 00	11 00 101 000	000000001000	0110 0	
	***** *#OVERVIEW-FUNCTION SERVICE CACHE PARITY * *ERROR CACHE PARITY ERRORS GENERATE A * *SERVICE REQUEST (EXCEPT WHEN THE PARITY * *ERROR ABORT BIT (CCR<07>) IS SET. THIS * *SERVICE CONDITION WILL CAUSE A TRAP TO * *114 UNLESS THE IGNORE CACHE PARITY * *ERROR BIT (CCR<0>) IS SET. WHEN THE TRAP * *OCCURS THE TAG PARITY ERROR, LOW BYTE * *PARITY ERROR, AND HIGH BYTE PARITY ERROR * *BITS (MEMORY ERROR REGISTER<07:05>) ARE * *SET BY DEFINITION. WHEN THE TRAP DOES * *NOT OCCUR THE NEXT INSTRUCTION IS * *EXECUTED. THE SOFTWARE PARITY TRAP * *HANDLER USES THIS TO PREVENT CACHE * *PARITY ERRORS FROM CAUSING IT TO REENTER * *ITSELF. #0-F END * *#OVERVIEW-IMPLEMENTATION SERVICE CACHE * *PARITY ERROR FIRST SCPE CHECKS TO SEE IF * *THE TRAP SHOULD OCCUR. IT DOES THIS BY * *TESTING CCR<0> WHICH IS STORED IN * *WHAMI<13>. * *-----* *P2, D+WHAMI,SR+WHAMI, * *NEXT, * * J/SCPE02 * --> VV ***** SCPE02:1162 F/SCPE01 <-- VV ***** *P2, D+D RIGHT 6,D(C)+ALU07, * *NEXT, * * J/SCPE03 * --> 1164 502 197 *****								
501				1162	1111 00 00	01 11 000 011	000000001000	0100 0	

K01

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RTE	COUT CLOCKS
502	SCPE03:1164	F/SCPE02	<--	1162 501 196	1164			00000000	1000
	* TEST				1111	00 00	11 00	101 111	0100 0
	*CCR(0)				00000	000000	10011	111000001	
	*P2, D+WHAMI,D(C)+D(C),								
	*NEXT, BUTR(D(C)),								
	* J/SCPE04		-->	01 1701 503 197					
	* J/SCPE05		-->	11 1703 507 198					
CASE 503	1 OF BSCPE03	F/SCPE03	<-- VV		1701			00000000	1000
	*SELECT, EMIT				0000	00 00	00 01	000 000	0000 0
	*NEXT, BUTR(D15),				11001	000000	01101	011101010	
	* J/SCPE06		-->	10 1352 504 197					
	* J/SCPE07		-->	11 1353 505 197					
CASE 504	1 OF BSCPE04	F/SCPE04	<-- VV		1352			00000000	1000
	* RETURN+SCPE12,				0001	00 00	11 11	000 011	0000 0
	*NEXT, BUT(GO TO),PAGE+3,				00000	000000	11100	101011100	
	* J/LOG01		-->	3534 926 310					
CASE 505	2 OF BSCPE04	F/SCPE04	<--	1701 503 197	1353			00000000	1000
	* TEST FOR LOG				0000	00 00	00 00	000 000	0000 0
	*ENABLED				00000	000000	00000	011011110	
	*NEXT, BUTR(SRO),								
	* J/SCPE09		-->	1110 1336 506 198					
	* J/SCPE10		-->	1111 1337 509 199					

# L01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 506	1 OF BSCPE07 SCPE09:1336	F/SCPE07	<--	1353 505 197	1336			000000001000
	* TRAP BUT NO				0001	00 01	01 01	000 011 0000 0
	*LOG				00000	000000	11100	101011100
	-----*							
	* RETURN+ETRPOS,							
	*NEXT, BUT(GO TO),PAGE+3,							
	* J/LOG01							
	*****							
			-->	3534 926 310				
				VV				
				1250 562 215				
.CASE 507	2 OF BSCPE03 SCPE05:1703	F/SCPE03	<--	1164 502 197	1703			000000001000
	* NO TRAP, CLEAR OUT				0100	00 00	10 00	000 000 0000 0
	*ERROR				11011	000000	11000	001110110
	-----*							
	* CLEAR JAM REG,							
	*NEXT,							
	* J/SCPE11		-->	VV				
508	SCPE11:1166	F/SCPE05	<--	VV	1166			000000001000
	* CLEAR ERROR TRAP IN PROGRESS				0111	11 11	11 00	101 000 0100 0
	*FLAG				00000	010010	11100	000000011
	-----*							
	*P2, D+WHAMI AND NOT 2,							
	*P3, WHAMI+D (A ADDR),							
	*NEXT, BUT(GO TO),PAGE+0,							
	* J/BRA05		-->	3 283 126				
	*****							

M01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUS9	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS		SP	UBF	RIF COUT CLOCKS
								UPF
509	SCPE10:1337	F/SCPE07	<--	1353	505	197		
	* *****			1337				000000001000
	* MODIFY LOG SERVICE AFTER			0001	00 00	11 11	000 011	0000 0
	* LOGGING			00000	000000	11100	101011100	
	* -----*							
	* RETURN+SCPE12,							
	* NEXT, BUT(GO TO),PAGE+3,							
	* J/LOG01							
	* *****							
			-->	3534	926	310		
				VV				
				1170	510	199		
510	SCPE12:1170			1170				0:00000001000
	* *****			1010	00 00	00 00	000 000	0010 0
	* P2, SR+CSP(1),			01110	000000	11000	001111001	
	* NEXT,		--> VV					
	* J/SCPE13							
	* *****							
511	SCPE13:1171	F/SCPE12	<-- VV	1171				000000001000
	* *****			0010	10 00	00 11	100 000	0000 0
	* P3, MD+20340,			00010	100000	11000	00111'100	
	* NEXT,		--> VV					
	* J/SCPE14							
	* *****							
512	SCPE14:1174	F/SCPE13	<-- VV	1174				000000001000
	* *****			1110	11 10	00 00	000 000	0100 0
	* P2, C+SR OR MD,			00000	000000	11000	001111101	
	* NEXT,		-->	1175	513	200		
	* J/SCPE15							
	* *****							



BOX NO.	TAG: ADDRESS	EXTENSION	ADDR	ALU	BUSB	BUSA	RIF	COUT	CLOCKS
				BUS	SP	UBF	UPF		
516	SDEF02:1202 F/SDEF01		1202	0000	00 00	00 00	000 011	0000	0
	* TEST FLAG07 SERVICE REQUEST TARGETS - 0 *			00000	000000	10011	111011001		
	*SDEF03								
	*-----*								
	* TEST SERVICE REQUEST,								
	*NEXT, BUTR(D(C)),								
	* J/SDEF03								
	* J/SVCDEF								
	*-----*								
	* J/SDEF03		01 1731	517	201				
	* J/SVCDEF		11 1733	1230	393				
	*-----*								
.CASE 517	1 OF BSDEF02 SDEF03:1731 F/SDEF02		1731	0000	00 00	00 00	000 000	0000	0
	*1 - SVCDEF			00000	000000	11100	111000010		
	*-----*								
	*NEXT, BUT(GO TO),PAGE+0,								
	* J/FETO1								
	*-----*								
	* J/FETO1		702	1	2				
	*-----*								
.TOC =	ERROR FLAGS"								
.TOC =	ODD ADDRESS"								
.CASE 518	3 OF BJAM11 OAD1:1322 F/JAM11		1322	0001	00 01	01 00	100 011	0000	0
	*#OVERVIEW-IMPLEMENTATION ODD ADDRESS ODD *			00000	000000	11100	101011100		
	*ADDRESS LOGS THEN PASSES CONTROL TO *								
	*ETRP01 WHICH USES THE SHARED TRAP FLOW TO *								
	*MAKE A TRAP TO 4 OCCUR. #0-I END TRAP *								
	*TO 4 LOG *								
	*-----*								
	* RETURN+ETRP01,								
	*NEXT, BUT(GO TO),PAGE+3,								
	* J/LOG01								
	*-----*								
	* J/LOG01		3534	926	310				
	*-----*								
	* J/LOG01		VV						
	*-----*								
	* J/LOG01		1244	558	214				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION RIF COUT CLOCKS UPF
519	EOE01:1433	F/JAM18	<--	1041 419 172				
	*****			1433	0000	00 00	00 01	000000001000
	*OVERVIEW-IMPLEMENTATION ERROR ON ERROR *				11001	000000	11000	000 000 0000 0
	*EOE SETS THE EOE HAS OCCURED BIT *							010000100
	*(WHAMI<02>) THEN USES THE RED ZONE FLOW *							
	*TO MAKE A TRAP TO 4 OCCUR. ONCE THE EOE *							
	*HAS OCCURED FLAG IS SET A MED OPERATION *							
	*IS NEEDED TO CLEAR IT. THIS IS DONE SC *							
	*THAT THE FACT THAT AN ERROR ON ERROR HAS *							
	*OCCURED WILL NOT BE LOST. #0-I END *							
	*-----*							
	*SELECT, EMIT, *							
	*NEXT, *							
	* J/EOE02 *			-->	VV			
520	EOE02:1204	F/EOE01	<--	VV				
	*****			1204	0000	10 00	00 00	000 100 0000 0
	*P3, MD+4, *				00010	100000	11000	010000110
	*NEXT, *							
	* J/EOE03 *			-->	VV			
521	EOE03:1206	F/EOE02	<--	VV				
	*****			1206	1110	11 10	11 00	101 000 0100 0
	* SET EOE HAS OCCURED FLAG CAN BE CLEARED *				00000	010010	11000	011010011
	*ONLY BY MACRO LEVEL MED *							
	*INSTRUCTION *							
	*-----*							
	*P2, D+WHAMI OR MD, *							
	*P3, WHAMI+D (A ADDR), *							
	*NEXT, *							
	* J/RZ01 *			-->	1323 522 203			
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BJS	BUSB SP	BUSA UBF	EXTENSION RIF COOT UPF	CLOCKS
522	RZ01:1323 4 OF BTAM11 RED ZONE" F/JAM11	<--	1054 425 173	1323	0000 00 00 00 01	000 000	0000 0	00000001000
	*OVERVIEW+IMPLEMENTATION RED ZONE RED * *ZONE RESETS THE KERNEL STACK POINTER TO * *4, THEN LOGS, THEN USES THE SHARED TRAP * *FLOW TO MAKE A TRAP TO 4 OCCUR. THE * *NTRPOD ENTRY POINT TO SHARED TRAP FLOW * *IS USED SO THAT NO FURTHER STACK * *VIOLATIONS WILL OCCUR WHILE PROCESSING * *THE TRAP. THERE IS A SLIGHT HACK HERE, * *BUT IT IS COMPATIBLE WITH THE 11/40. THE * *STACK THAT IS SET TO 4 IS THE CURRENT * *STACK. REALLY IT SHOULD BE THE STACK IN * *THE SPACE SPECIFIED BY THE PS STORED IN * *MEMORY LOCATION 6. IN ACTUAL PRACTICE * *THE PS IN MEMORY LOCATION 6 ALWAYS * *SPECIFIES KERNEL. BECAUSE RED ZONE * *ERRORS CAN OCCUR ONLY IN KERNEL THERE IS * *NEVER A PROBLEM BECAUSE THE CORRECT * *STACK IS SET TO 4. HOWEVER, IF SOME * *PROGRAM DECIDED TO HANDLE RED ZONE * *ERRORS WITH A HANDLER IN USER SPACE THE * *WRONG * *-----* *SELECT, EMIT, * *NEXT, * * J/RZ08 * --> VV							
523	RZ08:1210 MD+4, F/RZ01	<-- VV		1210	0000 10 00 00 00	000 100	0000 0	000000001000
	*P3, * *NEXT, * * J/RZ09 * --> VV							
524	RZ09:1212 D+MD, R6+D (A ADDR), BUT(GO TO),PAGE+4. F/RZ08 J/RZ11	<-- VV		1212	1010 11 10 00 00	111 100	0100 0	000000001000
	*P2, * *P3, * *NEXT, * * J/RZ11 * -->		4152 525 204					



E02

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BOX NO.	TAG: ADDRESS	EXTENSION	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSA UBF	RIF UPF	COUT	CLOCKS
525	RZ11:4152 ***** * RETURN+RZ12, * *NEXT, BUT(GO TO),PAGE+3, * * J/LOGO1 * *****	F/RZ09 000000001000	<--	1212 524 203	4152	0000	00 01	10 10	111 011	0000	0
			-->	3534 926 310		00000	000000	11100	101011100		
526	RZ12:0327 ***** *P3, MD+4, * *NEXT, * * J/NTRPOO * *****			327 526 204	327	0000	10 00	00 00	000 100	0000	0
			-->	310 355 151		00010	100000	11000	011001000		
.OC CASE 527	KT ABORT 5 OF BJAM11 KT01:1324 ***** *OVERVIEW-IMPLEMENTATION KT ABORT KT * *ABORT LOGS THEN PASSES CONTROL TO ETRPO6 * *WHICH USES THE SHARED TRAP FLOW TO MAKE * *A TRAP TO 250 OCCUR. 0-I END TRAP TO * *250 * -----* *P2, RETURN+ETRPO6, PAGE+3, * *NEXT, * * J/LOGO1 * *****	F/JAM11 000000001000	<--	1054 425 173	1324	0001	00 01	01 01	010 011	0000	0
			-->	3534 926 310		00000	000000	11100	101011100		

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS	
528	JCPE01:1326 F/JAM11 ***** *#OVERVIEW-IMPLEMENTATION CACHE PARITY * *ERROR WHEN THE ABORT ON CACHE PARITY * *ERROR BIT (CCR<07>) IS SET A CACHE * *PARITY ERROR WILL CAUSE CONTROL TO BE * *PASSED TO THIS FLOW. FIRST LOGGING IS * *DONE, THEN THE LOCATION IN ERROR IS * *INVALIDATED, THEN CONTROL IS PASSED TO * *ETRPOS WHICH USES THE SHARED TRAP FLOW * *TO MAKE A TRAP TO 114 OCCUR. THE * *LOCATION THAT CAUSED THE ERROR IS * *INVALIDATED BECAUSE THE CACHE DIAGNOSTIC * *REQUIRES IT TO BE THE CORRECT LOCATION * *IS INVALIDATED BECAUSE THE BA HAS NOT * *BEEN CHANGED SINCE THE ERROR OCCURED. * *#0-I END * *-----* *P3, RETURN+JCPE02, PAGE+3, * *NEXT, * * J/LOG01 * *****	<--	1054 425 173	1326	0011 00 00 01 00	0000 000000	111 011 0000 0	101011100	000000001000	0
529	JCPE02:3047 ***** * INVALIDATE MUST BE DONE AFTER LOGGING * *BECAUSE JAM REG MUST BE CLEARED WHEN * *INVALIDATE IS DONE AND LOGGING MUST BE * *DONE BEFORE THE JAM REG IS * *CLEARED * *-----* *P3 U, INVALIDATE * *NEXT, BUT(GO TO), PAGE+1, * * J/ETRPOS * *****	-->	3534 926 310	3047	0000 00 00 00 00	000 001 0000 0	10111 000000 11100 010101000	000000001000	0	
		-->	1250 562 215							

# G02

PROGRAM FLOWS

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PAGE 206

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC " 530	SSYN TIMEOUT" 8 OF BJAM11 SST01:1327	F/JAM11	<-- 1054 425 173	1327			000000001000
.CASE	* TRAP TO 4 LOG			0001	00 01	01 00	100 011 0000 0
	-----			00000	000000	11100	101011100
	* RETURN+ETRP01						
	*NEXT, BUT(GO TO), PAGE+3,						
	* J/LOG01						
	-----						
			--> 3534 926 310				
			VV				
			1244 558 214				
.TOC " 531	MEMORY PARITY ERROR" 9 OF BJAM11 MPE01:1330	F/JAM11	<-- 1054 425 173	1330			000000001000
.CASE	* TRAP TO 114 LOG			0001	00 01	01 01	000 011 0000 0
	-----			00000	000000	11100	101011100
	* RETURN+ETRPOS						
	*NEXT, BUT(GO TO), PAGE+3,						
	* J/LOG01						
	-----						
			--> 3534 926 310				
			VV				
			1250 562 215				
.TOC " 532	DEFAULT" 10 OF BJAM11 JDEF01:1331	F/JAM11	<-- 1054 425 173	1331			000000001000
.CASE	* CLEAR EOE **MUST CHECK FOR WCS ENABLE			0111	11 11	11 00	101 000 0100 0
	*AND GO TO CONSOLE IF THERE N Y			00000	010010	11001	110000101
	*I						
	-----						
	*P2, D+WHAMI AND NOT 2,						
	*P3, WHAMI+D (A ADDR),						
	*NEXT, BUT(TRACK),						
	* J/JDEF02						
	-----						
			--> 1605 1226 392				

H02

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 207

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
533	ILLEGAL INTERNAL ADDRESS ERROR" 6 OF BJAM11 IIAA01:1325 F/JAM11	<--	1054 425 173	1325	1110 11 11 11 00	000000001000	101 010 0100 0	00000 010010 1000 010010000
	*#OVERVIEW-FUNCTION ILLEGAL INTERNAL ADDRESS REFERENCE BECAUSE REFERENCES TO INTERNAL ADDRESSES CAUSE UNRECOVERABLE CHANGE TO THE DATA PATH, SOME FLOWS WHICH DO BUS CYCLES COULD PUT THE MACHINE IN AN UNDEFINED STATE. TO PREVENT THIS VARIOUS MECHANISMS ARE USED TO CAUSE AN ERROR TRAP WHEN THIS OCCURS. DATI CLKIR, DATI NOINT, AND ANY BUS CYCLE DONE BY A FLOATING POINT OR EIS INSTRUCTION MUST RESULT IN A TRAP TO 4 WHEN AN INTERNAL ADDRESS IS REFERRED TO. #0-F END #OVERVIEW-IMPLEMENTATION ILLEGAL INTERNAL ADDRESS REFERENCE ILLEGAL INTERNAL ADDRESS REFERENCE FIRST SETS THE ERROR TRAP IN PROGRESS BIT (WHAMI<01>). IT DOES THIS BECAUSE IT MAY BE ENTERED FROM ONE OF TWO PLACES. IF IT IS ENTERED FROM JAM DISPATCH THIS STEP IS UNNECESSARY. IF IT IS ENTERED FROM THE INTERNAL ADDRESS							
	*P2, D+WHAMI OR 2.D(C)+ALU00, *P3, WHAMI+D (A ADDR), *NEXT, J/IIAA02							
534	IIAA02:1220 F/IIAA01	<-- VV		1220	0000 00 00 00 00	000000001000	000 000 0000 0	00000 000000 10011 010000001
	* TEST FOR LOGGING *ENABLED *NEXT, BUTR(D(C)), * J/IIAA03 * J/IIA13		01 1201 535 208 11 1203 544 210					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 535	1 OF BI1AA02 I1AA03:1201	F/I1AA02	<--	1220	534	207				
	* TEST FOR LOG FIRST *ENABLED			1201				00000000	1000	
				0000	00 00	00 00	000 000	0000	0	
				00000	000000	01101	001111010			
	*NEXT, BUTR(D15), * J/I1AA05	J/I1AA05	-->	10	1172	536	208			
		J/I1AA04	-->	11	1173	537	208			
CASE 536	1 OF BI1AA03 I1AA05:1172	F/I1AA03 F/I1A13	<-- <--	1201 1203	535 544	208 210				
	* RETURN+I1AA06, *NEXT, BUT(GO TO),PAGE+3, * J/LOG01			1172				00000000	1000	
				0001	00 01	00 10	010 011	0000	0	
				00000	000000	11100	101011100			
			-->	3534	926	310				
				VV						
				1222	538	208				
.CASE 537	2 OF BI1AA03 I1AA04:1173	F/I1AA03 F/I1A13	<-- <--	1201 1203	535 544	208 210				
	* RETURN+ETRPO1, *NEXT, BUT(GO TO),PAGE+3, * J/LOG01			1173				00000000	1000	
				0001	00 01	01 00	100 011	0000	0	
				00000	000000	11100	101011100			
			-->	3534	926	310				
				VV						
				1244	558	214				
CASE 538	I1AA06:1222			1222				00000000	1000	
	*SELECT, EMIT, *NEXT, * J/I1AA07			0000	00 00	00 01	000 000	0000	0	
				11001	000000	11000	010010100			
			-->	1224	539	209				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION			
								RIF	COUT	CLOCKS	
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF				
539	IIAA07:1224 ***** *P3, MD+40, *NEXT, * J/IIA08 *****	F/IIA06 <--	1222 538 208	1224	0000	10 00	00 00	100 000	0000	0	000000001000
					00010	100000	11000	010010101			
540	IIAA08:1225 ***** *P2, SR+CSP(0), *NEXT, * J/IIA10 *****	F/IIA07 <-- VV		1225	1010	10 00	00 00	000 000	0010	0	000000001000
					01111	000000	11000	010010110			
541	IIA10:1226 ***** * SET ILLEGAL INTERNAL ADDRESS ACCESS *BIT *-----* *P2, D+SR OR MD, *NEXT, * J/IIA11 *****	F/IIA06 <-- VV		1226	1110	11 10	00 00	000 000	0100	0	000000001000
					00000	000000	11000	010010111			
542	IIA11:1227 ***** * DBUF LATCH+D, *NEXT, * J/IIA12 *****	F/IIA10 <-- VV	1230 543 210	1227	0100	00 00	00 00	000 100	0000	0	000000001000
					11011	000000	11000	010011000			

# K02

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION					
				ADDR	ALU BUS	BUSB SP	BUSA UBF	RIF UPF	COUT CLOCKS
543	IIA12:1230 ***** * REWRITE LOG JAM WITH ILLEGAL INTERNAL * * ADDRESS ACCESS BIT SET DONE TO SELECT * * EMIT * -----* * P3, CSP(0)+DATA, * * NEXT, BUT(CLEAR FLAGS), * * J/ETRPO1 * *****	<-- 1227 542 209		1230	0000 01111	10 00 100000	00 00 11010	000 000 010100100	000000001000 0000 0
CASE 544	2 OF BIIA02 IIA13:1203 ***** * NEXT, * * J/IIA05 * *****	<-- 1220 534 207		1203	0000 00000	00 00 000000	00 00 11000	000 000 001111010	000000001000 0000 0
.TOC - CASE 545	CONTROL STORE PARITY ERROR 2 OF BJAM11 CSPE01:1321 ***** * CONTROL STORE PARITY TRAP TO * * 114 * -----* * RETURN+ETRPOS, * * NEXT, BUT(GO TO), PAGE+3, * * J/LOG01 * *****	<-- 1054 425 173		1321	0001 00000	00 01 000000	01 01 11100	000 011 101011100	000000001000 0000 0
									***** 3534 926 310 ***** VV 1250 562 215

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
546	UB01:1320 F/JAM11 ***** *#OVERVIEW-FUNCTION MICROBREAK MICROBREAK * *IS THE RESULT OF AN ADDRESS COMPARE AND * *MICROBREAK ENABLE BIT (FLAG<08>) BEING * *SET. MICROBREAK WILL TRAP TO 4 IF THE * *TRAP ON MICROBREAK BIT (WHAMI<09>) IS * *SET. IF THE TRAP ON MICROBREAK BIT IS * *NOT SET AND THE MCS IS NOT ENABLED THEN * *MICROBREAK WILL GO TO THE CONSOLE LOOP. * *IF THE MCS IS ENABLED THEN CONTROL IS * *PASSED TO IT VIA XCSUBJ1. #0-F END * *#OVERVIEW-IMPLEMENTATION MICROBREAK * *FIRST MICROBREAK LOGS. NEXT MICROBREAK * *CLEARS THE MICROBREAK ENABLE FLAG. THIS * *IS DONE SO THAT MICROBREAKS CAN BE SET * *IN THE TRAP FLOW AND OTHER PLACES * *WITHOUT GOING INTO A SUNSET. NOTE THAT * *A SUNSET LOOP WILL OCCUR IS MICROBREAK * *IS SET IN LOG OR UB01,UB01,UB03,UB04 * *OR THE FLAG OR FLAG CLEAR ROUTINES. NEXT * *MICROBREAK CHECKS TO SEE IF THE TRAP ON * *MICROBREAK BIT IS SET. * *-----* * RETURN+UB02, * *NEXT, BUT(GO TO),PAGE+3, * * J/LOG0' * ***** -->	<--	1054 425 173	1320	0001 00 01 00 11 010 011 0000 0 00000 000000 11100 101011100	000000001000		
547	UB02:1232 ***** * CLEAR UBREAK * *FLAG * *-----* * RETURN+UB03, * *NEXT, BUT(GO TO),PAGE+1, * * J/FLG01 * ***** -->		***** 3534 926 310 ***** VV 1232 547 211	1232	0001 00 01 00 11 100 001 0000 0 00000 000000 11100 010101100	000000001000		
			***** 1254 564 216 ***** VV 1234 548 212					



M02

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUS3 SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
548	UB03:1234 *****~***** * MASK FOR CLEAR FLAG * *ROUTINE * -----* *P3, MD+100000, * *NEXT, * * J/UB04 * --> VV *****			1234	1000 00010	10 00 100000	00 00 11000	00000000 010011110	1000 0000 0	
549	UB04:1236 ***** * GO TO CLEAR FLG * *ROUTINE * -----* * RETURN+UB05, * *NEXT, BUT(GO TO),PAGE+1, * * J/FLG01 * ***** -->	F/UB03 ----- ----- ----- -----	<-- VV      ***** 1261 569 219 ***** VV 1240 550 212	1236	0001 00000	00 01 00000J	01 00 11100	00000000 010110001	1000 0000 0	
550	UB05:1240 ***** *P2, D+WHAMI, * *NEXT, * * J/UB06 * --> VV *****			1240	1111 00000	00 00 000000	11 00 11000	00000000 010100001	1000 0100 0	
551	UB06:1241 ***** * D(C) GETS UBREAK TRAP * *BIT * -----* *P2, D+D RIGHT 9,D(C)+ALU00, * *NEXT, * * J/UB07 * --> *****			1241	1111 00110	00 00 000000	01 10 11000	00000000 010100010	1000 0100 0	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
552	UB07:1242 ***** * TEST FOR TRAP OR *CONSOLE *-----* *SELECT, CMND MICROBREAK, *NEXT, BUTR(D(C)), * J/UB08 * J/UB09 *****	<--	1241 551 212	1242	0100 11011	00 00 000000	00 00 10011	000000001000 000 010 0000 0 100101001
.CASE 553	1 OF BUB07 UB08:1451 ***** * GO TO CONSOLE CLEAR ERROR TRAP IN *PROGRESS *BIT *-----* *P2, D+WHAMI AND NOT 2,D(C)+ALU07, *P3, WHAMI+D (A ADDR), *NEXT, J/UB11 *****	<-- VV	01 1451 553 213 11 1453 557 214	1451	0111 00000	11 11 010010	11 00 11000	000000001000 101 011 0100 0 010100011
554	UB11:1243 ***** *SELECT, EMIT *NEXT, BUTR(D(C)), * J/UB12 * J/UB13 *****	<-- VV	01 1721 555 213 11 1723 556 214	1243	0000 11001	00 00 000000	00 01 10011	000000001000 000 000 0000 0 111010001
.CASE 555	1 OF BUB11 UB12:1721 ***** *NEXT, BUT(GO TO),PAGE+1, * J/CON99 *****	<-- VV	1040 382 159	1721	0000 00000	00 00 000000	00 00 11100	000000001000 000 001 0000 0 000100000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 556	2 OF BUB11 UB13:1723	F/UB11	<--	1243	554	213		
	***** *NEXT, BUT(GO TO),PAGE+6, * J/XCSUB01 *****		-->	6000	1225	392		
				1723			000000001000	
				0000	00 00	00 00	000 110	0000 0
				0000	000000	1110C	00000000	
.CASE 557	2 OF BUB07 UB09:1453	F/UB07	<--	1242	552	213		
	***** *SELECT, EMIT, *NEXT, * J/ETRP01 *****		--> VV					
				1153			000000001000	
				0000	00 00	00 01	000 000	0000 0
				11001	000000	11000	010100100	
.TOC 558	"ERROR TRAPS - VECTOR GENERATION" ETRP01:1244	F/UB09	<--	1230	543	210		
	***** *#OVERVIEW-IMPLEMENTATION ERROR TRAPS - *VECTOR GENERATION THE FOLLOWING WORDS *ARE SHARED BY FLOWS THAT NEED TO *GENERATE VECTORS FOR THE SHAFED TRAP *FLOW. IT REQUIRES THAT EMIT BE *SELECTED. #0-I END TRAP *4 *-----* *P3, MD+4 (BC), *NEXT, * J/ETRP02 *****		--> VV					
				1244			000000001000	
				0000	10 00	00 00	000 100	0000 0
				00010	100000	11000	010100101	
		F/ETRP01	<--	1244	558	214		
		F/ETRP03	<--	1246	560	215		
		F/ETRP04	<--	1247	561	215		
		F/ETRP05	<--	1250	562	215		
		F/ETRP06	<--	1252	563	215		
.CASE 559	ETRP02:1245							
	***** *-----* *NEXT, BUT(GO TO),PAGE+0, * J/TRP00 *****		-->	127	357	151		
				1245			000000001000	
				0000	00 00	00 00	000 000	0000 0
				00000	000000	11100	001010111	



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION COUT UPF	CLOCKS
		F/RTT01 <--	76 312 137					
		F/TBIT01 <--	1047 490 193					
		F/UB02 <--	1232 547 211					
		F/MFAT02 <--	2004 573 221					
		F/IA114D <--	3250 688 251					
		F/CSR06A <--	1265 983 325					
*****								
*	SUBROUTINE FLC01	*						
		RETURN/RTT02 * -->	4040 313 137					
		RETURN/TBIT02 * -->	1140 491 193					
		RETURN/UB03 * -->	1234 548 212					
		RETURN/MFAT03 * -->	2005 574 221					
		RETURN/IA114E * -->	3251 689 251					
		RETURN/CSR06B * -->	1266 984 325					
*****								

564

F.G01:1254

```

*****
*#OVERVIEW-IMPLEMENTATION FLAG ROUTINES *
*THE FOLLOWING ROUTINES ARE SHARED BY *
*FLOWS THAT HAVE NEED TO SET AND CLEAR *
*THE FLAGS. THEY ARE SUBROUTINES, I. E. *
*THE END IN A BUT(RETURN). THE SUBROUTINE *
*FLG GETS THE FLAGS AND PUTS THEM INTO *
*R(SRC). R(SRC) IS A TEMPORARY LOCATION *
*IN THE SCRATCH PADS USED BY THE BASE *
*MACHINE FOR OPREAND CALCULATION. THE *
*FLAG ROUTINES CAN NOT BE USED IF R(SRC) *
*IS TO BE USED FOR SOME THING ELSE. FLG *
*IS USED PRIOR TO USING FLGS OR FLGC. *
*FLGS IS USED TO SET A FLAG. THIS IS *
*DONE BY OR'ING THE MASK FOUND IN THE MD *
*WITH R(SRC) AND WRITTING THE RESULT INTO *
*THE FLAG REGISTER. THE RESULT IS ALSO *
*WRITTEN INTO R(SRC) SO THAT IT KEEPS AN *
*UP TO DATE COPY OF THE FLAGS IN CASE *
*THEY NEED TO BE MODIFIED AGAIN. THIS *
*MODIFICATION CAN THEN BE DONE WITHOUT *
*USING FLG *
*-----*
*SELECT, KPROC(FLAGS), *
*NEXT, *
* J/FLG02 *
*****

```

```

1254 0000 00 00 11 01 000 001 0000 0
      11001 000000 11000 010101101

```

```

--> 1255 565 217

```



# G03

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC	"SET"							
		F/RTT03	<--	4042 314 138				
		F/TBIT03	<--	1142 492 193				
		F/MFAT04	<--	2020 575 221				
		F/IA114F	<--	3262 690 251				
		F/CSR06C	<--	1270 985 325				
*****								
*	SUBROUTINE FLG501		*					
		RETURN/RTI01	* -->	62 315 138				
		RETURN/TBIT04	* -->	1144 493 194				
		RETURN/MFAT09	* -->	2024 577 222				
		RETURN/IA114	* -->	3263 691 252				
		RETURN/CSR06	* -->	1271 986 325				
*****								



H03

568 FLGS01:1260

```
*****
*-----*
*P2,      D+R(SRC) OR MD,D(C)+D(C),
*P3,      R(SRC)+D (A ADDR),
*NEXT,
*                J/FLGC02
*****
```

-->

1262 570 219

```
1260      000000001000
1110 11 10 11 00 110 111 0100 0
00000 010110 11000 010110010
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION COO UPF	CLOCKS
.TOC "	CLEAR"							
	F/UB04		1236 549 212					
*	SUBROUTINE FLGCO1							
	RETURN/UB05		1240 550 212					

J03

```
569 FLGC01:1261
*****
*
* CLEAR
*-----*
*P2,      D+R(SRC) AND NOT MD,D(C)+D(C), *
*P3,      R(SRC)+D (A ADDR),             *
*NEXT,
*          J/FLGC02                       * --> VV
*****
*          F/FLGS01                       <--
570 FLGC02:1262      F/FLGC01             <-- VV
*****
* REWRITE
* FLAGS
*-----*
*          FLAGS+D,
*NEXT,
*          BUT(RETURN)                    * --> VV
*****
```

```
1261      000000001000
0111 11 10 11 00 110 111 0100 0
00000 010110 11000 010110010
```

1260 568 218

```
1262      000000001000
0000 00 00 00 01 000 001 0000 0
11011 000000 11111 000000000
```

# K03

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
571	MFAT00:0053      F/0TH01	<--	417 285 127	53			000000001000
	*****						1010 11 10 00 00 000 011 0100 0
	*#OVERVIEW-FUNCTION MFPI AND MTPI THE						00000 000000 11000 011011001
	*FOLLOWING FLOW IMPLEMENTS THE MFPI AND						
	*MTPI INSTRUCTIONS. ALSO MFPI IS						
	*INTERPERTED AS MFPI AND MTPD IS						
	*INTERPERTED AS MTPI. THIS FLOW WORKS						
	*BASICALLY THE SAME AS THE FLOW IN THE						
	*11/40, THAT IS, IT BUILDS AN APPROPRIATE						
	*MOVE INSTRUCTION, LOADS IT INTO THE IR,						
	*AND GOES TO THE MOVE FLOW. THE						
	*CONSTRUCTED MOVE INSTRUCTION PROCEEDS AS						
	*A NORMAL MOVE INSTRUCTION EXCEPT THAT						
	*THE SOURCE CALCULATION IS DONE IN THE						
	*PREVIOUS SPACE FOR MFPI AND THE						
	*DESTINATION CALCULATION IS DONE IN						
	*PREVIOUS SPACE FOR MTPI. THERE IS ONE						
	*EXCEPTION AROUND MFPI. IF THE SRC						
	*REGISTER IS 6 AND THE SOURCE MODE IF 4						
	* (AUTO DECREMENT) AND THE CURRENT AND						
	*PREVIOUS SPACE ARE THE SAME, THEN THE						
	*DECREMENTATION OF THE REGISTER IS DONE						
	*ADDRESS, INSTEAD OF BEFORE.						
	-----						
	*P2,            D+MD,D(C)+ALU07,						
	*NEXT,						
	*                            J/MFIX00		-->	VV			
	*****						
572	MFIX00:0331      F/MFAT00	<--	VV	331			000000001000
	*****						1111 00 00 01 01 000 010 0010 0
	*P2,            SR+D SIGN EXTENDED,						00010 000000 11100 000000100
	*NEXT,            BUT(GO TO),PAGE+2,						
	*                            J/MFAT02		-->	2004 573 221			
	*****						

L03

BOX NO.	TAG: ADDRESS	EXTENSION	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	RIF	COUT	CLOCKS	
			OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF				
573	MFAT02:2004 ***** * GET FLAG * *REGISTER * -----* *P3, RETURN+MFAT03 * *NEXT, BUT(GO TO),PAGE+1, * * J/FLG01 * *****	F/MFIX00 ***** ***** ***** ***** *****	<-- 331 572 220 ***** 1254 564 216 ***** VV 2005 574 221		2004	0010 0000	00 00 000000	00 00 11100	101 001 010101100	000000001000 0000 0		
574	MFAT03:2005 ***** * MASK FOR MFPI FLAG TEST WHETHER THIS * *FLAG SHOULD BE * *SET * -----* *P3, MD+2000 (BC), * *NEXT, BUTR(D(C)), * * J/MFAT04 * * J/MFAT04 * --> * J/MFAT05 * --> * UNDEFINED CASE * * UNDEFINED CASE * *****	F/MFAT03 ***** ***** ***** ***** *****			2005	0000 00010	10 01 100000	00 00 10011	000 000 000010000	000000001000 0000 0		
.CASE	1 OF BMFAT03											
575	MFAT04:2020 ***** * SET FLAG ROUTINE SET MF * *FLAG * -----* *P3, RETURN+MFAT09 * *NEXT, BUT(GO TO),PAGE+1, * * J/FLG01 * *****	F/MFAT03 F/MFAT05 ***** ***** *****	<-- <-- ***** 1260 568 218 ***** VV 2024 577 222		2020	0010 0000	00 00 000000	00 10 11100	100 001 010110000	000000001000 0000 0		

M03

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	CLOCKS
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	RIF UPF	COUT	
576	MFAT05:2022	F/MFAT03 F/MFAT05	<-- <--	2005 2022	574 576	221 222		000000001000	
	* MASK FOR MTP1						0000 10 00 10 00	000 000 0000 0	
	* FLAG						00010 100000 11000	000010000	
	* P3, MD+1000 (BC),								
	* NEXT,								
	* J/MFAT04	J/MFAT04	-->	2020	575	221			
577	MFAT09:2024							000000001000	
	* P2, D+SR, D(C)+D(C),						1111 00 00 00 00	000 111 0100 0	
	* NEXT, BUTR(D(C)),						00000 000000 10011	101010001	
	* J/MFAT10	J/MFAT10	-->	01 2521	578	222			
	* J/MFAT11	J/MFAT11	-->	11 2523	580	223			
.CASE 578	MFAT10:2521	F/MFAT09	<-- VV					000000001000	
	* P2, D+D SWAPPED RIGHT 2,						1111 00 00 01 11	000 000 0100 0	
	* NEXT, J/MFAT17	J/MFAT17	--> VV				00101 000000 11000	000010101	
579	MFAT17:2025	F/MFAT10	<-- VV					000000001000	
	* P3, MD+46 (BC),						0000 10 00 00 00	100 110 0000 0	
	* NEXT, J/MFAT12	J/MFAT12	-->	2026	581	223		00010110	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX						PAGE	RIF	
580	MFAT11:2523	F/MFAT09	<--	2024	577	222						
	*P3, MD+165000 (BC),									000000001000		
	*NEXT, J/MFAT12		-->							1110 10 10 10 00 000 000 0000 0		
										00010 100000 11000 000010110		
581	MFAT12:2026	F/MFAT17 F/MFAT11	<-- <--	2025	579	222						
	* BUILD MOV									000000001000		
	* INSTRUCTION									0110 11 10 01 01 000 000 1100 0		
	*P3, D+D XOR 12,									00000 000000 11000 000010111		
	*NEXT, J/MFAT14		-->									
582	MFAT14:2027	F/MFAT12	<--	2027								
	*P3, DBUF LATCH+D AND									000000001000		
	*ENABLE CLKIR,									0100 00 00 00 01 000 100 0000 0		
	*NEXT, J/MFAT15		-->							11011 000000 11000 000011100		
583	MFAT15:2034	F/MFAT14	<--	2034								
	*P2, DATTB									0000 00 00 00 00 000 000 0000 0		
	*NEXT, BUT(GO TO), PAGE+0,									11010 000000 11100 111000000		
	* J/FET03		-->	700	3	11						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
584	IA01:1055 ***** *#OVERVIEW-FUNCTION INTERNAL REGISTERS * *DATA TRANSFERS TO AND FROM INTERNAL * *REGISTERS ARE SERVICED BY 2 SUBROUTINES, * *IA (INTERNAL ADDRESS) AND MET) * *(MAINTENANCE EXAMINE AND DEPOSIT). * *INTERNAL REGISTERS ARE THOSE REGISTERS * *WHICH ARE NOT ACCESSABLE THROUGH THE * *UNIBUS. EXAMPLES OF THESE REGISTERS ARE * *THE PSM AND WHAMI REGISTER. TRANSFERS TO * *AND FROM THESE REGISTERS ARE: * *ACCOMPLISHED BY MICROCODE WITH VERY * *LITTLE HARDWARE ASSIST. THERE ARE TWO * *TYPES OF INTERNAL REGISTERS, INTERNAL * *UNIBUS REGISTERS AND INTERNAL CPU * *REGISTERS. THESE SETS ARE NOT * *NECESSARILY MUTUALLY EXCLUSIVE. INTERNAL * *UNIBUS REGISTERS ARE THOSE REGISTERS * *WHICH ARE NOT PHYSICALLY ON THE UNIBUS * *BUT ARE ACCESSED AT THE MACRO LEVEL BY * *TRANSFERS TO OR FROM A UNIBUS ADDRESS. * *AN EXAMPLE OF AN INTERNAL * *-----*	<--	F/JAM02E	1034	409	169		
				1055	1111	00 00	11 00	101 010 0010 0
					00000	000000	11100	000011101
585	IA05:2035 ***** * P2, SR+WHAMI * *NEXT, BUT(GO TO),PAGE+2, * * J/IA05 * ***** * TEST FOR TRAP IN PROGRESS, NOTE THAT * *SR<3> IS NOT MASKED OUT AS THIS IS THE * *GE WHICH MUST ALWAYS BE ZERO IN THIS * *PART OF THE * *FLOW * *-----*	<-- VV	F/IA01					
				2035	0000	00 00	00 00	000 101 0000 0
					00000	000000	00000	001100101
	*SETUP, TEST FOR FP INSTRUCTION, * *NEXT, BUTR(SR1), * * J/IA06 * * J/IA06 * --> 0101 2145 586 225 * J/IA220 * --> 0111 2147 608 230 * UNDEFINED CASE * * UNDEFINED CASE * *****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BLSA UBF	EXTENSION RIF COUT CLOCKS
CASE 586	1 OF BIA05 IA06:2145	F/IA05	<-- 2035 585 224	2145	0000 00000	00 00 000000	00 00 01100	00000001000 000 101 0000 0 011100110
	* TRAP NOT IN PROGRESS TEST FCP FP							
	* INSTRUCTION IN *IR							
	*NEXT, BUTM(FP), J/IA207		--> VV					
CASE 587	1 OF BIA06 IA207:2346	F/IA06	<-- VV	2346	1010 00000	01 11 000000	00 00 11000	00000001000 111 100 0:00 0 000100000
	*P2, D+R(CNTL),D(C)+ALU15,							
	*NEXT, J/IA207A		--> VV					
588	IA207A:2040	F/IA207	<-- VV	2040	0000 00000	00 00 000000	00 00 10011	00000001000 000 000 0000 0 011101001
	*NEXT, BUTR(D(C)), J/IA207B		--> 01 2351 589 225					
	* J/IA207C		--> 11 2353 590 226					
CASE 589	1 OF BIA207A IA207B:2351	F/IA207A	<-- VV	2351	0001 11001	00 00 000000	00 00 11000	00000001000 100 000 0000 0 000100001
	* DECODE UB INT,							
	*NEXT, J/IA208		--> 2041 591 226					



# E04

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION		CLOCKS
					BUS	SP	UBF	RIF	COLT	
594	IA211:2046	F/IA210	<--	2045 593 226						
	*****				2046				00000000	1000
	* DBUF LATCH CONTAINS D AT TIME IF	*			0100	00 00	00 00	000 100	0000	0
	*JAM	*			11001	000000	11000	000100111		
	-----*									
	*SELECT, DBUF LATCH,	*								
	*NEXT,	*								
	J/IA212		-->	VV						
595	IA212:2047	F/IA211	<--	VV						
	*****				2047				00000000	1000
	*P3, MD+DBUF LATCH,	*			0000	11 10	00 00	000 000	0000	0
	*NEXT,	*			00000	100000	11000	000110100		
	J/IA213A		-->	VV						
596	IA213A:2064	F/IA212	<--	VV						
	*****				2064				00000000	1000
	*SELECT, EMIT,	*			0000	00 00	00 01	000 000	0000	0
	*NEXT,	*			11001	000000	11000	000110101		
	J/IA213		-->	VV						
597	IA213:2065	F/IA213A	<--	VV						
	*****				2065				00000000	1000
	* FOR WCS REGISTERS	*			1010	11 10	00 00	000 111	0110	0
	*FLOW	*			00000	000000	11111	000000000		
	-----*									
	*P2, D+MD, SR+MD, D(C)+D(C),	*								
	*NEXT,	*								
	BUT(RETURN)		-->	VV						
	*****									

# F04

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX					PAGE	RIF	
		F/IA07	<--	3120	610	231					
		F/IA11	<--	3130	614	232					
		F/IA16	<--	3000	618	233					
		F/IA30	<--	3014	624	235					
		F/IA21	<--	3030	640	240					
598	IA100:3055										
	*****										
	* DATI'S WITH HOT BOX ALREPDY SELECTED *										
	*RETURN										
	*HERE										
	*-----*										
	*P3, MD+DATA,										
	*NEXT,										
	* J/IA101		-->	VV							
	*****										
599	IA101:3056	F/IA100	<--	VV							
	*****										
	*P2, D+MD,										
	*NEXT,										
	* J/IA102		-->	VV							
	*****										
		F/IA101	<--	3056	599	228					
		F/IA20	<--	3010	622	234					
		F/IA600	<--	3476	632	238					
		F/IA70	<--	3523	638	239					
		F/IA34G	<--	3174	661	245					
		F/IA390	<--	3212	671	247					
		F/IA15	<--	3100	679	249					
		F/WCSRDAOR	<--	3110	1209	388					
		F/WCSRDDAT07	<--	3651	1214	389					
600	IA102:3057										
	*****										
	* DATI'S WITH DATA LEFT IN DREG RETURN *										
	*HERE										
	*-----*										
	*P3, DBUF LATCH+D,										
	*NEXT,										
	* J/IA50A		-->	3063	602	229					
	*****										

```

3055
0000 11 10 00 00 000 000 0000 0
0000 100000 11000 000101110
    
```

```

3056
1010 11 10 00 00 000 100 0100 0
0000 000000 11000 000111111
    
```

```

3057
0100 00 00 00 00 000 100 0000 0
11011 000000 11000 000110011
    
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSB UBF	EXTENSION RIF COUT CLOCKS UPF
		F/IA08 <--	3122 611 231				
		F/IA09 <--	3123 612 232				
		F/IA10 <--	3121 613 232				
		F/IA12 <--	3132 615 232				
		F/IA13 <--	3133 616 233				
		F/IA14 <--	3131 617 233				
		F/IA17 <--	3002 619 233				
		F/IA18 <--	3003 620 234				
		F/IA19 <--	3001 621 234				
		F/IA31 <--	3245 652 243				
		F/IA32 <--	3247 653 243				
		F/IA33 <--	3033 654 243				
		F/IA38G <--	3202 667 247				
		F/IA40 <--	3041 672 248				
		F/IA86 <--	3060 676 248				
601	IA103:3062	F/IA87A <--	3216 678 249				
	*****						
	~ DATO'S AND DATOB'S RETURN	*					3062 0000 00 00 00 00 000 000 0000 0
	*HERE	*					11010 000000 11000 000110011
	-----*	*					
	*P3, DATTB,	*					
	*NEXT,	*					
	* J/IA50A	* --> VV					
	*****						
	F/IA102 <--		3057 600 228				
	F/IA103 <--		3062 601 229				
	F/IA78 <--		3105 639 240				
	F/WCSWRADRO2 <--		3645 1208 388				
	F/WCSWRDATO4 <--		3655 1218 390				
602	IA50A:3063	F/WCSWRSTO1 <--	3115 1219 391				
	*****						
	*SELECT, CIA,	*					3063 0000 00 00 01 01 000 300 0000 0
	*NEXT,	*					11001 000000 11000 000110101
	* J/IA216	* --> VV					
	*****						
603	IA216:3065	F/IA50A <-- VV					
	*****						
	*P3. MD+DATA,	*					3065 0000 11 10 00 00 000 000 0000 0
	* J/IA217	* -->	3066 604 230				00000 100000 11000 000110110
	*****						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS	
609	IA221:2347 F/IA06 ***** * FP INSTRUCTION WAS IN IR WHEN IA WAS * * ENTERED, GO DO IIAA * * TRAP * *-----* * NEXT, BUT(GO TO), PAGE+1, * * J/IIA01 * *****	<-- 2145 586 225		2347	0000 00 00	00 00	000 001	000000001000	0000 0
610	IA07:3120 ***** * OVERVIEW-IMPLEMENTATION PAR BECAUSE OF * * SPECIAL HARDWARE ON THE CACHE KT BOARD * * WHEN THE MACRO SELECT, PAR IS USED THE * * PAR ADDRESSED BY THE PHYSICAL ADDRESS IS * * PLACED ON BUS DIN. ALSO WRITTING A PAR * * WITH A DATTB WILL CAUSE THE PAR * * ADDRESSED BY THE PHYSICAL ADDRESS TO BE * * WRITTEN. SERVICE FOR THIS REGISTER * * CONSISTS ONLY OF SELECTING PAR ON CACHE * * KT AND PASSING CONTROL TO TO IA100 OR * * IA103. FOR BYTE OPERATIONS ONLY THE * * APPROPRIATE BYTE IS ENABLED TO BE * * WRITTEN. #0-I END PAR * *-----* * SELECT, PAR(R), * * NEXT, * * J/IA100 * *****	--> 1325 533 207		3120	1001 00 00	11 00	000 000	000000001000	0000 0
611	IA08:3122 ***** * DATOBE * *-----* * SELECT, PAR(RWL), * * NEXT, * * J/IA103 * *****	--> 3055 598 228		3122	1001 00 01	11 00	000 000	000000001000	0000 0
		--> 3062 601 229							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
612	IA09:3123 ***** * *DATOBO *-----* *SELECT, PAR(RWH), *NEXT, * J/IA103 *****	--> 3062 601 229		3123				00000000	1000	
					1001 00 10 11 00 000 000 0000 0 11001 000000 11000 000110010					
613	IA10:3121 ***** * *DATO *-----* *SELECT, PAR(RW), *NEXT, * J/IA103 *****	--> 3062 601 229		3121				00000000	1000	
					1001 00 11 11 00 000 000 0000 0 11001 000000 11000 000110010					
614	PDR IA11:3130 ***** *#OVERVIEW-IMPLEMENTATION PDR HARDWARE *FOR PDR REFERENCES IS SIMILAR TO THAT *FOR PAR REFERENCES AND FUNCTIONS IN THE *SAME WAY. #0-I END PDR *DATI *-----* *SELECT, PDR(R), *NEXT, * J/IA100 *****	--> 3055 598 228		3130				00000000	1000	
					1001 00 00 10 00 000 000 0000 0 11001 000000 11000 000101101					
615	IA12:3132 ***** * *DATOBE *-----* *SELECT, PDR(RWL), *NEXT, * J/IA103 *****	--> 3062 601 229		3132				00000000	1000	
					1001 00 01 10 00 000 000 0000 0 11001 000000 11000 000110010					



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	USA UBF	EXTENSION RIF COUT CLOCKS UPF
616	IA13:3133 ***** * *DATO80 *-----* *SELECT, PDR(RWH), *NEXT, * J/IA103 *****	--> 3062 601 229		3133 1001 00 10 10 00 11001 000000 11000			000000001000 000 000 0000 0 000110010
617	IA14:3131 ***** * *DATO *-----* *SELECT, PDR(RW), *NEXT, * J/IA103 *****	--> 3062 601 229		3131 1001 00 11 10 00 11001 000000 11000			000000001000 000 000 0000 0 000110010
TOC 618	MMRO IA16:3000 ***** *#OVERVIEW-IMPLEMENTATION MMRO MMRO IS *IMPLEMENTED BY USING UCON TO MOVE DATA *TO AND FROM IT. MMRO IS PHYSICALLY *LOCATED ON THE CACHE-KT BOARD #0-I END *DATI *-----* *SELECT, MMRO(R), *NEXT, * J/IA100 *****	--> 3055 598 228		3000 1001 00 00 01 00 11001 000000 11000			000000001000 000 000 0000 0 000101101
619	IA17:3002 ***** * *DATO8E *-----* *SELECT, MMRO(RWL), *NEXT, * J/IA103 *****	--> 3062 601 229		3002 1001 00 01 01 00 11001 000000 11000			000000001000 000 000 0000 0 000110010

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
620	IA18:3003 ***** * *DAT080 *-----* *SELECT, MMRO(RWH), *NEXT, * J/IA103 *****	-->	3062 601 229	3003	1001 11001	00 10 000000	01 00 11000	000 000 000110010	000000001000 0000 0
621	IA19:3001 ***** * *DAT0 *-----* *SELECT, MMRO(RW), *NEXT, * J/IA103 *****	-->	3062 601 229	3001	1001 11001	00 11 000000	01 00 11000	000 000 000110010	000000001000 0000 0
TOC 622	MMR1 IA20:3010 F/IA99 ***** *#OVERVIEW-IMPLEMENTATION MMR1 (READ *ONLY, OTHER OPERATIONS NOP) MMR1 DOES *NOT EXIST ON THE MACHINE, BUT MACRO *LEVEL READS OF IT READ A ZERO. A MACRO *LEVEL WRITE OF IT IS A NOP #0-I END *DATI *-----* *P2, D+0, *NEXT, * J/IA102 *****	<--	3011 623 234	3010	0011 00000	00 00 000000	00 00 11000	000 000 000101111	000000001000 0100 0
623	IA99:3011 ***** * *DAT0+B *-----* *NEXT, * J/IA20 *****	-->	3010 622 234	3011	0000 00000	00 00 000000	00 00 11000	000 000 000001000	0000 0

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF CCUT CLOCKS UPF
624	MMR2 IA90:3014	F/IA76 3015 625 235	<--	3014			000000001000
	***** *OVERVIEW-IMPLEMENTATION MMR2 (READ * *ONLY, OTHER OPERATIONS NOP) MMR2 IS READ * *BY USING UCON. WRITES TO IT ARE NOP'S. * *MMR2 IS PHYSIALLY LOCATED ON THE * *CACHE-KT BOARD. #0-I END * *DATI * *-----*						0001 00 00 00 00 010 000 0000 0 11001 000000 11000 000101101
625	MMR2 J/IA100 IA76:3015	J/IA100 3055 598 228	-->	3015			000000001000
	***** *DAT0+B * *-----*						0000 00 00 00 00 000 000 0000 0 00000 000000 11000 000001100
	NEXT, J/IA90	J/IA90 3014 624 235	-->				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COOT	CLOCKS
626	IA60:3070 CPU ERROR REGISTER			3070			000000001000	
	*OVERVIEW-FUNCTION CPU ERROR (READ ONLY, *OTHER OPERATIONS NOP) THE CPU ERROR *REGISTER WAS IMPLEMENTED SO THAT 11/70 *SOFTWARE COULD BE RUN ON THIS MACHINE *WITH MINIMUM CHANGE THE FORMAT OF THIS *CPU ERROR REGISTER IS SLIGHTLY *DIFFERENT THAN THAT IN THE 11/70, BUT *IS THOUGHT TO BE COMPATIBLE. BELOW IS *THE FORMAT OF THE CPU ERROR REGISTER IS *SHOWN BELOW.						0000 10 00 00 01 111 110 0000 0 00010 100000 11000 001000011	
	*-----*							
	*P3, MD+176, *NEXT, * J/IA60A							--> VV
627	IA60A:3103 F/IA60			3103			000000001000	
	*P2, SR+CSP(0),D+CSP(0), *NEXT, * J/IA60B						1010 10 00 00 00 000 000 0110 0 01111 000000 11000 001000110	
628	IA60B:3106 F/IA60A			3106			000000001000	
	*P2, D+D RIGHT 5,D'C)+ALU00, *NEXT, * J/IA60F						1111 00 00 01 10 000 010 0100 0 01000 000000 11000 001000111	
				3107	629	237		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
							RIF	COUT	CLOCKS
629	IA60F:3107	F/IA609 F/HOTSYNC	<-- <--	3106 628 236 4565 1297 421					
	*****						00000000	1000	
	*P2, D+D RIGHT 4 AND MD,D(C)+D(C), *						1011 11 10 01 01	000 111 0100 0	
	*NEXT, BUTR(SRO), *						01000 000000 00000	100111110	
	* J/IA600 *		-->	1110 3476 632 238					
	* J/IA60E *		-->	1111 3477 630 237					
	*****								
.CASE	2 OF BIA60F								
		F/IA60F	<--	3107 629 237					
		F/IA60H	<--	3112 631 237					
		F/CLRNZWS	<--	2120 1379 450					
		F/BIS04	<--	405 109 67					
		F/DST06	<--	516 44 37					
		F/SRC15	<--	4022 17 21					
		F/STEXP4	<--	620 1755 570					
630	IA60E:3477	F/IA111	<--	3225 682 250					
	*****								
	*P3, MD+200, *						0000 10 00 00 10	000 000 0000 0	
	*NEXT, *						00010 100000 11000	001001010	
	* J/IA60H *		-->	VV					
	*****								
631	IA60H:3112	F/IA60E	<--	VV					
	*****								
	*P2, D+D OR MD,D(C)+D(C), *						1110 11 10 01 01	000 111 0100 0	
	*NEXT, *						00000 000000 11000	100111110	
	* J/IA60D *		-->	3476 632 238					
	*****								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
		F/IA60F	<--	3107 629 237			
		F/IA60H	<--	3112 631 237			
		F/CLRNZWS	<--	2120 1379 450			
		F/BIS04	<--	405 109 67			
		F/DST06	<--	516 44 37			
		F/SRC15	<--	4022 17 21			
		F/STEXP4	<--	620 1755 570			
		F/IA111	<--	3225 682 250			
632	IA600:3476						
	*****						
	*P2, D+D PLUS D(C),						3476 00000001000
	*NEXT,						0100 11 01 01 01 000 000 0100 0
	*						00000 000000 11000 000101111
	J/IA102	-->	3057 600 228				
	*****						
.TOC	MEMORY SYSTEM ERROR REGISTER						
633	IA65:3104						
	*****						
	*OVERVIEW-FUNCTION MEMORY SYSTEM						3104 00000001000
	*ERROR (READ ONLY, OTHER OPERATIONS NOP)						1010 10 00 00 00 000 000 0110 0
	*THE MEMORY SYSTEM ERROR REGISTER WAS						01110 000000 11000 001001011
	*IMPLEMENTED ON THIS MACHINE TO MINIMIZE						
	*THE AMOUNT OF CHANGE TO 11/0 SOFTWARE						
	*FOR IT TO RUN ON THIS MACHINE. THIS						
	*REGISTER DOES NOT REALLY EXIST ON THIS						
	*MACHINE BUT IS CONSTRUCTED FROM LOGGED						
	*DATA WHEN IT IS REFERENCED.						
	*DATI						
	-----						
	*P2, SR+CSP(1),D+CSP(1),						
	*NEXT,						
	*						
	J/IA66A	-->	VV				
	*****						
634	IA66A:3113	F/IA65	<--	VV			
	*****						
	*P2, D+D RIGHT 6,D(C)+ALU07,						3113 00000001000
	*NEXT,						1111 00 00 01 11 000 011 0100 0
	*						01000 000000 11000 001010110
	J/IA67	-->	3126 635 239				
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BCX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
535	IA67:3126 ***** *P3, MD+340, *NEXT, * J/IA68 *****	<--	3113 634 238	3126	0000 10 00 00010 100000	00 11	100 000	000000001000	0000 0
636	IA68:3127 ***** *P2, SR+SR AND MD, *NEXT, BUTR(D(C)), * J/IA69 * J/IA70 *****	<-- VV	01 3521 637 239 11 3523 638 239	3127	1011 11 10 00000 003000	00 00	000 000	000000001000	0010 0
CASE 637	1 OF BIA68 IA69:3521 ***** *P3, MD+100000, *NEXT, * J/IA70 *****	<-- VV		3521	1000 10 00 00010 100000	00 00	000 000	000000001000	0000 0
CASE 638	2 OF BIA68 IA70:3523 ***** *P2, D+SR OR MD, *NEXT, * J/IA102 *****	<--	3127 636 239 3057 600 228	3523	1110 11 10 00000 000000	00 00	000 000	000000001000	0100 0

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB ALU BUS SP	BUSA RIF COUT UBF UPF	EXTENSION	CLOCKS
639	IA78:3105 ***** * DATO, ENABLE * * LOGGING * ----- * P2, D+WHAMI OR I * * P3, WHAMI+D (A ADDR), * * NEXT, * * J/IA50A * *****	--> 3063 602 229		3105 1110 11 00 11 00 00000 010010 11000	101 000 0100 0 000110011	000000001000	
640	PSW IA21:3030 ***** * OVERVIEW-FUNCTION PSW (DATO'S AND * * DATO'S DO NOT CHANGE T-BIT) THE PSW, * * BESIDES BEING CHANGED BY TRAPS, HAS AN * * I/O PAGE ADDRESS (7777(b), ANY * * INSTRUCTION THAT CAN OPERATE ON THIS * * LOCATION CAN CHANGE THE PSW, EXCEPT FOR * * THE T-BIT, WHICH CAN BE CHANGED ONLY BY * * A TRAP. #0-F END * * DATI * ----- * SELECT, PSW, * * NEXT, * * J/IA100 * *****	--> 3055 598 228		3030 1000 00 00 10 01 11001 000000 11000	010 010 0000 0 000101101	000000001000	
641	IA22A:3032 ***** * DATOBE * ----- * NEXT, * * J/IA22 * *****	--> VV		3032 0000 00 00 00 00 00000 000000 11000	000 000 0000 0 000011001	000000001000	
642	IA22:3031 ***** * DATO * * XMD+TMASK * ----- * P3, MD+20, * * NEXT, * * J/IA24 * *****	<-- VV		3031 0000 10 00 00 00 00010 100000 11000	010 000 0000 0 001100110	000000001000	
		--> 3146 643 241					



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALL BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
643	IA24:3146 ***** * SR GETS * * TMSK * *-----* *P2, SR+MD, * *NEXT, * * J/IA25A * *****	<--	3031 642 240	3146				00000000	1000	
					1010	11 10	00 00	000 000	0010 0	
					00000	000000	11000	001100111		
644	IA25A:3147 ***** *SELECT, PSW, * *NEXT, * * J/IA25 * *****	<-- VV		3147				00000000	1000	
					1000	00 00	10 01	010 010	0000 0	
					11001	000000	11000	001101010		
645	IA25:3152 ***** * XMD GETS OLD * *PSW * *-----* *P3, MD+DATA, * *NEXT, * * J/IA26 * *****	<-- VV		3152				00000000	1000	
					0000	11 10	00 00	000 000	0000 0	
					00000	100000	11000	001101100		
646	IA26:3154 ***** * D<4> GETS OLD T-BIT, OTHER BITS EQUAL * *0 * *-----* *P2, D+SR AND MD, D(C)+D(C), * *NEXT, * * J/IA27A * *****	<-- VV		3154				00000000	1000	
					1011	11 10	00 00	000 111	0100 0	
					00000	000000	11000	001101101		
			3155 647 242							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
647	IA27A:3155 ***** F/IA26 ***** *SELECT, DBUF LATCH, *NEXT, * J/IA27	<--	3154 646 241	3155	0100 11001	00 00 000000	00 00 11000	000 100 0000 0 001101110
648	IA27:3156 ***** F/IA27A ***** * XMD GETS NEW PSW, DBUF LATCH WAS LOADED *BY *JAM02 *-----* *P3, MD+DBUF LATCH, *NEXT, * J/IA28	<-- VV --> VV		3156	0000 00000	11 10 100000	00 00 11000	000 000 0000 0 001110010
649	IA28:3162 ***** F/IA27 ***** * TEST TO SEE IF T-BIT WAS SET OR CLEAR *IN OLD PSW TABLE *CU *-----* *NEXT, BUTR(D(14-0)), * J/IA29 * J/IA30	<-- VV --> VV -->	01 3165 650 242 11 3167 651 243	3162	0000 00000	00 00 000000	00 00 01101	000 000 0000 0 001110101
.CASE 650	1 OF BIA28 IA29:3165 ***** F/IA28 ***** * CLEAR D<4>, LEAVE REST OF D UNCHANGED *TEST FOR DATO OR DATOB TABLE *CV *-----* *P2, D+SR OR MD, D(C)+D(C), *NEXT, BUTR(D(C)), * J/IA31 * J/IA32	<-- VV --> VV -->	01 3245 652 243 11 3247 653 243	3165	1110 00000	11 10 000000	00 00 01101	000 111 0100 0 010100101

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS	
.CASE 651	2 OF BIA28 IA30:3167	F/IA28	<--	3162 649 242	3167 0010 11 10 00 00 000 111 0100 0 00000 000000 10011 010100101
	* SET D(4) TABLE				
	*CV				
	*P2, D+NOT SR AND MD, D(C)+D(C),				
	*NEXT, BUTR(D(C)),				
	* J/IA31				
		J/IA31	-->	01 3245 652 243	
		J/IA32	-->	11 3247 653 243	
.CASE 652	1 OF BIA29 IA31:3245	F/IA29 F/IA30	<-- <-- VV	3165 650 242	3245 1000 00 00 10 01 010 000 0000 0 11001 000000 11000 000110010
	* DATOBE				
	*SELECT, PSW(LO),				
	*NEXT, J/IA103				
		J/IA103	-->	3062 601 229	
.CASE 653	2 OF BIA29 IA32:3247	F/IA29 F/IA30	<-- <--	3165 650 242 3167 651 243	3247 1000 00 00 10 01 010 010 0000 0 11001 000000 11000 000110010
	* DATO				
	*SELECT, PSW,				
	*NEXT, J/IA103				
		J/IA103	-->	3062 601 229	
.CASE 654	IA33:3033				3033 0000 00 00 00 01 000 010 0000 0 11001 000000 11000 000110010
	* DATOBO				
	*SELECT, PSW(HI),				
	*NEXT, J/IA103				
		J/IA103	-->	3062 601 229	







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION		CLOCKS
					BUS	SP	UBF	RIF	COUT	
667	IA38G:3202 ***** *P2, D+SR, *NEXT, * J/IA103 *****	<-- 3201 666 246 --> 3062 601 229		3202	1111 00000	00 00 000000	00 00 11000	000 000 000110010	0100 0	000000001000
668	STACK LIMIT REGISTER IA39:3040 ***** *STACK LIMIT (WORD ONLY, MAY NOT BE *CORRECT) *-----* *P3, MD+177400, *NEXT, * J/IA39B *****	<-- 3203 669 247 --> VV		3040	1111 00010	10 11 100000	11 00 11000	000 000 010000011	0000 0	000000001000
669	IA39B:3203 ***** *SELECT, SLR, *NEXT, * J/IA39C *****	<-- VV --> VV		3203	1001 11001	00 10 00000	00 00 11000	000 000 010000110	0000 0	000000001000
670	IA39C:3206 ***** *P2, SR+MD, *P3, MD+DATA, *NEXT, * J/IA39D *****	<-- 3215 674 248 --> VV		3206	1010 00000	11 10 100000	00 00 11000	000 000 010001010	0010 0	000000001000
671	IA39D:3212 ***** *P2, D+SR AND MD, *NEXT, * J/IA102 *****	<-- VV -->		3212	1011 00000	11 10 000000	00 00 11000	000 000 000101111	0100 0	000000001000

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	CLOCK COUNT
672	IA40:3041 ***** * *DATO+B *-----* *SELECT,    SLR(RW), *            J/IA103 *****	-->	3062 601 229	3041	1001 11001	00 00	10 00	00 00 000 000	0000 0000 1000 0
.TOC 673	" HITMISS REGISTER" IA41:3050            F/IA85 ***** *HITMISS (READ ONLY, OTHER OPERATIONS *WILL NOP) *-----* *P3,            MD+377, *NEXT, *                    J/IA41B *****	<--	3051 675 248	3050	0000 00010	10 00 100000	00 11 11000	111 111 010001101	0000 0000 1000 0
674	IA41B:3215            F/IA41 ***** *SELECT,    HITTAG, *NEXT, *                    J/IA39C *****	--> VV <-- VV	3206 670 247	3215	0001 11001	01 00 000000	00 00 11000	010 000 010000110	0000 0000 1000 0
675	IA85:3051 ***** * *DATO+B *-----* *NEXT, *                    J/IA41 *****	-->	3050 673 248	3051	0000 00000	00 00 000000	00 00 11000	000 000 000101000	0000 0000 1000 0
.TOC 676	" UBREAK REGISTER" IA86:3060 ***** *UBREAK (NYI) *DATI *-----* *NEXT, *                    J/IA103 *****	-->	3062 601 229	3060	0000 00000	00 00 000000	00 00 11000	000 000 000110010	0000 0000 1000 0





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UEF	EXTENSION RIF COJT CLOCKS UPF
681	IA110:3221	F/IA89	<--	3101 580 249	3221			000000001000
	*SELECT, EMIT,				0000 00 00	00 01	000 000	0000 0
	*NEXT,				11001 000000	11000	010010101	
	* J/IA111		--> VV					
682	IA111:3225	F/IA110	<-- VV		3225			000000001000
	*P3, MD+3 (BC),				0000 10 00	00 00	000 011	0000 0
	*NEXT,				00010 100000	11000	010011001	
	* J/IA112A		--> VV					
683	IA112A:3231	F/IA111	<-- VV		3231			000000001000
	*P2, D+R(CNTL), SR+R(CNTL),				1010 01 11	00 00	111 000	0110 0
	*NEXT, BUT(TRACK),				00000 000000	11001	010011110	
	* J/IA113B		--> VV					
684	IA113B:3236	F/IA112A	<-- VV		3236			000000001000
	* CLEAR JAM REG,				0100 00 00	10 00	000 000	0000 0
	*NEXT,				11011 000000	11000	010100010	
	* J/IA113		--> VV					
685	IA113:3242	F/IA113B	<-- VV		3242			000000001000
	* DONE TO SELECT				1111 00 00	01 00	000 100	0100 0
	*EMIT				00000 000000	11010	010100100	
	*-----*							
	*P2, D+D LEFT 1, D(C)+ALU15,							
	*NEXT, BUT(CLEAR FLAGS),							
	* J/IA114B		-->	3244 686 251				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
686	IA114B:3244	F/IA113	<--	3242	685	250		
	*****			3244				000000001000
	*P3, CSP(12)+030000,			0011	10 00	00 00	000 000	0000 0
	*NEXT,			00101	100000	11000	010100110	
	* J/IA114C		--> VV					
687	IA114C:3246	F/IA114B	<-- VV					
	*****			3246				000000001000
	*P3, CSP(13)+040000,			0100	10 00	00 00	000 000	0000 0
	*NEXT,			00100	100000	11000	010101000	
	* J/IA114D		--> VV					
688	IA114D:3250	F/IA114C	<-- VV					
	*****			3250				000000001000
	*P2, RETURN+IA114E,			0011	00 01	01 01	001 001	0000 0
	*NEXT, BUT(GO TO),PAGE+1,			00000	000000	11100	010101100	
	* J/FLG01		-->					
	*****			1254	564	216		
	*****			VV				
	*****			3251	689	251		
689	IA114E:3251							
	*****			3251				000000001000
	*P3, MD+4000,			0000	10 10	00 00	000 000	0000 0
	*NEXT,			00010	100000	11000	010110010	
	* J/IA114F		--> VV					
690	IA114F:3262	F/IA114E	<-- VV					
	*****			3262				000000001000
	*P2, RETURN+IA114,			0011	00 01	01 10	011 001	0000 0
	*NEXT, BUT(GO TO),PAGE+1,			00000	000000	11100	010110000	
	* J/FLG501		-->					
	*****			1260	568	218		
	*****			VV				
	*****			3263	691	252		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
691	IA114:3263			3263				000000001000
	*P3, MD+100 (BC),				0000	10 00	00 01	000 000 0000 0
	*NEXT, BUTR(D(C)),				00010	100000	10011	100001001
	* J/IA115							
		J/IA115	-->	01 3411	692	252		
		J/IA116	-->	11 3413	697	253		
CASE 692	1 OF BIA114 IA115:3411	F/IA114	<-- VV	3411				000000001000
	*P2, SR+MD,				1010	11 10	00 00	000 000 0010 0
	*NEXT, J/IA115A		--> VV		00000	000000	11000	010110100
693	IA115A:3264	F/IA115	<-- VV	3264				000000001000
	*P2, SR+SR OR R(CNTL),				1110	01 11	00 00	111 000 0010 0
	*NEXT, J/IA115D		--> VV		00000	000000	11000	010110110
694	IA115D:3266	F/IA115A	<-- VV	3266				000000001000
	*P2, SR+SR AND NOT 1,				0111	11 00	00 00	000 000 00'0 0
	*NEXT, J/IA115E		--> VV		00000	000000	11000	010111010
695	IA115E:3272	F/IA115D	<-- VV	3272				000000001000
	*P2, D+SR AND NOT 2,				0111	11 11	00 00	111 000 0100 0
	*P3, R(CNTL)+D,				00000	011100	11000	010111011
	*NEXT, J/IA115C		-->	3273	696	253		

E06

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
696	IA115C:3273 ***** *P2, D+0, * *NEXT, BUT(GO TO),PAGE+1, * * J/DISO1 * *****	<-- 3272 695 252		3273	0011 00 00 00 00	0000 000000 11100	000000001000 000 001 0100 0 001110001
.CASE 697	2 OF BIA114 IA116:3413 ***** * DO NOT * *DISPLAY * -----* *NEXT, BUT(GO TO),PAGE+0, * * J/BRAOS * *****	<-- 3263 691 252		3413	0000 00 00 00 00	0000 000000 11100	000000001000 0000 000 0000 0 000000011
		--> 3 283 126					



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
700	MED03:3276 ***** *P2, SR+MD, *NEXT, * J/MED04 *****	<--	3274 699 254	3276	1010 00000	11 10 000000	00 00 11000	000 000 0010 0 011000010
701	MED04:3302 ***** *SELECT, EMIT, *NEXT, * J/MED05 *****	<-- VV		3302	0000 11001	00 00 000000	00 01 11000	000 000 0000 0 011000011
702	MED05:3303 ***** * BA GETS OPERATION CODE FOR DECODING BY *ROM ON *CACHKT *-----* *P1, BA+SR,CURRENT MODE, *P3, MD+7, *NEXT, * J/MED06 *****	<-- VV		3303	0000 00000	11 10 100000	00 00 11000	000 111 0001 0 011000110
703	MED06:3306 ***** *P2, D+SR AND MD,SR+SR AND MD. *NEXT, * J/MED10A *****	<-- VV		3306	1011 00000	11 10 000000	00 00 11000	000 000 0110 0 011000111
704	MED10A:3307 ***** *P3, MD+6 (3C), *NEXT, * J/MED10 *****	<-- VV	3312 705 256	3307	0000 00010	10 00 100000	00 00 11000	000 110 0000 0 011001010

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
705	MED10:3312	F/MED10A	<--	3312	0100	00 00	00 01	000 100 0000 0
	*P3,				11011	000000	11000	011001110
	*ENABLE CLKIR,							
	*NEXT,	J/MED11	--> VV					
706	MED11:3316	F/MED10	<-- VV	3316	0000	00 00	00 00	000 000 0000 0
	*P2, IR+DBUF LATCH,				11010	000000	11000	011010010
	*NEXT,	J/MED12A	--> VV					
707	MED12A:3322	F/MED11	<-- VV	3322	0110	11 10	00 00	000 000 1100 0
	*P2, D+SR XOR MD,				00000	000000	11000	011010011
	*NEXT,	J/MED12B	--> VV					
708	MED12B:3323	F/MED12A	<-- VV	3323	0011	00 00	00 00	000 000 0010 0
	*P2, SR+0,				00000	000000	01101	110000001
	*NEXT, BUTR(D(14-00) IS 0),							
	* J/MED12C	J/MED12C	-->					
	* J/MED12D	J/MED12D	-->					
				01 3601	709	257		
				11 3603	710	257		



BCX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
CASE 709	1 OF BMED128 MED12C:3601	F/MED128	<--	3323 708 256				
	*****							
	*P2, SR+NOT SR,							
	*NEXT,							
	* J/MED120		-->	VV				
	*****							
CASE 710	2 OF BMED128 MED12D:3603	F/MED128	<--	3323 708 256				
	*****							
	* DECODE CP INT,							
	*NEXT,							
	* J/MED15		-->	VV				
	*****							
711	MED13:3324	F/MED15	<--	3336 714 258				
	*****							
	*P3, MD+DATA,							
	*NEXT,							
	* J/MED14		-->	VV				
	*****							
712	MED14:3325	F/MED13	<--	VV				
	*****							
	*P2, D+MD,D(C)+D(C),							
	*NEXT,							
	* J/MED14A		-->	VV				
	*****							
713	MED14A:3326	F/MED14	<--	VV				
	*****							
	*P2, RETURN+D, PAGE+3,							
	*NEXT,							
	* J/MED16		-->	VV				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
714	MED15:3336 ***** *P2, D+R(CNTL),D(C)+ALU15, *NEXT, * J/MED13 *****	<-- F/MED12D 3603 710 257		3336	1010 01 11 00 00 00000 000000 11000			000000001000 111 100 0100 0 011010100		
715	MED16:3342 ***** * TEST FOR CONSOLE MODE TABLE *CW ----- *P2, D+RD, D(C)+D(C), *NEXT, BUTR(D(C)), * J/MED18 * J/MED18 * J/MED17 *****	<-- F/MED14A 3326 713 257  --> 01 3205 717 258 --> 11 3207 716 258		3342	1111 00 00 10 00 00000 000000 10011			000000001000 100 111 0100 0 010000101		
.CASE	2 OF BMED16									
716	MED17:3207 ***** * CONSOLE *MODE ----- *P2, D+R(TMPSW), *NEXT, * J/MED18 *****	<-- F/MED16 F/MED17 F/MED79C 3342 715 258 3207 716 258 3404 824 281		3207	1111 00 00 11 01 101 000 00000 000000 11000			000000001000 101 000 0100 0 010000101		
.CASE	1 OF BMED16									
717	MED18:3205 ***** *P3, DBUF LATCH+D, *NEXT, * BUT(RETURN) *****	<-- F/MED16 F/MED17 F/MED79C 3342 715 258 3207 716 258 3404 824 281		3205	0100 00 00 00 00 000 100 11011 000000 11111			000000001000 000 100 0000 0 000000000		

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
718	MED19A:2066	F/MED23A F/MED25A F/MED31A F/MED33A	<-- <-- <-- <--	2070 732 263 2071 736 264 2100 750 267 2101 754 267	2066		000000001000 0000 00 00 00 00 000 011 0000 0 00000 000000 11100 110011111
CASE 719	2 OF BMED32 MED19:3637	F/MED32	<--	3224 751 267	3637		000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 10011 010110101
	*TABLE *CX ----- *NEXT, BUTR(D(C)), * J/MED20 * J/MED20 * J/MED21			01 3265 720 259 11 3267 721 259			
CASE 720	1 OF BMED19 MED20:3265	F/MED19	<-- VV		3265		000000001000 0000 00 00 00 00 100 000 0000 0 00000 000110 11100 000000011
	*P3, RO+D *NEXT, BUT(GO TO),PAGE+0, * J/BRAOS			3 283 126			
CASE 721	2 OF BMED19 MED21:3267	F/MED19	<--	3637 719 259	3267		000000001000 0000 00 00 00 01 101 000 0000 0 00000 010010 11000 011100011
	*P3, R(TMPSW)+D, *NEXT, * J/MED85			3343 722 260			

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
722	MED85:3343	F/MED21	<--	3267 721 259			3343 000000001000
	*P2, SR+0, *						0011 00 00 00 00 000 001 0010 0
	*NEXT, BUT(GO TO),PAGE+1, *						00000 000000 11100 10000000
	* J/DIS06 *		-->	1400 1058 346			
	F/MED70		<--	3160 797 276			
	F/MED72		<--	3170 802 277			
	F/MED73		<--	3171 803 277			
	F/MED74		<--	3320 805 277			
	F/MED200		<--	3720 807 278			
	F/MED201		<--	3721 808 278			
723	MEDX1:3346	F/CAREAD02	<--	3415 832 283			3346 000000001000
	*P3, MD+DATA (BC), *						0000 10 00 00 00 000 000 0000 0
	*NEXT, *						00010 100000 11000 011101010
	* J/MEDX2 *		--> VV				
724	MEDX2:3352	F/MEDX1	<-- VV				3352 000000001000
	*P2, D+MD, D(C)+D(C), *						1010 11 10 00 00 000 111 0100 0
	*NEXT, *						00000 000000 11000 110011111
	* J/MED19 *		-->	3637 719 259			

BOX NO.	TAG: ADDRESS	SOURCE / DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
		F/MED26A <--	3716 738 264				
		F/MED26B <--	3717 739 264				
		F/MED27A <--	2074 741 265				
		F/MED28A <--	3736 743 265				
		F/MED28B <--	3737 744 265				
		F/MED29A <--	2076 746 266				
		F/MED34A <--	3436 756 268				
		F/MED34B <--	3437 757 268				
		F/MED35A <--	2104 759 268				
		F/MED36A <--	3416 761 269				
		F/MED36B <--	3417 762 269				
		F/MED37A <--	2105 764 269				
		F/MED54 <--	3304 781 273				
		F/MED55 <--	3305 782 273				
		F/MED56 <--	3310 783 273				
		F/MED57 <--	3311 784 273				
		F/MED58 <--	3314 785 273				
		F/MED59 <--	3315 786 274				
		F/MED60 <--	3330 787 274				
		F/MED61 <--	3331 788 274				
		F/MED62 <--	3334 789 274				
		F/MED63 <--	3335 790 274				
		F/MED64 <--	3370 791 274				
		F/MED65 <--	3371 792 275				
		F/MED66 <--	3374 793 275				
		F/MED67 <--	3375 794 275				
		F/MED68 <--	3360 795 275				
		F/MED69 <--	3361 796 275				
		F/MED208 <--	3725 812 279				
		F/MED209 <--	3730 813 279				
		F/MED76A <--	3372 815 279				
		F/MED204 <--	3376 818 280				
		F/MED78 <--	3377 820 280				
725	MEDZ1:3005	F/CAWRT02 <--	3414 830 282				
	*****						
	*P2 D+R(CNTL) D(C)+ALU15, *						
	*NEXT, BUT(DIAGNOSE), *						
	* J/MEDZ2 *	-->	3353 726 262				
	*****						

3005 000000001000  
 1010 01 11 00 00 111 100 0100 0  
 00000 00000 11011 011101011



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	! OF BMED22	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	USF	RIF COUT	CLOCKS
730	MED22A:3636	F/MED22	<--	3004	729	262		
	*P2, D+ASPL6,D(C)+D(C),			3636			000000001000	
	*NEXT, J/MED19	-->					1111 00 00 10 00 111 111 0100 0	
							00000 000000 11000 110011111	
731	MED23:3200			3200			000000001000	
	*NEXT, BUT(GO TO),PAGE+2,	--> VV					0000 00 00 00 00 000 010 0000 0	
	* J/MED23A						00000 000000 11100 000111000	
732	MED23A:2070	F/MED23	<-- VV	2070			100000001000	
	*P2, D+ASPL TOP (DF),D(C)+D(C),						1111 00 00 10 10 000 111 0100 0	
	*NEXT, BUT(DIAGNOSE),	-->					00000 000000 11011 000110110	
	* J/MED19A			2066	718	259		
733	MED24:3204			3204			000000001000	
	*P2, D+ASPH BOTTOM (DF),D(C)+D(C),						1111 00 00 11 10 000 111 0100 0	
	*NEXT, BUTR(SR1),						00000 000000 00000 110011101	
	* J/MED24A	-->		1101	3635	734	263	
	* UNDEFINED CASE							
.CASE	1 OF BMED24							
734	MED24A:3635	F/MED24	<-- VV	3635			000000001000	
	*P2, D+ASPH6,D(C)+D(C),						1111 00 00 11 00 111 111 0100 0	
	*NEXT, J/MED19	-->					00000 000000 11000 110011111	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
735	MED25:3020 ***** *NEXT, BUT(GO TO),PAGE+2, * J/MED25A *****	--> VV		3020	0000 00 00 00000 000000	00 00 11100	00 00 000111001	000000001000 000 010 0000 0
736	MED25A:2071 F/MED25 ***** *P2, D+ASPH TOP (DF),D(C)+D(C), *NEXT, BUT(DIAGNOSE), * J/MED19A *****	<-- VV -->	2066 718 259	2071	1111 00 00 00000 000000	11 10 11011	100000001000 000 111 0100 0	000110110
737	MED26:3024 ***** *ASP DEPOSIT ----- *NEXT, BUTR(SRO), * J/MED26A * J/MED26A * UNDEFINED CASE *****	-->	1110 3716 738 264	3024	0000 00 00 00000 000000	00 00 00000	000 000 0000 0 111001110	000000001000
CASE 738	1 OF BMED26 MED26A:3716 F/MED26 ***** *P3, ASPL6+D, *NEXT, J/MEDZ1 *****	<-- VV -->	3005 725 261	3716	0000 00 00 00000 000110	00 00 11000	000 000 0000 0 000000101	000000001000
739	MED26B:3717 ***** *P3, R(DF)+D (A ADDR), *NEXT, J/MEDZ1 *****	-->	3005 725 261	3717	0000 00 00 00000 000110	00 10 11000	000 000 0000 0 000000101	000000001000



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION				MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSB LBF	EXTENSION	
		OFST	ADDR	BOX	PAGE						RIF	COUT CLOCKS
740	MED27:3210					3210				00000000	1000	
	*NEXT, BUT(GO TO),PAGE+2,						0000	00 00	00 00	000 010	0000 0	
	* J/MED27A				--> VV		00000	000000	1'100	000111100		
741	MED27A:2074					2074				10000000	1000	
	*P3, ASPL TOP (DF)+D,						0000	00 00	00 10	000 011	0000 0	
	*NEXT, BUT(GO TO),PAGE+3,						00000	000C10	11100	000000101		
	* J/MEDZ1				-->	3005	725	261				
742	MED28:3034					3034				00000000	1000	
	*NEXT, BUTR(SRD),						0000	00 00	00 00	000 000	0000 0	
	* J/MED28A						00000	000000	0000C	111011110		
	* J/MED28A				-->	1110	3736	743	265			
	* J/MED28B				-->	1111	3737	744	265			
.CASE 743	1 OF BMED28 MED28A:3736					3736				00000000	1000	
	*P3, ASPH+D,						0000	00 00	00 00	111 000	0000 0	
	*NEXT, J/MEDZ1				-->	3005	725	261		000000101		
.CASE 744	2 OF BMED28 MED28B:3737					3737				00000000	1000	
	*P3, ASPH BOTTOM (DF)+D,						0000	00 00	00 10	000 000	0000 0	
	*NEXT, J/MEDZ1				-->	3005	725	261		000000101		



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSB UBF	EXTENSION RIF UPF	COUT	CLOCKS
750	MED31A:2100	F/MED31	<--	2100				100000001000		
	*P2, D+BSPH TOP (DF),D(C)+D(C),			1010	00 00	00 00	000 111	0100 0		
	*NEXT, BUT(DIAGNOSE),			00000	000000	11011	000110110			
	* J/MED19A		-->	2066	718	259				
751	MED32:3224			3224				000000001000		
	*P2, D+BSPH BOTTOM (DF),D(C)+D(C),			1010	01 00	00 00	000 111	0100 0		
	*NEXT, BUTR(SR3),			00000	000000	00000	110010111			
	* J/MED32A		-->	0111	3627	752	267			
	* J/MED19		-->	1111	3637	719	259			
.CASE	1 OF BMED32									
752	MED32A:3627	F/MED32	<-- VV	3627				000000001000		
	*P2, D+BSPH6,D(C)+D(C),			1010	01 10	00 00	111 111	0100 0		
	*NEXT, J/MED19		-->	3637	719	259				
753	MED33:3230			3230				000000001000		
	*NEXT, BUT(GO TO),PAGE+2,			0000	00 00	00 00	000 010	0000 0		
	* J/MED33A		--> VV	00000	000000	11100	001000001			
754	MED33A:2101	F/MED33	<-- VV	2101				100000001000		
	*P2, D+BSPH TOP (DF),D(C)+D(C),			1010	01 00	00 00	000 111	0100 0		
	*NEXT, BUT(DIAGNOSE),			00000	000000	11011	000110110			
	* J/MED19A		-->	2066	718	259				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
755	MED34:3054 ***** *BSP DEPOSIT *-----* *P3, BUTR(SRD), * J/MED34A * * J/MED34A * J/MED34B *-----*	--> 1110 3436 756 268 --> 1111 3437 757 268		3054	0000 70 00 00000 000000	00 00 0000	00 00 0000	00000001000 000 000 0000 0 10001'110
.CASE 756	1 OF BMED34 MED34A:3436 ***** *P3, BSPL6+D, *NEXT, * J/MEDZ1 *-----*	<-- VV --> 3005 725 261	F/MED34	3436	0000 00 10 00000 001100	00 00 11000	111 000 000000101	000000001000 0000 0 000000101
.CASE 757	2 OF BMED34 MED34B:3437 ***** *P3, BSPL BOTTOM (DF)+D, *NEXT, * J/MEDZ1 *-----*	<-- --> 3005 725 261	F/MED34	3437	0000 00 00 00000 000100	00 10 11000	000 000 000000101	000000001000 0000 0 000000101
758	MED35:3234 ***** *NEXT, BUT(GO TO),PAGE+2, * J/MED35A *-----*	<-- VV		3234	0000 00 00 00000 000000	00 00 11100	000 010 001000100	000000001000 0000 0 001000100
759	MED35A:2104 ***** *P3, BSPL TOP (DF)+D, *NEXT, BUT(GO TO),PAGE+3 * J/MEDZ1 *-----*	<-- VV --> 3005 725 261	F/MED35	2104	0000 00 00 00000 000100	00 10 11100	000 011 000000101	100000001000 0000 0 000000101

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
760	MED36:3240			3240				000000001000
	*NEXT, BUTR(SRO),				0000	00 00	00 00	000 000 0000 0
	* J/MED36A				00000	000000	00000	100001110
	* J/MED36A	-->	1110 3416 761 269					
	* J/MED36B	-->	1111 3417 762 269					
CASE 761	1 OF B MED36 MED36A:3416	F/MED36	<-- VV	3416				000000001000
	*P3, BSPH6+D,				0000	00 10	00 00	111 000 0000 0
	*NEXT, J/MEDZ1	-->	3005 725 261		00000	011100	11000	000000101
CASE 762	2 OF E MED36 MED36B:3417	F/MED36	<--	3417				000000001000
	*P3, BSPH BOTTOM (DF)+D,				0000	00 00	00 10	000 000 0000 0
	*NEXT, J/MEDZ1	-->	3005 725 261		00000	010100	11000	000000101
763	MED37:3064			3064				000000001000
	*NEXT, BUT(GO TO),PAGE+2,				0000	00 00	00 00	000 010 0000 0
	* J/MED37A	-->	VV		00000	000000	11100	001000101
764	MED37A:2105	F/MED37	<-- VV	2105				100000001000
	*P3, BSPH TOP (DF)+D,				0000	00 00	00 10	000 011 0000 0
	*NEXT, BUT(GO TO),PAGE+3,				00000	010100	11100	000000101
	* J/MEDZ1	-->	3005 725 261					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
				ADDR ALU BUSB BUSA RIF COUT CLOCKS
765	.TOC " C SCRATCH PAD" MED38:3364 ***** *CSP EXAMINE * *-----* *P2, D+CSP(0),D(C)+D(C), * *NEXT, * * J/MED19 * -->	3637	719 259	3364 1010 10 00 00 00 000 111 0100 0 01111 000000 11000 110011111
766	MED39:3365 ***** *P2, D+CSP(1),D(C)+D(C), * *NEXT, * * J/MED19 * -->	3637	719 259	3365 1010 10 00 00 00 000 111 0100 0 01110 000000 11000 110011111
767	MED40:3074 ***** *P2, D+CSP(2),D(C)+D(C), * *NEXT, * * J/MED19 * -->	3637	719 259	3074 1010 10 00 00 00 000 111 0100 0 01101 000000 11000 110011111
768	MED41:3075 ***** *P2, D+CSP(3),D(C)+D(C), * *NEXT, * * J/MED19 * -->	3637	719 259	3075 1010 10 00 00 00 000 111 0100 0 01100 000000 11000 110011111
769	MED42:3144 ***** *P2, D+CSP(4),D(C)+D(C), * *NEXT, * * J/MED19 * -->	3637	719 259	3144 1010 10 00 00 00 000 111 0100 0 01011 000000 11000 110011111

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX						PAGE	RIF UPF	
770	MED43:3145 ***** *P2, D+CSP(5),D(C)+D(C), * *NEXT, * * J/MED19 * --> *****		3637	719	259	3145	1010 01010	10 00 000000	00 00 11000	000 111 110011111	0100 0	000000001000
771	MED44:3150 ***** *P2, D+CSP(6),D(C)+D(C), * *NEXT, * * J/MED19 * --> *****		3637	719	259	3150	1010 01001	10 00 000000	00 00 11000	000 111 110011111	0100 0	000000001000
772	MED45:3151 ***** *P2, D+CSP(7),D(C)+D(C), * *NEXT, * * J/MED19 * --> *****		3637	719	259	3151	1010 01000	10 00 000000	00 00 11000	000 111 110011111	0100 0	000000001000
773	MED46:3254 ***** *P2, D+CSP(10),D(C)+D(C), * *NEXT, * * J/MED19 * --> *****		3637	719	259	3254	1010 00111	10 00 000000	00 00 11000	000 111 110011111	0100 0	000000001000
774	MED47:3255 ***** *P2, D+CSP(11),D(C)+D(C), * *NEXT, * * J/MED19 * --> *****		3637	719	259	3255	1010 00110	10 00 000000	00 00 11000	000 111 110011111	0100 0	000000001000
775	MED48:3260 ***** *P2, D+CSP(12),D(C)+D(C), * *NEXT, * * J/MED19 * --> *****		3637	719	259	3260	1010 00101	10 00 000000	00 00 11000	000 111 110011111	0100 0	000000001000

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX						PAGE	RIF	
776	MED49:3261					3261				00000000	1000	
	*P2, D+CSP(13),D(C)+D(C),						1010	10 00	00 00	000 111	0100	0
	*NEXT,						00100	000000	11000	110011111		
	* J/MED19	-->	3637	719	259							
777	MED50:3270					3270				00000000	1000	
	*P2, D+CSP(14),D(C)+D(C),						1010	10 00	00 00	000 111	0100	0
	*NEXT,						00011	000000	11000	110011111		
	* J/MED19	-->	3637	719	259							
778	MED51:3271					3271				00000000	1000	
	*P2, D+CSP(15),D(C)+D(C),						1010	10 00	00 00	000 111	0100	0
	*NEXT,						00010	000000	11000	110011111		
	* J/MED19	-->	3637	719	259							
779	MED52:3300					3300				00000000	1000	
	*P2, D+CSP(16),D(C)+D(C),						1010	10 00	00 00	000 111	0100	0
	*NEXT,						00001	000000	11000	110011111		
	* J/MED19	-->	3637	719	259							
780	MED53:3301					3301				00000000	1000	
	*P2, D+CSP(17),D(C)+D(C),						1010	10 00	00 00	000 111	0100	0
	*NEXT,						00000	000000	11000	110011111		
	* J/MED19	-->	3637	719	259							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
		OFST	ADDR	BOX						PAGE	RIF	
781	MED54:3304 ***** *CSP DEPOSIT *-----* *P3, CSP(0)+DATA, *NEXT, J/MEDZ1 * -->	3005	725	261	3304	0000 01111	10 00 100000	00 00 11000	000 000 000000101	00000000	1000	0
782	MED55:3305 ***** *P3, CSP(1)+DATA, *NEXT, J/MEDZ1 * -->	3005	725	261	3305	0000 01110	10 00 100000	00 00 11000	000 000 000000101	00000000	1000	0
783	MED56:3310 ***** *P3, CSP(2)+DATA, *NEXT, J/MEDZ1 * -->	3005	725	261	3310	0000 01101	10 00 100000	00 00 11000	000 000 000000101	00000000	1000	0
784	MED57:3311 ***** *P3, CSP(3)+DATA, *NEXT, J/MEDZ1 * -->	3005	725	261	3311	0000 01100	10 00 100000	00 00 11000	000 000 000000101	00000000	1000	0
785	MED58:3314 ***** *P3, CSP(4)+DATA, *NEXT, J/MEDZ1 * -->	3005	725	261	3314	0000 01011	10 00 100000	00 00 11000	000 000 000000101	00000000	1000	0

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX						PAGE	RIF	
786	MED59: 3315 ***** *P3, CSP(5)+DATA, * *NEXT, * * J/MEDZ1 * --> *****			3005	725	261	3315	0000 01010	10 00 100000	00 00 11000	00000000 000000101	1000 0
787	MED60: 3330 ***** *P3, CSP(6)+DATA, * *NEXT, * * J/MEDZ1 * --> *****			3005	725	261	3330	0000 01001	10 00 100000	00 00 11000	00000000 000000101	1000 0
788	MED61: 3331 ***** *P3, CSP(7)+DATA, * *NEXT, * * J/MEDZ1 * --> *****			3005	725	261	3331	0000 01000	10 00 100000	00 00 11000	00000000 000000101	1000 0
789	MED62: 3334 ***** *P3, CSP(10)+DATA, * *NEXT, * * J/MEDZ1 * --> *****			3005	725	261	3334	0000 00111	10 00 100000	00 00 11000	00000000 000000101	1000 0
790	MED63: 3335 ***** *P3, CSP(11)+DATA, * *NEXT, * * J/MEDZ1 * --> *****			3005	725	261	3335	0000 00110	10 00 100000	00 00 11000	00000000 000000101	1000 0
791	MED64: 3370 ***** *P3, CSP(12)+DATA, * *NEXT, * * J/MEDZ1 * --> *****			3005	725	261	3370	0000 00101	10 00 100000	00 00 11000	00000000 000000101	1000 0

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
		OFST	ADDR	BOX						PAGE	RIF
792	MED65:3371										
	*****					3371				00000000	1000
	*P3, CSP(13)+DATA,						0000	10 00	00 00	000 000	0000 0
	*NEXT,						00100	100000	11000	000000101	
	* J/MEDZ1	-->	3005	725	261						
793	MED66:3374										
	*****										
	*P3, CSP(14)+DATA,					3374				00000000	1000
	*NEXT,						0000	10 00	00 00	000 000	0000 0
	* J/MEDZ1	-->	3005	725	261					000000101	
794	MED67:3375										
	*****										
	*P3, CSP(15)+DATA,					3375				00000000	1000
	*NEXT,						0000	10 00	00 00	000 000	0000 0
	* J/MEDZ1	-->	3005	725	261					000000101	
795	MED68:3360										
	*****										
	*P3, CSP(16)+DATA,					3360				00000000	1000
	*NEXT,						0000	10 00	00 00	000 000	0000 0
	* J/MEDZ1	-->	3005	725	261					000000101	
796	MED69:3361										
	*****										
	*P3, CSP(17)+DATA,					3361				00000000	1000
	*NEXT,						0000	10 00	00 00	000 000	0000 0
	* J/MEDZ1	-->	3005	725	261					000000101	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	RUSA UBF	EXTENSION RIF COUT CLOCKS UPF
797	MED70:3160 ***** *MISC. CPU REGISTERS EXAMINE JAM *-----* *SELECT, JAM REG, *NEXT, * J/MEDX1 *****	-->	3346 723 260	3160	1100 00 00 11001 000000	00 00 11000	000 000 0000 0 011100110
798	MED71:3161 ***** *SERVICE *-----* *SELECT, STATUS REG, *NEXT, * J/MED71A *****	--> VV		3161	0100 01 00 11001 000000	00 00 11000	000 000 0000 0 011101110
799	MED71A:3356 ***** *P3, MD+DATA, *NEXT, * J/MED71B *****	<-- VV		3356	0000 11 10 00000 100000	00 00 11000	000 000 0000 0 011100110
800	MED71B:3362 ***** *P2, D+MD, *NEXT, * J/MED71C *****	<-- VV		3362	1010 11 10 00000 000000	00 00 11000	000 000 0100 0 011110011
801	MED71C:3363 ***** *NEXT, CLR NPR NOSAK FLOP, *NEXT, * J/MED19 *****	<-- VV		3363	0100 00 00 11011 000000	11 00 11000	000 000 0000 0 110011111
		-->	3637 719 259				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSE SP	BUSE UBF	EXTENSION RIF COUT CLOCKS UPF
802	MED72:3170 ***** *PBA ----- *SELECT, PBA, *NEXT, * J/MEDX1 *****	--> 3346 723 260		3170	1100 01 00 11001 000000	00 00 11000	00 00 011100110	00000001000 000 000 0000 0
803	MED73:3171 ***** *CUA ----- *SELECT, CUA, * J/MEDX1 *****	--> 3346 723 260		3171	0000 00 00 11001 000000	01 01 11000	000 000 0000 0 011100110	00000001000
804	MED74A:3321 ***** *NOP ----- *NEXT, * J/MED209 *****	--> 3730 813 279		3321	0000 00 00 00000 000000	00 00 11000	00 00 111011000	00000001000 000 000 0000 0
805	MED74:3320 ***** *FLAG ----- *SELECT, FLAGS, *NEXT, * J/MEDX1 *****	--> 3346 723 260		3320	0000 00 00 11001 000000	11 01 11000	000 001 0000 0 011100110	00000001000
806	MED75:3341 ***** *COUNT ----- *P2, D-COUNT, D(C)+D(C), *NEXT, * J/MED19 *****	--> 3637 719 259		3341	1111 00 00 00011 000000	01 00 11000	000 111 0100 0 110011111	00000001000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSE SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
807	MED200:3720 ***** *DCS #1 *-----* *SELECT, TRACKING NUA, *NEXT, * J/MEDX1 *****	-->	3346 723 260	3720	0010 11001	00 00 000000	00 00 11000	000 010 011100110	000000001000 0000 0
808	MED201:3721 ***** *DCS #2 *-----* *SELECT, ERROR CODE, *NEXT, * J/MEDX1 *****	-->	3346 723 260	3721	0010 11001	00 00 000000	00 00 11000	000 000 011100110	000000001000 0000 0
809	MED205:3340 ***** *REVISION REGISTER *-----* *SELECT, EMIT, *NEXT, * J/MED206 *****	--> VV		3340	0000 11001	00 00 000000	00 01 11000	000 000 011110110	000000001000 0000 0
810	MED206:3366 ***** *P3, MD+REV, *NEXT, * J/MED207 *****	<-- VV		3366	0000 00010	10 00 100000	00 00 11000	000 000 011110111	000000001000 0000 0
811	MED207:3367 ***** *P2 D+MD, D(C)+D(C), *NEXT, * J/MED19 *****	<-- VV		3367	1010 00000	11 10 000000	00 00 11000	000 111 110011111	000000001000 0100 0
		-->	3637 719 259						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSB SP	BUSB SP	EXTENSION RIF COUT CLOCKS
812	MED208:3725			3725	0000 0000	00 00 00 00	00 00 00 00	0000 0000 0000 0000	000000001000
	*NOP				0000 0000	000000 11000		000000101	
	*NEXT, J/MEDZ1	-->	3005 725 261						
813	MED209:3730			3730	0000 0000	00 00 00 00	00 00 00 00	0000 0000 0000 0000	000000001000
	*NOP FOR UNUSED MED				0000 0000	000000 11000		000000101	
	*CODES								
	*NEXT, J/MEDZ1	-->	3005 725 261						
814	MED76:3344			3344	0000 0000	00 00 11 01	000 001 0000 0	11001 000000 11000	000000001000
	*MISC. CPU REGISTERS DEPOSIT FLAGS							011111010	
	*SELECT, FLAGS,								
	*NEXT, J/MED76A	--> VV							
815	MED76A:3372			3372	0000 0000	00 00 00 00	000 000 0000 0	11010 000000 11000	000000001000
	*NEXT, DATTB,							000000101	
	*NEXT, J/MEDZ1	-->	3005 725 261						
816	MED202:3355			3355	0100 0000	00 00 00 00	000 100 0000 0	11011 000000 11000	000000001000
	*RES							011111011	
	*NEXT, DBUF LATCH+D,								
	*NEXT, J/MED203	-->	3373 817 280						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
817	MED203:3373 ***** *P3, MD+DATA, *NEXT, J/MED204 *****	F/MED202 <--	3355 816 279	3373	0000 11 10 00000 100000	00 00 11000	000 000 011111110	00000001000 0000 0000 0000 0
818	MED204:3376 ***** *RES+MD, *NEXT, J/MEDZ1 *****	F/MED203 <-- VV	3005 725 261	3376	0000 11 10 00000 010001	00 00 11000	000 000 000000101	000000001000 0000 000 3000 0
819	MED77:3351 ***** *COUNT ----- *P3, MD+DATA, *NEXT, J/MED78 *****	<-- VV		3351	0000 11 10 00000 100000	00 00 11000	000 000 011111111	000000001000 0000 000 0000 0
820	MED78:3377 ***** *P2, COUNT+MD, *NEXT, J/MEDZ1 *****	<-- VV	3005 725 261	3377	0000 11 10 00000 000101	00 00 11000	000 000 000000101	000000001000 0000 000 0000 0
821	MED79:3354 ***** *MUA ----- *SELECT, EMIT, *NEXT, J/MED79A *****	<--	3400 822 281	3354	0000 00 00 11001 000000	00 01 11000	000 000 100000000	000000001000 0000 000 0000 0





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	EXTENSION RIF COUT CLOCKS
827	MED82:3350 ***** *SHIFT REGISTER *-----* *P2, SR+RO, *NEXT, * J/MED83 *****			3350	1111 00 00 0000 000000	10 00 11000	000000001000 100 000 1010 0 100001000
828	MED83:3410 ***** *P2, D+SR, *NEXT, * J/MED19 *****	F/MED82 <-- VV  --> VV		3410	1111 00 00 0000 000000	00 00 11000	000000001000 000 000 0100 0 110011111
829	CAWRT01:3660 ***** *CACHE INVALIDATE AND READ *-----* *SELECT, TURN OFF KT, *NEXT, * J/CAWRT02 *****		3637 719 259	3660	0001 00 00 11001 000000	00 00 11000	000000001000 000 010 0000 0 100001100
830	CAWRT02:3414 ***** *P1, BA+R2 & R3, *P3, U, INVALIDATE, *NEXT, * J/MEDZ1 *****	F/CAWRT01 <-- VV		3414	0000 00 11 10111 000000	10 00 11000	000000001000 001 000 0001 0 000000101
831	CAREAD01:3661 ***** *SELECT, TAG AND TURN OFF KT, *NEXT, * J/CAREAD02 *****		3005 725 261	3661	0001 01 00 11001 000000	00 00 11000	000000001000 010 010 0000 0 100001101
			3415 832 283				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
832	CAREAD02:3415 *****~***** *P1, BA+R2 # R3, *NEXT, * J/MEDX1 *****~*****	<-- 3661 831 282		3415				000000001000		
					0000 00 11 10 00 001 000 0001 0					
		--> 3346 723 260			00000 000000 11000 011100110					
833	MED84:3345 *****~***** *D REGISTER *-----* *P2, D+RO, *NEXT, * J/MED19 *****~*****	--> 3637 719 259		3345				000300001000		
					1111 00 00 10 00 100 000 0100 0					
					00000 000000 11000 110011111					

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
			OFST	ADDR	BOX	COORD	BUS	SP	UBF	RIE	COUT CLOCKS
					PAGE	CARD				UPF	
	.TOC "INIT TABLE ORGANIZATION"										
	F/RES04	<--	3006	344	147						
	F/SBCB06	<--	114	177	91						
	F/BISB02	<--	635	94	61						
	F/DST17	<--	747	52	42						
	F/DST05	<--	515	43	37						
	F/SRC35	<--	665	27	28						
SSzd50,x <--	8 36 F/SSzd										
	F/JAM25	<--	3013	415	171						
	F/BOOT03	<--	1115	454	181						
*****											
*	SUBROUTINE INIT00	*									
	RETURN/UNDEFINED	* -->	-1	-1	-1	2	1	1			
	RETURN/TRP00	* -->	127	357	151						
	RETURN/ASRB05	* -->	522	180	92						
	RETURN/UNDEFINED	* -->	-1	-1	-1	2	1	1			
	RETURN/SRC34	* -->	664	26	27						
	RETURN/DST07	* -->	517	45	37						
	RETURN/SRC16	* -->	5	18	21						
	RETURN/PST01	* -->	1056	426	174						
	RETURN/BOOT03H	* -->	1116	455	181						
*****											

K08

```

834 INIT00:3420
*****
*PARTS OF THE MACHINE ARE INITIALIzed *
*ACCORDING TO BITS SET IN THE SR SR *
*BIT PART INITIALIzed 0 HFP 1 WHAMI *
*2 FLAGS 3 STACK LIMIT REGISTER 4 MMRO *
*5 CACHE CONTROL REGISER 6 PSW 7 CACHE *
*SWEEP 8 GENERAL REGISTERS 9 BASE *
*CONSTANTS 10 WCS 11 TURN ON TRACKING *
*12 JAM REGISTER 13 UNIBUS 14 START MACRO *
*MACHINE 15 RETURN (OR GO TO FETO1) *
*-----*
*P2, D+MD,SR+MD, *
*NEXT, *
* J/INIT01 *
*****

```

```

3420 000000001000
1010 11 10 00 00 000 000 0110 0
00000 000000 11000 100071010

```

```

--> 3412 835 285

```

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE			ADDR	ALU	BUSB	BUS	EXTENSION								
			OFST	ADDR	BOX					PAGE	COORD	CARD	SP	BUSA	RIF	COUT	CLOCKS	
		F/CONDIAG05 <--	3022	462	183													
		F/MED81 <--	3406	826	281													
*****																		
*	SUBROUTINE INIT01																	
		RETURN/CONDIAG06 * -->	3023	463	183													
		RETURN/MED19 * -->	3637	719	259													
*****																		

M08

```

835  INIT01:3412
*****
*SELECT,   EMIT,
*NEXT,
*          J/INIT02
***** --> VV
836  INIT02:3421          F/INIT01      <-- VV
*****
*P3,      MD+20000,
*NEXT,
*          J/INIT03
***** --> VV
837  INIT03:3422          F/INIT02      <-- VV
*****
* TEST FOR HFP
*INIT
-----
*P2,      RES+MD(D),
*P3,      MD+10000,
*NEXT,    BUTR(SRO),
*          J/INIT04
*          J/INIT04      --> 1110 3016 838 285
*          J/HFPINIT     --> 1111 3017 868 293
*****
.CASE 1 OF BINIT03
      F/INIT03          <-- 3422 837 285
838  INIT04:3016        F/HFPINIT     <-- 3017 868 293
*****
*SELECT,   EMIT,
*P2,      SHIFT SR,
*NEXT,
*          J/INIT05
***** --> 3423 839 286
*****

```

```

3412 0000 00 00 00 01 000 000 0000 0
      11001 000000 11000 100010001

```

```

3421 0010 10 00 00 00 000 000 0000 0
      00010 100000 11000 100010010

```

```

3422 0001 10 00 00 00 000 000 0000 0
      00010 110001 00000 000001110

```

```

3016 0000 00 00 00 01 000 000 0010 0
      11001 000000 11000 100010011

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
								RIF	COUT	
839	INIT05:3423	F/INIT04 <--	3016 838 285	3423				00000000	1000	
	* TEST FOR WHAMI			1010	11 10	00 00	000 000	0000	0100	0
	* INIT			00000	000000	00000	00011111			
	*P3, D+MD									
	*NEXT, BUTR(SRO),									
	* J/INIT06	J/INIT06 -->	1110 3076 840 286							
	* J/WHI02A	J/WHI02A -->	1111 3077 869 294							
.CASE	1 OF BINIT05									
840	INIT06:3076	F/INIT05 <--	3423 839 286	3076				00000000	1000	
	*P2, SHIFT SR, D+WHAMI,			1111	00 00	11 00	101 000	0110	0	
	*NEXT, J/INIT07	J/INIT07 --> VV		00000	000000	11000	100010100			
841	INIT07:3424	F/INIT06 <-- VV		3424				00000000	1000	
	* TEST FOR FLAG			1111	00 00	01 01	000 010	0100	0	
	* INIT			01000	000000	00000	001001110			
	*P2, D+D RIGHT 4, D(C)+ALU00,									
	*NEXT, BUTR(SRO),									
	* J/INIT08	J/INIT08 -->	1110 3116 842 286							
	* J/FGI01	J/FGI01 -->	1111 3117 890 299							
.CASE	1 OF BINIT07									
842	INIT08:3116	F/INIT07 <--	3424 841 286	3116				00000000	1000	
	*P2, D+D, D(C)+ALU00, SHIFT SR,			0011	00 00	00 01	110 010	0110	0	
	*P3, R(DST)+D (A ADDR),			00000	010110	11000	100010101			
	* J/INIT09	J/INIT09 -->	3425 843 287							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	RIF COUT	CLOCKS
843	INIT09:3425	F/INIT08		3425				000000001000
	* TEST FOR SLR			1001	00 10	00 00	000 000	0000 0
	*INIT			11001	000000	00000	001011110	
	*SELECT, SLR,							
	*NEXT, BUTR(SR0),							
	* J/INIT10	-->	1110 3136	844	287			
	* J/SLRINIT	-->	1111 3137	894	300			
.CASE	1 OF BINIT09							
844	INIT10:3136	F/INIT09		3136				000000001000
	* TEST FOR MMRO			1001	00 11	01 00	000 000	0000 0
	*INIT			11001	000000	00000	000011101	
	*SELECT, MMRO(RW),							
	*NEXT, BUTR(SR1),							
	* J/INIT11	-->	1101 3035	845	287			
	* J/MMROINIT	-->	1111 3037	895	300			
.CASE	1 OF BINIT10							
845	INIT11:3035	F/INIT10		3035				000000001000
	* TEST FOR CCR			1001	00 01	00 00	000 000	0000 0
	*INIT			11001	000000	00000	001101011	
	*SELECT, CCR(RW),							
	*NEXT, BUTR(SR2),							
	* J/INIT12	-->	1011 3153	846	288			
	* J/CCRINIT	-->	1111 3157	910	304			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	1 OF BINIT11	OFST ADDR BOX PAGE	COORD CARD	BUS	SP	USF	UPF	RIF COUT CLOCKS
846	INIT12:3153	F/INIT11 F/CCRINIT	<-- <--	3035 3157	845 910	287 304		
	*****							
	*SELECT, EMIT							
	*P2, SHIFT SR,							
	*NEXT,							
	* J/INIT13		-->		VV			
847	INIT13:3426	F/INIT12	<--					
	*****							
	*P2, SHIFT SR,							
	*P3, MD+2 (BC),							
	*NEXT,							
	* J/INIT14		-->		VV			
848	INIT14:3427	F/INIT13	<--					
	*****							
	* TEST FOR PSE							
	*INIT							
	-----							
	*SELECT, PSW,							
	*NEXT, BUTR(SR1),							
	* J/INIT15		-->	1101	3175	849	288	
	* J/PSWINIT		-->	1111	3177	911	304	
	*****							
.CASE	1 OF BINIT14							
849	INIT15:3175	F/INIT14 F/PSWINIT	<-- <--	3427 3177	848 911	288 304		
	*****							
	* TEST FOR CACHE							
	*INIT							
	-----							
	*SELECT, TURN OFF KT,							
	*NEXT, BUTR(SR2),							
	* J/INIT16		-->	1011	3213	850	288	
	* J/CAINIT01		-->	1111	3217	912	305	
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 250	1 OF BINIT15 INIT16:3213	F/INIT15 ----- *SELECT, EMIT, *NEXT, * J/INIT17A	<-- ----- * * * --> VV	3175 849 288	3213			00000000	1000	
					0000 00 00 00 01 000 000 0000 0	11001 000000 11000 100011000				
851	1 OF BINIT16 INIT17A:3430	F/INIT16 ----- * TEST FOR MISC. REGISTER *INIT *----- *P2, D←D, D(C)←ALU00, *NEXT, BUTR(SR3), * J/INIT17	<-- VV ----- * * * --> 0111 3527 852 289 * --> 1111 3537 896 301	3430				00000000	1000	
					0011 00 00 00 00 000 010 0100 0	00000 000000 00000 101010111				
.CASE	1 OF BINIT17A	F/INIT17A F/REGINIT14A	<-- <--	3430 851 289 3522 908 304	3527			00000000	1000	
852	INIT17:3527	*P2, SHIFT SR, *NEXT, * J/INIT18	<-- ----- * * --> VV					00000000	1000	
					0000 00 00 00 00 000 000 0010 0	00000 000000 11000 100011001				
853	1 OF BINIT17 INIT18:3431	F/INIT17 ----- * TEST FOR BASE CONSTANTS *INIT *----- *SELECT, EMIT *NEXT, BUTR(SR3), * J/INIT19	<-- VV ----- * * * --> 0111 3547 854 290 * --> 1111 3557 914 305	3431				00000000	1000	
					0000 00 00 00 01 000 000 0000 0	11001 000000 00000 101100111				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA JBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BINIT18						
854	INIT19:3547	F/INIT18 F/BASINIT03	<-- <--	3431 3525	853 916	289 306	
	*P2, SHIFT SR,						3547 0000 00 00 00 00 000 000 0010 0 00000 000000 11000 100011100
	*NEXT, J/INIT20						
855	INIT20:3434	F/INIT19	<-- VV				
	* TEST FOR WCS						3434 1111 10 01 00 00 000 001 0000 0 00010 100000 00000 011010111
	*INIT						
	*P3, MD+172001,						
	*NEXT, BUTR(SR3),						
	* J/INIT21						
	* J/INIT21		-->	0111 3327	856	290	
	* J/WCSINIT01		-->	1111 3337	1199	386	
.CASE	1 OF BINIT20						
856	INIT21:3327	F/INIT20 F/WCSINIT08	<-- <--	3434 3713	855 1205	290 388	
	*SELECT, EMIT,						3327 0000 00 00 00 01 000 000 0000 0 11001 000000 11000 100011100
	*NEXT, J/INIT22						
857	INIT22:3435	F/INIT21	<-- VV				
	*P2, MD+40000,						3435 0100 10 00 00 00 000 000 0000 0 00010 100000 11000 100100000
	*NEXT, J/INIT23A		-->	3440	858	291	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
858	INIT23A:3440 ***** *P2, D+SR, RES+MD, *NEXT, J/INIT23B *****	<--	3435 857 290	3440	1111 11 10	00 00	000 000	00000001000 0100 0
859	INIT23B:3441 ***** *P2, SR+D RIGHT 4, *NEXT, J/INIT23 *****	<-- VV --> VV		3441	1111 00 00	01 01	000 000	00000001000 0010 0
860	INIT23:3442 ***** * TEST FOR TURN ON * TRACKING ----- *P2, D+D, *P3, R(DST)+D (A ADDR), *NEXT, BUTR(SR0), * J/INIT24 * J/INIT24 * J/TKINIT *****	<-- VV --> 1110 3256 861 291 --> 1111 3257 917 306		3442	0011 00 00	00 01	110 000	00000001000 0100 0 00000 010110 00000 010101110
.CASE	1 OF BINIT23							
861	INIT24:3256 ***** * TEST FOR JAM AND SERVICE REGISTER * INIT ----- *P1, BA+R(DST), CURRENT MODE, *NEXT, BUTR(SR1), * J/INIT25 * J/INIT25 * J/JAMINIT *****	<-- <--	3442 860 291 3257 917 306	3256	0000 00 00	11 01	110 000	00000001011 0001 0 00000 000000 00000 010111101
		--> 1101 3275 862 292 --> 1111 3277 918 306						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BINIT24						
862	INIT25:3275	F/INIT24 F/SVSINIT	<-- <--	3256 861 291 3526 919 307			
	***** * TEST FOR UB *INIT *-----*						3275 000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 00000 011001011
	*NEXT, BUTR(SR2), * J/INIT26						
	*****	J/INIT26 J/UBINIT	*--> *-->	1011 3313 863 292 1111 3317 920 307			
.CASE	1 OF BINIT25						
863	INIT26:3313	F/INIT25 F/UBINIT	<-- <--	3275 862 292 3317 920 307			
	***** * TEST FOR START MACRO *MACHINE *-----*						3313 000000001000 1111 00 00 00 00 000 000 0100 0 00000 000000 00000 011100111
	*P2, D+SR *NEXT, BUTR(SR3), * J/INIT27						
	*****	J/INIT27 J/PWRTST	*--> *-->	0111 3347 864 292 1111 3357 921 307			
.CASE	1 OF BINIT26						
864	INIT27:3347	F/INIT26 F/PWRTST05	<-- <--	3313 863 292 3643 925 308			
	***** *P2, SR+D RIGHT 1, *NEXT, * J/INIT28 *****						3347 000000001000 1111 00 00 01 10 000 000 0010 0 00000 000000 11000 100100011



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT CLOCKS	
.TOC "WHAMI INITALIZATION"										
.CASE 2 OF BINITOS										
869	WHI02A:3077	F/INIT05 F/WHI16	<-- <--	3423 839 286 3467 889 299						
	*****								3077	000000001000
	*SELECT, XCS STATUS,							000 000 0000 0		
	*NEXT,							11001 000000 11000 100100100		
	* J/WHI02B		--> VV							
870	WHI02B:3444	F/WHI02A	<-- VV							
	*****								3444	000000001000
	* D<12> MUST = 1 FOR XCS STATUS TO BE							000 000 0000 0		
	*SELECTED							00000 100000 11000 100100101		
	*-----*									
	*P3, MD+DATA,									
	*NEXT,									
	* J/WHI02		--> VV							
871	WHI02:3445	F/WHI02B	<-- VV							
	*****								3445	000000001000
	*P2, D+MD,							1010 11 10 00 00 000 000 0100 0		
	*NEXT,							00000 000000 11000 100100110		
	* J/WHI03A		--> VV							
872	WHI03A:3446	F/WHI02	<-- VV							
	*****								3446	000000001000
	*SELECT, EMIT,							0000 00 00 00 01 000 000 0000 0		
	*NEXT,							11001 000000 11000 100100111		
	* J/WHI03B		-->	3447 873 295						
	*****									





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	RUSA	EXTENSION		
					BUS	SP	UBF	RIF	COUT	CLOCKS
.CASE 877	1 OF BWHIOS									
	WHI06:3470	F/WHIOS	<--	3460 876 295						
	* DCS				3470	0000	10 00	01 00	000 001	0000 0
	* INSTALLED					00010	100000	11000	100110001	
.CASE 878	3 OF BWHIOS									
	WHI07:3472	F/WHIOS	<--	3460 876 295						
	* ECS				3472	0000	10 00	00 00	000 001	0000 0
	* INSTALLED					00010	100000	11000	100110001	
.CASE 879	2 OF BWHIOS									
	WHI08:3471	F/WHIOS	<--	3460 876 295						
	* NO EXTRA CONTROL STORE				3471	0000	10 00	00 00	000 001	0000 0
	* INSTALLED					00010	100000	11000	100110001	
.CASE 880	4 OF BWHIOS									
	WHI09:3473	F/WHIOS	<--	3460 876 295						
	* WCS				3473	0000	10 00	00 00	100 001	0000 0
	* INSTALLED					00010	100000	11000	100110001	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
		OFST	ADDR	BOX						PAGE	RIF	COUT
881	WHI10:3461	F/WHI06	<--	3470	877	296						
		F/WHI07	<--	3472	878	296						
		F/WHI08	<--	3471	879	296						
		F/WHI09	<--	3473	880	296						
	*****											
	* OPTION BIT SET AND LOGGING * 3461 000000001000											
	*ENABLED * 1010 11 10 00 00 101 000 0100 0											
	*-----*											
	*P2, D+MD * 00000 010010 11000 100110010											
	*P3, WHAMI+D (A ADDR), *											
	*NEXT, *											
	* J/WHI11 * --> VV											
882	WHI11:3462	F/WHI10	<--	VV								
	*****											
	* TEST FOR HFP INSTALLED. HFP WILL PULL * 3462 000000001000											
	*DOWN * 0000 00 00 00 00 001 010 0000 0											
	*D<14>. * 11001 000000 11000 100110011											
	*-----*											
	*SELECT, HFP PRESENT, *											
	*NEXT, *											
	* J/WHI12A * --> VV											
883	WHI12A:3463	F/WHI11	<--	VV								
	*****											
	*P3, MD+DATA, * 3463 000000001000											
	*NEXT, * 0000 11 10 00 00 000 000 0000 0											
	* J/WHI12B * --> VV											
884	WHI12B:3464	F/WHI12A	<--	VV								
	*****											
	*P2, D+MD, * 3464 1010 11 10 00 00 000 000 0100 0											
	*NEXT, * 00000 000000 11000 100110101											
	* J/WHI12 * --> 3465 885 298											
	*****											

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
885	WHI12:3465 ***** *P2, D←D LEFT 1,D(C)←ALU15, *NEXT, J/WHI13 *****	<--	3464 884 297	3465	1111 00 00 01 00	00000000	1000	000 100	0100 0
886	WHI13:3466 ***** *SELECT, EMIT *NEXT, BUTR(D(C)), * J/WHI14 * J/WHI15 *****	<-- VV	01 3451 887 298 11 3453 888 298	3466	0000 00 00 00 01	00000000	1000	000 000	0000 0
.CASE 887	1 OF BWHI13 WHI14:3451 ***** * HFP *INSTALLED ----- *P3, MD←20, *NEXT, J/WHI16 *****	<-- VV	3467 889 299	3451	0000 10 00 00 00	010 000	0000 0	00010	100000 11000 100110111
.CASE 888	2 OF BWHI13 WHI15:3453 ***** * HFP NOT *INSTALLED ----- *P3, MD←0, *NEXT, J/WHI16 *****	<--	3466 886 298 3467 889 299	3453	0000 10 00 00 00	000 000	0000 0	00010	100000 11000 100110111

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
889	WHI16:3467	F/WHI14 F/WHI15	<-- <--	3451 887 298 3453 688 298			3467 1110 11 10 11 00 101 000 0100 0 00000 010010 11000 000111110
***** *P2, D+WHAMI OR MD, * *P3, WHAMI+D (A ADDR), * *NEXT, * * J/INIT06 * --> 3076 840 286 *****							
.TOC " FLAGS INITIALIZATION" .CASE 2 OF BINIT07							
890	FGI01:3117	F/INIT07 F/FGI04	<-- <--	3424 841 286 3474 893 300			3117 0000 10 10 00 00 000 000 0000 0 00010 100000 10011 101001001
***** * TEST FOR FLAGS * * INIT * -----* *P3, MD+4000, * *NEXT, BUTR(D(C)), * * J/FGI02 * --> 01 3511 891 299 * J/FGI03 * --> 11 3513 892 300 *****							
.CASE 1 OF BFGI01							
891	FGI02:3511	F/FGI01 F/FGI03	<-- <--	3117 890 299 3513 892 300			3511 1010 11 10 00 00 000 000 0100 0 00000 000000 11000 100111100
***** * HFP NOT * *ENABLED * -----* *P2, D+MD, * *NEXT, * * J/FGI04 * --> 3474 893 300 *****							

# B10

PROGRAM FLOWS

11/60 MICROCODE ON 03-Mar-77 BY AOSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BFGI01						
892	FGI03:3513	F/FGI01 F/FGI03	<-- <--	3117 890 299 3513 892 300			
	*****						
	* HFP						
	*ENABLED						
	-----						
	*P3, MD+14000,						
	*NEXT,						
	* J/FGI02		-->	3511 891 299			
893	FGI04:3474	F/FGI02	<--	3511 891 299			
	*****						
	* INIT						
	*FLAGS						
	-----						
	* FLAGS+D,						
	*NEXT,						
	* J/INIT08		-->	3116 842 286			
	*****						
.TOC "	SLR INIT"						
.CASE	2 OF BINIT09						
894	SLRINIT:3137	F/INIT09 F/SLRINIT	<-- <--	3425 843 287 3137 894 300			
	*****						
	*P3, SLR+D,						
	*NEXT,						
	* J/INIT10		-->	3136 844 287			
	*****						
.TOC "	MMRO INITIALIZATION"						
.CASE	2 OF BINI'10						
895	MMROINIT:3037	F/INIT10 F/MMROINIT	<-- <--	3136 844 287 3037 895 300			
	*****						
	*P3, MMRO+D,						
	*NEXT,						
	* J/INIT11		-->	3035 845 287			
	*****						

```

3513 . 000000001000
      0001 10 10 00 00 000 000 0000 0
      00010 100000 11000 101001001

3474 0000 00 00 00 01 000 001 0000 0
      11011 000000 11000 001001110

3137 0000 00 00 00 00 000 000 0000 0
      11010 000000 11000 001011110

3037 0000 00 00 00 00 000 000 0000 0
      11010 000000 11000 000011101
    
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.TOC	MISC. REGISTER INIT*	OFST ADDR BOX PAGE	COORD CARD	ALU BUS	SP	UBF	UPF	RIF COUT CLOCKS
896	REGINIT01:3537	F/INIT17A F/REGINIT14A	<-- <--	3430 3522	851 908	289 304		
	*P2, D+R0 (B),D(C)+D(C),			3537				000000001000
	*P3, R0+D,							1010 00 10 00 00 100 111 0100 0
	*NEXT,							00000 000110 11000 100111101
	* J/REGINIT02		--> VV					
897	REGINIT02:3475	F/REGINIT01	<-- VV					
	*P2, D+R1 (B),D(C)+D(C),			3475				000000001000
	*P3, R1+D,							1010 00 11 00 01 100 111 0100 0
	*NEXT,							00000 000110 11000 101000100
	* J/REGINIT03		--> VV					
898	REGINIT03:3504	F/REGINIT02	<-- VV					
	*P2, D+R2 (B),D(C)+D(C),			3504				000000001000
	*P3, R2+D,							1010 00 10 00 00 101 111 0100 0
	*NEXT,							00000 000110 11000 101000101
	* J/REGINIT04		--> VV					
899	REGINIT04:3505	F/REGINIT03	<-- VV					
	*P2, D+R3 (B),D(C)+D(C),			3505				000000001000
	*P3, R3+D,							1010 00 11 00 01 101 111 0100 0
	*NEXT,							00000 000110 11000 101001000
	* J/REGINIT05		-->	3510	900	302		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
900	REGINIT05:3510 ***** *P2, D+R4 (B),D(C)+D(C), * *P3, R4+D, * *NEXT, * * J/REGINIT06 * *****	<--	3505 899 301	3510	1010 00 10 00 00	0000 000110 11000	110 111 0100	00000000	1000	0
901	REGINIT06:3512 ***** *P2, D+R5 (B),D(C)+D(C), * *P3, R5+D, * *NEXT, * * J/REGINIT07 * *****	<-- VV		3512	1010 00 11 00 01	0000 000110 11000	110 111 0100	00000000	1000	0
902	REGINIT07:3514 ***** *P2, D+R6 (B),D(C)+D(C), * *P3, R6+D, * *NEXT, * * J/REGINIT08 * *****	<-- VV		3514	1010 00 10 00 00	0000 000110 11000	111 111 0100	00000000	1000	0
903	REGINIT08:3515 ***** *P2, D+R7 (B),D(C)+D(C), * *P3, R7+D, * *NEXT, * * J/REGINIT09 * *****	<-- VV	3516 904 303	3515	1010 00 11 00 01	0000 000110 11000	111 111 0100	00000000	1000	0





# F10

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
908	REGINIT14A:3522 ***** *P2, D+0, * *P3, R(ZERO)+D, * *NEXT, * * J/INIT17 * *****	<--	3520 907 303	3522	0011 00 11 00 00	00 00 101 000	0100 0	000000001000
					00000 011100 11000	101010111		
		-->	3527 852 289					
.CASE 909	2 OF BREGINIT10 REGINIT15:3073 ***** *P2, D+WHAMI AND NOT MD, * *P3, WHAMI+D (A ADDR), * *NEXT, * * BUT(RETURN) * *****	<--	3517 905 303	3073	0111 11 10 11 00	101 000	0100 0	000000001000
					00000 010010 11111	000000000		
		--> VV						
.TOC " .CASE	CCR INITIALIZATION" 2 OF BINIT11							
910	CCRINIT:3157 ***** *P2, CCR+D, * *NEXT, * * J/INIT12 * *****	<-- <--	3035 845 287 3157 910 304	3157	0000 00 00 00 00	000 000	0000 0	000000001000
					11010 000000 11000	001101011		
		-->	3153 846 288					
.TOC " .CASE	PSW INITIALIZATION" 2 OF BINIT14							
911	PSWINIT:3177 ***** *P2, PS+D, * *NEXT, * * J/INIT15 * *****	<-- <--	3427 848 288 3177 911 304	3177	0000 00 00 00 00	000 000	0000 0	000000001000
					11010 000000 11000	001111101		
		-->	3175 849 288					

# G10

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA	EXTENSION RIF COUT CLOCKS
.TOC "	CACHE INITIALITION"				
.CASE 912	2 OF BINIT15 CAINIT01:3217	F/INIT15 <--	3175 849 288	3217	000000001011 1001 11 10 11 01 110 111 0101 0 1011 010110 1001 01001001
	*P1, BA+R(DST) CURRENT MODE *				
	*P2, D+R(DST) PLUS MD, D(C)+D(C), *				
	*P3, R(DST)+D (A ADDR), *				
	*P3, U, INVALIDATE, *				
	*NEXT, BUTR(D(C)), *				
	* J/CAINIT02 *				
	* J/CAINIT02 UNDEFINED CASE *	-->	01 3211 913 305		
.CASE 913	1 OF BCINIT01 CAINIT02:3211	F/CAINIT01 <-- VV		3211	000000001000 1111 00 00 01 01 000 100 0100 0 00000 000000 11000 010001111
	* CACHE IS SWEEP 8 TIMES, DONE AS HOOK *				
	*FOR FUTURE EXPANSION OF *				
	*CACHE *				
	*-----*				
	*P2, D+D, D(C)+ALU15, *				
	*NEXT, *				
	* J/CAINIT01 *	-->	3217 912 305		
.TOC "	BASE CONSTANTS INITIALIZATION"				
.CASE 914	2 OF BINIT18 BASINIT01:3557	F/INIT18 <-- F/BASINIT03 <--	3431 853 289 3525 916 306	3557	000000001000 0000 10 00 00 00 000 000 0000 0 00001 100000 11000 101010100
	*P3, *				
	*P3, CSP(ZERO)+0, *				
	*NEXT, *				
	* J/BASINIT02 *	-->	3524 915 306		

# H10

PROGRAM FLOWS

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PAGE 306

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK	
								RIF	COUT		
915	BASINIT02:3524 ***** *P3, CSP(ONE)+1, *NEXT, * J/BASINIT03 *****	<--	3557 914 305	3524	0000 00000	10 00 100000	00 00 11000	000 001 101010101	00000000	1000	0
916	BASINIT03:3525 ***** *P3, CSP(TWO)+2, *NEXT, * J/INIT19 *****	<-- VV		3525	0000 00011	10 00 100000	00 00 11000	000 010 101100111	00000000	1000	0
.TOC " TRACKING INITIALIZATION"											
.CASE 2 OF BINIT23											
917	TRKINIT:3257 ***** *NEXT, BUT(TRACK), * J/INIT24 *****	<-- <--	3442 860 291 3257 917 306	3257	0000 00000	00 00 000000	00 00 11001	000 000 010101110	00000000	1000	0
.TOC " JAM AND SERVICE REGISTER INITIALIZATION"											
.CASE 2 OF BINIT24											
918	JAMINIT:3277 ***** *NEXT, CLEAR JAM REG, * J/SVSINIT *****	<-- <--	3256 861 291 3526 919 307	3277	0100 11011	00 00 000000	10 00 11000	000 000 101010110	00000000	1000	0

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
								RIF	COUT	CLOCKS	
919	SVSINIT:3526 ***** * CLEAR SERVICE REG, *NEXT, * J/INIT25 *****	<-- <-- <-- <-- <--	3277 918 306 3275 862 292	3526	0100 00 01 11011 000000	01 00 11000	000 000 010111101	00000000	1000	0000 0	0
.TOC " .CASE	UNIBUS INIT" 2 OF BINIT25										
920	UBINIT:3317 ***** * UNIBUS INIT, *NEXT, * J/INIT26 *****	<-- <-- <-- <-- <--	3275 862 292 3317 920 307 3313 863 292	3317	0100 00 01 11011 000000	11 00 11000	000 000 011001011	00000000	1000	0000 0	0
.TOC " .CASE	START MACRO MACHINE" 2 OF BINIT26										
921	PWRTST:3357 ***** * START MACRO MACHINE, *NEXT, * J/PWRTST01 *****	<-- <-- <-- <-- <--	3313 863 292 3643 925 308	3357	0100 00 00 11011 000000	01 00 11000	000 000 101011000	00000000	1000	0000 0	0
922	PWRTST01:3530 ***** *P2, D+0, *P3, R(DST)+D (A ADDR). *NEXT, * J/PWRTST03 *****	<-- VV <-- VV <-- <-- <--	3641 923 308	3530	0011 00 00 00000 010110	00 01 11000	110 000 110100001	00000000	1000	0100 0	0



# K10

PROGRAM FLOWS

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PAGE 309

BOX  
NO. TAG:ADDRESS

SCURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF

# L10

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 310

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
***** * SUBROUTINE LOGO1 * *****								
	F/YZ01	<--	1660 495 194					
	F/SCPE06	<--	1352 504 197					
	F/SC 09	<--	1336 506 198					
	F/SCPE10	<--	1337 509 199					
	F/OA01	<--	1322 518 201					
	F/RZ11	<--	4152 525 204					
	F/SST01	<--	1327 530 206					
	F/MPE01	<--	1330 531 206					
	F/IIAA05	<--	1172 536 208					
	F/IIAA04	<--	1173 537 208					
	F/CSPE01	<--	1321 545 210					
	F/UB01	<--	1320 546 211					
*****								
	RETURN/YZ02	* -->	1154 496 195					
	RETURN/SCPE12	* -->	1170 510 199					
	RETURN/ETRP05	* -->	1250 562 215					
	RETURN/SCPE12	* -->	1170 510 199					
	RETURN/ETRP01	* -->	1244 558 214					
	RETURN/RZ12	* -->	327 526 204					
	RETURN/ETRP01	* -->	1244 558 214					
	RETURN/ETRP05	* -->	1250 562 215					
	RETURN/IIAA06	* -->	1222 538 208					
	RETURN/ETRP01	* -->	1244 558 214					
	RETURN/ETRP05	* -->	1250 562 215					
	RETURN/UB02	* -->	1232 547 211					
*****								



M10

926

LOG01:3534

```

*****
** OVERVIEW-FUNCTION ERROR LOGGING THE
** ERROR LOGGING SUBROUTINE STORES SELECTED
** MACHINE STATE IN THE CSP. THIS
** SUBROUTINE IS INVOKED BY ALL ABORT (JAM)
** CONDITIONS EXCEPT INTERNAL ADDRESS.
** SOME ERROR HANDLING ROUTINES INVOKE
** ERROR LOGGING THEN MODIFY THE LOG. THIS
** ARE NOTED AND EXPLAINED WHERE THEY
** OCCUR. THE CSP LOCATIONS USED FOR
** LOGGING AND THEIR CONTENTS ARE SHOWN
** BELOW. LOG JAM CSP(00)
*****
**15*14*13*12*11*10*09*08*07*06*05*04*03*0
**2*01*00*
*****
** * * * * * ODD ADDRESS ERROR*****
** * * * * * USED AND 0*****
** * * * * *
-----
*P3,          D+MIAMI,D(C)+ALUDD,
*NEXT,
*              J/LOG02
*****
LOG02:3535          F/LOG01
*****
* TEST LOG
*ENABLE
-----
*SELECT,      DBUF LATCH,
*NEXT,        BUTR(D(C)),
*              J/LOG02A
*              J/LOG02A
*              J/LOG02B
*****

```

3534

```

000000001000
1111 00 00 11 00 101 010 0100 0
00000 000000 11000 101011101

```

927

LOG02:3535

```

*****
* TEST LOG
*ENABLE
-----
*SELECT,      DBUF LATCH,
*NEXT,        BUTR(D(C)),
*              J/LOG02A
*              J/LOG02A
*              J/LOG02B
*****

```

3535

```

000000001000
0100 00 00 00 00 000 100 0000 0
11001 000000 10011 010100001

```

--> VV

<-- VV

-->

```

01 3241 928 311
11 3243 930 311

```



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
932	LOG02E: 3540 * LOG *MHAMI *-----* *P3, CSP(5)+DATA, *NEXT, * J/LOG03A	F/LOG03D <--	3536 931 311	3540	0000 01010	10 00 100000	00 00 11000	000 000 101100001	000000001000 0000 0
933	LOG03A: 3541 *SELECT, KPROC(FLAGS) *NEXT, * J/LOG03F	F/LOG02L <-- VV --> VV		3541	0000 11001	00 00 000000	11 01 11000	000 001 101100010	000000001000 0000 0
934	LOG03F: 3542 *P3, MD+DATA, *NEXT, * J/LOG03G	F/LOG03A <-- VV --> VV		3542	0000 00000	11 10 100000	00 00 11000	000 000 101100011	000000001000 0000 0
935	LOG03G: 3543 *SELECT, EMIT (WRITE FLAGS), *NEXT, * J/LOG03H	F/LOG03F <-- VV --> VV		3543	0000 11001	00 00 000000	00 01 11000	000 001 101100100	000000001000 0000 0
936	LOG03H: 3544 *P2, SR+MD(D), *NEXT, * J/LOG03I	F/LOG03G <-- VV -->	3545 937 313	3544	1010 00010	10 00 000000	00 00 11000	000 000 101100101	000000001000 0010 0



D11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARC	ACDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
941	LOG03M: 3554 ***** * D GETS FLAGS WITH LOW ORDER BYTE * * MASKED * * OUT * *-----* *P2, D+SR AND NOT MD, * *NEXT, * * J/LOG03N * *****	<--	3552 940 313	3554				00000000	1000
					0111 11 10	00 00	000 000	0100	0
					00000 000000	11000	101101110		
942	LOG03M: 3556 ***** *P2, SR+R(VECT SAV), * *P3, R(VECT SAV)+D, * *NEXT, * * J/LOG030 * *****	<-- VV		3556				00000000	1000
					1010 01 10	00 00	101 000	0010	0
					00000 011100	11000	101110000		
943	LOG030: 3560 ***** *P2, D+SR AND MD, * *NEXT, * * J/LOG03P * *****	<-- VV		3560				00000000	1000
					1011 11 10	00 00	000 000	0100	0
					00000 000000	11000	101110001		
944	LOG03P: 3561 ***** *P2, D+D OR R(VECT SAV), * *NEXT, * * J/LOG030 * *****	<-- VV		3561				00000000	1000
					1110 01 10	01 01	101 000	0100	0
					00000 000000	11000	101110010		
945	LOG030: 3562 ***** * DBUF LATCH+D, * *NEXT, * * J/LOG03R * *****	<-- VV		3562				00000000	1000
					0100 00 00	00 00	000 100	0000	0
					11011 000000	11000	101110011		
			3563 946 315						

# E11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
946	LOG03R:3563 ***** * RESTORE R(VECT SAV) LOG FLAGS * *VECTOR *-----* *P2, D+SR, *P3, R(VECT SAV)+D,CSP(4)+DATA (0), *NEXT, * J/LOG03S *****	<--	3562 945 314	3563				00000000	1000	
					1111 00 10 00 00	101 000	0100 0			
					01011 111100 11000	101110100				
947	LOG03S:3564 ***** *SELECT, CACHE DATA, *NEXT, * J/LOG03 *****	<-- VV		3564				00000000	1000	
					0100 00 10 00 00	000 000	0000 0			
					11001 000000 11000	101110101				
948	LOG03:3565 ***** * LOG CACHE *DATA *-----* *P3, CSP(6)+DATA, *NEXT, * J/LOG04 *****	<-- VV		3565				00000000	1000	
					0000 10 00 00 00	000 000	0000 0			
					01001 100000 11000	101110110				
949	LOG04:3566 ***** *P3, DBUF LATCH+D, *NEXT, * J/LOG15 *****	<-- VV		3566				00000000	1000	
					0100 00 00 00 00	000 100	0000 0			
					11011 000000 11000	101110110				
			3567 950 316							

# F11

PROGRAM FLOWS

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PAGE 316

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
								RIF	COUT	
950	LOG15:3567 ***** *SELECT, JAM REG, *NEXT, * J/LOG16 *****	F/LOG04 <--	3566 949 315	3567	1100 11001	00 00 000000	00 00 11000	000 000 101111000	00000000	1000 0
951	LOG16:3570 ***** * LOG *JAM ----- *P3, CSP(0)+DATA, *NEXT, * J/LOG17 *****	F/LOG15 <-- VV		3570	0000 01111	10 00 100000	00 00 11000	000 000 101111001	00000000	1000 0
952	LOG17:3571 ***** *SELECT, STATUS, *NEXT, * J/LOG18 *****	F/LOG16 <-- VV		3571	0100 11001	01 00 000000	00 00 11000	000 000 101111010	00000000	1000 0
953	LOG18:3572 ***** * LOG *SERVICE ----- *P3, CSP(1)+DATA, *NEXT, * J/LOG19A *****	F/LOG17 <-- VV		3572	0000 01110	10 00 100000	00 00 11000	000 000 101111011	00000000	1000 0
954	LOG19A:3573 ***** *SELECT, EMIT, *NEXT, * J/LOG19B *****	F/LOG18 <-- VV	3574 955 317	3573	0000 11001	00 00 000000	00 01 11000	000 000 101111100	00000000	1000 0

# G11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF UPF	COUT	CLOCKS
955	LOG198:3574	F/LOG19A	<--	3573 954 316	3574			000000001000		
	*P3, MD+340,				0000	10 00	00 11	100 000	0000	0
	*NEXT,				00010	100000	11000	101111110		
	* J/LOG19C		--> VV							
956	LOG19C:3576	F/LOG19B	<-- VV		3576			000000001000		
	*P2, SR+MD,				1010	11 10	00 00	000 000	0010	0
	*NEXT,				00000	000000	11000	110000000		
	* J/LOG19D		--> VV							
957	LOG19D:3600	F/LOG19C	<-- VV		3600			000000001000		
	*P2, D+SR XOR CSP(1),				0110	10 00	00 00	000 000	0100	0
	*NEXT,				01110	000000	11000	110000010		
	* J/LOG19E		- VV							
958	LOG19E:3602	F/LOG19D	<-- VV		3602			000000001000		
	*P3, DBUF LATCH+D,				0100	00 00	00 00	000 100	0000	0
	*NEXT,				11011	000000	11000	110000100		
	* J/LOG19F		--> VV							
959	LOG19F:3604	F/LOG19E	<-- VV		3604			000000001000		
	*P3, CSP(1)+DATA,				0000	10 00	00 00	000 000	0000	0
	*NEXT,				01110	100000	11000	110000101		
	* J/LOG19		-->	3605 960 318						



# H11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
960	LOG19:3605 ***** *SELECT, PBA, *NEXT, * J/LOG20 *****	F/LOG19F <--	3604 959 317	3605				00000000	1000	
					1100	01 00	00 00	000 000	0000 0	
					11001	000000	11000	110000110		
961	LOG20:3606 ***** * LOG *PBA *-----* *P3, CSP(2)+DATA, *NEXT, * J/LOG21 *****	F/LOG19 <-- VV		3606				00000000	1000	
					0000	10 00	00 00	000 000	0000 0	
					01101	100000	11000	110000111		
962	LOG21:3607 ***** *SELECT, CUA, *NEXT, * J/LOG22 *****	F/LOG20 <-- VV		3607				00000000	1000	
					0000	00 00	01 01	000 000	0000 0	
					11001	000000	11000	110001000		
963	LOG22:3610 ***** * LOG *CUA *-----* *P3, CSP(3)+DATA, *NEXT, * J/LOG23 *****	F/LOG21 <-- VV		3610				00000000	1000	
					0000	10 00	00 00	000 000	0000 0	
					01100	100000	11000	110001010		
			3612 964 319							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUS A	EXTENSION		CLOCKS	
								OFST	ADDR		BOX
964	LOG23:3612	F/LOG22	<--	3610	963	318					
	*****						3612			000000001000	
	* NOTE THAT TAG FIELD IS READ ASSERTED *							0001	01 00	00 00	010 000 0000 0
	*LOW, BUT IS							11001	000000	11000	110001100
	*INVERTED										
	*-----*										
	*SELECT, HITTAG,										
	*NEXT,										
	* J/LOG24A		--> VV								
965	LOG24A:3614	F/LOG23	<-- VV								
	*****						3614			000000001000	
	*BEFORE LOGGING. VALID IS NOT INVERTED *							0000	11 10	00 00	000 000 0000 0
	*-----*							00000	100000	11000	110001110
	*P3, MD+DATA,										
	*NEXT,										
	* J/LOG24B		--> VV								
966	LOG24B:3616	F/LOG24A	<-- VV								
	*****						3616			000000001000	
	*SELECT, EMIT,							0000	00 00	00 01	000 000 0000 0
	*NEXT,							11001	000000	11000	110001111
	* J/LOG24C		--> VV								
967	LOG24C:3617	F/LOG24B	<-- VV								
	*****						3617			000000001000	
	*P2, SR+MD,							1010	11 10	00 00	000 000 0010 0
	*NEXT,							00000	000000	11000	110010000
	* J/LOG24D		-->	3620	968	320					
	*****										

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
968	LOG24D:3620	F/LOG24C	<--	3617 967 319	3620			000000001000
	* MASK TO INVERT TAG				0111 10 11	11 00	000 000	0000 0
	*FIELD				00010	100000	11000	110010001
	*P3, MD+77400,							
	*NEXT, J/LOG24E		--> VV					
969	LOG24E:3621	F/LOG24D	<-- VV		3621			000000001000
	*P2, D+SR XOR MD,				0110 11 10	00 00	000 000	1100 0
	*NEXT, J/LOG24F		--> VV		00000	000000	11000	110010010
970	LOG24F:3622	F/LOG24E	<-- VV		3622			000000001000
	* DBUF LATCH+D,				0100 00 00	00 00	000 100	0000 0
	*NEXT, J/LOG24G		--> VV		11011	000000	11000	110010011
971	LOG24G:3623	F/LOG24F	<-- VV		3623			000000001000
	* LOG HITTAG WITH TAG FIELD ASSERTED				0000 10 00	00 00	000 000	0000 0
	*HIGH				01000	100000	11000	010101011
	*P3, CSP(7)+DATA,							
	*NEXT, J/LOG25		-->	3253 972 321				

# K11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
972	LOG25: 3253	F/LOG02A	<--	3241 928 311	3253			00000000	1000
	* CLEAR JAM REG,				0100	00 00	10 00	000 000	0000 0
	*NEXT, BUT(TRACK),				11011	000000	11001	110010100	
	* J/LOG25A		-->	VV					
973	LOG25A: 3624	F/LOG25	<--	VV	3624			00000000	1000
	*SELECT, READ WCS STATUS,				0010	00 00	01 00	000 000	0000 0
	*NEXT,				11001	000000	11000	110010101	
	* J/LOG27		-->	VV					
974	LOG27: 3625	F/LOG25A	<--	VV	3625			00000000	1000
	* DONE TO SELECT				0111	11 00	11 00	101 000	0100 0
	*EMIT				00000	010010	11010	110010110	
	*-----*								
	*P2, D+WHAMI AND NOT 1,								
	*P3, WHAMI+D (A ADDR),								
	*NEXT, BUT(CLEAR FLAGS),								
	* J/LOG28		-->	VV					
975	LOG28: 3626	F/LOG27	<--	VV	3626			00000000	1000
	*P2, D+R(CNTL),D(C)+ALU15,				1010	01 11	00 00	111 100	0100 0
	*NEXT,				00000	000000	11000	110011000	
	* J/LOG29		-->	3630 976 322					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION PIF COUT CLOCKS UPF
976	LOG29:3630	F/LOG28	<--	3626 975 321	3630	0100	10 00	00 00 000 000 0000 0
	*P3, MD+40000 (BC),					00010	100000	10011 100000001
	*NEXT, BUTR(D(C)),							
	* J/LOG30	J/LOG30	* -->	01 3401 977 322				
	* J/LOG31	J/LOG31	* -->	11 3403 978 322				
CASE 977	1 OF BLOG29 LOG30:3401	F/LOG29	<-- VV		3401	0000	00 00	00 00 000 000 0000 0
	*NEXT, BUT(RETURN)		* --> VV			00000	000000	11111 000000000
CASE 978	2 OF BLOG29 LOG31:3403	F/LOG29	<--	3630 976 322	3403	0111	11 11	11 00 101 000 0.00 0
	*P2, D+WHAMI AND NOT 2,					00000	010010	11000 110011001
	*P3, WHAMI+D (A ADDR),							
	*NEXT, J/LOG31A		* --> VV					
979	LOG31A:3631	F/LOG31	<-- VV		3631	1010	11 10	00 00 000 001 0100 0
	*P2, D+MD					00000	000000	11100 001110001
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/DISO1		* -->	1161 1054 345				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC " BEGINING OF CONSOLE FLOWS "							
: THIS FLOW IS NORMALLY ENTERED WHEN A CONSOLE SERVICE CONDITION							
: IS DETECTED IN THE SERVICE FLOW. THE SWITCHCODE WHICH IS A							
: FIVEBIT CODE UNIQUELY REPRESENTING ONE OF THE TWENTY KEYS ON							
: KEYPAD, WOULD HAVE BEEN LATCHED PRIOR TO ASSERTING THE CONSOLE							
: SERVICE. THE FOLLOWING TABLE SHOWS THE ASSIGNMENT OF CODES.							
: CONSOLE KEY ! SWCD<4:0>							
*****							
	UNUSED !	00000					
	UNUSED !	00001					
	UNUSED !	00010					
	UNUSED !	00011					
	DIAG !	00100					
	BOOT !	00101					
	START !	00110					
	CONT !	00111					
	DEP !	01000					
	MAINT !	01001					
	LADRS !	01010					
	EXAM !	01011					
	DADRS !	01100					
	DSWR !	01101					
	LSWR !	01110					
	HALT/SI !	01111					
	0 !	10000					
	1 !	10001					
	2 !	10010					
	3 !	10011					
	4 !	10100					
	5 !	10101					
	6 !	10110					
	7 !	10111					
*****							
: SCRATCH PAD REGISTERS USED:							
: NAME USED IN THESE FLOWS ! NAME USED IN SPEC							
: R(TMPSW) ! CNSL.TMPSW							
: R(SW) ! CNSL.SW							
: R(CADRS) ! CNSL.ADR							
: R(CNTL) ! CNSL.CNTL							
: OTHER DEFINITIONS:							
: TSR<17:00> = R(CNTL)<9:8> # R(TMPSW)<15:00>							
: SW.REG<17:00> = R(CNTL)<11:10> # R(SW)<15:00>							
: CAR<17:00> = R(CNTL)<1:0> # R(CADRS)<15:00>							
: ASSIGNMENT OF BITS IN R(CNTL):							
: *****							
	CONSOLE !	DLOCK !	EXAM !	DEP !	SW.REG<17> !	SW.REG<16> !	TSR<17>
	15 !	14 !	13 !	12 !	11 !	10 !	9
: *****							
	TSR<16> !	SI !	DNTCLRCR !	UNUSED !	CAR<17> !	CAR<16> !	
	8 !	7 !	6 !	5, 4, 3, 2 !	1 !	0 !	
: *****							

# N11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS UPF
THE CSR FLOW ACCOMPLISHES THE FOLLOWING: LOADS THE CSP REGISTERS WITH CONSTANTS USED IN CONSOLE, SETS CSP INVALID BIT, INITIALIZES R(CNTL), AND FINDS OUT THE NATURE OF THE ENTRY INTO THE FLOW--WHETHER IT IS A NORMAL ENTRY OR A REENTRY AFTER THE EXECUTION OF A SINGLE INSTRUCTION IN RESPONSE TO SI KEY. IF THE ENTRY IS DUE TO SINGLE INSTRUCTION, THE SI BIT IS CLEARED AND CONSOLE BIT IS SET AND HALT FLOW IS ENTERED TO DISPLAY PC AND LOOP IN EOS FLOW FOR SERVICING THE KEYS. IF IT IS A NORMAL ENTRY SDCD FLOW IS ENTERED.									
.CASE 5 OF BSER11									
980	CSR01:1664	F/SER11	<--	1016	401	167			
	*****								
	*-----*								
	*P2, CSP(10)+100000,								
	*NEXT,								
	* J/CSR04		-->	1263	981	324			
981	CSR04:1263	F/CSR01	<--	1664	980	323			
	*****								
	*-----*								
	*P2, CSP(12)+030000,								
	*NEXT,								
	* J/CSR05		-->	VV					
982	CSR05:1264	F/CSR04	<--	VV					
	*****								
	*-----*								
	*P2, CSP(13)+040000,								
	*NEXT,								
	* J/CSR06A		-->	1265	983	325			
	*****								





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	EXTENSION			CLOCK	
					ALU BUS	BUSB SP	BUSA UBF		
987	CSRO6D:1272 ***** * CLEARS "DNTCLRCR" IN *R(CNTL). *-----* *P2, * D+(NOT(D RIGHT 8)) AND * R(CNTL) *P3, R(CNTL)+D, *NEXT, * J/CSRO6E *****	<--	1271 986 325	1272	0010 00110	01 11 011100	01 01 11000	111 000 010111011	0100 0 0
988	CSRO6E:1273 ***** *-----* *P2, D+CSP(12), *NEXT, * J/CSR12 *****	<-- VV		1273	1010 00101	10 00 000000	00 00 11000	000 000 010111100	0100 0 0
989	CSR12:1274 ***** * CLEAR 'EXAM' AND 'DEP' IN R(CNTL).AND *D(C) GETS *'SI'. *-----* *P2, D+NOT(D) AND R(CNTL), * D(C)+ALU07, *P3, R(CNTL)+D, *NEXT, * J/CSRO7 *****	<-- VV		1274	0010 00000	01 11 011100	01 01 11000	111 011 010111101	0100 0 0
		-->	1275 990 327						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
990	CSR07:1275	F/CSR12	<--	1274 989 326	1275			000000001000
	* THIS WORD TESTS THE 'SI' BIT OF * *R(CNTL). THIS BIT WILL BE SET IN SINGLE * *INSTRUCTION * -----* *P2, D+CSP(13),D(C)+D(C), * *NEXT, BUTR(SI), * * J/SDC001 * --> 10 1002 994 328 * J/CSR08 * --> 11 1003 991 327 *****				1010 10 00 00 00 000 111 0100 0 00100 000000 01111 000000010			
.CASE	2 OF BCSR07							
991	CSR08:1003	F/CSR07 F/E0S13	<-- <--	1275 990 327 1063 1131 366	1003			000000001000
	*SERVICE, BEFORE LEAVING THE CONSOLE TO * *EXECUTE ONE INSTRUCTION. SO TESTING OF * *THIS BIT DIFFERENTIATES THE ENTRY AFTER * *A SINGLE INSTRUCTION FROM NORMAL * *ENTRY. BRANCH TARGETS ARE SOC001 AND * *CSR08. ENTER FROM CSR07 IF 'SI' IS * *SET. CSR08 TO CSR11 WILL CLEAR 'SI' AND * *SET * *'CONSOLE'. * -----* *P2, D+CSP(13),D(C)+ALU15, * *NEXT, J/CSR09 * --> VV *****				1010 10 00 00 00 000 100 0100 0 00100 000000 11000 010111110			
992	CSR09:1276	F/CSR08	<-- VV		1276			000000001000
	*-----* *P2, * * D+(NOT(D RIGHT 7)) AND * * R(CNTL) * *P3, R(CNTL)+D, * *NEXT, * * J/CSR10 * --> *****			1300 993 328	0010 01 11 01 00 111 000 0100 0 00110 011100 11000 011000000			

BOX NO.	TAG: ADDRESS	EXTENSION	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA	ALU BUS SP UBF	RIF COUT CLOCKS
993	CSR10:1300	F/CSR09	<--	1276 992 327	1300	1010 10 00 00 00	00000001000
	*****					00111 000000 11000	000 000 0110 0
	*-----*						000011010
	*P2, D+CSP(10),SR+CSP(10),						
	*NEXT,						
	* J/HLT01		-->	1032 1029 339			
	*****						
.TOC "BEGINING OF SDCD (SWITCH DECODE) ROUTINE." : THIS ROUTINE READS THE LATCHED 5 BIT CONSOLE : SWITCH CODE AND DECODES AND BRANCHES TO VARIOUS : ROUTINES TO SERVICE CONSOLE SWITCH FUNCTIONS." .CASE 1 OF BCSR07							
994	SDCD01:1002	F/CSR07 F/EOS13	<-- <--	1275 990 327 1063 1131 366	1002	1110 01 11 01 01	000000001000
	*****					00000 011100 11000	111 000 0100 0
	* ENTER FROM CSR07.SET 'DLOCK' IN						011000001
	*R(CNTL).						
	*-----*						
	*P2, D+D OR R(CNTL),						
	*P3, R(CNTL)+D,						
	*NEXT,						
	* J/SDCD15		-->	VV			
	*****						
995	SDCD15:1301	F/SDCD01	<--	VV	1301	0100 00 00 00 00	000000001000
	*****					11001 000000 11000	000 000 0000 0
	* TO READ CONSOLE						011000010
	*DATA						
	*-----*						
	*SELECT, CONSOLE DATA,						
	*NEXT,						
	* J/SDCD18		-->	VV			
	*****						
996	SDCD18:1302	F/SDCD15	<--	VV	1302	0000 11 10 00 00	000000001000
	*****					00000 100000 11000	000 000 0000 0
	*-----*						011000011
	*P3, MD+DATA,						
	*NEXT,						
	* J/SDCD19		-->	1303 997 329			
	*****						

# F12

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
997	SDCD19:1303	F/SDCD18	<--	1302 996 328	1303	0100	00 00	00 00 000 000 0000 0
	* FOR REMOTE				11011	000000	11000	011000100
	*CONSOLE							
	-----							
	* CLEAR CMND LTCH,							
	*NEXT,	J/SDCD02	--> VV					
998	SDCD02:1304	F/SDCD19	<-- VV		1304	1010	11 10	00 00 000 000 0100 0
						00000	000000	11000 011001000
	*P2, D+MD,							
	*NEXT,	J/SDCD03	--> VV					
999	SDCD03:1310	F/SDCD02	<-- VV		1310	1111	00 00	01 11 000 000 0010 0
	* SR<2:0> GETS SWCD					00000	000000	11000 011001001
	*<4:2>							
	-----							
	*P2, SR+D RIGHT 2,							
	*NEXT,	J/SDCD04	--> VV					
1000	SDCD04:1311	F/SDCD03	<-- VV		1311	1111	00 00	11 01 101 000 0100 0
	* BRANCH TARGETS ARE					00000	000000	00000 010011001
	*SDCD05, SDCD10, NMRC01, SDCD17.							
	-----							
	*P2, D+R(TMPSW),							
	*NEXT, BUTR(SWCD04 # SWCD03),							
	* J/SDCD05	J/SDCD05	-->	1001 1231	1001	330		
		J/SDCD10	-->	1011 1233	1006	331		
		J/NMRC01	-->	1101 1235	1014	335		
		J/SDCD17	-->	1111 1237	1013	334		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE 1001	SDCD05:1231	F/SDCD04	<--	1311	1000	329			
	*****			1231				000000001000	
	* ENTER FROM SDCD04 WHEN SWCD <4:3>=00. *			1010	01 11	00 00	111 100	0100 0	
	*THIS MAJOR BRANCH LEADS TO CODES OF * *FUNCTIONS *			00000	000000	00000	0011	10	
	*-----*								
	*P2, D+R(CNTL), D(C)+ALU15, *								
	*NEXT, BUTR(SWCD02), *								
	* J/SDCD06 *		-->	1110	1156	1002	330		
	* J/SDCD07 *		-->	1111	1157	1003	330		
	*****								
.CASE 1002	SDCD06:1156	F/SDCD05 F/SDCD17	<-- <--	1231 1237	1001 1013	330 334			
	*****			1156				000000001000	
	*WHICH ARE SERVICED ONLY IN CONSOLE MODE. *			0100	00 00	00 00	100 010	0000 0	
	*OF THE POSSIBLE EIGHT ONLY FOUR ARE *			11011	000000	11000	110001001		
	*USED. THE FOUR CODES HAVING SWCD<2>=0, *								
	*ARE NOT USED. BRANCH TARGETS ARE SDCD06 *								
	*AND SDCD07. ENTER FROM SDCD05 WHEN *								
	*SWCD<2>=0. UNDEFINED *								
	*CODES. *								
	*-----*								
	*P3, CMND REJECT, *								
	*NEXT, *								
	* J/E0504B *		-->	1611	1120	363			
	*****								
.CASE 1003	SDCD07:1157	F/SDCD05 F/SDCD17	<-- <--	1231 1237	1001 1013	330 334			
	*****			1157				000000001000	
	*CMND REJECT SENT TO REMOTE CONSOLE *			1010	11 10	00 00	000 000	0010 0	
	*ENTER FROM SDCD05 WHEN SWCD<2>=1. *			00000	000000	01111	000110110		
	*SR<3:0> GETS SWCD<4:3>. TEST CONSOLE BIT *								
	*IN R(CNTL). BRANCH TARGETS ARE *								
	*SDCD08, SDCD09. *								
	*-----*								
	*P2, SR+MD, *								
	*NEXT, BUTR(CONSOLE), *								
	* J/SDCD08 *		-->	10	1066	1004	331		
	* J/SDCD09 *		-->	11	1067	1005	331		
	*****								

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PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION COUT UPF	CLOCKS
.CASE	1 OF BSDCD07							
1004	SDCD08:1066	F/SDCD07 F/SDCD12	<-- <--	1157 1012	1003 1009	330 332		
	*****							
	* ENTER FROM SDCD07 WHEN 'CONSOLE' NOT							
	*SET. SEND							
	*CMND							
	*-----*							
	*P3, CMND ILLEGAL,							
	*NEXT,							
	* J/EOS04B							
	*****							
.CASE	2 OF BSDCD07							
1005	SDCD09:1067	F/SDCD07 F/SDCD12	<-- <--	1157 1012	1003 1009	330 332		
	*****							
	*ILLEGAL TO REMOTE CONSOLE AND LEAVE							
	*CONSOLE ENTERED ALSO FROM SDCD12. ENTER							
	*FROM SDCD07 WHEN 'CONSOLE' IS SET. THIS							
	*BRANCH LEADS TO DIAG, BOOT, START AND							
	*CONT							
	*ROUTINES.							
	*-----*							
	*P2, D+CSP(13) D(C)+ALU15,							
	*NEXT, BUTR(SWCD01 # SWCD00),							
	* J/DIAG01							
	* J/DIAG01							
	* J/BOOT							
	* J/STC01							
	* J/STC02							
	*****							
.CASE	2 OF BSDCD04							
1006	SDCD10:1233	F/SDCD04	<--	1311	1000	329		
	*****							
	*BRANCH TARGETS ARE DIAG01,BOOT01,							
	*STC01,STC02. ENTER FROM SDCD04 WHEN							
	*SWCD<4:3>=1. THIS MAJOR BRANCH LEADS TO							
	*EIGHT							
	*CODES							
	*-----*							
	*P2, SR+MD,							
	*NEXT,							
	* J/SDCD20							
	*****							

1066  
 0100 00 00 00 00 010 010 0000 0  
 11011 000000 11000 110001001

1067  
 1010 10 00 00 00 000 100 0100 0  
 00100 000000 01011 001100001

1233  
 1010 11 10 00 00 000 000 0010 0  
 00000 000000 11000 011000101

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION													
								RIF	COUT	CLOCKS											
1007	SDCD20:1305	F/SDCD10	<--	1233	1006	331															
	*****																				
	*THE FOUR HAVING SWCD<2>=0, ARE SERVICED *																				
	*ONLY IF 'CONSOLE' IS SET. THIS TEST *																				
	*DIVIDES THE CODES INTO TWO PARTS. BRANCH *																				
	*TARGETS ARE *																				
	*SDCD11 *																				
	*-----*																				
	*P2,	D+R(CNTL),D(C)+ALU15,																			
	*NEXT,	BUTR(SWCD02),																			
	*	J/SDCD11																			
	*	J/SDCD11	-->	1011	1113	1008	332														
	*	J/SDCD14	-->	1111	1117	1011	333														
	*****																				
CASE 1008	1 OF BSDCD20																				
1008	SDCD11:1113	F/SDCD20	<-- VV																		
	*****																				
	*AND SDCD14. ENTER FROM SDCD20 WHEN *																				
	*SWCD<2>=0, SIGNIFYING CODES SERVICED *																				
	*ONLY IN CONSOLE MODE. TEST *																				
	*'CONSOLE'.																				
	*-----*																				
	*NEXT,	NULL, NULL,																			
	*	BUTR(CONSOLE),																			
	*	J/SDCD12																			
	*	J/SDCD12	-->	10	1012	1009	332														
	*	J/SDCD13	-->	11	1013	1010	333														
	*****																				
CASE 1009	1 OF BSDCD11																				
1009	SDCD12:1012	F/SDCD11	<-- VV																		
	*****																				
	*BRANCH TARGETS ARE SDCD12 AND SDCD13. *																				
	*ENTER FROM SDCD11 WHEN 'CONSOLE' NOT *																				
	*SET. SEND CMND *																				
	*ILLEGAL *																				
	*-----*																				
	*NEXT,																				
	*	J/SDCD08	-->	1066	1004	331															
	*****																				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
.CASE 1010	2 OF BSOD11 SDCD13:1013	F/SDCD11	<-- 1113 1008 332	1013 1010 01 11 00 00 11 000 0100 0 00000 000000 01011 001011001
	***** * ENTER FROM SDCD11 WHEN 'CONSOLE' IS * * SET. THIS BRANCH LEADS TO DEP. INT. LAD * * AND EXAM ROUTINES. BRANCH TARGETS * * ARE * *-----*			
	*P2, D+R(CNTL),			
	*NEXT, BUTR(SWCD01 # SWCD00),			
		J/DEPO1	--> 001 1131 1083 353	
		J/INT01	--> 011 1133 1078 352	
		J/LAD01	--> 101 1135 1070 350	
		J/EXM01	--> 111 1137 1059 347	
	*****			
.CASE 1011	2 OF BSOD20 SDCD14:1117	F/SDCD20	<-- 1305 1007 332	1117 1010 10 00 00 00 000 111 0100 0 00100 000000 01011 001110001
	***** * DEPO1, INT01, LAD01, EXM01. ENTER FROM * * SDCD20 WHEN SWCD02 =1 BRANCH TARGETS * * ARE DIS01, * * LSRO1 * *-----*			
	*P2, D+CSP(13), D(C)+D(C),			
	*NEXT, BUTR(SWCD01 # SWCD00),			
		J/DIS01	--> 001 1161 1054 345	
		J/DSRO1	--> 011 1163 1041 342	
		J/LSRO1	--> 101 1165 1045 343	
		J/SDCD16	--> 111 1167 1012 334	
	*****			



# K12

BOX NO. .CASE	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
1012	SDCD16:1167	F/IA115C	<--	3273 696 253				
		F/LOG31A	<--	3631 979 322				
		F/SDCD14	<--	1117 1011 333				
		F/LAD08	<--	1421 1077 352				
							1167	000000001000
							1010	10 00 00 00 000 111 0110 0
							00111	000000 01111 000011010
	*DSR01, AND SDCD16. ALL THESE ARE SERVICED * *IN RUN AND CONSOLE MODES. ENTER FROM * *SDCD14. BRANCH FURTHER INTO HALT AND * *SI ROUTINES BRANCH TARGETS ARE HLTO1 * *AND * *SINO1. *							
	-----							
	*P2, D+CSP(10), D(C)+D(C), *							
	* SR+CSP(10), *							
	*NEXT, BUTR(CONSOLE), *							
	* J/HLTO1 *							
		J/HLTO1	-->	10 1032 1029 339				
		J/SINO1	-->	11 1033 1035 340				
	-----							
1013	SDCD17:1237	F/SDCD04	<--	1311 1000 329				
							1237	000000001000
							0000	00 00 00 00 000 000 0000 0
							00000	000000 11000 001101110
	* ENTER FROM SDCD04 WHEN SWCD<4:3> IS 11. * *THESE ARE UNDEFINED CODES. GO TO * *SDCD06 *							
	-----							
	* NULL, NULL, *							
	*NEXT, *							
		J/SDCD06	-->	1156 1002 330				
	-----							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA JBF	EXTENSION RIF COUT CLOCKS UPF
.TOC "BEGINING OF NUMERIC ROUTINE."							
; THIS ROUTINE ENTERS THE VALUE OF THE NUMERIC DEPRESSED							
; INTO THE LOWER THREE BITS OF THE TSR WITH THE PREVIOUS							
; CONTENTS LEFT SHIFTED THREE BITS. OPERATION OCCURS							
; IN BOTH CONSOLE AND RUN MODES.							
CASE	3 OF BSDC004						
1014	NMRC01:1235	F/SDC004	<--	1311	1000	329	
	*****						
	*TO SEND CMND REJECTED. SR<1:0> GETS *						
	*R(TMPSW)<14:13>. ENTER FROM SDC004 WHEN *						
	*SWCU<4:3>=10. *						
	*-----*						
	*P2, SR+0 RIGHT 13, *						
	*NEXT, *						
	* J/NMRC02 * --> VV						
	*****						
1015	NMRC02:1312	F/NMRC01	<-- VV				
	*****						
	*SELECT, EMIT, *						
	*NEXT, *						
	* J/NMRC02A * --> VV						
	*****						
1016	NMRC02A:1313	F/NMRC02	<-- VV				
	*****						
	* MAKES RES<3>=1, TO DISABLE SENDMUX. SO *						
	* THAT D(0) GETS ZERO ON LEFT *						
	* SHIFTS. *						
	*-----*						
	* RES+0, *						
	*NEXT, *						
	* J/NMRC03 * -->						
	*****						
				1314	1017	336	

1235	1111	00	00	01	10	000	000	0010	0
	01110	000000	11000	011001010					
1312	0000	00	00	00	01	000	000	0000	0
	11001	000000	11000	011001011					
1313	0000	10	00	00	00	000	000	0000	0
	00001	010001	11000	011001100					

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1017	NMRC03:1314 ***** * R(TMPW) IS SHIFTED LEFT BY THREE IN * * THIS AND THE * * FOLLOWING * *-----* *P2, D+D LEFT 1, * *NEXT, * * J/NMRC04 * *****	<--	1313 1016 335	1314	1111 00 00	01 00	000 000	0100 0 000000001000 00000 000000 11000 011001101
1018	NMRC04:1315 ***** * TWO WORDS. * *-----* *P2, D+D LEFT 1, * *NEXT, * * J/NMRC05 * *****	<-- VV		1315	1111 00 00	01 00	000 000	0100 0 000000001000 00000 000000 11000 011001110
1019	NMRC05:1316 ***** *-----* *P2, D+D LEFT 1, * *P3, R(TEMP2A)+D (B ADDR), * *NEXT, * * J/NMRC06A * *****	<-- VV		1316	1111 00 11	01 00	110 000	0100 0 00000 011010 11000 011001111
1020	NMRC06A:1317 ***** * TO CLEAR * * RES * *-----* *P2, RES+CSP(13), * *NEXT, * * J/NMRC06 * *****	<-- VV		1317	0000 10 00	00 00	000 000	0000 0 00100 010001 11000 011011010
			1332 1021 337					

# N12

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	CLOCK COUT	
1021	NMRC06:1332 ***** * MD(LOW) HAS SWCD<4:0> SWCD<2:0> * REPRESENTS THE NUMERIC TO BE LOADED IN * TSR. *-----* * P2,            D+MD * P3,            R(TEMP2B)+D (A ADDR), * NEXT, *                            J/NMRC07A *****	---	1317 1020 336	1332	1010 00000	11 10 010100	00 01 11000	110 000 01101011	0100 0	000000001000
1022	NMRC07A:1333 ***** * P2,            MD+177770 (BC), * NEXT, *                            J/NMRC07B *****	<-- VV		1333	1111 00010	10 11 100000	11 11 11000	111 000 01101100	0000 0	000000001000
1023	NMRC07B:1334 ***** *-----* * P2,            D+MD, * NEXT, *                            J/NMRC08 *****	<-- VV		1334	1010 00000	11 10 000000	00 00 11000	000 000 011011101	0100 0	000000001000
1024	NMRC08:1335 ***** * R(TEMP2B)<15:3> IS CLEARED. * R(TEMP2B)<2:0> CONTAINS THE VALUE OF * NUMERIC BEING * SERVICED. *-----* * P2,            D+NOT(D) AND R(TEMP2B), * P3,            R(TEMP2B)+D, * NEXT, *                            J/NMRC09 *****	<-- VV		1335	0010 00000	01 11 011100	01 01 11000	110 000 011100000	0100 0	000000001000
		-->	1340 1025 338							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF	COUT	CLOCKS	
1025	MMRC09:1340 ***** * D HAS THE * DESIRED *-----* *P2, D+R(TEMP2A) OR R(TEMP2B), *NEXT * J/MMRC10 *****	---	1335 1024 337	1340	1110 00000	01 11 000000	11 01 11000	110 000 011100001	0100 0	000000001000	
1026	MMRC10:1341 ***** *R(TMP SW)<12:00> NUMERIC<2:0> *R(TMP SW)<15:00> = R(TMP SW)<12:00> *NUMERIC *<550> *-----* *P2, R(TMP SW)+D, *NEXT, * J/MMRC11 *****	--- VV		1341	0000 00000	00 00 010010	00 01 11000	101 000 011100010	0000 0	000000001000	
1027	MMRC11:1342 ***** * TSR<17:16> GETS SR<1:0> AND HENCE *R(TMP SW)<14:13> LOOK AT *MMRC02 *-----* * RETURN+MMRC12, *NEXT, BUT(GO TO), PAGE+1, * J/SBR01 *****	--- VV		1342	0001 00000	00 01 000000	11 00 11100	011 001 101101101	0000 0	000000001000	
		---	***** 1555 1152 373 ***** VV 1343 1028 338								
1028	MMRC12:1343 ***** *-----* * RETURN+E0503, *NEXT, BUT(GO TO), PAGE+1, * J/SBRA01 *****	---	***** 1505 1132 367 ***** VV 1464 1115 361	1343	0001 00000	00 10 000000	01 10 11100	100 001 101000101	0000 0	000000001000	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
	.TOC "BEGINING OF 'HALT' (HLT) ROUTINE."							
	: THIS ROUTINE SETS							
	: CONSOLE BIT IN R(CNTL) AS WELL AS THE CONSOLE FLAG IN STATUS							
	: BOARD. DISPLAYS PC.							
	.CASE 1 OF BSDCD16							
1029	HLT01:1032	F/CSR10 F/SDCD16	<-- <--	1300 1167	993 1012	328 334		
	*****							
	* SET 'CONSOLE' IN R(CNTL) *							
	*-----*							
	*P2,	D+D OR R(CNTL),	*					
	*P3,	R(CNTL)+D,	*					
	*NEXT,		*					
	*	J/HLT02	* --> VV					
	*****							
1030	HLT02:1344	F/HLT01	<-- VV					
	*****							
	* THRU UCON INTERFACE *							
	*-----*							
	*P3,	SET CONSOLE,	*					
	*NEXT,		*					
	*	J/HLT03	* --> VV					
	*****							
1031	HLT03:1345	F/HLT02	<-- VV					
	*****							
	*-----*							
	*P2,	D+PC (A),	*					
	*NEXT,		*					
	*	J/HLT04	* --> VV					
	*****							
1032	HLT04:1346	F/HLT03	<-- VV					
	*****							
	* TSR<15:00> GETS *							
	*PC		*					
	*-----*							
	*P2,	R(TMPSW)+D,	*					
	*NEXT,		*					
	*	J/HLT05A	* -->	1350	1033	340		
	*****							

1032	000000001000
	1110 01 11 01 01 111 000 0100 0
	00000 011100 11000 011100100
1344	000000001000
	0100 00 00 00 00 100 001 0000 0
	11011 000000 11000 011100101
1345	000000001000
	1111 00 00 10 01 111 000 0100 0
	00000 000000 11000 011100110
1346	000000001000
	0000 00 00 00 01 101 000 0000 0
	00000 010010 11000 011101000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1033	HLT05A:1350	F/HLT04	<--	1346 1032 339	1350			000000001000
	*****				0100	00 00	00 00	110 001 0000 0
	-----				11011	000000	11000	011101001
	* SET DP,							
	*NEXT,							
	* J/HLT05		--> VV					
1034	HLT05:1351	F/HLT05A	<-- VV		1351			000000001000
	*****				0001	00 10	01 10	000 001 0000 0
	* TSR<17:16> GETS SR<1:0> WHICH IS <00>.				00000	000000	11100	101101101
	-----							
	* RETURN+EOS1A,							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/SBRC01							
	*****		-->	1555 1152 373				
	*****			VV				
				1460 1111 360				

.TOC "BEGINING OF 'SINGLE INSTRUCTION' (SIN) ROUTINE."  
 ;; THIS ROUTINE CLEARS 'CONSOLE' IN R(CNTL) AND IN STATUS BOARD.  
 ;; SETS 'SI' IN R(CNTL) AND SENDS CMND COMPLETE TO REMOTE CONSOLE.  
 ;; IF BG IS ASSERTED IT GOES TO INTRO1 TO SERVICE THE PENDING REQUEST  
 ;; AND RETURNS TO FETO1 TO EXECUTE AN INSTUCTION. IF BG IS NOT ASSERTED  
 ;; IT DIRECTLY GOES TO FETO1 TO EXECUTE AN INSTUCTION. SINCE THE  
 ;; CONSOLE SERVICE FLAG IS NOT CLEARED, CONSOLE IS REENTERED AFTER THE  
 ;; EXECUTION OF ONE INSTRUCTION.  
 .CASE 2 OF BSDCD16

1035	SIN01:1033	F/CSR10 F/SOCD16	<-- <--	1500 993 328 1167 1012 334	1033			000000001000
	*****				0001	00 01	11 01	100 001 0000 0
	* CLEAR 'CONSOLE' IN R(CNTL) AND THE				00000	000000	11100	101110110
	* HARDWARE FLAG IN STATUS							
	* BOARD							
	-----							
	* RETURN+SIN02,							
	*NEXT, BUT(GO TO),PAGE+1,							
	* J/SBRE01							
	*****		-->	1566 1163 377				
	*****			VV				
				1354 1036 341				

E13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1036	SIN02:1354			1354	1010 00100	10 00 000000	00 00 11000	000 100 0100 0 011101101
	*P2, D+CSP(13),D(C)+ALU15,							
	*NEXT, J/SIN03		--> VV					
1037	SIN03:1355	F/SIN02	<-- VV	1355	1110 00110	01 11 011100	01 00 11000	111 000 0100 0 011101110
	* SET 'SI' IN R(CNTL)							
	*P2, D+(D RIGHT 7) OR R(CNTL),							
	*P3, R(CNTL)+D,							
	*NEXT, J/SIN05		--> VV					
1038	SIN05:1356	F/SIN03	<-- VV	1356	0000 11001	00 00 000000	00 01 01100	000 000 0000 0 100010011
	* OTHER TARGET							
	*SIN08							
	*SELECT, EMIT,							
	*NEXT, BUTR(BG),							
	* J/SIN06		-->	011 1423	1039	341		
	* J/SIN08		-->	111 1427	1040	342		
CASE 1039	1 OF BSIN05							
1039	SIN06:1423	F/SIN05	<-- VV	1423	0000 00000	00 11 000000	10 00 010 000	0000 0000 0 000010011
	* RETURN TO							
	*FETO1							
	* RETURN+FETO1							
	*NEXT, BUT(GO TO),PAGE+0,							
	* J/INTRO1		-->	23	389	164		
				VV				
				702	1	2		



# F13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1040	2 OF BSINOS SIN08:1427	F/SIN05	<--	1356	1038	341		
	***** * EXECUTE ONE * INSTRUCTION. *****			1427				000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 11100 111000010
	*NEXT, BUT(GO TO),PAGE+0, * J/FET01		-->	702	1	2		
.TCC "BEGINING OF DISPLAY SWITCH REGISTER (DSR)" :: THIS DISPLAYS THE CONTENTS OF SWITCH REGISTER :: IN THE CONSOLE DISPLAY.								
.CASE 1041	2 OF BSDCD14 DSR01:1163	F/IA115C F/LOG31A F/SDCD14 F/LAD08	<-- <-- <-- <--	3273 3631 1117 1421	696 979 1011 1077	253 322 333 352		
	***** *P2, D+R(CNTL), *NEXT, * J/DSR02A			1163				000000001000 1010 01 11 00 00 111 000 0100 0 00000 000000 11000 011110000
.CASE 1042	DSR02A:1360	F/DSR01	<-- VV					
	***** * SR<1:0> GETS SW.REG<17:16> ***** *P2, SR+D RIGHT 10, *NEXT, * J/DSR02			1360				000000001000 1111 00 00 01 11 000 000 0010 0 00110 000000 11000 011110001
.CASE 1043	DSR02:1361	F/DSR02A	<-- VV					
	***** *P2, D+R(SW), *NEXT, * J/DSR03			1361				000000001000 1111 00 00 11 00 111 000 0100 0 00000 000000 11000 011110010
	*****			1362	1044	343		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1044	DSR03:1362	F/DSR02	<--	1361 1043 342	1362	0000 00 00	00 01	101 000	0000 0
	*P3, R(TMPSW)+D,					00000 010010	11000	100000000	
	*NEXT, J/DISO6		-->	1400 1058 346					
.TOC "BEGINING OF 'LOAD SWITCH REGISTER' (LSR) ROUTINE." :: THIS ROUTINE LOADS THE SWITCH REGISTER WITH THE TEMPORARY SWITCH REGISTER. CASE 3 OF BSDCD14									
		F/IA115C	<--	3273 696 253					
		F/LOG31A	<--	3631 979 322					
		F/SOCD14	<--	1117 1011 333					
1045	LSR01:1165	F/LA008	<--	1421 1077 352	1165	1111 00 00	11 01	101 000	0100 0
	*-----*					00000 000000	11000	011110011	
	*P2, D+R(TMPSW),								
	*NEXT, J/LSR02A		-->	VV					
1046	LSR02A:1363	F/LSR01	<--	VV	1363	0000 00 00	00 00	111 000	0000 0
	*P3, R(SW)+D,					00000 010010	11000	011110100	
	*NEXT, J/LSR02		-->	VV					
1047	LSR02:1364	F/LSR02A	<--	VV	1364	1010 10 00	00 00	000 100	0100 0
	*-----*					00101 000000	11000	011110101	
	*P2, D+CSP(12),D(C)+ALU15,								
	*NEXT, J/LSR03		-->	1365 1048 344					

H13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS	
1048	LSR03:1365 ***** * CLEARS R(CNTTL)<11:10> AND HENCE * * SW.REG<17:16> * *-----* *P2, * * D+(NOT(D RIGHT 2)) AND * * R(CNTL),R(CNTL)+D, * *NEXT, * * J/LSR04 * --> VV *****	<--	1364 1047 343	1365	0010 0000	01 11 011100	01 11 11000	111 000 011110110	0100 0	000000001000	
1049	LSR04:1366 ***** *P2, D+D LEFT 1, * *NEXT, * * J/LSR05 * --> VV *****	<-- VV		1366	1111 00000	00 00 000000	01 00 11000	000 000 011111000	0100 0	000000001000	
1050	LSR05:1370 ***** * R(TEMP2B)<11:10> GETS R(CNTL)<9:8> AND * * HENCE * * TSR<17:16> * *-----* *P2, D+D LEFT 1, * *P3, R(TEMP2B)+0, * *NEXT, * * J/LSR06 * --> VV *****	<-- VV		1370	1111 00000	00 11 011100	01 00 11000	110 000 011111001	0100 0	000000001000	
1051	LSR06:1371 ***** *P2, D+CSP(12), * *NEXT, * * J/LSR07 * --> VV *****	<-- VV	1372 1052 345	1371	1010 00101	10 00 000000	00 00 11000	000 000 011111010	0100 0	000000001000	



# J13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS	
								RIF	COUT		
1055	DIS04:1374 ***** *-----* *P2,            D+R(CADRS), *NEXT, *                    J/DIS02 *****	<--		1161 1054 345							
				1374				00000000	1000		
					1111 00 00	11 01	111 000	0100	0		
					00000 000000	11000	011111101				
1056	DIS02:1375 ***** * R(TMPSW)+R(CADRS) *-----* *P2,            R(TMPSW)+D, *NEXT, *                    J/DIS03 *****	<-- VV									
				1375				00000000	1000		
					0000 00 00	00 01	101 000	0000	0		
					00000 010010	11000	011111110				
1057	DIS03:1376 ***** * SET D.P THROUGH UCON *INTERFACE *-----* *P3,            SET DP, *NEXT, *                    J/DIS06 *****	<-- VV									
				1376				00000000	1000		
					0100 00 00	00 00	110 001	0000	0		
					11011 000000	11000	100000000				
1058	DIS06:1400 ***** * CALL SUBROUTINE C WHICH TRANSFERS *SR<1:0> TO *TSR<17:16> *-----* *                    RETURN+EOS1A, *NEXT,            BUT(GO TO),PAGE+1, *                    J/SBR01 *****	<-- VV		3343 722 260 1362 1044 343							
				1400				00000000	1000		
					0001 00 10	01 10	000 001	0000	0		
					00000 000000	11100	101101101				
					*****						
					1555 1152 373						
					*****						
					VV						
					1460 1111 360						

# K13

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
<p>..TOC "BEGINNING OF EXAM ROUTINE."            .. THIS ROUTINE ACCESSES THE UNIBUS            .. ADDRESS SPECIFIED BY THE CONSOLE ADDRESS REGISTER AND DISPLAYS            .. THE CONTENTS OF THAT LOCATION. SEQUENTIAL EXAMINES AUTOMATICALLY            .. WORD INCREMENT THE CONSOLE ADDRESS REGISTER AND USE THE            .. INCREMENTED ADDRESS. AN 'EXAM' BIT IN R(CNTL) IS USED FOR            .. THIS PURPOSE.</p>								
CASE 1059	4 OF BSDCD13 EXM01:1137	F/SOCD13	<--	1013 1010 333				
	<p>*****            *-----*            *P2, D+D RIGHT 13,D(C)+ALU00,            *NEXT, J/EXM02            *-----*            * J/EXM03            * J/EXM06            *****</p>							<p>1137            1111 00 00 01 10 000 010 0100 0            01110 000000 11000 100000001</p>
CASE 1060	EXM02:1401	F/EXM01	<-- VV					
	<p>*****            * TEST 'EXAM' IN R(CNTL). BRANCH            * TARGETS ARE EXM03 AND            * EXM06.            *-----*            *P2, D+CSP(12),D(C)+D(C),            *NEXT, BUTR(EXAM),            * J/EXM03            * J/EXM06            *****</p>							<p>1401            1010 10 00 00 00 000 111 0100 0            00101 000000 01111 000100010</p>
CASE 1061	1 OF BEXM02 EXM03:1042	F/EXM02	<-- VV					
	<p>*****            * FROM EXM02 WHEN EXAM NOT SET. THIS IS            * THE FIRST EXAM. CLEAR 'EXAM' AND 'DEP'            * IN            * R(CNTL).            *-----*            *P2, D+NOT(D) AND R(CNTL),            *P3, R(CNTL)+D,            *NEXT, J/EXM04            *****</p>							<p>1042            0010 01 11 01 01 111 000 0100 0            00000 011100 11000 100000010</p>
			-->	1402 1062 348				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1062	EXM04:1402 ***** *-----* *P2, D+(CSP(13),D(C)+ALU15, *NEXT, * J/EXM05 *****	<--	1042 1051 347	1402	1010 00100	10 00 000000	00 00 11000	000 100 0100 0 100000011
1063	EXM05:1403 ***** * SET 'EXAM', CLEAR *'DEP' *-----* *P2, D+(D RIGHT 1) OR R(CNTL), *P3, R(CNTL)+D, *NEXT, * J/EXM07A *****	<-- VV		1403	1110 00000	01 11 01 10 111 000	01 10 111 000 0100 0 00000 011100 11000 100000100	
1064	EXM07A:1404 ***** * THIS CLEARS R(CADRS)<00> WHICH MAKES AN *ODD *EVEN. *-----* *P2, SR+NOT(ONE) AND R(CADRS), * D(C)+D(C), *NEXT, * J/EXM07 *****	<-- VV		1404	0111 00000	11 00 11 01 111 111	111 01 111 111 0110 0 00000 000000 11000 100000101	
			1405 1066 349					

# M13

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
1065	EXM06:1043	F/EXM02	<--	1401	1060	347		
	*****			1043			000000001000	
	* GO TO SUBROUTINE D FOR INCREMENTING			0001	00 10	00 00	100 001	0000 0
	* CONSOLE ADDRESS BY 2. ENTER FROM EXM02			0000	000000	11100	101110000	
	* WHEN 'EXAM' IS							
	* SET							
	*-----*							
	* RETURN+EXM07A,							
	* NEXT, BUT(GO TO),PAGE+1,							
	* J/SBRD01							
	*****							
			-->	1560	1160	376		
				VV				
				1404	1064	348		
				1404	1064	348		
1066	EXM07:1405	F/EXM07A	<--					
	*****			1405			000000001000	
	*-----*			0001	00 00	00 00	000 010	0000 0
	* TURN OFF KT,			11001	000000	11000	100000110	
	* NEXT, J/EXM08							
			--> VV					
1067	EXM08:1406	F/EXM07	<-- VV					
	*****			1406			000000001000	
	*-----*			0000	01 11	00 00	111 000	0001 0
	* P1, BA+CONSOLE ADDRESS,			10110	000000	11000	100001000	
	* P3, U,DATI,							
	* NEXT, J/EXM09							
			--> VV					
1068	EXM09:1410	F/EXM08	<-- VV					
	*****			1410			000000001000	
	*-----*			0000	11 10	00 00	000 000	0000 0
	* P3, MD+DATA,			00000	100000	11000	100001001	
	* NEXT, J/EXM10							
			-->	1411	1069	350		
	*****							



# N13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
1069	EXM10:1411	F/EXM09	<--	1410 1068 349						
	*****									
	*-----*									
	*P2,            D+MD,									
	*P3,            R(TMPSW)+D,									
	*NEXT,									
	*                  J/E0S01		-->	1462 1113 361						
	*****									
.TOC "BEGINING OF 'LOAD ADDRESS' (LAD) ROUTINE."										
:;    TSR IS LOADED										
:;    INTO CONSOLE ADDRESS REGISTER. 'EXAM' AND 'DEP' BITS										
:;    IN R(CNTL) ARE CLEARED.										
.CASE 3 OF BSDCD13										
1070	LAD01:1135	F/SDCD13	<--	1013 1010 333						
	*****									
	*-----*									
	*P2,            D+CSP(12),D(C)+ALU15,									
	*NEXT,									
	*                  J/LAD02		-->	VV						
	*****									
1071	LAD02:1412	F/LAD01	<--	VV						
	*****									
	*-----*									
	*P2,            D+NOT(D RIGHT 12) AND R(CNTL),									
	*P3,            R(CNTL)+D,									
	*NEXT,									
	*                  J/LAD03		-->	VV						
	*****									
1072	LAD03:1413	F/LAD02	<--	VV						
	*****									
	*-----*									
	*P2,            D+CSP(12),D(C)+ALU15,									
	*NEXT,									
	*                  J/LAD04		-->	1414 1073 351						
	*****									

```

1411
1010 11 10 00 01 101 000 0100 0
00000 010010 11000 100110010

1135
1010 10 00 00 00 000 100 0100 0
00101 000000 11000 100001010

1412
0010 01 11 01 01 111 000 0100 0
01110 011100 11000 100001011

1413
1010 10 00 00 00 000 100 0100 0
00101 000000 11000 100001100
    
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1073	LAD04:1414	F/LAD03	<--	1413 1072 350	1414			000000001000
	*-----*				1011 01 11 01 01		111 100	0100 0
	*P2, D+(D RIGHT 4) AND R(CNTL),				01000 000000	11000	100001101	
	* D(C)+ALU15,							
	*NEXT, J/LAD05		--> VV					
1074	LAD05:1415	F/LAD04	<-- VV		1415			000000001000
	*-----*				1110 01 11 01 01		111 000	0100 0
	* R(CNTL)<1:0> GETS R(CNTL)<9:8> S0				00110 011100	11000	100001110	
	*CAR<17:16> GETS							
	*TSR<17:16>							
	*-----*							
	*P2, D+(D RIGHT 8) OR R(CNTL),							
	*P3, R(CNTL)+D,							
	*NEXT, J/LAD06		--> VV					
1075	LAD06:1416	F/LAD05	<-- VV		1416			000000001000
	*-----*				1111 00 00 11 01		101 000	0100 0
	*P2, D+R(TMPSW),				00000 000000	11000	100010000	
	*NEXT, J/LAD07		--> VV					
1076	LAD07:1420	F/LAD06	<-- VV		1420			000000001000
	*-----*				0000 00 00 00 01		111 000	0000 0
	*P2, R(CADRS)+D,				00000 010010	11000	100010001	
	*NEXT, J/LAD08		-->	1421 1077 352				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION	
					BUS	SP	UBF	RIF	COUT
1077	LAD08:1421	F/LAD07	<--	1420 1076 351					
	*****			1421				00000000	1000
	*-----*				1010	10 00	00 00	000 000	0100 0
	*P2, D+CSP(13),				00100	000000	11000	001110001	
	*NEXT,								
	* J/DISO1		-->	1161 1054 345					
	*****								
.TOC "THIS IS THE CONSOLE MAINT (INTERNAL EXAM OR DEPOSIT) ROUTINE."									
;; THIS USES THE SAME CODE AS 'MED' INSTRUCTION. SO									
;; WHAT IS NEEDED HERE IS MERELY AN ENTRY TO 'MED' FLOWS.									
CASE	2 OF BS0CD13								
1078	INT01:1133	F/S0CD13	<--	1013 1010 333					
	*****			1133				00000000	1000
	*SELECT, EMIT AND CLKIR ENAB,				0000	00 00	00 01	000 100	0000 0
	*NEXT,				11001	000000	11000	100010010	
	* J/INT02		-->	VV					
	*****								
1079	INT02:1422	F/INT01	<--	VV					
	*****			1422				00000000	1000
	* IR=0,				0000	00 00	00 00	000 000	0000 0
	*NEXT,				11010	000000	11000	100010100	
	* J/INT03		-->	VV					
	*****								
1080	INT03:1424	F/INT02	<--	VV					
	*****			1424				00000000	1000
	*-----*				1111	00 00	11 00	111 000	0100 0
	*P2, D+R(SW),				00000	000000	11000	100010101	
	*NEXT,								
	* J/INT04		-->	1425 1081 353					
	*****								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UPF	EXTENSION CLOCK
1081	INT04:1425 ***** *-----* * DBUF LATCH+D, * *NEXT, * * J/INT05 * --> VV *****	<--	1424 1080 352	1425				000000001000 0100 00 00 00 00 000 100 0000 0 1101: 000000 11000 100010110
1082	INT05:1426 ***** *-----* * BUT(GO TO),PAGE+3, * * J/MED02 * --> VV *****	<-- VV	3274 699 254	1426				000000001000 0000 00 00 00 00 000 011 0000 0 00000 000000 11100 010111100
.TOC "BEGINING OF DEPOSIT (DEP) ROUTINE." ;; THIS DEPOSITS THE CONTENTS OF ;; THE TSR AT THE UNIBUS ADDRESS SPECIFIED BY THE CONSOLE ADDRESS ;; REGISTER. THE SWITCH REGISTER AND THE CONSOLE DATA REGISTER ARE ;; ALSO LOADED. SEQUENTIAL DEPOSITS AUTOMATICALLY WORD INCREMENT THE ;; CONSOLE ADDRESS REGISTER AND USE THE INCREMENTED ADDRESS.								
CASE 1 OF BS0CD13								
1083	DEPO1:1131 ***** * ENTER FROM SDCD13. D(C) GETS 'DEP' * *-----* *P2, D+D RIGHT 12,D(C)+ALU00, * *NEXT, * * J/DEPO2 * --> VV *****	<--	1013 1010 333	1131				000000001000 1111 00 00 01 01 000 010 0100 0 01110 000000 11000 100011000
1084	DEPO2:1430 ***** * TEST 'DEP' IF NOT SET, FIRST DEPOSIT * *AND NO INCREMENTING * *NEEDED.BRANCH * *-----* *P2, D+CSP(12),D(C)+D(C), * *NEXT, BUTR(DEP), * * J/DEPO3 * --> VV * J/DEPO6 * --> VV *****	<-- VV	10 1052 1085 354 11 1053 1088 354	1430				000000001000 1010 10 00 00 00 000 111 0100 0 00101 000000 01111 000101010

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU CUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1085	1 OF BOEP02 DEPO3:1052	F/DEPO2	<--	1430 1084 353				
	***** *TARGETS ARE DEPO3 AND DEPO6. ENTER FROM * *DEPO2 WHEN 'DEP' IS SET CLEAR 'EXAM' * *AND 'DEP' * *-----* *P2, D+NOT(D) AND R(CNTL), * *P3, R(CNTL)+D, * *NEXT, * * J/DEPO4 * --> VV *****			1052				000000001000 0010 01 11 01 01 111 000 0100 0 00000 011100 11000 100011010
1086	DEPO4:1432	F/DEPO3	<-- VV					
	***** *-----* *P2, D+CSP(13),D(C)+ALU15, * *NEXT, * * J/DEPOS * --> VV *****			1432				000000001000 1010 10 00 00 00 000 100 0100 0 00100 000000 11000 100011100
1087	DEPOS:1434	F/DEPO4	<-- VV					
	***** * SET 'DEP', CLEAR * *'EXAM' * *-----* *P2, D+(D RIGHT 2) OR R(CNTL), * *P3, R(CNTL)+D, * *NEXT, * * J/DEPO7A * --> 1435 1089 355 *****			1434				000000001000 1110 01 11 01 11 111 000 0100 0 00000 011100 11000 100011101
.CASE 1088	2 OF BOEP02 DEPO6:1053	F/DEPO2	<--	1430 1084 353				
	***** * ENTER FROM DEPO2 WHEN 'DEP' IS SET * *INCREMENT CONSOLE ADDRESS REG BY 2. * *-----* * RETURN+DEPO7A * *NEXT, BUT(GO TO),PAGE+1, * * J/SBR001 * ***** --> 1560 1160 376 ***** VV 1435 1089 355			1053				000000001000 0001 00 10 00 11 101 001 0000 0 00000 000000 11100 101110000

BOX NO.	TAG: ADDRESS	EXTENSION	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	RIF COUT CLOCKS	
1089	DEPO7A:1435 ***** * CLEAR R(CADR)<00> TO MAKE THE ADDRESS * *EVEN * *-----* *P2, SR+NOT(ONE) AND R(CADRS), * *NEXT, * * J/DEPO7B * *****	000000001000	<--	1434 1087 354	1435	0111 11 00 11 01	000000 11000	111 000 0010 0	000000001000
1090	DEPO7B:1436 ***** *-----* *P2, D+R(TMPSW), * *NEXT, * * J/DEPO7 * *****	000000001000	<-- VV		1436	1111 00 00 11 01	000000 11000	101 000 0100 0	000000001000
1091	DEPO7:1437 ***** *-----* * NEXT, TURN OFF KT, * * J/DEPO8 * *****	000000001000	<-- VV		1437	0001 00 00 00 00	000000 11000	000 010 0000 0	000000001000
1092	DEPO8:1440 ***** *-----* *P1, BA+CONSOLE ADDRESS, * *P3 U,DATO, * *NEXT, * * J/EOS01 * *****	000000001000	<-- VV		1440	0000 01 11 00 00	000000 11000	111 000 0001 0	000000001000
			-->	1462 1113 361					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION COUT UPF	CLOCKS
.TOC "THIS IS THE ROUTINE FOR START AND CONT FUNCTIONS." ;; THEY SHARE ;; THE CODE TO THE EXTENT POSSIBLE AND THEN DIVERGE.								
CASE 1093	STC01:1145	F/SDC09	<-- 1067 1005 331					
	*****			1:45			000000001000	
	* FROM SDC09 IF START CLEAR 'DLOCK' IN * *R(CNTL) *				0010 01 11 01 01 111 000 0100 0			
	*-----*				00000 011100 11000 001100111			
	*P2, D+NOT(D) AND R(CNTL), * *P3, R(CNTL)+D, * *NEXT, *							
	* J/STC02 * --> VV							
CASE 1094	STC02:1147	F/SDC09	<-- 1067 1005 331					
	*****			1:47			000000001000	
	* FROM SDC09 IF CONT CLEAR 'CONSOLE' IN * *R(CNTL) AND STATUS *				0001 00 10 01 00 001 001 0000 0			
	*BOARD *				00000 000000 11100 101110110			
	*-----*							
	* RETURN+STC04, * *NEXT, BUT(GO TO),PAGE+1, * * J/SBREQ1 *							
	***** -->		***** 1566 1163 377 *****					
			VV 1441 1095 356					
1095	STC04:1441							
	*****			1:41			000000001000	
	* THRU UCON *				0100 00 00 00 00 110 000 0000 0			
	*-----*				11011 000000 11000 100100010			
	* CLEAR CSR, * * J/STC05 * --> VV							
CASE 1096	STC05:1442	F/STC04	<-- VV					
	*****			1:42			000000001000	
	* TO REMOTE CONSOLE THRU UCON *				0100 00 00 00 00 110 010 0000 0			
	*-----*				11011 000000 11000 100100011			
	* CMND COMPLETE, * * J/STC06 * -->		1443 1097 357					
	*****							





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR 1446	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1101	STC12:1446 ***** *-----* *SELECT,   EMIT, *NEXT, *                J/STC13 *****	<--	1176 110C 357	1446	0000 00 00 11001 000000	00 00 11000	00 01 100101000	000 000 100101000	000000001000 0000 0
1102	STC13:1450 ***** *-----* *                MD+35775 (BC), *NEXT, *                J/STC14 *****	<-- VV		1450	0011 10 10 00010 100000	11 11 11000	111 101 100101010	000000001000 0000 0	
1103	STC14:1452 ***** * INITIALIZE AND GO TO *FETO1. *-----* *NEXT,        BUT(GO TO),PAGE+3, *                J/INIT00 *****	<-- VV		1452	0000 00 00 00000 000000	00 00 11100	000 011 100010000	000000001000 0000 0	
.TOC .CASE 1104	"DIAG" 1 OF BSDC009 DIAG01:1141 ***** *-----* *                START DCS, *NEXT, *                J/DIAG02 *****	<--	3420 834 284  1067 1005 331	1141	0010 00 00 11011 000000	00 00 11000	000 100 100101100	000000001000 0000 0	
		-->	1454 1105 359						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BLSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
1105	DIAG02:1454	F/DIAG01	<--	1141 1104 358	1454			00000000	1000	
	*-----*				1111 00 00	11 00	101 011	0100	0	
	*P2, D+WHAMI, D(C)+ALU07,				00000 000000	11000	100101110			
	*NEXT, J/DIAG03		--> VV							
1106	DIAG03:1456	F/DIAG02	<-- VV		1456			00000000	1000	
	*-----*				0000 00 00	00 00	000 000	0000	0	
	*NEXT, BUTR(WCS OR ECS),				00000 000000	01111	101001010			
	* J/DIAG04		-->	10 1512 1107 359						
	* J/DIAG05		-->	11 1513 1108 359						
	*-----*									
CASE 1107	1 OF BDIAG03 DIAG04:1512	F/DIAG03	<-- VV		1512			00000000	1000	
	*-----*				0000 00 00	00 00	000 000	0000	0	
	*NEXT, J/EOS1A		-->	1460 1111 360						
	*-----*									
CASE 1108	2 OF BDIAG03 DIAG05:1513	F/DIAG03	<--	1456 1106 359	1513			00000000	1000	
	*NEXT, BUT(GO TO) PAGE+6,				0000 00 00	00 00	000 110	0000	0	
	* J/WCSDIAG01		--> VV		00000 000000	11100	000001000			
	*-----*									
1109	WCSDIAG01:6010	F/DIAG05 F/WCSDIAG01	<-- <--	1513 1108 359 6010 1109 359	6010			00000000	1000	
	*NEXT, J/WCSDIAG01		-->	6010 1109 359				0000 00 00	00 00	000 000
	*-----*				00000 000000	11000	000001000			

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX	MICROFICHE PAGE	COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1110	BOOT:1143	F/SDCD09	<--	1067 1005 331	1143	0001 00 00	10 01	010 001	0000 0
	* CLEAR 'CONSOLE' IN R(CNTL) AND IN * *STATUS * *BOARD. *					00000 000000	11100	101110110	
	*-----* * RETURN+BOOT01 * *NEXT, BUT(GO TO),PAGE+1, * * J/SBRED1 *								
	***** -->			1566 1163 377					
				VV					
				1112 452 180					
.TOC "BEGINNING OF EOS (END OF SERVICE) ROUTINE." ;; THIS ROUTINE DISPLAYS TSR, SENDS A CMND COMPLETE TO REMOTE ;; CONSOLE, CLEARS CSR (WHICH ALSO CLEARS SWCD LATCH) AND TESTS ;; 'CONSOLE' BIT TO LEAVE THE CONSOLE OR STAY IN CONSOLE.									
1111	EOS1A:1460	F/MEDZ4 F/LSR08 F/DIAG04	<-- <-- <--	3507 728 262 1373 1053 345 1512 1107 359	1460	1010 10 00	00 00	000 000	0100 0
	*-----* *P2, D+CSP(12), * *NEXT, * * J/EOS1B * --> VV					00101 000000	11000	100110001	
1112	EOS1B:1461	F/EOS1A	<-- VV		1461	0010 01 11	01 01	111 000	0100 0
	* CLEARS "EXAM" AND "DEP" IN R(CNTL). * *-----* *P2, D+NOT(D) AND R(CNTL), * *P3, R(CNTL)+D, * *NEXT, * * J/EOS01 * -->			1462 1113 361		00000 011100	11000	100110010	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1113	E0S01:1462	F/EXM10 F/DEPO8 F/E0S1B	<-- <-- <--	1411 1069 350 1440 1092 355 1461 1112 360	1462			000000001000	
	* CALL SUBROUTINE A (SBRA) WHICH DISPLAYS * * THE CONTENTS OF TSR IN CONSOLE, AND * * RETURN TO * * E0S02. * *-----* * RETURN+E0S02, * * NEXT, BUT(GO TO), PAGE+1, * * J/SBRA01 * *-----* *-----*							0001 00 10 01 10 011 001 0000 0 0000 000000 11100 101000101	
			-->	***** 1505 1132 367 ***** VV 1463 1114 361					
1114	E0S02:1463	F/EXM10 F/DEPO8 F/E0S1B	<-- <-- <--	1411 1069 350 1440 1092 355 1461 1112 360	1463			000000001000	
	* CALL SUBROUTINE B (SBRB) WHICH CLEARS * * TSR. AND RETURN TO * * E0S03. * *-----* * RETURN+E0S03, * * NEXT, BUT(GO TO), PAGE+1, * * J/SBRB01 * *-----* *-----*							0001 00 10 01 10 100 001 0000 0 0000 000000 11100 101101010	
			-->	***** 1552 1149 372 ***** VV 1464 1115 361					
1115	E0S03:1464	F/EXM10 F/DEPO8 F/E0S1B	<-- <-- <--	1411 1069 350 1440 1092 355 1461 1112 360	1464			000000001000	
	* TO REMOTE CONSOLE * *-----* * CMND COMPLETE, * * NEXT, * * J/E0S03A * *-----* *-----*							0100 00 00 00 00 110 010 0000 0 11011 000000 11000 100110101	
			-->	VV					
1116	E0S03A:1465	F/EXM10 F/DEPO8 F/E0S1B	<-- <-- <--	1411 1069 350 1440 1092 355 1461 1112 360	1465			000000001000	
	*-----* * P2, D+R(CNTL), D(C)+ALU07, * * NEXT, * * J/E0S3B * *-----* *-----*							1010 01 11 00 00 111 011 0100 0 0000 000000 11000 100111000	
			-->	1470 1117 362					

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUS A	EXTENSION		RIF	COJT	CLOCKS
								OFST	ADDR			
1117	E0538:1470	F/E0503A <--		1465	1116	361						
	*****											
	* BRANCH TARGETS E0505			1470								000000001000
	-----											
	*NEXT, BUTR(SI),											0000 00 00 00 00 000 000 0000 0
	* J/E0504											00000 000000 01111 100111010
	* J/E0504	* -->	10	1472	1118	362						
	* J/E0505	* -->	11	1473	1122	363						
	*****											
CASE 1118	1 OF BE0538											
	E0504:1472	F/E053B <-- VV		1472								000000001000
	*****											
	* D(C) GETS R(CNTL)<6>. THIS BIT IS SET BY											1111 00 00 01 11 000 010 0100 0
	*BASE MACHINE BEFORE ENTERING CONSOLE											01000 000000 11000 100111001
	* WHEN EXECUTING A MOVE											
	*TO											
	-----											
	*P2, D+D RIGHT 6, D(C)+ALU00,											
	*NEXT, J/E0504A	* --> VV										
1119	E0504A:1471	F/E0504 <-- VV		1471								000000001000
	*****											
	*177570 WHICH IS THE SWITH REGISTER											0000 00 00 00 00 000 000 0000 0
	*ADDRESS. TARGETS											00000 000000 10011 110001001
	*E0504C											
	-----											
	*NEXT, BUTR(D(C)),											
	* J/E0504B											
	* J/E0504B	* -->	01	1611	1120	363						
	* J/E0504C	* -->	11	1613	1121	363						
	*****											

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
.CASE	1 OF BE0S04A							
1120	E0S04B:1611	F/S0C006 <--	1156 1002 330					
		F/S0C008 <--	1066 1004 331					
		F/E0S04A <--	1471 1119 362					
	*****							
	* CLEAR CSR. ENTERED ALSO FROM S0C006 AND * * S0C008 *			1611	0100 00 00 00 00	110 000	0000 0	000000001000
	-----*				11011 000000	11000	100111011	
	*P3, CLEAR CSR, *							
	*NEXT, *							
	* J/E0S05 * -->		1473 1122 363					
	*****							
.CASE	2 OF BE0S04A							
1121	E0S04C:1613	F/S0C006 <--	1156 1002 330					
		F/S0C008 <--	1066 1004 331					
		F/E0S04A <--	1471 1119 362					
	*****							
	*NEXT, *			1613	0000 00 00 00 00	000 000	0000 0	000000001000
	* J/E0S05 * --> VV				00000 000000	11000	100111011	
	*****							
.CASE	2 OF BE0S3B							
1122	E0S05:1473	F/E0S3B <--	1470 1117 362					
	*****							
	* D(C) GETS *			1473	1010 01 11 00 00	111 100	0100 0	000000001000
	* 'CONSOLE' . *				00000 000000	11000	100111100	
	-----*							
	*P2, D+R(CNTL),D(C)+ALU15, *							
	*NEXT, *							
	* J/E0S06 * -->		1474 1123 364					
	*****							







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1130	1 OF BE0S11 EOS12:1062	F/E0S11 <--	1504 1129 365	1062			000000001000
	* ENTER FROM EOS11 IF 'CSR' NOT SET. READ * *AND TEST 'CSR' * *AGAIN. *				0000 00 00 00 00	000 000 0000 0	000000001000
	-----* * NULL, NULL, *				00000 000000 11000	100111101	
	*NEXT, J/E0S08 *	-->	1475 1126 365				
.CASE 1131	2 OF BE0S11 EOS13:1063	F/E0S11 <--	1504 1129 365	1063			000000001000
	* ENTER FROM EOS11 IF 'CSR' SET. GO TO * *SDC01 TO READ AND * *DECODE *				0000 00 00 00 00	000 000 0000 0	000000001000
	-----* * NULL, NULL, *				00000 000000 11000	000000010	
	*NEXT, J/SDC01 *	-->	1002 994 328				

# E15

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BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	CCUT CLOCKS
.TOC "BEGINNING OF 'SBRA'"									
::: SUBROUTINE WHICH MOVES TSR									
::: TO THE CONSOLE DISPLAY SCRATCHPAD WHICH IS CONTINUOUSLY									
::: SCANNED AND DISPLAYED IN CONSOLE.									
	F/CONDIAG16	<--		3502 474 186					
	F/NNRC12	<--		1343 1028 338					
	F/EOS01	<--		1462 1113 361					
*****									
*	SUBROUTINE SBRA01	*							
	RETURN/CONDIAG07	* -->		3025 464 184					
	RETURN/EOS03	* -->		1464 1115 361					
	RETURN/EOS02	* -->		1463 1114 361					
*****									

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```
1132 SBRA01:1505
*****
*CONSOLE SWITCH CODE.
*-----*
*P3, CLEAR WRITE COUNTER,
*NEXT,
* J/SBRA02 --> VV
*****
1133 SBRA02:1506 F/SBRA01 <-- VV
*****
*-----*
*P2, D+R(TMPSW),SR+R(TMPSW),
*NEXT,
* J/SBRA03 --> VV
*****
1134 SBRA03:1507 F/SBRA02 <-- VV
*****
* DISPLAY SP(00) GETS D<5:0> AND HENCE
*TSR<5:0>
*-----*
*P3, STROBE DISPLAY,
*NEXT,
* J/SBRA04 -->
*****
```

```
1505 0100 00 00 00 00 00000001000
      11011 000000 11000 101000110
```

```
1506 1111 00 00 11 01 00000001000
      00000 000000 11000 101000111
```

```
1507 0100 00 00 00 00 00000001000
      11011 000000 11000 101001100
```

1514 1135 368

# G15

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	EXTENSION			
					ALU BUS	BUSB SP	BUSA UBF	RIF COUT CLOCKS UPF
1135	SBRA04:1514 ***** * FOR SUBSEQUENT LOADING *OF *-----* *P3,            INC WRITE COUNTER, *NEXT, *                    J/SBRA05 *****	<--	1507 1134 367	1514	0100 11011	00 00 000000	00 00 11000	000000001000 100 000 0000 0 101001101
1136	SBRA05:1515 ***** *DISPLAY SP(01) *-----* *SELECT,        EMIT, *NEXT, *                    J/SBRA06 *****	<-- VV		1515	0000 11001	00 00 000000	00 01 11000	000000001000 000 000 0000 0 101001110
1137	SBRA06:1516 ***** * CONSTANT FOR RES FOR SHIFTING (D # SR) *RIGHT. *-----* *P3,            MD+020000 (BC), *NEXT, *                    J/SBRA07 *****	<-- VV		1516	0010 00010	10 00 100000	00 00 11000	000000001000 000 000 0000 0 101001111
1138	SBRA07:1517 ***** *-----* *P1,            RES+MD, *NEXT, *                    J/SBRA08 *****	<-- VV		1517	0000 00000	11 10 010001	00 00 11000	000000001000 000 000 0000 0 101010000
			1520 1139 369					

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS		
								RIF	COUT			
1139	SBRA08:1520	F/SBRA07	<--	1517	1138	368	1520		000000001000			
	*-----*							1010	01 11	00 00	111 000	0100 0
	*P2,            D+R(CNTL),							00000	000000	11000	101010010	
	*NEXT,											
	*                    J/SBRA09		--> VV									
1140	SBRA09:1522	F/SBRA08	<-- VV	1522					000000001000			
	* D<1:0> GETS							1111	00 00	01 01	000 000	0100 0
	*TSR<17:16>							00110	000000	11000	101010100	
	*-----*											
	*P2,            D+D RIGHT 8,											
	*NEXT,											
	*                    J/SBRA10		--> VV									
1141	SBRA10:1524	F/SBRA09	<-- VV	1524					000000001000			
	* (D # SR) SHIFTED RIGHT BY							1111	00 00	01 10	000 000	0110 0
	*1							00000	000000	11000	101010110	
	*-----*											
	*P2,            D+D RIGHT 1,CLKSR/YES,											
	*NEXT,											
	*                    J/SBRA11		--> VV									
1142	SBRA11:1526	F/SBRA10	<-- VV	1526					000000001000			
	* (D # SR) SHIFTED RIGHT BY 1 SR<15:0> =							1111	00 00	01 10	000 000	0110 0
	*TSR<17:2>							00000	000000	11000	101011100	
	*-----*											
	*P2,            D+D RIGHT 1,CLKSR/YES,											
	*NEXT,											
	*                    J/SBRA12		-->	1534	1143	370						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
1143	SBRA12:1534	F/SBRA11	<--	1526	1142	369	1534	000000001000	
	* D<15:0> = TSR<17:2> TO CLEAR				1111	10 00	00 00	000 000	0100 0
	*RES				00100	010001	11000	10101	110
	*P2, D+SR, RES+CSP(13),								
	*NEXT, J/SBRA13		--> VV						
1144	SBRA13:1536	F/SBRA12	<-- VV	1536				000000001000	
	* D<11:0> =				1111	00 00	01 01	000 000	0100 0
	*TSR<17:6>				01000	000000	11000	101100100	
	*P2, D+D RIGHT 4,								
	*NEXT, J/SBRA14		--> VV						
1145	SBRA14:1544	F/SBRA13	<-- VV	1544				000000001000	
	* DISPLAY SP(01) GETS D <5:0> AND HENCE				0100	00 00	00 00	000 001	0000 0
	*TSR<11:6>				11011	000000	11000	101100110	
	*P3, STROBE DISPLAY,								
	*NEXT, J/SBRA15		--> VV						
1146	SBRA15:1546	F/SBRA14	<-- VV	1546				000000001000	
	* FOR SUBSEQUENT LOADING OF DISPLAY				0100	00 00	00 00	100 000	0000 0
	*SP(10)				11011	000000	11000	101101000	
	*P3, INC WRITE COUNTER,								
	*NEXT, J/SBRA16		-->	1550	1147	371			



# K15

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION COUT UPF	CLOCKS
	.TOC "BEGINNING OF 'SBRB'"								
	:: SUBROUTINE WHICH CLEARS TSR (TEMPORARY SWITCH REGISTER)								
	:: TSR<17:00> = RCCNTL<9:8> R(TMP.SW)<15:0>								
	F/STC06	<--	1443	1097	357				
	F/EOS02	<--	1463	1114	361				
*****									
*	SUBROUTINE SBRB01	*							
	RETURN/STC07	* -->	1444	1098	357				
	RETURN/EOS03	* -->	1464	1115	361				
*****									



L15

```
1149 SBRB01:1552
*****
* CLEARS TSR<15:00>
*-----*
*P2,      D←0,
*P3,      R(TMPSW)←D,
*NEXT,
*          J/SBRB02
***** --> VV
1150 SBRB02:1553      F/SBRB01 <-- VV
*****
*-----*
*P2,      D←CSP(12),D(C)←ALU15,
*NEXT,
*          J/SBRB03
***** --> VV
1151 SBRB03:1554      F/SBRB02 <-- VV
*****
* CLEARS
*TSR<17:16>
*-----*
*P2,
*          D←(NOT(D RIGHT 4)) AND
*          R CNTL)
*P3,      R(CNTL)←D,
*NEXT,
*          BUT(RETURN)
***** --> VV
*****
```

```
1552
0011 00 00 00 01 101 000 0100 0
00000 010010 11000 101101011
```

```
1553
1010 10 00 00 00 000 100 0100 0
00101 000000 11000 101101100
```

```
1554
0010 01 11 01 01 111 000 0100 0
01000 011100 11111 000000000
```

# M15

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 373

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
		OFST	ADDR	BOX					PAGE	RIF	COUT	CLOCKS
	.TOC "BEGINING OF 'SBRC'"											
	:: SUBROUTINE WHICH MOVES SR<1:0> TO											
	:: R(CNTL) <9:8> WHICH REPRESENT TSR<17:16>											
	F/MMRC11	<--	1342	1027	338							
	F/HLT05	<--	1351	1034	340							
	F/DIS06	<--	1400	1058	346							
*****												
*	SUBROUTINE SBRC01	*										
	RETURN/MMRC12	* -->	1343	1028	338							
	RETURN/EOS1A	* -->	1460	1111	360							
	RETURN/EOS1A	* -->	1450	1111	360							
*****												

# N15

```

1152 SBRC01:1555
*****
*P2,      D←CSP(12),D(C)←ALU15,
*NEXT,
*          J/SBRC02
***** --> VV
1153 SBRC02:1556      F/SBRC01      <-- VV
*****
* CLEARS TSR <17:16> IN
*R(CNTL)<9:8>
*-----*
*P2,
*          D←(NOT(D RIGHT 4)) AND
*          R(CNTL)
*P3,      R(CNTL)←D,
*NEXT,
*          J/SBRC03
***** --> VV
1154 SBRC03:1557      F/SBRC02      <-- VV
*****
* BRANCH TARGETS ARE SBRC04,
*SBRC05, SBRC06, SBRC07.
*-----*
*P2,      D←CSP(13),D(C)←ALU15,
*NEXT,      BUTR(SR01←SR00),
*          J/SBRC04
*          J/SBRC04      * --> 1100 1214 1155 374
*          J/SBRC05      * --> 1101 1215 1156 374
*          J/SBRC06      * --> 1110 1216 1157 374
*          J/SBRC07      * --> 1111 1217 1158 375
*****

```

```

1555
1010 10 00 00 00 000 100 0100 0
00101 000000 11000 101101110

```

```

1556
0010 01 11 01 01 111 000 0100 0
01000 011100 11000 101101111

```

```

1557
1010 10 00 00 00 000 100 0100 0
00100 000000 00000 010001100

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COCRD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSB UBF	EXTENSION RIF COLT CLXCS UPF
CASE 1155	1 OF BSBR03 SBR04:1214	F/SBR03	<--	1557	1154	373		
	* ENTER FROM SBR03 WHEN SR<1:0> = 00 00 * * NOTHING. *							1214 0000 00 00 00 00 000 000 0000 0 00000 000000 11111 00000000
	* NULL, NULL, *							
	* NEXT, *							
	* BUT(RETURN) *		-->	VV				
CASE 1156	2 OF BSBR03 SBR05:1215	F/SBR03	<--	1557	1154	373		
	* ENTER FROM SBR03 WHEN SR<1:0> = 01. *							1215 1110 01 11 01 11 111 000 0100 0 01000 011100 11111 00000000
	* MAKE R(CNTL)<9:8> = * * 01 *							
	* P2, D+(D RIGHT 6) OR R(CNTL), *							
	* R(CNTL)+D, *							
	* NEXT, *							
	* BUT(RETURN) *		-->	VV				
CASE 1157	3 OF BSBR03 SBR06:1216	F/SBR03	<--	1557	1154	373		
	* ENTER FROM SBR03 WHEN, SR<1:0> = 10 *							1216 1110 01 11 01 10 111 000 0100 0 01000 011100 11111 00000000
	* MAKE R(CNTL) <9:8> = * * 10. *							
	* P2, D+(D RIGHT 5) OR R(CNTL), *							
	* P3, R(CNTL)+D, *							
	* NEXT, *							
	* BUT(RETURN) *		-->	VV				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUNT CLOCKS
1:58	SBRC07:1217	F/SBRC03	<--	1557	1154	373		
	* ENTER FROM SBRC02 WHEN SR<1:0> = *11.			1217				000000001000
				1010	10 00	00 00	000 100	0100 0
				00101	000000	11000	000010001	
	*P2, D+CSP(12) D(C)+ALU15, *NEXT, J/SBRC08		--> VV					
1159	SBRC08:1021	F/SBRC07	<-- VV					
	* MAKE R(CNTL)<9:8> = *11			1021				000000001000
				1110	01 11	01 01	111 000	0100 0
				01000	011100	11111	000000000	
	*P2, D+(D RIGHT 4) OR R(CNTL), *P3, R(CNTL)+D, *NEXT, BUT(RETURN)		--> VV					

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
	.TOC "BEGINNING OF 'SBRD'"						
	:: SUBROUTINE WHICH INCREMENTS CONSOLE ADDRESS						
	:: BY 2. THIS IS USED IN EXM DEP ROUTINES. CONSOLE ADDRESS IS FORMED						
	:: BY CAR<17:00>=R(CNTL)<01:00>*R(CADRS)<15:00>.						
	F/EXM06	<--	1043 1065 349				
	F/DEP06	<--	1053 1088 354				
	*****						
*	SUBROUTINE SBRD01	*					
	RETURN/EXM07A	* -->	1404 1064 348				
	RETURN/DEP07A	* -->	1435 1089 355				
	*****						

E16

```
1160 SBR001:1560
*****
*-----*
*P2,      D+R(CADRS) PLUS 2,D(C)+COUT15, *
*P3,      R(CADRS)+D, *
*NEXT,    J/SBR002 * --> VV
*****
1161 SBR002:1562      F/SBR001 <-- VV
*****
*-----*
*P2,      SR+D, *
*NEXT,    J/SBR003 * --> VV
*****
1162 SBR003:1564      F/SBR002 <-- VV
*****
*-----*
*P2,      D+SR PLUS R(CNTL) PLUS D(C), *
*P3,      R(CNTL)+D, *
*NEXT,    BUT(RETURN) * --> VV
*****
```

```
1560
000000001000
1001 10 00 11 01 111 110 0100 0
00011 010010 11000 101110010
```

```
1562
000000001000
0011 00 00 00 00 000 000 0010 0
00000 000000 11000 101110100
```

```
1564
000000001000
0100 01 11 00 00 111 000 0100 0
00000 011100 11111 000000000
```

# F16

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COOT
	;;AND IN STATUS BOARD.											
		F/SINO1	<--	1033	1035	340						
		F/STC02	<--	1147	1094	356						
		F/BOOT	<--	1143	1110	360						
*****												
*	SUBROUTINE SBRE01		*									
		RETURN/SINO2	* - >	1354	1036	341						
		RETURN/STC04	* -->	1441	1095	356						
		RETURN/BOOT01	* -->	1112	452	180						
*****												



G16

```
1163 SBRE01:1566
*****
*P2      D=CSP(10),
*NEXT,
*
*          J/SBRE02
*****
1164 SBRE02:1600      F/SBRE01      <-- VV
*****
*P2      D=NOT(D) AND R(CNTL),
*P3      R(CNTL)+D,
*NEXT,
*
*          J/SBRE03
*****
1165 SBRE03:1601      F/SBRE02      <-- VV
*****
* THRU
*UCON
*-----*
*          CLEAR CONSOLE,
*NEXT,
*          BUT(RETURN)
*****
*          --> VV
*****
```

```
1566      000000001000
01010 10 00 00 00 000 000 0100 0
00111 000000 11000 113000000
```

```
1600      000000001000
0010 01 11 01 01 111 000 0100 0
00000 011100 11000 110000001
```

```
1601      000000001000
0100 00 00 00 00 010 001 0000 0
11011 000000 11111 000000000
```

# H16

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 378

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF CCLT CLOCKS UPF	
.TOC "XFC FLOW"								
: THIS FLOW IS ENTERED FROM BUT(INSTR1) WHEN AN XFC CODE IS DECODED								
: IN IR. XFC INSTRUCTIONS ARE TO BE EXECUTED BY WCS IF WCS IS ENABLED								
: OTHERWISE TRAPPED TO LOCATION 10. THE ONLY EXCEPTION IS MED								
: INSTRUCTION WHOSE CODE 076600 IS PART OF THE XFC INSTRUCTION. THIS								
: HAS TO BE EXECUTED IRRESPECTIVE OF WCS BEING ENABLED OR NOT.								
.CASE 40 OF BFET03								
1166	XFC01:0447	F/FET03	<-- 700 3 11					
	*****						447	00000001000
	*P2, D+WHAMI,	*					1111 00 00 11 00 101 001 0100 0	
	*NEXT, BUT(GO TO),PAGE+1,	*					00000 000000 11100 110000010	
	* J/XFC02	* --> VV						
*****								
1167	XFC02:1602	F/XFC01	<-- VV					
	*****						1602	00000001000
	* SR GETS CONTENTS OF IR. BRANCH ON WCS	*					1010 W 10 00 00 000 000 0010 0	
	*ENABLE IN WHAMI. BRANCH TARGETS ARE	*					00000 000000 01000 100100101	
	*XFC03 IF ENABLED OR ELSE	*						
	*XFC12.	*						
-----								
	*P2, SR+MD,	*						
	*NEXT, BUTR(007),	*						
	* J/XFC12	* -->	101 1445 1184 382					
	* J/XFC03	* -->	111 1447 1168 378					
*****								
.CASE 2 OF BXFC01								
1168	XFC03:1447	F/XFC02 F/XFC10	<-- <-- 1602 1167 378 1676 1181 381					
	*****						1447	00000001000
	* BRANCH TARGETS ARE XFC04 TO	*					0000 00 00 00 00 000 000 0000 0	
	*XFC11.	*					00000 000000 00100 110111000	
-----								
	*NEXT, BUTR(IR(8#7#6)),	*						
	* J/XFC04	*						
	* J/XFC04	* -->	1000 1670 1169 379					
	* J/XFC05	* -->	1001 1671 1171 379					
	* J/XFC06	* -->	1010 1672 1173 379					
	* J/XFC07	* -->	1011 1673 1175 380					
	* J/XFC08	* -->	1100 1674 1177 380					
	* J/XFC09	* -->	1101 1675 1179 381					
	* J/XFC10	* -->	1110 1676 1181 381					
	* J/XFC11	* -->	1111 1677 1182 381					
*****								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1169	XFC04:1670	F/XFC03	<--	1447	1168	378		
	*****			1670				000000001000
	*NEXT, BUT(GO TO),PAGE+6,			0000	00 00	00 00	000 110	0000 0
	* J/XFCOTH01		--> VV	00000	000000	11100	000000001	
	*****							
1170	XFCOTH01:6001	F/XFC04 F/XFCOTH01	<-- <--	1670 6001	1169 1170	379 379		
	*****			6001				000000001000
	* IN WCS ENGINEERING			0000	00 00	00 00	000 000	0000 0
	*SECTION.			00000	000000	11000	000000001	
	*****							
	*NEXT,							
	* J/XFCOTH01		-->	6001	1170	379		
	*****							
.CASE 1171	XFC05:1671	F/XFC03	<--	1447	1168	378		
	*****			1671				000000001000
	*NEXT, BUT(GO TO),PAGE+6,			0000	00 00	00 00	000 110	0000 0
	* J/XFCOTH10		--> VV	00000	000000	11100	000001001	
	*****							
1172	XFCOTH10:6011	F/XFC05 F/XFCOTH10	<-- <--	1671 6011	1171 1172	379 379		
	*****			6011				000000001000
	*NEXT,			0000	00 00	00 00	000 000	0000 0
	* J/XFCOTH10		-->	00000	000000	11000	000001001	
	*****							
.CASE 1173	XFC06:1672	F/XFC03	<--	1447	1168	378		
	*****			1672				000000001000
	*NEXT, BUT(GO TO),PAGE+6,			0000	00 00	00 00	000 110	0000 0
	* J/XFCOTH20		-->	00000	000000	11100	000001010	
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA JBF	EXTENSION		CLOCK
								RIF	COUT	
1174	XFCOTH20:6012	F/XFC06 F/XFCOTH20	<-- <--	1672 6012	1173 1174	379 380				
	*NEXT,*	J/XFCOTH20	* -->	6012	1174	380				
	*****									
CASE 1175	4 OF BXFC03 XFC07:1673	F/XFC03	<--	1447	1168	378				
	*NEXT,*	BUT(GO TO),PAGE+6, J/XFCOTH30	* --> VV							
	*****									
1176	XFCOTH30:6013	F/XFC07 F/XFCOTH30	<-- <--	1673 6013	1175 1176	380 380				
	*NEXT,*	J/XFCOTH30	* -->	6013	1176	380				
	*****									
CASE 1177	5 OF BXFC03 XFC08:1674	F/XFC03	<--	1447	1168	378				
	*NEXT,*	BUT(GO TO),PAGE+6, J/XFCOTH40	* --> VV							
	*****									
1178	XFCOTH40:6014	F/XFC08 F/XFCOTH40	<-- <--	1674 6014	1177 1178	380 380				
	*NEXT,*	J/XFCOTH40	* -->	6014	1178	380				
	*****									

```

6012 0000 00 00 00 00 000 000 0000 0
      00000 000000 11000 000001010

6013 0000 00 00 00 00 000 110 0000 0
      00000 000000 11100 000001011

6014 0000 00 00 00 00 000 000 0000 0
      00000 000000 11000 000001100

```



# L16

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION	
				BUS	BUS SP	UBF	RIF	COUT	CLOCKS
1183	USERDISP01:6002	F/XFC11 F/USERDISP01	<-- <--	1677 6002	1182 1183	381 382			
	***** *NEXT, * J/USERDISP01 *****			6002				00000000	1000
								0000 00 00 00 00 000 000 0000 0	
								00000 000000 10000 000000010	
.CASE	1 OF BXFC01								
1184	XFC12:1445	F/XFC02 F/XFC10	<-- <--	1602 167F	1167 1181	378 381			
	***** * ENTERED FROM XFC02 AND XFC10 MD GETS *MED *OPCODE. *-----* *P3, MD+076600, *NEXT, * J/XFC13 *****			1445				00000000	1000
								0111 10 11 01 10 000 000 0000 0	
								00010 100000 11000 110000011	
1185	XFC13:1603	F/XFC12	<-- VV						
	***** *-----* *P2, D+SR MINUS MD, *NEXT, * J/XFC14 *****			1603				00000000	1000
								1101 11 10 00 00 000 000 0100 0	
								00000 000000 11000 110000100	
1186	XFC14:1604	F/XFC13	<-- VV						
	***** * BRANCH TARGETS ARE *XFC15,16. *-----* *NEXT, BUTR(D(14-00) EQUALS 0), * J/XFC15 * J/XFC16 *****			1604				00000000	1000
								0000 00 00 00 00 000 000 0000 0	
								00000 000000 01101 100101101	
		J/XFC15 J/XFC16	--> -->	01 1455 11 1457	1187 1188	383 383			

# M16

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
.CASE 1187	1 OF BXFC14							
	XFC15:1455	F/XFC14	<--	1604 1186 382			1455	000000001000
	* NOT MED OPCODE SO							0000 10 00 00 00 001 000 0000 0
	* TRAP.							00010 100000 11100 001010111
	*P3, MD+10,							
	*NEXT, BUT(GO TO),PAGE+0,							
	* J/TRPOD		-->	127 357 151				
.CASE 1188	2 OF BXFC14							
	XFC16:1457	F/XFC14	<--	1604 1186 382			1457	000000001000
	* IT IS MED SO CHECK FOR KERNEL							0000 00 00 00 00 000 000 0000 0
	* MODE							00000 000000 01110 100110110
	*NEXT, BUTR(PS15),							
	* J/XFC18		-->	10 1466 1190 383				
	* J/XFC17		-->	11 1467 1189 383				
.CASE 1189	2 OF BXFC16							
	XFC17:1467	F/XFC16	<-- VV				1467	000000001000
	* USER MODE SO							0000 10 00 00 00 001 000 0000 0
	* TRAP.							00010 100000 11100 001010111
	*P3, MD+10,							
	*NEXT, BUT(GO TO),PAGE+0,							
	* J/TRPOD		-->	127 357 151				
.CASE 1190	1 OF BXFC16							
	XFC18:1466	F/XFC16	<--	1457 1188 383			1466	000000001000
	* IT IS MED AND KERNEL MODE SO EXECUTE							0000 00 00 00 00 000 000 0000 0
	* MED INSTUCTION.							00000 000000 11100 011011011
	*NEXT, BUT(GO TO),PAGE+0,							
	* J/MED01		-->	333 698 254				







# D01

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
<p>TOC THIS ROUTINE INITIALIZES WCS ARRAY. THE PURPOSE IS TO WRITE EVERY LOCATION IN THE WCS ARRAY SO THAT CORRECT PARITY IS GENERATED AND WRITTEN. LOCATION 0 GETS 0. LOCATION 1 GETS 172002. LOCATION 2 GETS 172003. LOCATION N GETS (172001+N). THE LAST LOCATION 5777 GETS 0. NO CONTAINS 172001 BEFORE ENTERING THIS ROUTINE.</p>							
<p>CASE 2 OF BINIT20</p>							
1199	WCSINIT01:3337	F/INIT20 F/WCSINIT08	<-- <--	3434 855 290 3713 1206 388			
	*****						3337 000000001000
	* DB IN WCS GETS						0011 00 00 00 01 100 000 0100 0
	*0.						00000 010010 11000 110011010
	-----*						
	*P2, D=0						
	*P3, WCSADR=0,						
	*NEXT,						
	* J/WCSINIT02		--> VV				
1200	WCSINIT02:3632	F/WCSINIT01	<-- VV				
	*****						3632 000000001000
	* SELECT PROPER ROUTINE IN TMS						0010 00 00 10 00 000 000 0000 0
	*ROM.						11011 000000 11000 110011100
	-----*						
	*P3, TMSPTR=001,						
	*NEXT,						
	* J/WCSINIT03		--> VV				
1201	WCSINIT03:3634	F/WCSINIT02	<-- VV				
	*****						3634 000000001000
	* ADR REG IN WCS GETS 0.DB HAS						0000 00 00 00 00 000 000 0000 0
	*0.						00000 000000 11000 110100000
	-----*						
	*NEXT,						
	* J/WCSINIT04		-->	3640 1202 387			
	*****						

E01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
1202	WCSINIT04:3640	F/WCSINIT03	<--	3634	1201	386		
	*****							
	* LOCATION 0 IN ARRAY IS WRITTEN WITH 0. *							
	*DB GETS *							
	*172001 *							
	*-----*							
	*P2, D+MD,							
	*NEXT,							
	* J/WCSINIT05		--> VV					
	*****							
.CASE	1 OF BWCSINIT06							
1203	WCSINIT05:3711	F/WCSINIT04	<--	3640	1202	387		
		F/WCSINIT07	<--	3644	1205	387		
	*****							
	*P3, TMSPTR+004,							
	*NEXT,							
	* J/WCSINIT06		--> VV					
	*****							
1204	WCSINIT06:3642	F/WCSINIT05	<-- VV					
	*****							
	*P2, D+0 PLUS 1,							
	*NEXT,							
	* J/WCSINIT07		--> VV					
	*****							
1205	WCSINIT07:3644	F/WCSINIT06	<-- VV					
	*****							
	* TARGETS ARE WCSINIT05 *							
	*,08. *							
	*-----*							
	*NEXT, BUTR(D(14-00) EQUALS 0),							
	* J/WCSINIT05		-->	01	3711	1203	387	
	* J/WCSINIT08		-->	11	3713	1206	388	
	*****							

3640								000000001000
1010	11	10	00	00	000	000	0100	0
00000	000000	11000						111001001
3711								000000001000
0010	00	10	00	00	000	000	0000	0
11011	000000	11000						110100010
3642								000000001000
1001	11	00	01	01	000	000	0100	0
00000	000000	11000						110100100
3644								000000001000
0000	00	00	00	00	000	000	0000	0
00000	000000	01101						111001001

# F01

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 388

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE	2 OF BMCINIT06									
1206	WCSINIT08:3713	F/WCSINIT04 F/WCSINIT07	<-- <--	3640 3644	1202 1205	387 387				
	*NEXT, * J/INIT21		-->	3327	856	290				
.TOC	"THIS ROUTINE SERVICES WCSADR REGISTER."									
1207	WCSMRADR01:3111									
	*NEXT, * TMSPTR+020, * J/WCSMRADR02		-->							
1208	WCSMRADR02:3645	F/WCSMRADR01	<--							
	* WRITE WCSADR WITH DATA IN D. *-----* *P3, WCSADR+D, *NEXT, * J/IA50A		-->	3063	602	229				
1209	WCSR0ADR:3110									
	* READ WCSADR AND PUT CONTENTS IN D. *-----* *P2, D+WCSADR, *NEXT, * J/IA102		-->	3057	600	228				
.TOC	"THIS ROUTINE READS WCSADR REGISTER AND PUTS IN D"									
1210	WCSR0ADR01:3124									
	* DB GETS WCS *ADR. *-----* *P2, D+WCSADR, *NEXT, * J/WCSR0ADR02		-->	3646	1211	389				

# G01

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	EXTENSION				
					ALU BUS	BUSB SP	BUSA UBF	RIF COUT UPF	CLOCKS
1211	WCSRDDAT02:3646 ***** * SELECTS PROPER ROUTINE IN TMS *ROM. ----- * TMSPTR+020, *NEXT, * J/WCSRDDAT05 *****	<--	3124 1210 388	3646	1010 11011	00 00 000000	00 00 11000	000 000 110100111	000000001000 0000 0
1212	WCSRDDAT05:3647 ***** *NEXT, * J/WCSRDDAT06 *****	<-- VV		3647	0000 00000	00 00 000000	00 00 11000	000 000 110101000	000000001000 0000 0
1213	WCSRDDAT06:3650 ***** * DATA FROM WCS *ARRAY. ----- *P3, MD+DATA, *NEXT, * J/WCSRDDAT07 *****	<-- <--	3647 1212 389 3662 1222 391	3650	0000 00000	11 10 100000	00 00 11000	000 000 110101001	000000001000 0000 0
1214	WCSRDDAT07:3651 ***** *P2, D+MD, *NEXT, * J/IA102 *****	<-- VV		3651	1010 00000	11 10 000000	00 00 11000	000 000 000101111	000000001000 0100 0
			3057 600 228						

# H01

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 390

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC "THIS ROUTINE WRITES MCSDAT REGISTER WITH DATA IN D AND SR"								
1215	MCSWRDAT01:3125			3125				000000001000
	* DB GETS				1111	00 00	11 01	100 000 0100 0
	*MCSADR.				00000	000000	11000	110101010
	*-----*							
	*P2 D←MCSADR,							
	*NEXT,							
	* J/MCSWRDAT02	-->	VV					
1216	MCSWRDAT02:3652	F/MCSWRDAT01	<--	VV				000000001000
	* SELECTS PROPER ROUTINE IN				0010	01 00	00 00	000 000 0000 0
	*TMSROM.				11011	000000	11000	110101100
	*-----*							
	* TMSPTR←010,							
	*NEXT,							
	* J/MCSWRDAT03	-->	VV					
1217	MCSWRDAT03:3654	F/MCSWRDAT02	<--	VV				000000001000
	* DB GETS DATA TO BE				1111	00 00	00 00	000 000 0100 0
	*WRITTEN.				00000	000000	11000	110101101
	*-----*							
	*P2 D←SR,							
	*NEXT,							
	* J/MCSWRDAT04	-->	VV					
1218	MCSWRDAT04:3655	F/MCSWRDAT03	<--	VV				000000001000
	* DATA IS WRITTEN IN MCS				0000	00 00	00 00	000 000 0000 0
	*ARRAY.				00000	000000	11000	000110011
	*-----*							
	*NEXT,							
	* J/IAS0A	-->		3063 602 229				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC "THIS ROUTINE WRITES WCS STATUS REGISTER WITH DATA IN D AND SR"								
1219	WCSRST01:3115			3115				000000001000
	* WRITE WCS STATUS,				0010 00 00 01 00		000 000 0000 0	
	* NEXT,				11011 000000 11000		000110011	
	* J/IASOA	-->	3063 602 229					
.TOC "THIS ROUTINE READS WCS STATUS REGISTER AND PUTS IT IN D."								
1220	WCSRST01:3114			3114				000000001000
	* TMSPTR←030,				1010 01 00 00 00		000 000 0000 0	
	* NEXT,				11011 000000 11000		110101110	
	* J/WCSRST02	-->	VV					
1221	WCSRST02:3656	F/WCSRST01	<-- VV	3656				000000001000
	* DB GETS WCSADR FOR PARITY				1111 00 00 11 01		100 000 0100 0	
	* PURPOSES.				00000 000000 11000		110110010	
	*-----*							
	*P2, D←WCSADR,							
	* NEXT,							
	* J/WCSRST03	-->	VV					
1222	WCSRST03:3662	F/WCSRST02	<-- VV	3662				000000001000
	* PREPARATION FOR READING WCS				0010 00 00 01 00		000 000 0000 0	
	* STATUS.				11001 000000 11000		110101000	
	*-----*							
	* READ WCS STATUS,							
	* NEXT,							
	* J/WCSRDDAT06	-->	3650 1213 389					
	*-----*							





# K01

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 393

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COYRD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1227	1 OF BJDEF02 JDEF03:1735	F/JDEF02 ----- * WCS NOT ENABLED - GO TO * *CONSOLE * *P3, MD+200 (BC), * *NEXT, * * J/CON998 * -----	<--	1605 1226 392				1735 000000001000 0000 10 00 00 10 000 000 0000 0 00010 100000 11000 000000000
.CASE 1228	2 OF BJDEF02 JDEF04:1737	F/JDEF02 ----- * GO TO WCS - ITS * *ENABLED * *NEXT, BUT(GO TO),PAGE+6, * * J/JAMDEFLOT1 * -----	<--	1605 1226 392				1737 000000001000 0000 00 00 00 00 000 110 0000 0 00000 000000 11100 000000110
1229	JAMDEFLOT1:6006	F/JDEF04 F/JAMDEFLOT1 ----- *NEXT, * * J/JAMDEFLOT1 * -----	<-- <--	1737 1228 393 6006 1229 393				6006 000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 11000 000000110
.CASE 1230	2 OF BSDEF02 SVCDEF:1733	F/SDEF02 ----- * TARGETS * *- * *NEXT, BUTM(SERVICE REQUEST), * * J/SVCDEF02 * -----	<--	1202 516 201				1733 000000001000 0000 00 00 00 00 000 011 0000 0 00000 000000 01100 000010110
			<--	1026 1231 394				

# L01

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1231	1 OF BSVCODEF SVCDEF02:1026	F/SVCDEF	<--	1733	1230	393		
	*****			1026				000000001000
	*0 - SVCDEF02 1 - SVCDEF03		*	0000	00 00	00 00	000 110	0000 0
	-----*			00000	000000	11100	000000111	
	*NEXT, BUT(GO TO),PAGE+6,		*					
	* J/SVCDEF01		* -->	6007	1233	394		
.CASE 1232	2 OF BSVCODEF SVCDEF03:1027	F/SVCDEF	<--	1733	1230	393		
	*****			1027				000000001000
	*NEXT, BUT(GO TO),PAGE+6,		*	0000	00 00	00 00	000 110	0000 0
	* J/SVCDEF02		* -->	6005	1234	394		000000101
	*****							
1233	SVCDEF01:6007	F/SVCDEF02 F/SVCDEF01	<-- <--	1026 6007	1231 1233	394 394		
	*****			6007				000000001000
	*NEXT,		*	0000	00 00	00 00	000 000	0000 0
	* J/SVCDEF01		* -->	6007	1233	394		000000111
	*****							
1234	SVCDEF02:6005	F/SVCDEF03 F/SVCDEF02	<-- <--	1027 6005	1232 1234	394 394		
	*****			6005				000000001000
	*NEXT,		*	0000	00 00	00 00	000 000	0000 0
	* J/SVCDEF02		* -->	6005	1234	394		000000101
	*****							

# MO1

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
	TOC "TABLE OF CONTENTS - FLOATING POINT MICROCODE"						
	SETCLASS SETF, SETD, CFCC, LDUBRK, ILLEGAL						
	STATUS LDFPS, STFPS, STST						
	CTAN CLEAR, TEST, ABSOLUTE, NEGATE						
	MULF/D						
	MOOF/D						
	ROOF/D						
	LDF/D						
	SUBF/D						
	CHPF/D						
	STF/D						
	DIVF/D						
	STEXP						
	STCT STCFI, STCFI, STCDI, STCDL						
	LDEXP						
	LDCT LDCIF, LDCLF, LDCID, LDCLD						
	LDCP LDCFD, LDCDF						
	NROUND NORMALIZATION AND ROUNDING ROUTINE						
	TRAPS FLOATING POINT EXCEPTIONS						
	I/O SUBROUTINES						
	FETCHINT						
	STOREINT						
	FLOATING I/O PREFIXES						
	FETCHFLT						
	STOREFLT						
	SUBROUTINES						
	DATAPREP PREPARE OPERANDS FDST AND FAC(SF)						
	EXPTST TEST FAC(SF) AND FDST EXPONENTS						
	FD-TOGGLE FLIP FD BIT OF FPS						
	LEFTSHIFSF LEFT SHIT SOURCE ACCUMULATOR						
	MOVFDSTSF MOVE FDST DATA TO SF ACCUMULATOR						
	MOVSFFDST MOVE SF ACCUMULATOR TO FDST REGISTERS						
	RESTART RESTART THE INSTRUCTION						
	RESTORECSP RESTORE CSP CONSTANTS						
	RTSHFSF RIGHT SHIFT SOURCE FIELD ACCUMULATOR						
	RTSHFDST RIGHT SHIFT FDST REGISTERS						
	SETFZFN SET FLOATING POINT CONDITION CODES						
	EIS DISPATCH EIS MICROCODE						
	MUL						
	DIV						
	ASH						
	ASHC						
	TOC " SCRATCH PAD LAYOUT IN BASE MACHINE ##FLPT##"						
	BSP(0:15) BSP(16:31) ASP(0:15) ASP(16:31)						
	(BSPLO) (BSPHI) (ASPLO) (ASPHI)						
	0 RO WCSB(0) RO WCSADR						
	FAC3(SAV)						
	1 R1 WCSB(1) R1 WCSA(1)						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC " CSP ALLOCATION AND CONTENTS ##FLPT##"							
	LOCATION NAME CONTENTS						
	CSP(0) EXPMASK 077600 LOG.JAM						
	CSP(1) CNST8 000010 LOG.SERVICE						
	CSP(2) RESRIGHT 020000 LOG.PBA						
	CSP(3) CNST4 000004 LOG.CUA						
	CSP(4) RESLEFTD(C) 050000 LOG.FLAG/INTR						
	CSP(5) RESLEFTGD 054000 LOG.MHAMI						
	CSP(6) EMITCON LOG.CACHEDATA						
	CSP(7) RESRIGHTGD 024000 LOG.TAG/CPU						
	CSP(10) HIBYTEMASK 17740C CNLSL.CNST100000						
	CSP(11) SEXPMASK 177600 LOG.DS						
	CSP(12) SIGNBIT 100000 CNLSL.CNST30000 CNST100000						
	CSP(13) CNST200 000200 CNLSL.CNST040000 HIDDENBIT SETDMASK						
	CSP(14) # 2 000002						
	CSP(15) MD *****						
	CSP(16) # 0 000000						
	CSP(17) # 1 000001						

↑.TOC " TEMPORARY REGISTERS ##FLPT##"  
 .TOC " LABELLING CONVENTIONS IN ALL FLP MICROCODE:- ##FLPT##"

SECTIONS:  
 THE LABEL ON THE FIRST WORD OF A SECTION IS ALSO THE NAME OF

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
---------	-------------	--	--------------------------	-----------------	------------	-------------	-------------------------------------

THAT SECTION. BY CONVENTION IT HAS NO TRAILING NUMERICS.  
 FOR EXAMPLE, ADDN2 IS THE LABEL OF THE FIRST WORD OF THE  
 SECTION DOING ADD WITH A NON-ZERO DEST MODE, BUT CFC03 IS THE THIRD  
 WORD OF THE SECTION CFCC. SUBROUTINES ARE ALSO SECTIONS.

WARM VS HOT:  
 THE LAST CHARACTER OF A WARM SECTION NAME IS W.

-----  
 TOC "UCON - FLOATING POINT SPECIFIC ##FLPT##"

FPS<7:4>  
 READ (TOGETHER WITH FLAGS AND FPS<3:0>) BY SELECTING  
 KP HBMUX X PORT

EXAMPLE IN UMORDS:  
 WRITTEN BY SELECT AND DATTB (MACRO IS FPS+D)  
 EXAMPLE IN UMORD LDFPS2

FPS<3:0>  
 READ WITH FPS<7:4> AS ABOVE

WRITTEN BY  
 (A) MUX SELECT ROMEX.FPSSSEL (MACRO FPSCC)  
 (B) CLOCK ROMEX.USFCC (MACRO CLKFPSCC)  
 EXAMPLE IN UMORDS LDFPS2 AND FET03F1

-----  
 TOC "USAGE OF TEMPORARIES ##FLPT##"

<u>NAME</u>	<u>USED BY</u>	<u>SCOPE</u>
-------------	----------------	--------------

R(FSTA) - MERGE WITH CR CONCEPT

R(EDIFF)

R(ES)

R(ED)

R(WDADR)

R(GRINC) FETCHSTOREFLT DURATION OF SUBROUTINE

FLAGS<2:1>

D(C)

R(CR)

R(TRAPSEN)

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION		MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
		OFST ADDR	BOX PAGE					RIF	COUT

TOC - OCCURRENCE OF FLOATING POINT EXCEPTIONS ##FLPT##

INSTRUCTION I/O ROUTINE EXCEPTIONS

```

LOADF/D  FETCHFLT  FIUV
STOREF/D  STOREFLT  NONE
MULF/D  FETCHFLT  FIV,FIU,FIUV
DIVF/D  FETCHFLT  FIV,FIU,FIUV,ZERODIV
CLRF/D  STOREFLT  NONE
TSTF/D  FFLTDEFER  FIUV
ABSF/D  FFLTDEFER  FIUV
NEGF/D  FFLTDEFER  FIUV
ADDF/D  FETCHFLT  FIV,FIU,FIUV
SUBF/D  FETCHFLT  FIV,FIU,FIUV
CMPF/D  FETCHFLT  FIUV
LDCP  LDCFETCH  FIV,FIUV
STCP  STCFLT  FIV
LDCT  FETCHINT, FETCHINTLG  NONE
STCT  STOREINT, STOREINTLG  FIC
LDEXP  FETCHINT  FIV,FIU
STEXP  STOREINT  NONE

```

TOC - FLOATING POINT INSTRUCTION ABORTS ##FLPT##

THE LENGTH OF TIME REQUIRED TO COMPLETE EXECUTION OF THE ARITHMETIC INSTRUCTIONS AND THE REQUIREMENTS OF HONORING INTERRUPTS IN ORDER TO PREVENT INTERRUPT LATENCIES NECESSITATES THAT THE EXECUTION OF THESE INSTRUCTIONS BE INTERRUPTABLE. INSTRUCTIONS CAPABLE OF BEING INTERRUPTED AND RESTARTED ARE AS FOLLOWS:

ADDF/D, SUBF/D, MULF/D, DIVF/D, MODF/D, LDCT

TESTS ARE MADE AT APPROPRIATE POINTS IN THESE INSTRUCTIONS BY USING BUTR(BG) - CHECKING WHETHER A BUS GRANT IS PENDING. SHOULD INTERRUPT PENDING EXIST, THE PC OF THE INSTRUCTION IS BACKED UP TO REEXECUTE THE INSTRUCTION, THE ACCUMULATORS REFERENCED BY THE INSTRUCTION ARE RESTORED AND THE SPECIFIED SOURCE OPERAND REGISTER WOULD BE RESTORED IF IT WAS PUSHED OR POPPED. THE REFERENCED ACCUMULATOR IS SAVED BEFORE EXECUTION IN "A" SCRATCH PAD LOW, ALSO SAVED IS R(GRINC) INDICATING THE INCREMENT VALUE FOR THE GENERAL REGISTER. RESTORATION OCCURS IN THE RESTART FLOWS OF THE MICROCODE. ANOTHER POINT IN THE MICROCODE FLOWS WHERE AN INSTRUCTION ABORT CAN OCCUR IS IN THE OPERAND FETCH ROUTINE LABELLED AS FETCHSTOREFLT AS A CONSEQUENCE OF SHARING THE SAME I/O ROUTINE AS HFPP. IN THIS SITUATION, RESTORATION OF ACCUMULATORS AND GENERAL REGISTERS IS NOT NECESSARY AS NOTHING HAS BEEN ALTERED UP TO THIS POINT. ONLY THE PC IS BACKED UP AND THE T-BIT MASK IS SET UP BEFORE EXECUTING THE INTERRUPT ROUTINE.

TOC - USAGE OF TEMPORARIES ##FLPT##

;; REGISTER LOCATION COMMENT

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION		MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
		OFST ADDR	BOX PAGE						RIF	COUT

```

CR2 R3 (A) USED TO HOLD CONDITIONS INDICATING OVERFLOW
UNDERFLOW, MOD FLAG, AND MOD RESTORE AC+1
FLAG
CR2<00> MOD FLAG
CR2<01> OVERFLOW FLAG
CR2<02> UNDERFLOW FLAG
CR2<03> RESTORE AC+1 MOD FLAG
CR1 R2 (A) USED TO HOLD THE RESULTANT SIGN BIT IN CR1<15>
FAC3(SAV) R0 (A) SAVE FAC3(SF)
FAC2(SAV) R1 (A) SAVE FAC2(SF)
FAC1(SAV) R6 (A) SAVE FAC1(SF)
FAC0(SAV) R7 (A) SAVE FAC0(SF)
R(GRINC-SAV)R5 (A) SAVE R(GRINC) - GENERAL REGISTER INCREMENT
R(ER) R4(A) RESULTANT EXPONENT IS STORED

```

.TOC " HOT FLOATING POINT MICROCODE ##FLPT##"

.CASE 2 OF BRESTCSP17  
1235 MFORK:0475 F/RESTCSP17 <-- 646 2284 752

```

475 1010 11 10 00 01 00000001000
00000 010010 00011 010100000

```

```

*****
*NAME USE ACTUAL REGISTER R(ES) SOURCE *
*EXPONENT R(ED) DESTINATION EXPONENT *
*R(ER) EXPONENT RESULT R(EDIFF) EXPONENT *
*DIFFERENCE R(WDADR) WORD ADDRESS *
*-----:FROM *
*BT(INSTR 1) WHEN ; FLPT#HOT ;FLOATING *
*POINT DECODE IS PERFORMED BY *
*BT(IR11#FLPROM<3:0>) ; :FLOATING POINT *
*DECODE ROM IS DIVIDED INTO THE FOLLOWING *
*DECODE :TARGETS - ; INPUT OUTPUT *
* INSTRUCTION IR11=0' INSTRUCTION *
*IR11=1 *

```

Label	SR+MD, D+MD, R(IR)+D (A ADDR), BUTR(FLPDECODE), J/SETCLASS	Op	Op Code	Box	Page	Coord
*	J/SETCLASS	* -->	00000	240	1237	402
*	J/STATUS	* -->	00001	241	1259	409
*	J/CTANZ	* -->	00010	242	1254	407
*	J/CTANZ	* -->	00011	243	1255	408
*	J/MULFZ	* -->	00100	244	1243	404
*	J/MULDZ	* -->	00101	245	1244	404
*	J/MULXNZ	* -->	00110	246	1245	404
*	J/MOD	* -->	00111	247	1260	409
*	J/AD0Z	* -->	01000	250	1246	405
*	J/AD0NZ	* -->	01001	251	1247	405
*	J/LOADZ	* -->	01010	252	1248	405
*	J/LOADSIX	* -->	01011	253	1249	406
*	J/LOADNZS	* -->	01100	254	1251	406
*	J/SUBZ	* -->	01101	255	1252	407
*	J/SUBNZ	* -->	01110	256	1253	407
*	J/CHP	* -->	01111	257	1261	409
*	J/STFD	* -->	10000	260	1262	409
*	J/STFD2	* -->	10001	261	1263	410
*	J/DIVZ	* -->	10010	262	1283	416
*	J/DIVNZ	* -->	10011	263	1284	416
*	J/STOREXP	* -->	10100	264	1264	410



*	J/STOREXPD	* -->	10101	265	1265	410
*	J STOREXPX	* -->	10110	266	1266	410
*	J/STCT	* -->	10111	267	1267	416
*	J/STCPZ	* -->	11000	270	1269	411
*	J/STCPNZ	* -->	11001	271	1270	412
*	J/LDEXP	* -->	11010	272	1272	412
*	J/LDEXPDMS	* -->	11011	273	1273	413
*	J/LDEXPX	* -->	11100	274	1274	413
*	J/LDCTZ	* -->	11101	275	1275	413
*	J/LDCTNZ	* -->	11110	276	1276	414
*	J/LDCP	* -->	11111	277	1291	418

\*\*\*\*\*

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G02

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 401

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1236	4 OF BRESTCSP17 HFORKNVALD:0477						
	F/RESTCSP17	<--	646 2284 752				
	*****			477			000000001000
	* SECONDARY ENTRY POINT INTO HOT FLOW *			1010	11 10	00 01	011 010 0110 0
	* WITH THE CSP NOT VALID FROM INSTR 1 *			00000	010010	11100	110110010
	* BRANCH SR+IR GET INSTRUCTION RESTORE CSP *						
	* CONSTANTS FOR FLOATING POINT *						
	* RESTOREATION OF *						
	* CSP *						
	-----*						
	*P2, SR+MD, D+MD, *						
	*P3, R(IR)+D (A ADDR) *						
	*NEXT, BUT(GO TO), PAGE+2, *						
	* J/RESTORECSP *	-->	2662 2268 749				
	*****						

# H02

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 402

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1237	1 OF H/FORK SETCLASS: 0240	F/HFORK	<-- 475 1235 395				
	***** *RETURNS TO HFORK LABEL ENTRY INTO THIS * *POINT IS FROM HFORK INSTRUCTIONS * *EXCEUTED ARE - * *SETF SETD, SETI, SETL, LDUBRK, ILLEGAL CLOCK * *CONDITION CODES TARGETS * *- * *-----* *SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO, * *NEXT, BUTR(SERVICE#FPPACK), * * J/SETCLASS2 * * J/SETCLASS2 * --> 0101 205 1238 402 * J/SETCLASS3 * --> 0111 207 1239 403 * J/SETCLASS4 * --> 1101 215 1240 403 * J/SETCLASS5 * --> 1111 217 1241 403 *****			240 0000 00 00 00 00 000 000 0000 0 11100 000000 00111 010000101			010000001000 000 000 0000 0 010000101
.CASE 1238	1 OF BSETCLASS SETCLASS2: 0205	F/SETCLASS F/SETCLASS2	<-- 240 1237 402 <-- 205 1238 402				
	***** #00 - SETCLASS2 01 - SETCLASS3 10 - * #SETCLASS4 11 - SETCLASS5 * *-----* *SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO, * *NEXT, BUTR(SERVICE#FPPACK), * * J/SETCLASS2 * * J/SETCLASS2 * --> 0101 205 1238 402 * J/SETCLASS3 * --> 0111 207 1239 403 * J/SETCLASS4 * --> 1101 215 1240 403 * J/SETCLASS5 * --> 1111 217 1241 403 *****			205 0000 00 00 00 00 000 000 0000 0 11100 000000 00111 010000101			010000001000 000 000 0000 0 010000101

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BSETCLASS							
1239	SETCLASS3:0207	F/SETCLASS F/SETCLASS2	<-- <--	240 1237 402 205 1238 402				
	***** * SAVE PC FOR POSSIBLE EXCEPTIONS GO TO * WARM FOR * EXECUTION *-----*							207 000000001000 1111 00 10 10 01 111 000 0100 0 00000 011100 11000 011100000
	*P2, D+PC (A), *P3, FPA+D (B ADDR), *NEXT, * J/SETCLASSW		-->	340 1320 431				
.CASE	3 OF BSETCLASS							
1240	SETCLASS4:0215	F/SETCLASS F/SETCLASS2	<-- <--	240 1237 402 205 1238 402				
	***** * SELECT, FPP(ABORT), * NEXT, * J/SETCLASS6		-->	335 1242 403				215 0000 00 00 00 00 001 001 0000 0 11001 000000 11000 011011101
.CASE	4 OF BSETCLASS							
1241	SETCLASS5:0217	F/SETCLASS F/SETCLASS2	<-- <--	240 1237 402 205 1238 402				
	***** * ABORT INSTRUCTION * EXECUTION *-----*							217 0000 00 00 00 00 001 001 0000 0 11001 000000 11000 011011101
	*SELECT, FPP(ABORT), *NEXT, * J/SETCLASS6		--> VV					
1242	SETCLASS6:0335	F/SETCLASS4 F/SETCLASS5	<-- <-- VV	215 1240 403				
	***** * GO SET T-BIT MASK THEN TO SERVICE FLOWS *-----*							335 0000 00 00 00 00 000 100 0000 0 00000 000000 11100 111100001
	*NEXT, BUT(GO TO) PAGE+4, * J/FPPABORT10		-->	4741 2185 720				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE 1243	5 OF BHFORK	F/HFORK	<--	475	1235	395			
	MULFZ:0244							010000001000	
	*****								
	-----								
	* HOT MULTIPLY DMO								
	* SINGLE PRECISION ENTRY DO DMO SYNC								
	* OPERATION								
	-----								
	* P2, D+PC (A)								
	* SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,								
* NEXT, BUTR(SERVICE#FPPACK),									
* J/HOTDMOSYNC									
*****									
J/HOTDMOSYNC --> 0101 165 1292 418									
J/HOTDMOSYNC2 --> 0111 167 1293 419									
J/HOTDMOSYNC3 --> 1101 175 1294 419									
J/HOTDMOSYNC4 --> 1111 177 1295 420									
*****									
.CASE 1244	6 OF BHFORK	F/HFORK	<--	475	1235	395			
	MULDZ:0245							010000001000	
	*****								
	* HOT MULTIPLY DMO DOUBLE PRECISION ENTRY								
	* DO DMO SYNC								
	* OPERATION								
	-----								
	* P2, D+PC (A)								
	* SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,								
	* NEXT, BUTR(SERVICE#FPPACK),								
* J/HOTDMOSYNC									
*****									
J/HOTDMOSYNC --> 0101 165 1292 418									
J/HOTDMOSYNC2 --> 0111 167 1293 419									
J/HOTDMOSYNC3 --> 1101 175 1294 419									
J/HOTDMOSYNC4 --> 1111 177 1295 420									
*****									
.CASE 1245	7 OF BHFORK	F/HFORK	<--	475	1235	395			
	MULXNZ:0246							000000001000	
	*****								
	* HOT MULTIPLY NON DMO								
	* OPERATION								
	-----								
	* NEXT, BUT(GO TO) PAGE+4,								
	* J/FETCHFLT2 -->								
	*****								
	4651 2060 671								

244  
 1111 00 00 10 01 111 000 0100 0  
 11100 000000 00111 001110101

245  
 1111 00 00 10 01 111 000 0100 0  
 11100 000000 00111 001110101

246  
 0000 00 00 00 00 000 100 0000 0  
 00000 000000 11100 110101001

# K02

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
1246	9 OF BHFORK ADDZ: 0250	F/HFORK <--		475	1235	395		
	*****							250
	-----							010000001000
	HOT FLOATING							1111 00 00 10 01 111 000 0100 0
	*POINT ADD DMO							11100 000000 00111 001110101
	*OPERATION							
	-----							
	*P2, D+PC (A)							
	*SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,							
	*NEXT, BUTR(SERVICE#FPPACK),							
	* J/HOTDMOSYNC							
	* J/HOTDMOSYNC	-->	0101 165 1292 418					
	* J/HTDMOSYNC2	-->	0111 167 1293 419					
	* J/HTDMOSYNC3	-->	1101 175 1294 419					
	* J/HTDMOSYNC4	-->	1111 177 1295 420					
	*****							
1247	10 OF BHFORK ADDZ: 0251	F/HFORK <--		475	1235	395		
	*****							251
	*NEXT, BUT(GO TO) PAGE+4,							000000001000
	* J/FETCHFLT2	-->	4651 2060 671					0000 00 00 00 00 000 100 0000 0
	*****							00000 000000 11100 110101001
1248	11 OF BHFORK LOADZ: 0252	F/HFORK <--		475	1235	395		
	*****							252
	-----							010000001000
	HOT FLOATING							1111 00 00 10 01 111 000 0100 0
	*POINT LOAD DMO							11100 000000 00111 001110101
	*OPERATION							
	-----							
	*P2, D+PC (A)							
	*SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,							
	*NEXT, BUTR(SERVICE#FPPACK),							
	* J/HOTDMOSYNC							
	* J/HOTDMOSYNC	-->	0101 165 1292 418					
	* J/HTDMOSYNC2	-->	0111 167 1293 419					
	* J/HTDMOSYNC3	-->	1101 175 1294 419					
	* J/HTDMOSYNC4	-->	1111 177 1295 420					
	*****							

# L02

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA LBF	EXTENSION RIF COUT CLOCKS
.CASE 1249	12 OF BHFORK LOADSIX:0253	F/HFORK <--	475 1235 395	253			000000001011
	* HOT FLOATING POINT LOAD DESTINATION			1001	11 11	10 01	111 100 0101 0
	*MODE 6			10001	000110	11100	001101100
	*OPERATION						
	*P1, BA+PC CURRENT MODE,						
	*P2, D+PC PLUS 2,						
	*P3, PC+D (A ADDR),						
	*P3, U, DATA POINT,						
	*NEXT, BUT(GO TO), PAGE+4,						
	* J/LOADSIX2	--> VV					
1250	LOADSIX2:4154	F/LOADSIX <-- VV		4154			000000001000
	* NEEDED AT			0011	11 10	00 01	110 010 0100 0
	*FSDM6FLT3			00000	110100	11000	011011110
	*P2, D+D, D(C)+ALUDD,						
	*P3, R(GAINC)+D (A ADDR), MD+DATA,						
	*NEXT,						
	* J/FSDM6FLT3	-->	4336 2090 685				
.CASE 1251	13 OF BHFORK LOADNZS:0254	F/HFORK <--	475 1235 395	254			000000001000
	*NEXT, BUT(GO TO), PAGE+4,			0000	00 00	00 00	000 100 0000 0
	* J/FETCHFLT2	-->	4651 2060 671				00000 000000 11100 110101001

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1252	14 OF BHFORK	F/HFORK	<--	475 1235 395				
	SUBZ: 0255							010000001000
	*****							
	-----							
	*----- NOT FLOATING -----*							
	*POINT							
	*SUBTRACT							
	*-----							
	*P2, D+PC (A)							
	*SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,							
*NEXT, BUTR(SERVICE#FPPACK),								
* J/HOTDMOSYNC								
* J/HOTDMOSYNC --> 0101 165 1292 418								
* J/HTDMOSYNC2 --> 0111 167 1293 419								
* J/HTDMOSYNC3 --> 1101 175 1294 419								
* J/HTDMOSYNC4 --> 1111 177 1295 420								
*****								
.CASE 1253	15 OF BHFORK	F/HFORK	<--	475 1235 395				
	SUBZ: 0256							000000001000
	*****							
	*NEXT, BUT(GO TO), PAGE+4,							
* J/FETCHFLT2 --> 4651 2060 671								
*****								
.CASE 1254	3 OF BHFORK	F/HFORK	<--	475 1235 395				
	CTANZ: 0242							010000001000
	*****							
	*-----							
	*P2, D+PC (A)							
	*SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,							
	*NEXT, BUTR(SERVICE#FPPACK),							
	* J/HOTDMOSYNC							
	* J/HOTDMOSYNC --> 0101 165 1292 418							
	* J/HTDMOSYNC2 --> 0111 167 1293 419							
* J/HTDMOSYNC3 --> 1101 175 1294 419								
* J/HTDMOSYNC4 --> 1111 177 1295 420								
*****								



# N02

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
1255	4 OF BHFORK CTANNZ:0243	F/HFORK	<--	475 1235 395					
	*****								
	* READ FLAG REGISTER								
	*****								
	*SELECT, P3, NEXT, J/CTANNZ2		-->	VV					
1256	CTANNZ2:0336	F/CTANNZ	<--	VV					
	*****								
	*P2, D+EMITCON, NEXT, J/CTANNZ3		-->	VV					
1257	CTANNZ3:0337	F/CTANNZ2	<--	VV					
	*****								
	* SET UP FLAG REGISTER FORCE WARM ON BUTR(HOTWARM)								
	*****								
	*P2, D+D OR 2, NEXT, BUT(GO TO), PAGE+2, J/CTANNZ4		-->	VV					
1258	CTANNZ4:2110	F/CTANNZ3	<--	VV					
	*****								
	*SELECT, P3, NEXT, J/CTANNZ42		-->	VV					
	*****								
				2112 1374 449					

ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
243	0000 11001	10 00 100000	11 01 11000	00000001000 000 000 011011110	0000 0
336	1010 01001	10 00 000000	00 00 11000	00000001000 000 000 011011111	0100 0
337	1110 00000	11 11 000000	01 01 11100	00000001000 000 010 001001000	0100 0
2110	0000 11011	00 00 000000	00 01 11000	00000001000 000 001 001001010	0000 0

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1259	2 OF BHFORK STATUS:0241	F/HFORK	<--	475 1235 395				
	*****							241 00000001000
	-----							0000 00 01 11 00 001 100 0000 0
	PERFORM SYNC							00000 000000 11100 101110101
	*OPERATION							
	*NEXT, CALL HOTSUNC							
	* RETURN+STATUSW							
	*****		-->	4565 1297 421				
				WV				
				-1 -1 -1 2 1 1				
.CASE 1260	8 OF BHFORK MOD:0247	F/HFORK	<--	475 1235 395				
	*****							247 00000001000
	*THEN GO TO WARM FOR EXECUTION							0000 00 00 00 00 000 100 0000 0
	-----							00000 000000 11100 110101001
	*NEXT, BUT(GO TO),PAGE+4,							
	* J/FETCHFLT2		-->	4651 2060 671				
	*****							
.CASE 1261	16 OF BHFORK CMP:0257	F/HFORK	<--	475 1235 395				
	*****							257 00000001000
	*NEXT, BUT(GO TO),PAGE+4,							0000 00 00 00 00 000 100 0000 0
	* J/FETCHFLT2		-->	4651 2060 671				00000 000000 11100 110101001
	*****							
.CASE 1262	17 OF BHFORK STFD:0260	F/HFORK	<--	475 1235 395				
	*****							260 00000001000
	-----							0000 00 00 00 00 000 100 0000 0
	HOT FLOATING							00000 000000 11100 110101100
	*POINT STORE OPERATION ACCUMULATOR ZERO							
	*STORE							
	-----							
	*NEXT, BUT(GO TO),PAGE+4,							
	* J/STOREFLT		-->	4654 2061 674				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1263	18 OF BHFORK STFD2:0261 F/HFORK	<--	475 1235 395	261	0000 00000	00 00 000000	00 00 11100	00000001000 000 100 0000 0 110101100
	* ACCUMULATOR 1, 2, OR 3 * STORE							
	*NEXT, BUT(GO TO),PAGE+4, * J/STOREFLT	-->	4654 2061 674					
.CASE 1264	21 OF BHFORK STOREXP:0264 F/HFORK	<--	475 1235 395	264	0000 00000	00 10 000000	00 00 11100	00000001000 001 100 0000 0 101110101
	*NEXT, CALL HOTS SYNC, * RETURN+STEXPHOT	-->	4565 1297 421					
			WV 401 1267 411					
.CASE 1265	22 OF BHFORK STOREXP0:0265 F/HFORK	<--	475 1235 395	265	0000 00000	00 10 000000	00 00 11100	00000001000 001 100 0000 0 101110101
	*NEXT, CALL HOTS SYNC, * RETURN+STEXPHOT	-->	4565 1297 421					
			WV 401 1267 411					
.CASE 1266	23 OF BHFORK STOREXPX:0266 F/HFORK	<--	475 1235 395	266	0000 00000	00 10 000000	00 00 11100	00000001000 001 100 0000 0 101110101
	*NEXT, CALL HOTS SYNC, * RETURN+STEXPHOT	-->	4565 1297 421					
			WV 401 1267 411					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX						PAGE	RIF UPF	
1267	STEXPHOT:0401					401				00000000	1000	
	* ACCEPT EXP FROM HOT						1010	11 10	00 00	000 000	0110	0
	*UNIT						00000	000000	11000	100001001		
	*P2, D+MD, SR+MD,											
	*NEXT, J/STEXPHOT2				-->							VV
1268	STEXPHOT2:0411					411				00000000	1000	
	*D(C)=0						1011	10 00	00 00	000 000	0100	0
	*P2, D+SR AND EXPMASK, D(C)+CIN,						01111	000000	11000	110000000		
	*NEXT, J/STEXP2				-->	600	1753	569				
CASE 1269	25 OF BIFORK											
	STCP2:0270					270				01000000	1000	
	*----- DESTINATION MODE						1111	00 00	10 01	111 000	0100	0
	*0 ENTRY AND F						11100	000000	00111	001110101		
	*MODE											
	*P2, D+PC (A)											
	*SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO,											
	*NEXT, BUTR(SERVICE#FPPACK),											
	* J/HOTDMOSYNC				-->	0101	165	1292	418			
	* J/HTDMOSYNC2				-->	0111	167	1293	419			
	* J/HTDMOSYNC3				-->	1101	175	1294	419			
	* J/HTDMOSYNC4				-->	1111	177	1295	420			

E03

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1270	26 OF BHFORK							
	STCPNZ:0271	F/HFORK	<--	475 1235 395				
	*****							
	* NON DESTINATION MODE							
				271	1111 00 00 10 01	00000001000	0100 0	
					00000 000000 11100	001101110		
	*P2	D+PC (A)						
	*NEXT,	BUT(GO TO),PAGE+4,						
	*	J/STCPNZ2	--> VV					
	*****							
1271	STCPNZ2:4156	F/STCPNZ	<-- VV					
	*****							
	* SAVE THE PC FOR THE FPA STORE INTO FPA							
	*OCCURS							
	*ONLY							
	*****							
	*P3,	R(T3)+D (A ADDR),						
	*NEXT,							
	*	J/STCFLT	-->	4621 2042 664				
	*****							
.CASE 1272	27 OF BHFORK							
	LDEXP:0272	F/HFORK	<--	475 1235 395				
	*****							
	*ON AN EXCEPTION DONE IN STOREHOT FLOWS							
	*****							
	*----- LOAD EXPONENT							
	*ENTRY FOR HOT FLOATING POINT PERFORM							
	*SYNC							
	*OPERATION							
	*****							
	*NEXT,	CALL HOTSINC,						
	*	RETURN+LDEXPZW	-->	*****				
	*****							
				4565 1297 421				
				VV				
				-1 -1 -1 0 1 1				



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1276	31 OF BHFORK LDCTNZ:0276 F/HFORK ***** *EXECUTION *-----* *P3, * *EMITCON+GUARD * *ENABLE, *NEXT, * *J/LDCTN2 *****	<-- 475 1235 395		276	0100 01001	10 10 100000	00 00 11000	00000001000 000 000 0000 0 110011000
1277	LDCT2:1606 ***** * TARGETS *- *-----* *P2, D+PC (A),D(C)+D(C), *P3, FPA+D (B ADDR), *NEXT, BUTR(D(C)), * * J/LDCT3 * * J/LDCT5 *****	--> 630 1858 600		1606	1111 00000	00 10 011100	10 01 10011	00000001000 111 111 0100 0 010101001
.CASE 1278	1 OF BLDCT2 LDCT3:1251 F/LDCT2 ***** *0 - LDCT3 1 - LDCT5 SHORT INTEGER *FETCH *-----* *NEXT, CALL FETCHINT, * RETURN+LDCT4 *****	<-- VV 01 1251 1278 414 11 1253 1280 415		1251	0000 00000	00 10 000000	00 10 11100	00000001000 100 010 0000 0 101101000
		-->	***** 2550 2009 650 ***** VV 424 1279 415					

# H03

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1279	LDCT4:0424			424			000000001000
	*P2, D+R(T2) (A), FLPGO,			1111	00 00	11 01	110 000 0100 0
	*NEXT, BUTR(SERVICE),			11100	000000	10000	111000010
	* J/FETO1						
	* J/FETO3	-->	00 700 3 11				
	* J/SERO1	-->	01 701 385 160				
	* J/FETO1	-->	10 702 1 2				
	* J/SERO2	-->	11 703 387 162				
CASE 1280	2 OF BLDCT2 LDCT5:1253	F/LDCT2	<-- 1606 1277 414	1253			000000001000
	* LONG INTEGER			0000	00 10	00 10	101 100 0000 0
	*FETCH			00000	000000	11100	110010100
	*NEXT, CALL FETCHINTLG,						
	* RETURN+LDCT6	-->	***** 4624 2043 665 ***** VV 425 1281 415				
1281	LDCT6:0425			425			000000001000
	* ONLY WHEN IT IS DMO WILL A RETURN BE			1111	00 00	10 01	011 000 0100 0
	*MADE			11100	000000	11000	100010110
	*P2, D+FDST3, FLPGO,						
	*NEXT, J/LDCT7	--> VV					
1282	LDCT7:0426	F/LDCT6	<-- VV	426			000000001000
	*SUCH THAT DATA IS FETCHED FROM D BUS			1010	00 11	00 00	011 000 0100 0
	*P2, D+FDST2,			00000	000000	10000	111000010
	*NEXT, BUTR(SERVICE),						
	* J/FETO1						
	* J/FETO3	-->	00 700 3 11				
	* J/SERO1	-->	01 701 385 160				
	* J/FETO1	-->	10 702 1 2				
	* J/SERO2	-->	11 703 387 162				



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1283	19 OF BHFORK DIVZ:0262	F/HFORK	<-- 475 1235 395				262 010000001000 1111 00 00 10 01 111 000 0100 0 11100 000000 00111 001110101
	***** ----- *----- HOT FLOATING *DIVIDE ENTRY DESTINATION MODE *ZERO *****						
	*P2, D+PC (A), *SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO, *NEXT, BUTR(SERVICE#FPPACK), * J/HOTDMOSYNC						
	* J/HOTDMOSYNC	-->	0101 165 1292 418				
	* J/HTDMOSYNC2	-->	0111 167 1293 419				
	* J/HTDMOSYNC3	-->	1101 175 1294 419				
	* J/HTDMOSYNC4	-->	1111 177 1295 420				
	*****						
.CASE 1284	20 OF BHFORK DIVNZ:0263	F/HFORK	<-- 475 1235 395				263 000000001000 0000 00 00 00 00 000 100 0000 0 00000 000000 11100 110101001
	***** *NEXT, BUT(GO TO) PAGE+4, * J/FETCHFLT2 *****						
	* J/FETCHFLT2	-->	4651 2060 671				
	*****						
.CASE 1285	24 OF BHFORK STCT:0267	F/HFORK	<-- 475 1235 395				267 000000001000 0000 00 10 01 00 000 100 0000 0 00000 000000 11100 101110101
	***** *NEXT, CALL HOTSYN, * RETURN+STCT2 *****						
	* RETURN+STCT2	-->	4565 1297 421				
	*****						
			440 1286 416				
	*****						
1286	STCT2:0440						440 0000 11 10 00 00 001 000 0000 0 11001 100000 11000 100101000
	***** *SELECT, FPP(READ), *P3, MD+DATA, *NEXT, * J/STCT3 *****						
	* J/STCT3	-->	450 1287 417				
	*****						

# J03

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION					
				ADDR	ALU BUS	BUSB SP	BUSA UBF	R/E COUT CLOCKS	
1287	STCT3:0450	F/STCT2	<-- 440 1286 416	450	1010 00000	11 10 100010	00 01 11100	011 100 01000000	0100 0 1000
	*P2, D+MD								
	*P3, FDST3+D (A ADDR), MD+DATA,								
	*NEXT, BUT(GO TO), PAGE+4,								
	* J/STCT4		--> VV						
1288	STCT4:4200	F/STCT3	<-- VV	4200	1010 00000	11 10 100100	00 01 10111	011 000 111011010	0100 0 1000
	* TARGETS - 0 - F -								
	*STCT5								
	*P2, D+MD								
	*P3, FDST2+D (A ADDR), MD+DATA,								
	*NEXT, BUTR(FD),								
	* J/STCT5		--> 10 4732 1289 417						
	* J/STCT6		--> 11 4733 1290 417						
.CASE 1289	1 OF BSTCT4 STCT5:4732	F/STCT4	<-- VV	4732	0011 00000	00 00 010110	00 01 11000	011 000 011110010	0100 0 1000
	* #1 - 0 - STCT6								
	*P2, D+0								
	*P3, FDST10+D (A ADDR),								
	*NEXT, J/STCTW2		--> 4362 1758 571						
.CASE 1290	2 OF BSTCT4 STCT6:4733	F/STCT4	<--	4733	1010 00000	11 10 010010	00 01 11000	011 000 011110010	0100 0 1000
	* NOTE - ONLY THREE WORDS ARE REQUIRED								
	*FOR								
	*CONVERSION								
	*P2, D+MD								
	*P3, FDST1+D (A ADDR),								
	*NEXT, J/STCTW2		--> 4362 1758 571						

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1291	LDCP:0277	F/HFORK <--	475 1235 395	277				00000001000
	*NEXT, BUT(GO TO), PAGE+4, *	J/LDCFETCH <--	4620 2041 663		0000 00 00 00 00	000 100 0000 0	00000 000000 11100 110010000	
.CASE 1292	HOTDMOSYNC:0165	F/MULFZ <--	244 1243 404					
		F/MULDZ <--	245 1244 404					
		F/ADDZ <--	250 1246 405					
		F/LOADZ <--	252 1248 405					
		F/SUBZ <--	255 1252 407					
		F/CTANZ <--	242 1254 407					
		F/STCPZ <--	270 1269 411					
		F/DIVZ <--	262 1283 416					
		F/HOTDMOSYNC <--	165 1292 418					
		F/FSDMOFLTS <--	4607 2066 676					
				165	0000 00 00 00 00	000 000 0000 0	010000001000	
					11100 000000 00111 001110101			
	*----- DESTINATION MODE *							
	*ZERO SYNC OPERATIONS TARGETS - 00 - *							
	*HOTDMOSYNC 01 - HOTDMOSYNC2 10 - *							
	*HOTDMOSYNCS 11 - *							
	*HOTDMOSYNCS 11 - *							
	*----- *							
	*SELECT, FPSCC(FPP), FPSCC+DATA, FLPGO, *							
	*NEXT, BUTR(SERVICE#FPPACK), *							
	* J/HOTDMOSYNC *	J/HOTDMOSYNC <-->	0101 165 1292 418					
	* J/HOTDMOSYNC2 *	J/HOTDMOSYNC2 <-->	0111 167 1293 419					
	* J/HOTDMOSYNC3 *	J/HOTDMOSYNC3 <-->	1101 175 1294 419					
	* J/HOTDMOSYNC4 *	J/HOTDMOSYNC4 <-->	1111 177 1295 420					
	*****							

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PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BMULFZ							
		F/MULFZ	<--	244	1243	404		
		F/MULDZ	<--	245	1244	404		
		F/ADDZ	<--	250	1246	405		
		F/LOADZ	<--	252	1248	405		
		F/SUBZ	<--	255	1252	407		
		F/CTANZ	<--	242	1254	407		
		F/STCPZ	<--	270	1269	411		
		F/DIVZ	<--	262	1283	416		
		F/HOTDMOSYNC	<--	165	1292	418		
1293	HTDMOSYNC2:0167	F/FSDMOFLT5	<--	4607	2066	676		
	*****							
	*P2, D+PC (A),	*						167 00000001000
	*P3, FPA+D (B ADDR),	*						1111 00 10 10 01 111 000 0100 0
	*NEXT, BUTR(SERVICE),	*						00000 011100 10000 111000010
	* J/FETO1	*						
	* J/FETO3	* -->	00 700	3	11			
	* J/SERO1	* -->	01 701	385	160			
	* J/FETO1	* -->	10 702	1	2			
	* J/SERO2	* -->	11 703	387	162			
	*****							
.CASE	3 OF BMULFZ							
		F/MULFZ	<--	244	1243	404		
		F/MULDZ	<--	245	1244	404		
		F/ADDZ	<--	250	1246	405		
		F/LOADZ	<--	252	1248	405		
		F/SUBZ	<--	255	1252	407		
		F/CTANZ	<--	242	1254	407		
		F/STCPZ	<--	270	1269	411		
		F/DIVZ	<--	262	1283	416		
		F/HOTDMOSYNC	<--	165	1292	418		
		F/FSDMOFLT5	<--	4607	2066	676		
1294	HTDMOSYNC3:0175							
	*****							
	* DO INTERRUPT AND ABORT EXECUTION OF	*						175 00000001000
	* INSTRUCTION	*						0000 00 00 00 00 001 001 0000 0
	-----	*						11001 000000 11000 100101111
	*SELECT, FPP(ABORT),	*						
	*NEXT, J/HTDMOSYNCS	* -->	457	1296	420			
	*****							

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PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO. TAG: ADDRESS  
 .CASE 4 OF BMULFZ

SOURCE/DESTINATION OFST ADDR BOX PAGE MICROFICHE COORD CARD ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS UBF UPF

	F/MULEZ	<--	244	1243	404								
	F/HOLDZ	<--	245	1244	404								
	F/ADDZ	<--	250	1246	405								
	F/LOADZ	<--	252	1248	405								
	F/SUBZ	<--	255	1252	407								
	F/CTANZ	<--	242	1254	407								
	F/STCPZ	<--	270	1269	411								
	F/DIVZ	<--	262	1283	416								
	F/HTDMOSYNC	<--	165	1292	418								
1295	HTDMOSYNC4:0177	F/FSDMFLTS	<--	4607	2066	676							
	*****												
	* SIMULTANEOUS RECEPTION OF FPPACK AND												
	* SERVICE CLEAR COUNTER DO NOT ABORT												
	* FPP												
	-----												
	*P2,	D+PC (A),											
	*P3,	FPA+D (B ADDR),											
	*NEXT,	BUTR(SERVICE),											
		J/SER02											
		J/FET03	-->	00	700	3	11						
		J/SER01	-->	01	701	385	160						
		J/FET01	-->	10	702	1	2						
		J/SER02	-->	11	703	387	162						
	*****												
1296	HTDMOSYNC5:0457	F/HTDMOSYNC3	<--	175	1294	419							
	*****												
	* DEFER EXECUTION OF INSTRUCTION GO BACK												
	* UP PC AND SET T												
	* BIT												
	-----												
	*NEXT,	BUT(GO TO) PAGE+4,											
		J/FPPABORT10	-->	4741	2185	720							
	*****												

177  
 1111 00 10 10 01 111 000 0100 0  
 00000 011100 10000 111000011

457  
 0000 00 06 00 00 000 100 0000 0  
 00000 000000 11100 111100001

# N03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BHOTSYNC						
	F/STATUS	<-- 211 1259 409					
	F/STOREXP	<-- 264 1264 410					
	F/STOREXP0	<-- 265 1265 410					
	F/STOREXPX	<-- 266 1266 410					
	F/LDEXP	<-- 272 1272 412					
	F/LDEXP0M6	<-- 273 1273 413					
	F/LDEXPX	<-- 274 1274 413					
	F/STCT	<-- 267 1285 416					
	F/LDCTW7	<-- 4713 1863 602					
*****							
*	SUBROUTINE HOTSUNC	*					
	RETURN/STATUS	* --> -1 -1 -1					2 1 1
	RETURN/STEXPROT	* --> 401 1267 411					
	RETURN/STEXPROT	* --> 401 1267 411					
	RETURN/STEXPROT	* --> 401 1267 411					
	RETURN/LDEXPZH	* --> -1 -1 -1					2 1 1
	RETURN/LDEXP0M6W	* --> 373 1836 594					
	RETURN/LDEXPNZH	* --> 374 1837 594					
	RETURN/STCT2	* --> 440 1286 416					
	RETURN/LDCT2	* --> -1 -1 -1					2 1 1
*****							

```

1297 HOTSINC:4565
*****
#MASK
-----
----- GENERAL
#SYNCRONIZATION SUBROUTINE FOR
#INSTRUCTIONS FOR HOT FLOATING POINT NOTE
#ROUTINE DOES NOT SAVE PC FOR FPA TARGETS
*- HOTSINC -
#HOTSINC4
-----
#SELECT,   FPSCC(FPP),
#SELECT,   FPP(READ),FPSCC+DATA,FLPGO,
#P3,       MD+DATA,
#NEXT,     BUTR(SERVICE#FPPACK),
*          J/HOTSINC
BRANCHING-BUT USED WITH TAG NOT IDENTIFIED AS .CASE -- BOX 1297
*****

```

```

4565      010000001000
0000 11 10 00 00 001 000 0000 0
11101 100000 00111 101110101

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BHOTSYNC							
1298	HOTSYNC2:4567	F/STATUS F/IA608 F/HOTSYNC	(-- (-- (--	241 1259 409 3106 628 236 4565 1297 421				
	*****			4567				000000001000
	* SYNC				0000	00 00	00 01	000 000 0000 0
	*COMPLETE				11001	000000	11111	000 0000
	-----							
	*SELECT, EMIT,							
	*NEXT,							
	* BUT(RETURN)		--> W					
	*****							
.CASE	3 OF BSTFLT4							
1299	HOTSYNC3:4575	F/STFLT4	(--	4711 2119 696				
	*****			4575				000000001000
	*RETURN TO CALLER ABORT THE EXECUTION OF				0000	00 00	00 00	001 001 0000 0
	*INSTRUCTION				11001	000000	11000	111100001
	-----							
	*SELECT, FPP(ABORT),							
	*NEXT,							
	* J/FPPABORT10		-->	4741 2185 720				
	*****							
.CASE	4 OF BSTFLT4							
1300	HOTSYNC4:4577	F/STFLT4	(--	4711 2119 696				
	*****			4577				000000001000
	* ABORT EXECUTION OF INSTRUCTION AND GO				0000	00 00	00 00	001 001 0000 0
	*BACK UP PC				11001	000000	11000	111100001
	*FOR							
	-----							
	*SELECT, FPP(ABORT),							
	*NEXT,							
	* J/FPPABORT10		-->	4741 2185 720				
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
	.TOC " HOT FLOATING POINT SERVICE HANDLER ##FLPT##" .: THIS POINT IS ENTERED TO SERVICE HOT FLOATING POINT EXCEPTIONS .: HOT FLOATING POINT IS IN A WAIT STATE MONITORING THE ISSANCE .: OF A UNCON PATTERN GENERATED BY "SELECT, FPP(SERVICE)" .: AN EXCHANGE OF INFORMATION IS MADE DURING THIS SERVICE ROUTINE. .: HOT FLOATING POINT WILL PRESENT A CODE TO BE DECODED BY THE .: BASE MACHINE AS TO THE TYPE OF EXCEPTION THAT OCCURRED. BASE .: MACHINE WILL PRESENT THE FPSHI REGISTER RIGHT JUSTIFIED TO .: INFORM THE HOT FPP IF THE PARTICULAR TRAP IS ENABLED. .: .: IF THE PRIORITY OF THE PROCESSOR IS 7 AND THE INSTRUCTION .: REGISTER DOES NOT CONTAIN						

1301	HFPPSVC:1663	F/SER11	<--	1016	401	167	OF BSER11	1663	000000001000
	*****								
	#REEXECUTION		*					1000	00 00 10 01 010 010 0000 0
	-----*								
	*SELECT, PS,		*					11001	000000 11000 110001000
	*NEXT,		*						
	* J/HFPPSVC2		* --> VV						
	*****								
1302	HFPPSVC2:1610	F/HFPPSVC	<-- VV					1610	000000001000
	*****								
	#P2, MD+PS		*					0000	11 10 00 00 000 100 0000 0
	*NEXT, BUT(GO TO),PAGE+4,		*					00000	100000 11100 010000010
	* J/HFPPSVC3		* -->	4202	1303	424			
	*****								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
1303	HFPPSVC3:4202 ***** *P2 SR+MD * *NEXT, BUT(CLEAR FLAGS), * * J/HFPPSVC4 * *****	<--	1610 1302 423	4202	1010 00000	11 10 000000	00 00 11010	000 000 010000100	0010 0	0
1304	HFPPSVC4:4204 ***** * MASK TO ISOLATE PRIORITY * *FIELD * ----- *P3 MD+340 (BC), * *NEXT, * * J/HFPPSVC5 * *****	<-- VV		4204	0000 00010	10 00 100000	00 11 11000	100 000 010000110	0000 0	0
1305	HFPPSVC5:4206 ***** * ISOLATE * *PRIORITY * ----- *P2 D+NOT SR AND MD * *SETUP, TEST FOR FP INSTRUCTION, * *NEXT, * * J/HFPPSVC6 * *****	<-- VV		4206	0010 00000	11 10 000000	00 00 11000	000 101 010001000	0100 0	0
1306	HFPPSVC6:4210 ***** * CHECK 17 OPCODE TARGETS * *- * ----- *NEXT, BUTM(FP), * * J/HFPPSVC7 * *****	<-- VV	4626 1307 425	4210	0000 00000	00 00 000000	00 00 01100	000 101 110010110	0000 0	0



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	RIF	COUT	CLOCKS
		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	UPF			
1311	HFPPTRAP4:4214 ***** * RIGHT *JUSTIFY *-----* *P2, D+D SWAP, *NEXT, * J/HFPPTRAP3 *****	<--		4212 1310 425							
				4214	1111 00 00	01 01	000 000	0100 0	00000000	1000	
					00101 000000	11000	010001110				
1312	HFPPTRAP5:4216 ***** *FPSHI ISSUE ACKNOWLEDGEMENT OF FPP *SERVICE *-----* *SELECT, FPP(SERVICE), *NEXT, * J/HFPPTRAP5 *****	<-- VV									
				4216	0000 00 00	00 00	101 000	0000 0	00000000	1000	
					11001 000000	11000	010010000				
1313	HFPPTRAP6:4220 ***** * RETURN+HFPPTRAP7 *NEXT, BUT(GO TO) PAGE+2, * J/TPREAMBLE *****	<-- VV									
				4220	0100 00 01	00 10	010 010	0000 0	00000000	1000	
					00000 000000	11100	101100100				
					*****						
					2544 1969 637						
					*****						
					VV						
					4222 1314 426						
1314	HFPPTRAP7:4222 ***** * GO TO THE *PARTICULAR *-----* *NEXT, BUT(CASE), * J/4540 * UNDEFINED CASE * J/OPCODERR * J/ZERODIV * J/CONVTRAP * J/VTRAPS * J/UFLOTRAP * J/NZEROTRAP * J/MAINTTRAP *****										
				4222	0000 00 00	00 00	000 000	0000 0	00000000	1000	
					00000 000000	00000	101100000				
					1001 4541	1971	638				
					1010 4542	1974	639				
					1011 4543	1975	639				
					1100 4544	1981	641				
					1101 4545	1983	641				
					1110 4546	1985	642				
					1111 4547	1987	642				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BHPPPSVC7						
1315	FETO1F2:4233	F/HFPPSVC7 F/HFPPTRAP	(-- (--	4626 1307 425 4627 1308 425			
	*****						4233 000000001011
	*TARGETS - 001 - OPCODEERR 010 - ZERO DIV						1001 11 11 10 01 111 000 0101 0
	*100 - VTRAPS 101 - UFLOTRAP 110 -						10000 000110 11100 000000001
	*NZEROTRAP 111 - MAINTRAP PS PRIORITY IS						
	*HIGHEST (?) DEFER OPERATING ON HOTT FPP						
	*SERVICE REQUEST UNTIL PRIORITY LEVEL						
	*DROPS BELOW 7 FETCH NEXT						
	*INSTRUCTION						
	-----						
	*P1, BA+PC CURRENT MODE,						
	*P2, D+PC PLUS 2,						
	*P3, PC+D (A ADDR),						
	*P3, U, DATI CLKIR,						
	*NEXT, BUT(GO TO), PAGE+D,						
	* J/FETO2		-->	1 2 10			
	*****						
.TOC "	PAGE FOUR COPY OF FETO1						
.CASE	1 OF BTSTNZM6						
	F/TSTNZM6	(--		4636 1385 452			
	F/WARMDIS3	(--		4406 1994 645			
	F/WARMDIS4	(--		4407 1995 645			
	F/HOTDIS	(--		4447 1996 645			
	F/UVDIS3	(--		4643 1999 646			
	F/COIS	(--		4617 2000 646			
	F/NOTRAP	(--		4027 2008 649			
	F/FFLT8	(--		4102 2104 690			
	F/FFLT18	(--		4277 2114 693			
1316	FETO1F:4722						
	*****						4722 000000001011
	*P1, BA+PC CURRENT MODE,						1001 11 11 10 01 111 000 0101 0
	*P2, D+PC PLUS 2,						10000 000110 11100 000000001
	*P3, PC+D (A ADDR),						
	*P3, U, DATI CLKIR,						
	*NEXT, BUT(GO TO), PAGE+D,						
	* J/FETO2		-->	1 2 10			
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	MICROFICHE PAGE	COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT CLOCKS
.CASE	2 OF BTSTNZW6	F/TSTNZW6	<--	4636 1385 452					
		F/WARNDIS3	<--	4406 1994 645					
		F/WARNDIS4	<--	4407 1995 645					
		F/HOTDIS	<--	4447 1996 645					
		F/LVNDIS3	<--	4643 1999 646					
		F/CDIS	<--	4617 2000 646					
		F/NOTRAP	<--	4027 2008 649					
		F/FFLT8	<--	4102 2104 690					
1317	SER02F:4723	F/FFLT18	<--	4277 2114 693					
	*****								
	* CHECK IF THIS SHOULD BE BRAOS *								
	*****								
	-----*								
	* RETURN+SER04 *								
	*NEXT, BUT(GO TO),PAGE+0, *								
	* J/SER03 *								
	***** -->								
				*****					
				322 388 163					
				*****					
				W					
				21 394 165					

4723 0000 00 00 00 10 001 000 0000 0  
 00000 000000 11100 011010010

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIE COUT CLOCKS UPF
1318	WARM FLOATING POINT UCODE:- ##FLTPT## 1 OF BRESTCSP17 WFORK:0474	F/RESTCSP17	<--	646	2284	752		
	*****			474				000000001000
	* FROM BUT(INSTR I) WHEN FLOATING POINT			1010	10 11	00 00	011 000	0110 0
	* AND NOT HOT; FLOATING POINT DECODE IS			00010	011010	00011	011100000	
	* PERFORMED BY BUT(IR11#FLPROM<3:0>);							
	* FLOATING POINT DECODE ROM IS DIVIDED							
	* INTO THE FOLLOWING DECODE TARGETS - ;							
	* INPUT OUTPUT INSTRUCTION							
	* IR11=0 INSTRUCTION IR11=1;							
	* IR<10:3>#FD; :00 000 XXX X							
	* 00 SETCLASS STF1 :00 0XX XXX X							
	* 01 STATUS STF2 :00 1XX 000 X							
	* 02 CTAN#DMO DIV#DMO							
	-----							
	* P2, SR+MD(D) D+MD(D),							
	* P3, R(IR)+D (B ADDR),							
	* NEXT, BUTR(FLPDECODE),							
	* J/SETCLASSW		-->	00000	340	1320		431
	* J/STATUSW		-->	00001	341	1345		439
	* J/CTANZW		-->	00010	342	1360		444
	* J/CTANZW		-->	00011	343	1373		448
	* J/MULFZW		-->	00100	344	1404		457
	* J/MULDZW		-->	00101	345	1405		457
	* J/MULXW		-->	00110	346	1406		458
	* J/MODW		-->	00111	347	1479		481
	* J/ADDZW		-->	01000	350	1565		508
	* J/ADONZW		-->	01001	351	1566		509
	* J/LOADZW		-->	01010	352	1641		534
	* J/LOADSIXW		-->	01011	353	1648		536
	* J/LORONZW		-->	01100	354	1650		537
	* J/SUBZW		-->	01101	355	1567		509
	* J/SUBNZW		-->	01110	356	1568		509
	* J/CMPW		-->	01111	357	1656		539
	* J/STIW		-->	10000	360	1680		546
	* J/STZW		-->	10001	361	1681		547
	* J/DIVZW		-->	10010	362	1683		548
	* J/DIVNZW		-->	10011	363	1684		548
	* J/STOREXPW		-->	10100	364	1750		568
	* J/STOREXPDW		-->	10101	365	1751		569
	* J/STOREXPXW		-->	10110	366	1752		569
	* J/STCTW		-->	10111	367	1757		571
	* J/STCPZW		-->	11000	370	1803		584
	* J/STCPNZW		-->	11001	371	1806		585
	* J/LDEXPZW		-->	11010	372	1835		594
	* J/LDEXPDM6W		-->	11011	373	1836		594
	* J/LDEXPNZW		-->	11100	374	1837		594
	* J/LDCTZW		-->	11101	375	1856		600
	* J/LDCTNZW		-->	11110	376	1857		600
	* J/LDCPW1		-->	11111	377	1889		610
	*****							

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PAGE 430

BOX  
NO. TAG: ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1319	3 OF BRESTCSP17 WFORKNVALD:0476	F/RESTCSP17 <--	646 2284 752	476	1010 00000	11 10 010010	00 01 11100	000000001000 011 010 0110 0 110110010
	* SECONDARY ENTRY POINT INTO WFPP FROM * * INSTR 1 BRANCH WHERE CSP'S ARE NOT VALID * * SECOND ENTRY TO WFORK CSP NOT VALID GO * * RESTORE CSP FPP * * CONSTANTS * *-----*							
	*P2, D+MD, SR+MD, * *P3, R(IR)+D (A, ADDR) * *NEXT, BUT(GO TO), PAGE+2, * * J/RESTORECSP * -->		2662 2268 749					
.CASE 1320	1 OF BWFORK SETCLASSW:0340	F/SETCLASS3 <-- F/WFORK <--	207 1239 403 474 1318 429	340	0000 11001	10 00 100000	11 01 00101	000000001000 000 000 0000 0 011001001
	* THEN RETURN TO WFORK LABEL ENTRY INTO * * THIS POINT IS FROM WFORK OR SETCLASS3 * * INSTRUCTION EXECUTED ARE - * * SETF, SETD, SETI, SETL, LDUBRK, ILLEGAL * * INSTRUCTION DECODE TARGETS * * - * *-----*							
	*SELECT, FPS(READ), EMITCON+FPS, * *NEXT, BUTR(DM), * * J/SETFDW * -->		1001 311 1324 432					
	* J/ILLEGAL1 * -->		1011 313 1321 432					
	* J/ILLEGAL2 * -->		1101 315 1322 432					
	* J/ILLEGAL3 * -->		1111 317 1323 432					
	*-----*							

# M04

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA	ALU BUS SP UBF	EXTENSION RIF COUT CLOCKS
.CASE 1321	2 OF BSETCLASSW ILLEGAL1:0313 F/SETCLASSW	<--	340 1320 431	313	0100 00 10 11 00 00000 000000 11100	000000001000 001 010 0000 0 101100100
	*OOX - SETFDW 01X,10X,11X *ILLEGAL1-ILLEGAL3 ILLEGAL INSTRUCTION *GO TO *TRAPS ----- *NEXT, BUT(GO TO),PAGE+2, * RETURN+OPCODERR, * J/TPREAMBLE		--> 2544 1969 637			
.CASE 1322	3 OF BSETCLASSW ILLEGAL2:0315 F/SETCLASSW	<--	340 1320 431	315	0100 00 10 11 00 00000 000000 11100	000000001000 001 010 0000 0 101100100
	* ILLEGAL INSTRUCTION GO TO *TRAPS ----- *NEXT, BUT(GO TO),PAGE+2, * RETURN+OPCODERR, * J/TPREAMBLE		--> 2544 1969 637			
.CASE 1323	4 OF BSETCLASSW ILLEGAL3:0317 F/SETCLASSW	<--	340 1320 431	317	0100 00 10 11 00 00000 000000 11100	000000001000 001 010 0000 0 101100100
	* ILLEGAL INSTRUCTION GO TO *TRAPS ----- *NEXT, BUT(GO TO),PAGE+2, * RETURN+OPCODERR, * J/TPREAMBLE		--> 2544 1969 637			
.TOC "	SETL AND SETD AND RESERVED INSTRUCTIONS		##FLPT##			
.CASE 1324	1 OF BSETCLASSW SETFDW:0311 F/SETCLASSW	<--	340 1320 431	311	1010 10 00 00 00 01001 010110 11000	000000001000 110 000 0100 0 100110000
	*P2, D+EMITCON *P3, R(T1)+D (A ADDR), *NEXT, J/SETFD02		--> 460 1325 433			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
1325	SETFD02:0460	F/SETFDW	<--	311	1324	432			
	*****								
	* TARGETS								
	*--								
	-----								
	*SELECT, EMIT,								
	*NEXT, BUT(CASE),								
	* J/CFCC								
	* J/CFCC	* -->		0000	220	1326	433		
	* J/SETF	* -->		0001	221	1327	434		
	* J/SETI	* -->		0010	222	1328	434		
	* J/LDUBRK	* -->		0011	223	1330	435		
	* J/FPPMAINT1	* -->		0100	224	1331	435		
	* J/FPPMAINT2	* -->		0101	225	1332	435		
	* J/ILLTWO	* -->		0110	226	1333	436		
	* J/FPPMAINT3	* -->		0111	227	1334	436		
	* J/ILLTHREE	* -->		1000	230	1335	436		
	* J/SETD	* -->		1001	231	1336	436		
	* J/SETL	* -->		1010	232	1338	437		
	* J/ILLFOUR	* -->		1011	233	1340	437		
	* J/ILLFIVE	* -->		1100	234	1341	438		
	* J/ILLSIX	* -->		1101	235	1342	438		
	* J/ILLSEVEN	* -->		1110	236	1343	438		
	* J/ILLEIGHT	* -->		1111	237	1344	438		
	*****								
.TOC "	SETF, SETI, CFCC, LDUBRK AND RESERVED INSTRUCTIONS								
.CASE	1 OF BSETFD02								
1326	CFCC:0220	F/SETFD02	<-- VV						
	*****								
	*SR<3:0> 0000 - CFCC 0001 - SETF								
	*0010 - SETI 0011 - LDUBRK								
	*1000 - ILLTHREE 1001 - SETD 1010 - SETL								
	*1011 - ILLFOUR INSTRUCTION COPIES								
	*FLOATING POINT CONDITION CODES INTO PSW								
	*COPY								
	*FPSCC								
	-----								
	*SELECT, PS(CC),								
	*P3, PS(CC)+D,								
	*NEXT, BUTR(SERVICE),								
	* J/FETO1								
	* J/FETO3	* -->		00	700	3	11		
	* J/SERO1	* -->		01	701	385	160		
	* J/FETO1	* -->		10	702	1	2		
	* J/SERO2	* -->		11	703	387	162		
	*****								

460  
0000 00 00 00 01 000 000 0000 0  
11001 000000 00000 010010000

220  
1000 00 00 10 01 000 000 0000 0  
11011 000000 10000 111000010

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
CASE 1327	2 OF BSETFD02 SETF:0221	F/SETFD02	<-- 460 1325 433				
	***** *INSTRUCTION CLEARS FPS<07> IN FLOATING *POINT STATUS REGISTER *-----*						221 000000001000 0111 10 00 11 00 110 000 0100 0 00100 000000 11000 100111000
	*P2, D+R(T1) AND NOT SETDMASK, *NEXT, * J/SETDM2		--> 470 1337 437				
CASE 1328	3 OF BSETFD02 SETI:0222	F/SETFD02	<-- 460 1325 433				
	***** *INSTRUCTION CLEARS FPS<06> IN FLOATING *POINT STATUS REGISTER *-----*						222 000000001000 0000 10 00 00 01 000 000 0000 0 00010 100000 11000 100110001
	*P3, MD+SETLMASK, *NEXT, * J/SETI2		--> VV				
1329	SETI2:0461	F/SETI	<-- VV				
	***** *P2, D+R(T1) AND NOT MD, *NEXT, * J/SETDM2		--> 470 1337 437				461 000000001000 0111 11 10 11 00 110 000 0100 0 00000 000000 11000 100111000

# C05

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS	
								RIF	COUT		
.CASE 1330	4 OF BSETFD02	F/SETFD02	<--	460	1325	433					
	LDUBRK:0223										
	*****										
	* LOAD HOT FPP UBREAK REGISTER IN THE										
	* FLOATING POINT PROCESSOR :- IF EXECUTED										
	* BY WARM FLOATING POINT, NO ACTION IS										
	* TAKEN SOURCE OF ADDRESS IS FROM GENERAL										
	* REGISTER										
	*3										
	*****										
-----											
	*P2, D+R3 (A), FLPGO,										
	*NEXT, BUTR(SERVICE),										
	* J/FETO1										
		J/FETO3	-->	00	700	3	11				
		J/SERO1	-->	01	701	385	160				
		J/FETO1	-->	10	702	1	2				
		J/SERO2	-->	11	703	387	162				
*****											
.CASE 1331	5 OF BSETFD02	F/SETFD02	<--	460	1325	433					
	FPPMAINT1:0224										
	*****										
	* FLOATING POINT MAINTENANCE										
	* INSTRUCTION										
	-----										
		*NEXT, BUTR(SERVICE),									
		* J/FETO1									
			J/FETO3	-->	00	700	3	11			
			J/SERO1	-->	01	701	385	160			
		J/FETO1	-->	10	702	1	2				
		J/SERO2	-->	11	703	387	162				
*****											
.CASE 1332	6 OF BSETFD02	F/SETFD02	<--	460	1325	433					
	FPPMAINT2:0225										
	*****										
	* NEXT, BUTR(SERVICE),										
	* J/FETO1										
			J/FETO3	-->	00	700	3	11			
			J/SERO1	-->	01	701	385	160			
			J/FETO1	-->	10	702	1	2			
			J/SERO2	-->	11	703	387	162			
	*****										

ADDR	ALU BUS	BUSB SP	BUSA UBF	RIF	COUT	CLOCKS
223	1111	00 00	10 01	101 000	0100 0	00000001000
	11100	000000	10000	111000010		
224	0000	00 00	00 00	000 000	0000 0	00000001000
	00000	000000	10000	111000010		
225	0000	00 00	00 00	000 000	0000 0	00000001000
	00000	000000	10000	111000010		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
.CASE 1333	7 OF BSETFD02	F/SETFD02	<--	460 1325 433				
	ILLTWO:0226						000000001000	
	*NEXT, RETURN+OPCODERR, PAGE+2, BUT(GO TO) J/TPREAMBLE		-->	2544 1969 637	0100 00 10 11 00	000000 11100	001 010 0000 0	101100100
.CASE 1334	8 OF BSETFD02	F/SETFD02	<--	460 1325 433				
	FPPMAINT3:0227						000000001000	
	*P2, D+R4 FLPGO						1111 00 00 10 00	110 000 0100 0
	*NEXT, BUTR(SERVICE), J/FETO1						11100 000000 10000	111000010
	* J/FETO3		-->	00 700 3 11				
* J/SERO1		-->	01 701 385 160					
* J/FETO1		-->	10 702 1 2					
* J/SERO2		-->	11 703 387 162					
.CASE 1335	9 OF BSETFD02	F/SETFD02	<--	460 1325 433				
	ILLTHREE:0230						000000001000	
	* ILLEGAL INSTRUCTION GO TO TRAPS						0100 00 10 11 00	001 010 0000 0
*NEXT, BUT(GO TO) PAGE+2, RETURN+OPCODERR, J/TPREAMBLE		-->	2544 1969 637	000000 11100	101100100			
.CASE 1336	10 OF BSETFD02	F/SETFD02	<--	460 1325 433				
	SETD:0231						000000001000	
	*INSTRUCTION SETS FPS<07> IN FLOATNG *POINT STATUS REGISTER						1110 10 00 11 00	110 000 0100 0
*P2, D+R(T1) OR SETDMASK, *NEXT, J/SETDM2		-->	470 1337 437	00100 000000 11000	100111000			



# F05

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
							RIF UPF	COOT UPF	
.CASE 1341	13 OF BSETFD02 ILLFIVE:0234	F/SETFD02	<--	460 1325 433					
	*****								
	*NEXT, BUT(GO TO),PAGE+2,*								
	* RETURN+OPCODERR,*								
	* J/TPREAMBLE *		-->	2544 1969 637					
	*****								
	234			0100 00 10 11 00			000000001000		0000 0
				00000 000000 11100			101100100		
.CASE 1342	14 OF BSETFD02 ILLSIX:0235	F/SETFD02	<--	460 1325 433					
	*****								
	*NEXT, BUT(GO TO),PAGE+2,*								
	* RETURN+OPCODERR,*								
	* J/TPREAMBLE *		-->	2544 1969 637					
	*****								
	235			0100 00 10 11 00			000000001000		0000 0
				00000 000000 11100			101100100		
.CASE 1343	15 OF BSETFD02 ILLSEVEN:0236	F/SETFD02	<--	460 1325 433					
	*****								
	*NEXT, BUT(GO TO),PAGE+2,*								
	* RETURN+OPCODERR,*								
	* J/TPREAMBLE *		-->	2544 1969 637					
	*****								
	236			0100 00 10 11 00			000000001000		0000 0
				00000 000000 11100			101100100		
.CASE 1344	16 OF BSETFD02 ILLEIGHT:0237	F/SETFD02	<--	460 1325 433					
	*****								
	*NEXT, BUT(GO TO),PAGE+2,*								
	* RETURN+OPCODERR,*								
	* J/TPREAMBLE *		-->	2544 1969 637					
	*****								
	237			0100 00 10 11 00			000000001000		0000 0
				00000 000000 11100			101100100		



# G05

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
.CASE	2 OF BWFORK							
1345	STATUS: 0341	F/SETCLASS3 F/WFORK	<-- <--	207 474	1239 1318	403 429		
	*IR(7:6)							341 00000001000
	*SELECT, FPS(READ),							0000 11 10 11 01 000 000 0000 0
	*P3, MD+FPS,							11001 100000 00100 101000100
	*NEXT, BUTR(IR07#IR06),							
	J/OS04							
	UNDEFINED CASE							
	J/LDFPS	-->		1001 505	1346	439		
	J/STFPS	-->		1010 506	1355	442		
	J/STST	-->		1011 507	1357	443		
	UNDEFINED CASE							
	UNDEFINED CASE							
	UNDEFINED CASE							
	UNDEFINED CASE							
.CASE	2 OF BSTATUSM							
1346	LDFPS: 0505	F/STATUSM	<-- VV					
	*01 LDFPS 10 STFPS 11 STST FETCH							505 0000 00 10 01 11 010 010 0000 0
	*OPERAND							00000 000000 11100 101101000
	*NEXT, CALL FETCHINT,							
	RETURN+LDFPS2							
	*****	-->		2550 2009 650				
	*****			VV				
				472 1347 439				
1347	LDFPS2: 0472							
	* USED TO SATISFY HOT FPP REQUIREMENT FOR							472 0000 00 00 00 01 000 000 0000 0
	*DOUBLE FLPGO IN STATUS							11101 000000 11000 100111011
	*CODE							
	*SELECT, EMIT, FLPGO,							
	*NEXT,							
	J/LDFPS3	-->		473 1348 440				

# H05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 440

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	EXTENSION	CLOCKS
1348	LDFPS3:0473	F/LDFPS2	<--	472 1347 439				
	*****							
	* CHECK IF KERNAL OR USER 0 - KERNAL -							
	*LDFPS6							
	-----							
	*P3, MD+147400,							
	*NEXT, BUTR(PS15),							
	* J/LDFPS6							
		J/LDFPS6	-->	10 162 1351 441				
		J/LDFPS4	-->	11 163 1349 440				
	*****							
.CASE	2 OF BLDFPS3							
1349	LDFPS4:0163	F/LDFPS3	<--	473 1348 440				
	*****	F/LDFPS5	<--	500 1350 440				
	*1 - USER - LDFPS4 CONSTANT TO MASK							
	*FMM							
	-----							
	*P3, EMITCON+147757,							
	*NEXT, J/LDFPS5							
			-->	VV				
	*****							
1350	LDFPS5:0500	F/LDFPS4	<--	VV				
	*****							
	* FMM IS							
	*REMOVED							
	-----							
	*P2, D+R(T2) AND EMITCON,							
	*P3, R(T2)+D (A ADDR),							
	*NEXT, J/LDFPS6							
			-->	162 1351 441				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BLDFPS3						
1351	LDFPS6:0162	F/LDFPS3 F/LDFPS5	<-- 473 1348 440 <-- 500 1350 440	162			011000001000 0000 00 00 00 01 100 000 0000 0 11011 000000 11000 101000010
	***** * LO BYTE OF FPS HAS BEEN LOADED IN * #FPSLO * -----*						
	*SELECT, FPS(WRITE), * *SELECT, FPSCC(DBUF), * *P3, FPS+D,FPSCC+DATA, * *NEXT, * * J/LDFPS7 --> VV						
1352	LDFPS7:0502	F/LDFPS6	<-- VV	502			000000001000 1011 11 10 01 01 000 000 0110 0 00000 000000 11000 101000100
	***** * MASK OUT LO BYTE OF NEW * #FPS * -----*						
	*P2, D+D AND MD,SR+D AND MD, * *NEXT, * * J/LDFPS8 --> VV						
1353	LDFPS8:0504	F/LDFPS7	<-- VV	504			000000001000 0111 10 11 11 00 011 000 0100 0 00111 001110 11000 101001000
	***** * GET RID OF OLD FPS * #HI * -----*						
	*P2, D+FPSHIFEC AND NOT HIBYTE MASK, * *P3, R(T3)+D (B ADDR), * *NEXT, * * J/LDFPS9 --> 510 1354 442						
	*****						

# J05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	F/LDFPSB	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COOT CLOCKS
1354	LDFPS9:0510	F/LDFPSB	<--	504 1353 441	510				000000001000
	*****								
	* INSERT NEW FPSHI FOR WRITE BACK								
	*****								
	-----								
	*P2, D+SR OR R(T3),								
	*P3, D+FPSHIFEC+D (A ADDR),								
	*NEXT, BUTR(SERVICE),								
	* J/FETO1								
		J/FETO3	-->	00 700 3 11					
		J/SERO1	-->	01 701 385 160					
		J/FETO1	-->	10 702 1 2					
		J/SERO2	-->	11 703 387 162					
	*****								
CASE 1355	3 OF BSTATUS	F/STATUSM	<--	341 1345 439	506				000000001000
	STFPS:0506	F/STATUSM	<--	341 1345 439					
	*****								
	* ISSUED TO SATISFY HFPP'S REQUIREMENTS								
	* IN ALL STATUS								
	* CODE								
	-----								
	* FLPGO,								
	*P2, D+FPSHIFEC,								
	*P3, R(T3)+D (B ADDR),								
	*NEXT, J/STFPS2		-->	VV					
	*****								
1356	STFPS2:0544	F/STFPS	<--	VV	544				000000111000
	*****								
	* MERGE FPSLO AND FPSHI GO TO STEXP5 TO								
	* CALL								
	* STOREINT								
	-----								
	*P2, D+MD,								
	*P3, R(T3)(LBYTE)+D (A ADDR),								
	*NEXT, BUT(GO TO),PAGE+1,								
	* J/STEXPS		-->	1622 1756 570					
	*****								

# K05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 443

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION		
								RIF	COUL	CLOCKS
1357	STST:0507 F/STATUSH	<--	341 1345 439	507				00000000	1000	
	*P2, D+FPSHIFEC AND NOT HIBYTE MASK, *				0111 10 11 11 00			011 001	0100 0	
	*P3, FDST3+D (B ADDR), *				00111 001010 11100			110001010		
	*NEXT, BUT(GO TO), PAGE+1, *									
	* J/STST2 *	-->	VV							
1358	STST2:1612 F/STST	<-- VV		1612				00000000	1000	
	*P2, D+R(FEA) *				1010 01 10 00 01			011 000	0100 0	
	*P3, FDST2+D (A ADDR), *				00000 000100 11000			110001100		
	*NEXT, *									
	* J/STST3 *	-->	VV							
1359	STST3:1614 F/STST2	<-- VV		1614				00000000	1000	
	*NEXT, CALL STOREINTLG, *				0000 00 00 00 00			011 100	0000 0	
	* RETURN+BRAS *				00000 000000 11100			110011010		
	***** -->		4632 2048 667							
			VV							
			3 283 126							

L05

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 444

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
---------	--------------	-----------------------------------	------	-----------------------	--------------	---------	----------	--------------------	--------

.TOC - FLOATING POINT CLEAR, TEST ABSOLUTE AND NEGATE

CTAN - CLEAR TEST ABSOLUTE, AND NEGATE  
DESCRIPTION OF INSTRUCTIONS:-  
=====

CLR CLEAR THE WHOLE WORD.  
NO INTERRUPTS WILL OCCUR.

TST SET THE CONDITION CODES.  
FIUV INTERRUPT, IF ENABLED, FOR DM NON ZERO,  
AFTER EXECUTION.  
DOES NOT CLEAN UP A DIRTY ZERO.

ABS CLEAR SIGN BIT.  
FIUV INTERRUPT, IF ENABLED, FOR DM NON ZERO,  
AFTER EXECUTION.  
CLEANS UP A DIRTY ZERO.

NEG INVERT THE SIGN BIT, UNLESS EXPONENT IS ZERO.  
FIUV INTERRUPT, IF ENABLED, FOR DM NON ZERO,  
AFTER EXECUTION.  
CLEANS UP A DIRTY ZERO.

.CASE 3 OF BWFORK

1360	CTANZW:0342	F/SETCLASS3	<--	207	1239	403			
		F/WFORK	<--	474	1318	429			
	*****								
	* FROM WFORK 0*011 TARGETS								
	*-----*								
	*NEXT,	BUTR(NOT DST REG 6-7),	*						
		J/CTANZW2	*						
		J/CTANZW2	* -->	10	122	1361	444		
		J/CTANZW3	* -->	11	123	1362	445		
	*****								

```

342
0000 00 00 00 00 000 000 0000 0
0000 000000 10001 001010010

```

.CASE 1 OF BCTANZW

1361	CTANZW2:0122	F/CTANZW	<-- VV						
	*****								
	*0 - CTANZW2 1 - CTANZW3 ILLEGAL								
	*INSTRUCTION								
	*-----*								
	*NEXT,	BUT(GO TO) PAGE+2,	*						
		RETURN+OPCODEERR,	*						
		J/TPREAMBLE	* -->	2544	1969	637			
	*****								

```

122
0100 00 10 11 00 001 010 0000 0
0000 000000 11100 101100100

```

# M05

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 445

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 1362	2 OF BCTANZW									
	CTANZW3:0123	F/CTANZW	<--	342	1360	444				
	*****									
	*NEXT, BUT(GO TO),PAGE+3,									
	* J/CTANZW3B		-->	VV						
*****										
1363	CTANZW3B:3663	F/CTANZW3	<--	VV						
	*****									
	* EXTRACT SIGN AND EXPONENT TARGETS									
	*IR<7:6>									
	*ARE:									
-----										
	*P2, D+FAC3(DF) AND SEXPMASK,									
	*NEXT, BUTR(IRO7#IRO6),									
	* J/CLRZW		-->	1100	3454	1364	445			
	* J/TSTZW		-->	1101	3455	1367	446			
	* J/ABSZW		-->	1110	3456	1368	447			
	* J/NEGZW		-->	1111	3457	1372	448			
*****										
.CASE 1364	1 OF BCTANZW3B									
	CLRZW:3454	F/CTANZW3B	<--	VV						
	*****									
	*00 CLRZW CLEAR 01 TSTZW TEST 10 ABSZW									
	*ABSOLUTE 11 NEGZW NEGATE CLEAR									
	*FAC3(DF) AND FAC2(DF) IF FLOATING GO TO									
	*CLRFZW									
-----										
	*P2, D+0,									
	*P3, FAC32(DF)+D (B ADDR),									
	*NEXT, BUTR(FD),									
	* J/CLRFZW		-->	10	3226	1365	446			
	* J/CLRDZW		-->	11	3227	1366	446			
*****										

```

123
0000 00 00 00 00 000 011 0000 0
0000 000000 11100 110110011
    
```

```

3663
1011 10 00 10 10 000 000 0100 0
00110 000000 00100 100101100
    
```

```

3454
0011 00 00 00 00 000 000 0100 0
00000 001110 10111 010010110
    
```

# N05

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
							RIF	COUT	
.CASE	1 OF BCLRZW								
1365	CLRFZW:3226	F/CLRZW F/CLRDZW F/ABSZW3	<-- <-- <--	3454 1364 445 3227 1366 446 3237 1370 447					
	***** *ELSE GO TO CLRDZW *-----* *NEXT,        BUT(GO TO),RETURN+BRAOS, *                PAGE+2, *                J/FCCHX2 *-----* *****								
							3226		00000001000 0000 00 00 00 00 011 010 0000 0 00000 000000 11100 000011010
.CASE	2 OF BCLRZW								
1366	CLRDZW:3227	F/CLRZW F/CLRDZW F/ABSZW3	<-- <-- <--	3454 1364 445 3227 1366 446 3237 1370 447					
	***** * CLEAR FAC1(DF) AND *FAC0(DF) *-----* *P2,            D+0 *P3,            FAC10(DF)+D (A ADDR), *NEXT, *                J/CLRFZW *-----* *****								
							3227		10000001000 0011 00 00 00 10 000 000 0100 0 00000 010110 11000 010010110
.CASE	2 OF BCTANZW38								
1367	TSTZW:3455	F/CTANZW38	<--	3663 1363 445					
	***** *GO TO CLRFZW TO LOAD FPS<3:0> WITH 0100 *-----* *NEXT,        BUT(GO TO),RETURN+BRAOS, *                PAGE+2, *                J/SETFZFN2 *-----* *****								
							3455		00000001000 0000 00 00 00 00 011 010 0000 0 00000 000000 11100 111011000



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUNT CLOCKS
.CASE 1368	3 OF BCTANZW38 ABSZW: 3456	F/CTANZW38 <--	3663 1363 445	3456				100000001000	
	* TARGETS - 0 -				0111	10 00	10 10	000 000	1100 0
	* ABSZW2				00101	000000	01101	010011101	
	* P3, D+(P3) FAC3(DF) * -SIGNBIT,								
	* NEXT, BUT(D(14-00) IS 0),								
	* J/ABSZW2								
		J/ABSZW2 -->	01 3235 1369 447						
		J/ABSZW3 -->	11 3237 1370 447						
.CASE 1369	1 OF BABSZW ABSZW2: 3235	F/ABSZW <-- F/NEGZW <--	3456 1368 447 3457 1372 448	3235				100000001000	
	* 1 - ABSZW3 STORE RESULT GO SET CC'S AND				0000	00 00	00 10	000 000	0000 0
	* EXIT				00000	000010	11000	110110100	
	* P3, FAC3(DF)+D (A ADDR),								
	* NEXT, J/ABSZW4								
		J/ABSZW4 -->	3664 1371 448						
.CASE 1370	2 OF BABSZW ABSZW3: 3237	F/ABSZW <-- F/NEGZW <--	3456 1368 447 3457 1372 448	3237				100000001000	
	* EXP IS				0011	00 00	00 10	000 000	0100 0
	* ZERO				00000	000110	10111	010010110	
	* P2, D+0,								
	* P3, FAC32(DF)+D (A ADDR),								
	* NEXT, BUTR(FD),								
	* J/CLRFZW								
		J/CLRFZW -->	10 3226 1365 446						
		J/CLRDZW -->	11 3227 1366 446						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
								OFST	ADDR
1371	ABSZM: 3664 F/ABSZM2	<--		3235	1369	447			
	***** * GET SIGN AND EXP AND GO SET *CC'S ----- *P2, D+(FAC3(DF) AND SEXPMASK, *NEXT, * J/TSTZM			3455	1367	446			
CASE 1372	4 OF BCTANZM3B NEGZM: 3457 F/CTANZM3B	<--		3663	1363	445			
	***** * TARGETS - 0 - *ABSZM2 ----- *P3, D+(P3) FAC3(DF) XOR SIGNBIT, *NEXT, BUT(D(14-00) IS 0), * J/ABSZM2			01 3235	1369	447			
	* J/ABSZM3	-->		11 3237	1370	447			
CASE 1373	4 OF BWFORK CTANZM: 0343 F/SETCLASS3 F/WFORK	<--		207	1239	403			
	***** *1 - ABSZM3 CTAN NON DESTINATION MODE *ZERO OPERATIONS - FROM WFORK AND *0#012 ----- *NEXT, BUT(GO TO), PAGE+2, * J/CTANZM2			474	1318	429			
	*****	-->		2112	1374	449			

ADDR	ALU	BUSB	BUSA	RIF	COUT	CLOCKS
3664	1011	10 00	10 10	000 000	0100 0	10000001000
	00110	000000	11000	100101101		
3457	0110	10 00	10 10	000 000	1100 0	10000001000
	00101	000000	01101	010011101		
343	0000	00 00	00 00	000 010	0000 0	00000001000
	00000	000000	11100	001001010		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
1374	CTANNZM2:2112	F/CTANNZ4 F/CTANNZM	<-- <--	2110 1258 408 343 1373 448					
	*****				2112			000000001000	
	* IR<7:6> TARGETS				0000	00 00	00 01	000 000	0000 0
	*-				11001	000000	00100	110101100	
	*-----*								
	*SELECT, EMIT								
	*NEXT, BUTR(IR07#IR06),								
	* J/CLRNZM								
		J/CLRNZM	-->	1100 2654 1375 449					
		J/TSTNZM	-->	1101 2655 1380 450					
		J/ABSNZM	-->	1110 2656 1387 452					
		J/NEGNZM	-->	1111 2657 1401 456					
	*****								
CASE 1375	1 OF BCTANNZM2 CLRNZM:2654	F/CTANNZM2	<-- VV						
	*****				2654			000000001000	
	*00 - CLEAR 01 - TEST 10 - ABSOLUTE 11 -				0011	00 00	00 01	011 000	0100 0
	*NEGATE STORE A ZERO WORD TO MEMORY.				00000	000110	11000	001001100	
	*FIRST SET FOST TO ZERO THEN CALL								
	*STOREFLT								
	*-----*								
	*P2, D+0								
	*P3, FOST32+D (A ADDR),								
	*NEXT, J/CLRNZM2		--> VV						
	*****								
1376	CLRNZM2:2114	F/CLRNZM	<-- VV						
	*****				2114			000000001000	
	*P2, D+0				0011	00 00	00 01	011 000	0100 0
	*P3, FOST10+D (A ADDR),				00000	010110	11000	001001101	
	*NEXT, J/CLRNZM3		-->	2115 1377 450					
	*****								



# F06

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION				
				ADDR ALU BUS	BUSB SP	BUSA UBF	RIF UPF	COUT CLOCK
1381	TSTNZW2:2122			2122				000000001000
	*P2, D+FDST3 AND SEXPMASK,			1011	10 00	10 01	011 000	0100 0
	*NEXT, J/TSTNZW3	--> VV		00110	000000	11000	001010100	
1382	TSTNZW3:2124	F/TSTNZW2	<-- VV	2124				000000001000
	* GO SET FCC'S THEN RETURN TO TSTNZW4 AND			0100	00 01	00 10	100 010	0000 0
	*TEST FOR NEG ZERO			00000	000000	11100	111011000	
	*FETCH							
	*NEXT, BUT(GO TO), PAGE+2,							
	* RETURN+TSTNZW4,							
	* J/SETFZF2	-->	2730 2324 769					
1383	TSTNZW4:4224			4224				000000001000
	* LOAD CONDITION SR WITH			1111	00 00	11 01	110 000	0010 0
	*CONDITION			00000	000000	11000	010010110	
	*P2, SR+R(T2A),							
	*NEXT, J/TSTNZW5	--> VV						
1384	TSTNZW5:4226	F/TSTNZW4	<-- VV	4226				000000001000
	*REGISTER CHECK ON POSSIBLE TRAP OF NEG			1111	00 00	11 00	011 000	0100 0
	*ZERO CONDITION			00000	000000	00000	110011110	
	*REG<00>							
	*P2, D+FPSHIFEC,							
	*NEXT, BUT(CASE),							
	* J/TSTNZW6	-->	1110 4636 1385 452					
	* J/TSTNZW7	-->	1111 4637 1386 452					

G06

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1385	1 OF BTSTNZW5 TSTNZW6:4636 F/TSTNZW5 ***** *SET IF NEG ZERO IS FETCHED BRANCH ON * *SR<00> TARGETS - 0 - TSTNZW6 1 - TSTNZW7 * * GO FETCH NEXT * *INSTRUCTION * -----* *NEXT, BUTR(SERVICE), * * J/FETOIF * * J/FETOIF * * J/SEROZF * *****	<-- 4226 1384 451		4636			000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 10000 111010010
.CASE 1386	2 OF BTSTNZW5 TSTNZW7:4637 F/TSTNZW5 ***** * GO TO TRAPS DUE TO NEG ZERO * *FETCH * -----* *NEXT, BUT(GO TO) PAGE+4, * * RETURN+BRAD5, * * J/NZERO4 * *****	<-- 4226 1384 451		4637			000000001000 0000 00 00 00 00 011 100 0000 0 00000 000000 11100 111100100
.CASE 1387	3 OF BCTANNZW2 ABSZNW:2656 F/CTANNZW2 ***** *NEXT, CALL FFLTDEFER, * * RETURN+ABSZNW2 * *****	<-- 2112 1374 449		2656			000000001000 0010 00 00 10 10 110 100 0000 0 00000 000000 11100 110001110
1388	ABSZNW2:2126 ***** *P2 D+FDST3 AND EXPMASK, * *NEXT, * * J/ABSZNW3 * *****	--> 10 4722 1316 427 --> 11 4723 1317 428					
		--> 4744 2195 724					
		--> 2126 1388 452					
		--> 2130 1389 453		2126			000000001000 1011 10 00 10 01 011 000 0100 0 01111 000000 11000 001011000

# H06

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE OFST ADDR BO PAGE	COORD CARD	ADDP ALU BUSB BUSA	ALU BUS SP UBF	EXTENSION RIF COUT CLOCKS
1389	ABSZNW3:2130	F/ABSZNW2	2126	1388	452		
	*****						
	* TARGETS - 0 -						
	* ANWRTBAK						
	-----						
	*P3, D+(P3) FDST3 * -SIGNBIT,						
	*NEXT, BUT(D(14-00) IS 0),						
	* J/ANWRTBAK						
		J/ANWRTBAK	01	2261	1390	453	
		J/ANWRTBAK2	11	2263	1391	453	
	*****						
.CASE	1 OF BABSZNW3						
1390	ANWRTBAK:2261	F/ABSZNW3	2130	1389	453		
		F/NEGNZW3	2151	1403	457		
	*****						
	*1 - ANWRTBAK2 R(WDADR) SAVED BY						
	*FETCHFLT EXP IS NOT						
	*ZERO						
	-----						
	*P1, BA+R(WDADR), CURRENT MODE,						
	*P3, U, DATO,						
	*ENABLE, KJ,						
	*NEXT,						
		J/ANWRTBAK11	2146	1400	456		
	*****						
.CASE	2 OF BABSZNW3						
1391	ANWRTBAK2:2263	F/ABSZNW3	2130	1389	453		
		F/NEGNZW3	2151	1403	457		
	*****						
	* CHECK ON IMMEDIATE ADDRESSING ZERO						
	*EXPONENT						
	*EXISTS						
	-----						
	*P2, D+SR, D(C)+ALU15,						
	*NEXT,						
		J/ANWRTBAK3	2131	1392	454		
	*****						

2130  
0111 10 00 10 01 011 000 1100 0  
00101 000000 01101 010110001

2261  
0000 00 00 11 00 110 000 0001 0  
10010 000000 11000 001100110

2263  
1111 00 00 00 00 000 100 0100 0  
00000 000000 11000 001011001

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR BUS	ALU BUS	BUSB SP	BUSA UPF	EXTENSION RIF COUT CLOCKS
1392	ANMRTBAK3:2131 ***** *A STORE OF AN EXACT ZERO WILL OCCUR *STORE EXACT ZERO TARGETS - 0 - *ANMRTBAK4 ----- *P1, BA+R(WDADR) CURRENT MODE, *P2, D+0, D(C)+D(C), *P3, U, DATO, *ENABLE, KJ, *NEXT, BUTR(D(C)), * J/ANMRTBAK4 * J/ANMRTBAK10 *****	<--	2263 1391 453	2131				000001001011 0011 00 00 11 00 110 111 0101 0 10010 000000 10011 001010001
.CASE 1393	1 OF BANMRTBAK3 ANMRTBAK4:2121 ***** *1 - ANMRTBAK10 NO IMMEDIATE ADDRESSING *ON FETCH OF OPERANDS TARGETS - F - *ANMRTBAK5 ----- *P2, SR+R(WDADR) PLUS 2, *NEXT, BUTR(FD), * J/ANMRTBAK5 * J/ANMRTBAK6 *****	<-- VV		2121				000000001000 1001 11 11 11 00 110 000 0010 0 00000 000000 10111 001000010
.CASE 1394	1 OF BANMRTBAK4 ANMRTBAK5:2102 ***** *0 - ANMRTBAK6 SINGLE PRECISION STORE *OPERATION ----- *P1, BA+SR, CURRENT MODE, *P2, D+0, *P3, U, DATO, *ENABLE, KJ, *NEXT, J/ANMRTBAK10 *****	<-- <--	2121 1393 454 2144 1398 455	2102				000001001011 0011 00 00 00 00 000 000 0101 0 10010 000000 11000 001010011
		-->	2123 1399 456					



# JOB

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE	2 OF BANWRTBAK4									
1395	ANWRTBAK6:2103	F/ANWRTBAK4 F/ANWRTBAK9	<-- <--	2121 1393 454 2144 1398 455						
	***** * DOUBLE PRECISION AND NOT IMMEDIATE * ADDRESSING *-----*									
	*P1, BA+SR, CURRENT MODE, * CURRENT MODE, *P2, D+0, *P3, U, DATO, *ENABLE, KJ, *NEXT, * J/ANWRTBAK7									
			-->	VV						
1396	ANWRTBAK7:2134	F/ANWRTBAK6	<-- VV							
	***** *P2, SR+SR PLUS 2, *NEXT, * J/ANWRTBAK8									
			-->	VV						
1397	ANWRTBAK8:2135	F/ANWRTBAK7	<-- VV							
	***** *P1, BA+SR, CURRENT MODE, *P2, D+0, *P3, U, DATO, *ENABLE, KJ, *NEXT, * J/ANWRTBAK9									
			-->	VV						
1398	ANWRTBAK9:2144	F/ANWRTBAK8	<-- VV							
	***** *P2, SR+SR PLUS 2, *NEXT, * J/ANWRTBAK5									
			-->		2102 1394 454					

```

2103
0011 00 00 00 00 000 000 0101 0
10010 000000 11000 001011100

```

```

2134
1001 11 11 00 00 000 000 0010 0
00000 000000 11000 001011101

```

```

2135
0011 00 00 00 00 000 000 0101 0
10010 000000 11000 001100100

```

```

2144
1001 11 11 00 00 000 000 0010 0
00000 000000 11000 001000010

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSI RIF COU UPF	CLOCKS
CASE 1399	2 OF BANMRTBAK3 ANMRTBAK10:2123 F/ANMRTBAK3	<--	2131 1392 454	2123	0100 00000	00 01 000000	00 10 11100	000000001000 100 010 0000 0 000011010	
	* AN EXACT ZERO WAS STORED INTO MEMORY GO * *SET FCC'S THEN RETURN TO TST FOR NEG * *ZERO * *TRAP * -----*								
	*NEXT, BUT(GO TO), RETURN+TSTNZW4, * PAGE+2, * J/FCCHEX2	-->	2032 2327 770						
1400	ANMRTBAK11:2146 F/ANMRTBAK	<--	2261 1390 453	2146	0000 00000	00 00 000000	00 00 11100	000000001000 011 010 0000 0 111011000	
	* POINT REACHED WHERE SIGN OPERATION AND * *EXPONENT WAS NOT ZERO GO SET * *FCC'S * -----*								
	*NEXT, BUT(GO TO), PAGE+2, * RETURN+BRADS, * J/SETFZFN2	-->	2730 2324 769						
CASE 1401	4 OF BCTANINZW2 NEGNZW:2657 F/CTANINZW2	<--	2112 1374 449	2657	0010 00000	00 00 000000	11 01 11100	000000001000 000 100 0000 0 110001110	
	*-----*								
	*NEXT, CALL FFLTDEFER, * RETURN+NEGNZW2	-->	***** 4616 2040 662 *****						
	-----*								
	* J/NEGNZW3	-->	WV 2150 1402 456						
1402	NEGNZW2:2150			2150	1011 01111	10 00 000000	10 01 11000	000000001000 011 000 0100 0 001101001	
	*P2 D+FDST3 AND EXPMASK, *NEXT, *-----*								
	* J/NEGNZW3	-->	2151 1403 457						

# L06

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX	MICROFICHE PAGE	COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA DEF	EXTENSION	
									R/E	C/OUT
1403	NEGNZW3:2151	F/NEGNZW2	<--	2150 1402 456	2151				00000000	1000
	* REVERSE SIGN					0110	10 00	10 01	011 000	1100 0
	*BIT					00101	000000	01101	010110001	
	*P3, D+(P3) FDST3 XOR SIGNBIT,									
	*NEXT, BUT(D(14-00) IS 0),									
	* J/ANWRTBAK									
	* J/ANWRTBAK		-->	01 2261 1390 453						
	* J/ANWRTBAK2		-->	11 2263 1391 453						
	*****									
.TOC =	FLOATING POINT MULTIPLICATION									
.CASE	5 OF BWFORK									
1404	MULFZW:0344	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429	344				00000000	1000
	* FROM FLPDECODE WHEN 0*02 ENTRY POINT					0010	00 00	11 01	010 100	0000 0
	*FOR SINGLE					00000	000000	11100	110001100	
	*AND									
	*NEXT, CALL FETCHFLT,									
	* RETURN+MULMODW									
	*****		-->	4614 2039 661						
	*****			VV						
				-1 -1 -1 0 1 1						
.CASE	6 OF BWFORK									
1405	MULDZW:0345	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429	345				00000000	1000
	*AND DMO					0010	00 00	11 01	010 100	0000 0
	*NEXT, CALL FETCHFLT,					00000	000000	11100	110001100	
	* RETURN+MULMODW									
	*****		-->	4614 2039 661						
	*****			VV						
				2152 1408 458						

M06

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 458

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
							RIF	COOT	
.CASE	7 OF BMFORK								
1406	MULXM:0346	F/SETCLASS3 F/DFORK	<-- <--	207 1239 403 474 1318 429					
	***** *NEW FLPDECODE DOES NOT REQUIRE FD ***** ENTRY POINT FOR MULF OR MULD *AND ----- *NEXT, CALL FETCHFLT, * RETURN+MULMODW *****								
			-->	4614 2039 661 ----- VV -1 -1 -1 @ 1 1					
346							00000001000		
							0010 00 00 11 01 010 100 0000 0 00000 000000 11100 110001100		
.CASE	1 OF BMFRAC12								
1407	MULFDW:2273	F/MFRAC12	<--	2225 1445 471					
	***** *-DND RETURN POINT FROM MFRAC FOR MUL *SET UP EXPONENT DELTA AND GO TO NROUND *TO LEFT-NORMALIZE RESET RES SETUP *FROM ----- *P2, D+1 *P3, R(TI)+D (A ADDR), *NEXT, BUTR(RESET RES); * J/NROUND26 *****								
			-->	2201 1931 623					
2273							00000001000		
							1010 11 00 00 00 110 000 0100 0 00000 010110 11010 010000001		
1408	MULMODW:2152								
	***** *MFRAC12 MULMODW ROUTINE SHARED BY *MODF/D AND MULF/D FLOATING POINT *INSTRUCTIONS ----- *NEXT, CALL EXPTST, * RETURN+MULMODW2 *****								
			-->	2621 2213 730 ----- VV 2154 1409 459					
2152							00000001000		
							0010 00 00 11 01 100 010 0000 0 00000 000000 11100 110010001		



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1412	MULMOD5:2117	F/MULMOD3	<--	2075 1410 459			2117 0000 00 00 00 00 000 000 0000 0 00000 000000 00100 001101011
	* RESULT IS ZERO CHECK IF MOD OR * *MUL * -----*						
	*NEXT, BUTR(IROB), * * J/MULMOD6 * * J/MULMOD7 * -----*			1011 2153 1413 460 1111 2157 1414 460			
.CASE 1413	MULMOD6:2153	F/MULMOD4 F/MULMOD5 F/ADDSFDFEZ	<-- <-- <--	2077 1411 459 2117 1412 460 4417 1582 514			2153 0011 00 00 00 11 000 000 0100 0 00000 000110 10111 000000110
	*TARGETS - 0 - MULMOD6 1 - MULMOD7 * *ALSO ENTERED BY WORDCMP6 TARGETS - 0 - * *MULMOD11 * -----*						
	*P2, D+0, * *P3, FAC32(SF)+D (A ADDR), * *NEXT, BUTR(FD), * * J/MULMOD11 * * J/MULMOD12 * -----*			10 2006 1418 462 11 2007 1419 462			
.CASE 1414	MULMOD7:2157	F/MULMOD4 F/MULMOD5 F/ADDSFDFEZ	<-- <-- <--	2077 1411 459 2117 1412 460 4417 1582 514			2157 0011 00 00 00 11 000 000 0100 0 00000 000110 10010 001101101
	*1 - MULMOD12 * -----*						
	*P2, D+0, * *P3, FAC32(SF)+D (A ADDR), * *NEXT, BUT(ROR1), * * J/MULMOD8 * -----*			2155 1415 461			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COOKD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								JPF
1415	MULMODW8:2155	F/MULMODW7		2157 1414 460				
	*****							
	* TARGETS							
	*-							
	-----							
	*P2, D+0							
	*P3, FAC32(SF+1)+D (A ADDR),							
	*NEXT, BUTR(FD)							
	* J/MULMODW9							
		J/MULMODW9		10 2002 1416 461				
		J/MULMODW10		11 2003 1417 461				
	*****							
CASE 1416	1 OF BMULMODW8							
	MULMODW9:2002	F/MULMODW8						
	*****							
	*0 - MULMODW9 1 - MULMODW10 GO SET							
	*CONDITION							
	-----							
	*NEXT, BUT(GO TO),RETURN+BRAOS,							
	* PAGE+2							
	* J/FCCHEX2			2032 2327 770				
	*****							
CASE 1417	2 OF BMULMODW8							
	MULMODW10:2003	F/MULMODW8		2155 1415 461				
	*****							
	*P2, D+0							
	*P3, FAC10(SF)+D (A ADDR),							
	*NEXT, BUT(ROR1)							
	* J/MULMODW12			2007 1419 462				
	*****							

ADDR	ALU	BUSB	BUSA	EXTENSION
	BUS	SP	UBF	RIF COUT CLOCKS
				JPF
2155				100000001000
	0011 00 00 00 11			000 000 0100 0
	00000 000110 10111			000000010
2002				000000001000
	0000 00 00 00 00			011 010 0000 0
	00000 000000 11100			000011010
2003				100000001000
	0011 00 00 00 11			000 000 0100 0
	00000 010110 10010			000000111

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COU' CLOCK'S UPF
.CASE	1 OF BMULMODW6						
		F/MULMODW6	(-- 2153 1413 460				
		F/MULMODW12	(-- 2007 1419 462				
		F/WORDCMP8	(-- 2673 1677 545				
		F/DIVFDW7	(-- 2355 1690 550				
1418	MULMODW11:2006	F/LDCPW7	(-- 2547 1895 611				
	*****						
	* GO SET CONDITON						2006 0000 00 00 00 00 011 010 0000 0
	*CODES						00000 000000 11100 000011010
	-----*						
	*NEXT, BUT(GO TO),RETURN+BRAS,						
	* PAGE+2,						
	* J/FCHEX2		--> 2032 2327 770				
	*****						
.CASE	2 OF BMULMODW6						
		F/MULMODW6	(-- 2153 1413 460				
		F/MULMODW12	(-- 2007 1419 462				
		F/WORDCMP8	(-- 2673 1677 545				
		F/DIVFDW7	(-- 2355 1690 550				
		F/LDCPW7	(-- 2547 1895 611				
1419	MULMODW12:2007						
	*****						
	* WHEN ENTERED BY MULMODW6						2007 0011 00 00 00 11 000 000 0100 0
	*FAC1(SF)-FAC0(SF) GETS						00000 010110 11000 000000110
	*CLEARED						
	-----*						
	*P2, D+0						
	*P3, FAC10(SF)+D (A ADDR),						
	*NEXT,						
	* J/MULMODW11		--> 2006 1418 462				
	*****						
.CASE	1 OF BMULMODW3						
1420	MULMODW13:2116	F/MULMODW3	(-- 2075 1410 459				
	*****						
	*WHEN ENTERED BY MULMODW10 FAC0(SF+1) -						2116 0010 00 00 11 01 110 010 0000 0
	*FAC1(SF+1) IS CLEARED ALSO ENTERED BY						00000 000000 11100 101111001
	*LDCPW9						
	-----*						
	*NEXT, CALL DATAPREP,						
	* RETURN+MULMODW14						
	*****		-->				
			2571 2196 725				
			VV				
			2156 1421 463				



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1421	MULMODW14:2156			2156	1111 00 10	10 01	101 000	0100 0
	*P2, D+CR2,				00000	001010	11000	001110000
	*P3, CR1+D' (B ADDR),							
	*NEXT, J/MULMODW15		--> VV					
1422	MULMODW15:2160	F/MULMODW14	<-- VV	2160	1001 01 11	11 00	110 000	0100 0
	* ADD				00000	000010	11010	001110001
	*EXONENTS							
	*P2, D+R(ES) PLUS R(ED),							
	*P3, R(ER)+D (A ADDR),							
	*NEXT, BUT(CLEAR FLAGS),							
	* J/MULMODW16		--> VV					
1423	MULMODW16:2161	F/MULMODW15	<-- VV	2161	1101 10 00	10 00	110 000	0100 0
	* REMOVE EXCESS 200 BIAS OF RESULT				00100	000010	00100	010101011
	*TARGETS							
	*-							
	*P2, D+R(ER) MINUS CNST200,							
	*P3, R(ER)+D (A ADDR),							
	*NEXT, BUTR(IROB),							
	* J/MFRAC							
	* J/MFRAC		--> 1011 2253 1433 467					
	* J/MULMODW17		--> 1111 2257 1424 464					

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1424	MULMODW17:2257	F/MULMODW16	<-- 2161 1423 463	2257			000000001000
	*0 - MFRAC 1 - MULMODW17 DO PREPARATION			1010	11 00	00 00	000 000 0010 0
	*STEPS FOR MOD INSTRUCTION TARGETS			00000	000000	10111	111010010
	*-----*						
	*P2, SR+1						
	*NEXT, BUTR(FD),						
	* J/MULMODW18						
	* J/MULMODW18		--> 10 2722 1425 464				
	* J/MULMODW24		--> 11 2723 1431 465				
.CASE 1425	MULMODW18:2722	F/MULMODW17	<-- VV	2722			000000001000
	*F - MULMODW18 D - MULMODW24 FLIP THE FD			0010	00 00	11 10	100 001 0000 0
	*BIT IN FPS			00000	000000	11100	110010011
	*REGISTER						
	*-----*						
	*NEXT, CALL FD-TOGGLE						
	* RETURN+MULMODW19						
	*-----*						
			--> *****				
			1623 2219 732				
			*****				
			VV				
			-1 -1 -1 0 1 1				
1426	MULMODW19:2164			2164			000000001000
	*SELECT, EMIT,			0000	00 00	00 01	000 000 0000 0
	*NEXT,			11001	000000	11000	001110101
	* J/MULMODW20		--> VV				
1427	MULMODW20:2165	F/MULMODW19	<-- VV	2165			000000001000
	* COUNT VALUE FOR MFRAC			1111	10 11	11 11	100 111 0000 0
	*SUBROUTINE			00010	100000	11000	001111000
	*-----*						
	*P3, MD+-31 (BC),						
	*NEXT,						
	* J/MULMODW21		--> 2170 1428 465				
	*-----*						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								UPF
1428	MULMOD21:2170 ***** * SETUP FOR REMEMBERING * STATE ----- * P2, D+0 SR+0 * P3, FAC10(SF)+D (A ADDR), * NEXT, * J/MULMOD22 *****	(--	2165 1427 464	2170	0011 00000	00 00 010110	00 11 11000	100000001000 000 000 0110 0 001111010
1429	MULMOD22:2172 ***** * OF FD BIT IN BA<00> PERFORM WORD SHIFT * TO PROVIDE * FASTER ----- * P2, D+FDST3, * P3, FDST1+D (B ADDR), * NEXT, * J/MULMOD23 *****	(-- VV		2172	1111 00000	00 11 011010	10 01 11000	000000001000 011 000 0100 0 010000000
1430	MULMOD23:2200 ***** * MULTIPLICATION FOR DOUBLE PRECISION ----- * P2, D+FDST2, * P3, FDST0+D (A ADDR), * NEXT, * J/MULMOD25 *****	(-- VV		2200	1010 00000	00 11 010100	00 01 11000	000000001000 011 000 0100 0 010000010
CASE 1431	2 OF BMULMOD17 MULMOD24:2723 ***** * COUNT FOR MFRAC * SUBROUTINE ----- * P3, MD+-71 (BC), * NEXT, * J/MULMOD25 *****	(--	2257 1424 464	2723	1111 00010	10 11 10000	11 11 11000	000000001000 000 111 0000 0 010000010
		(--	2202 1432 466					
		(--	2202 1432 466					



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION RIF COUT UPF	CLOCKS
.TOC = MULTIPLICATION FRACTION SUBROUTINE ##FLPT##								
MFRAC SUBROUTINE								
MFRAC MULTIPLICATION FRACTION PROCESSING SUBROUTINE -								
GENERATES FRACTION RESULT FOR SINGLE AND DOUBLE PRECISION.								
PRODUCES 24 BITS PLUS GUARD FOR SINGLE								
PRODUCES 56 BITS PLUS GUARD FOR DOUBLE								
RESULTS ARE ALWAYS NORMALIZED AND CR.UFLO IS UPDATED IF REQUIRED								
NOTE: MFRAC CALLS UPON THE FOLLOWING SUBROUTINES:								
RTSHFSF - SHIFT RIGHT SOURCE REGISTERS								
RTSHFDST - SHIFT RIGHT DESTINATION REGISTERS								
PARAMETERS FOR ENTRY:								
RETURN ADDRESS MUST HAVE BEEN LOADED IN R(RETURN)								
MULTIPLIER IS IN FAC3(SF) - FAC0(SF)								
MULTIPLICAND IS IN FDST3 - FDST0								
R(ER) CONTAINS RESULTANT BIASED EXPONENT (RIGHT JUSTIFIED)								
TEMPORARIES USED ARE:								
R(MAND3) - R(MAND0) LOCATED IN R(T1A),R(T1B),R(T2A),R(T2B)								
UPON EXIT:								
FRACTION PRODUCT IS IN FAC3(SF) - FAC0(SF)								
FRACTION REQUIRES AT MOST ONE RIGHT SHIFT FOR NORMALIZATION								
GUARD BITS ARE IN GUARD REGISTER								
RETURN IS TO THE CALLER								

```

CASE 1 OF BMULMODW16
1433 MFRAC:2253 F/MULMODW16 (--- 2161 1423 463
*****
#TO GENERATE FRACTION RESULT TARGETS - F *
#- *
#MFRACF *
#-----*
#P2, SR+FDST2, *
#NEXT, BUTR(FD), *
# J/MFRACF *
# J/MFRACF * --> 10 2402 1451 473
# J/MFRACD * --> 11 2403 1434 468
*****

```

```

2253 000000001000
1010 00 11 00 00 011 000 0010 0
00000 000000 10111 100000010

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
1434	MFRAC0:2403 F/MFRAC ***** #0 - MFRAC CONSTANT 57 FOR COUNTER FOR #DOUBLE #PRECISION ----- #P3, MD+-71 (BC), #NEXT, * J/MFRAC2 *****	<--	2253 1433 467	2403	1111 10 11 11 11 000 111 0000 0	00010 100000 11000 010000100	000000001000	
1435	MFRAC2:2204 F/MULMODM25 F/MFRACD ***** # LOAD SR WITH LO #MIER ----- #P2, SR+FDSTO, #NEXT, * J/MFRAC3 *****	<-- VV <-- VV	2202 1432 466	2204	1010 01 11 00 00 011 000 0010 0	00000 000000 11000 010000101	000000001000	
1436	MFRAC3:2205 F/MFRAC2 ***** # PUT -57. IN #COUNTER ----- # COUNTER+MD(D), #NEXT, * J/MFRAC4 *****	<-- VV		2205	0000 10 00 00 00 000 000 0000 0	00010 000101 11000 010000110	000000001000	
1437	MFRAC4:2206 F/MFRAC3 ***** # LOAD R(MAND) WITH #FAC(SF) ----- #P2, D+FAC3(SF), #P3, R(MAND3)+D' (B ADDR), #NEXT, * J/MFRAC5 *****	<-- VV -->	2207 1438 469	2206	1111 00 11 10 11 110 000 0100 0	00000 011100 11000 010000111	100000001000	

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
								RIF	COUT	CLOCKS	
1438	MFRAC5:2207	F/MFRAC4	<--	2206 1437 468	2207				100000001000		
	*P2, D+FAC2(SF),		*		1010	00 01	00 01	110 000	0100	0	
	*P3, R(MAND2)+D (A ADDR),		*		00000	010010	11000	010001000			
	*NEXT,		*								
	* J/MFRAC6		* --> VV								
1439	MFRAC6:2210	F/MFRAC5	<-- VV		2210				100000001000		
	*P2, D+FAC1(SF),		*		1111	00 10	11 11	110 000	0100	0	
	*P3, R(MAND1)+D (B ADDR),		*		00000	011100	11000	010001010			
	*NEXT,		*								
	* J/MFRAC7		* --> VV								
1440	MFRAC7:2212	F/MFRAC6	<-- VV		2212				100000001000		
	*P2, D+FAC0(SF),		*		1010	01 01	00 00	110 000	0100	0	
	*P3, R(MAND0)+D (A ADDR),		*		00000	010010	11000	010001100			
	*NEXT,		*								
	* J/MFRAC8		* --> VV								
1441	MFRAC8:2214	F/MFRAC7	<-- VV		2214				100000001000		
	* CLEAR THE ACCUMULATORS FOR		*		0011	00 00	00 11	000 000	0100	0	
	*DATA		*		00000	000110	11000	010001101			
	*-----*		*								
	*P2, D+D,		*								
	*P3, FAC32(SF)+D (A ADDR),		*								
	*NEXT,		*								
	* J/MFRAC9		* -->	2215 1442 470							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1442	MFRAC9:2215 ***** * CLEAR LOWER SET OF * * ACCUMULATORS * *-----* *P2, D+0 * *P3, FAC10(SF)+D (A ADDR), * *NEXT, * * J/MFRAC10 * *****	<--	2214 1441 469	2215	0011 0000	00 00 010110	00 11 11000	100000001000 000 000 0100 0 010010000
1443	MFRAC10:2220 ***** * FOR RTSHFDF BRANCH ON LO BIT OF MIER * * TARGETS: * *-----* *P3, MD+RESRIGHT * *NEXT, BUTR(SR00#COUNT IS -1), * * J/MFRAC11 * * J/MFRAC12 * * J/MFRAC13 * * UNDEFINED CASE * *****	<-- VV --> VV	100 2224 1444 470 101 2225 1445 471 110 2226 1446 471	2220	0010 0010	10 00 100000	00 00 01011	000000001000 000 000 0000 0 010010100
.CASE	1 OF BMFRAC10							
1444	MFRAC11:2224 ***** *00 MFRAC11 01 MFRAC12 10 MFRAC13 11 * *IMPOSSIBLE MIER BIT = 0 AND COUNT NOT * *SATISFIED * *-----* *NEXT, CALL RTSHFDF * * RETURN+MFRAC17 * *****	<-- <--	2220 1443 470 2230 1449 472	2224	0010 0000	00 01 000000	00 11 11100	000000001000 001 010 0000 0 111010000
		-->	2720 2306 761 W 2231 1450 472					





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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COU	
1448	MFRAC15:2227	F/MFRAC14	<--	2221	1447	471				
	*****			2227				10000000	1000	
	*P2,				0100	00 01	11 01	110 110	0100	0
	* D+D(C) PLUS R(MAND2) P				00000	001100	11000	010011000		
	* LUS FAC2(SF) D(C)+COUT15,									
	*P3, FAC2(SF)+D (B ADDR),									
	*NEXT,									
	* J/MFRAC16		--> VV							
1449	MFRAC16:2230	F/MFRAC15	<-- VV							
	*****			2230				10000000	1000	
	*P2,				0100	01 11	10 11	110 110	0100	0
	* D+FAC3(SF) PLUS R(MAND				00000	000010	11000	010010100		
	* 3) PLUS D(C) D(C)+COUT15,									
	*P3, FAC3(SF)+D (A ADDR),									
	*NEXT,									
	* J/MFRAC11		-->	2224	1444	470				
1450	MFRAC17:2231									
	*****			2231				00000000	01000	
	*NEXT, CALL RTSHFDST,				0010	00 01	00 10	000 010	0000	0
	* RETURN+MFRAC10				00000	000000	11100	111000110		
	*****									
				2706	2285	753				
				VV						
			-->	2220	1443	470				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	1 OF MFRAC	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	RIF	COUT CLOCKS
1451	MFRACF:2402	F/MFRAC	(--	2253	1433	467		
	*****			2402				100000001000
	* ;SINGLE PRECISION FRACTION GENERATION *			1010	00 01	00 01	110 000	0100 0
	*ROUTINE ;ROUTINE PRODUCES 24 FRACTION *			00000	010100	11000	010011100	
	*BITS PLUS GUARD ;BY GENERATING CROSS *							
	*PRODUCTS AND USING EIS ;INNER LOOP TO *							
	*PRODUCE INDIVIDUAL TERMS ; CROSS *							
	*PRODUCTS ARE - ; FOST2 * FAC2(SF) *							
	*FOST2 * FAC3(SF) ; FAC2(SF) * FOST3 *							
	*FAC3(SF) * FOST3 ;CROSS PRODUCT TERMS *							
	*ARE THEN SUPP'ED AND GUARD BIT ;SHIFTED *							
	*INTO THE GUARD REGISTER GENERATE *							
	*FAC2(SF)*FOST2 *							
	-----							
	*P2, D*FAC2(SF), *							
	*P3, R(T2B)+D (A ADDR), *							
	*NEXT, *							
	* J/MFRACF2 *	-->	W					
1452	MFRACF2:2234	F/MFRAC	(--	VV				
	*****			2234				000000001000
	* CALL EIS INNER *			0001	00 11	00 01	101 001	0000 0
	*LOOP *			00000	000000	11100	111001010	
	-----							
	*NEXT, CALL MULTLOOP, *							
	* RETURN+MFRACF2B *							
	*****	-->		*****				
				1712	2393	792		
				*****				
				W				
				1615	1453	473		
1453	MFRACF2B:1615							
	*****			1615				000000001000
	* REALIGN PRODUCT *			1001	11 01	01 10	000 000	0100 0
	*D(C)=0 *			00000	000000	11000	110001110	
	-----							
	*P2, D+D RIGHT 1 PLUS 0,D(C)+CIN, *							
	*NEXT, *							
	* J/MFRACF3 *	-->		1616	1454	474		
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1454	MFRACF3:1616 * CONSTANT FOR RIGHT SHIFT GUARD ENABLE * *AND COUNT * *7 * -----* *P3, MD+24371 (BC) * *NEXT, BUTR(RESET RES), * * J/MFRACF4 * --> VV	<--	1615 1453 473	1616	0010 00010	10 10 10000	00 11 11010	111 001 110010000	000000001000 0000 0
1455	MFRACF4:1620 * LOAD NEW MIER FOR FAC3(SF)*FDST2 CROSS * *PRODUCT * -----* *P2, SR+FDST3, RES+MD, COUNTER+MD, * *NEXT, * * J/MFRACF5 * --> VV	<-- VV		1620	1111 0000	11 10 010101	10 01 11000	011 000 110010001	000000001000 0010 0
1456	MFRACF5:1621 * ENTER AT MLOOP2B, WHICH ADDS THE * *CONTENTS OF D INTO THE * *PRODUCT * -----* *NEXT, CALL MULTLOOP3, * * RETURN+MFRACF6 * *-----* -->	<-- VV	***** 1713 2394 793 ***** VV -1 -1 -1 2 1 1	1621	0010 0000	00 01 00000	00 11 11100	101 001 111001011	000000001000 0000 0
1457	MFRACF6:2235 * REALIGN * *PRODUCT * -----* *P2, D+D RIGHT 1 SHIFT SR, * *P3, R(T1)+D (B ADDR), * *NEXT, BUTR(RESET RES), * * J/MFRACF7 * -->		2240 1458 475	2235	1111 0000	00 10 011110	01 10 11010	110 000 01010000	000000001000 0110 0

BOX NO.	TAG: ADDRESS	F/MFRACF#	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUS SP	BUS UPF	EXTENSION		
								RIF	COUT	CLOCKS
1458	MFRACF7:2240	F/MFRACF6	<--	2235 1457 474	2240			000000001000		
	*P2, D←F0ST2,	*				1010 00 11	00 00	011 000	0100 0	
	*NEXT,	*				00000	000000	11000	010100001	
	* J/MFRACF8	* --> VV								
1459	MFRACF8:2241	F/MFRACF7	<-- VV		2241			000000001000		
	* LOAD	*				0000 00 00	00 01	110 000	0000 0	
	*MIER	*				00000	010100	11000	010100010	
	*P3, R(T2B)←D (A ADDR),	*								
	*NEXT,	*								
	* J/MFRACF9	* --> VV								
1460	MFRACF9:2242	F/MFRACF8	<-- VV		2242			000000001000		
	* COUNTER GETS LO BYTE OF	*				1111 01 10	00 00	110 000	0100 0	
	*R(T1)	*				00000	000101	11000	010100100	
	*P2, D←SR, COUNTER←R(T1),	*								
	*NEXT,	*								
	* J/MFRACF10	* --> VV								
1461	MFRACF10:2244	F/MFRACF9	<-- VV		2244			000000001000		
	* MERGE BYTE	*				1111 00 00	01 01	000 000	0100 0	
	*TERMS	*				00111	000000	11000	010100101	
	*P2, D←COUNTER#D(HIBYTE),	*								
	*NEXT,	*								
	* J/MFRACF11	* -->		2245 1462 476						

BOX NO.	TAG: ADDRESS	F/MFRACF	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1462	MFRACF11:2245	F/MFRACF10	<--	2244 1461 475	2245			100000001000
	* LOAD NEW MIER TEST FOR * * INTERRUPT *							1111 11 10 10 11 000 000 0010 0 00000 010101 01100 110010011
	*P2, SR+ $FAC3(SF)$ , COUNTER+ $MD$ , RES+ $MD$ , * *NEXT, BUTR( $BG$ ) * * J/MFRACF12 *							
		J/LFSHFSF7	-->	011 2613 2230 736				
		J/LFSHFSF10	-->	111 2617 2234 737				
CASE 1463	1 OF MFRACF11 MFRACF12:2623	F/LFSHFSF6	<--	2632 2229 736	2623			100000001000
	* ABORT EXECUTION GO TO RESTART * * FLOWS *							1111 00 01 10 00 100 000 0100 0 00000 001010 11000 110011100
	*P2, D+ $FAC3(SAV)$ * *P3, $FAC3(SF)+D$ (B ADDR), * *NEXT, * * J/RESTART2 *							
		J/RESTART2	-->	2634 2245 742				
CASE 1464	2 OF MFRACF11 MFRACF12B:2627	F/LFSHFSF6	<--	2632 2229 736	2627			000000001000
	*NEXT, CALL MULTLOOP3, * * RETURN+MFRACF13 *							0010 00 01 01 00 110 001 0000 0 00000 000000 11100 111001011
			-->	1713 2394 793				
				2246 1465 476				
1465	MFRACF13:2246				2246			100000001000
	* REALIGN * * PRODUCT *							1111 00 01 01 10 000 000 0110 0 00000 001100 11010 010101000
	*P2, D+ $D$ RIGHT 1, SHIFT SR, * *P3, $FAC2(SF)+D$ (B ADDR), * *NEXT, BUTR(RESET RES), * * J/MFRACF14 *							
		J/MFRACF14	-->	2250 1466 477				

# F08

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE OFST ADDR BOX PAGE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
1466	MFRACF14:2250 ***** #P2, D+SR, #NEXT, * J/MFRACF15 *****	<--	2246 1465 476	2250	1111 00000	00 00 000000	00 00 11000	000 000 010101001	0100 0 0
1467	MFRACF15:2251 ***** # SAVE HIGHEST 2 BIT FOR #GUARD ----- #P2, D+D RIGHT 14, #P3, R(T2A)+D (B ADDR), #NEXT, * J/MFRACF16 *****	<-- VV		2251	1111 01110	00 11 011010	01 11 11000	110 000 010101010	0100 0 0
1468	MFRACF16:2252 ***** # LOAD NEW #MIER ----- #P2, D+FAC3(SF), #P3, R(T2B)+D (B ADDR), #NEXT, * J/MFRACF17 *****	<-- VV		2252	1111 00000	00 11 011100	10 11 11000	110 000 010101100	0100 0 0
1469	MFRACF17:2254 ***** #P2, D+R(T1) AND HIBYTE MASK, #NEXT, * J/MFRACF18 *****	<-- VV	2255 1470 478	2254	1011 00111	10 00 000000	11 00 11000	110 000 010101101	0100 0 0

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1470	MFRACF18:2255 ***** *P2, D=0 SWAP, *NEXT, * J/MFRACF19 *****	(--	2254 1469 477	2255	1111 00 00 00101 000000	01 01	000 000	0100 0 010101110
1471	MFRACF19:2256 ***** * LOAD LAST *MIER ----- *P2, SR=FDST3, RES=MD, COUNTER=MD, *NEXT, * J/MFRACF20 *****	(-- VV		2256	1111 11 10 00000 010101	10 01	011 000	0010 0 010110000
1472	MFRACF20:2260 ***** *NEXT, CALL MULTLOOP3 * RETURN=MFRACF21 *****	(-- VV	***** 1713 2394 793 ***** W 2262 1473 478	2260	0010 00 01 00000 000000	01 10	010 001	0000 0 111001011
1473	MFRACF21:2262 ***** * REALIGN *PRODUCT ----- *P2, D=0 RIGHT 1, SHIFT SP, *P3, FAC3(SF)=0 (B ADDR), *NEXT, BUTR(RESET RES), * J/MFRACF21B *****	(--	2264 1474 479	2262	1111 00 01 00000 001010	01 10	000 000	0110 0 010110100



# H08

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION		CLOCKS
					BUS	SP	UBF	RIF	COUT	
1474	MFRACF21B:2264	F/MFRACF21	<--	2262 1473 478	2264					00000001000
	* CLEAR OUT LO BYTE DUE TO 9 SHIFTS				1011	10 00	00 00	000 000	0010 0	
	*OF				00111	000000	11000	010110101		
	*P2, SR+SR AND HIBYTE MASK,									
	*NEXT, J/MFRACF22		-->	VV						
1475	MFRACF22:2265	F/MFRACF21B	<-- VV		2265					10000001000
	*THE SR OCCURS IN MLOOP3 AND MLOOP4 -				1001	00 01	00 00	000 110	0100 0	
	*WOULD CAUSE SR<07> = 1 IF D<00> = 1 UPON				00000	001100	11000	010110110		
	*INITIALLY ENTERING MLOOP									
	*P2, D+SR PLUS FAC2(SF),									
	* D(C)+COUT15,									
	*P3, FAC2(SF)+D (B ADDR),									
	*NEXT, J/MFRACF23		-->	VV						
1476	MFRACF23:2266	F/MFRACF22	<-- VV		2266					00000001000
	* GET GUARD BITS INTO SR AND ENABLE				1111	11 10	11 01	110 000	0010 0	
	*LOADING GUARD WITH RIGHT				00000	010001	11000	010110111		
	*SHIFTS									
	*P2, SR+R(T2A), RES+RD,									
	*NEXT, J/MFRACF24		-->	VV						
1477	MFRACF24:2267	F/MFRACF23	<-- VV		2267					10000001000
	* D(C) =				0100	11 01	10 11	000 110	0110 0	
	*0				00000	000010	11000	010111000		
	*P2, D+FAC3(SF) PLUS 0 PLUS D(C),									
	* D(C)+COUT15, SHIFT SR,									
	*P3, FAC3(SF)+D (A ADDR),									
	*NEXT, J/MFRACF25		-->	2270 1478 480						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1478	MFRACF25:2270	F/MFRACF24	<--	2267	1477	479		
	*****			2270				000000001000
	* SR IS IN SHIFT MODE TO ALIGN GUARD				1010	11 00	00 00	110 000 0110 0
	*BITS				00000	010110	11010	010000001
	-----*							
	*P2, D+1 SHIFT SR							
	*P3, R(T1)+D (A ADDR),							
	*NEXT, BUTR(RESET RES),							
	* J/MROUND26		-->	2201	1931	623		
	*****							

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC = MOD SPECIFIC INSTRUCTION PROPROCESSING ##FLPT##"							
:MOD SPECIFIC PROCESSING							
:INSTRUCTION SEPARATES INTEGER AND FRACTION INTO TWO FLOATING POINT FORMATTED NUMBERS							
:INSERTS INTEGER PORTION IN FAC(SF+1) AND FRACTION PORTION INTO FAC(SF) ACCUMULATORS							
:IF ODD ACCUMULATOR IS USED, ONLY THE FRACTION PORTION OF THE OPERATION IS KEPTED							
:INSTRUCTION FALLS INTO 5 CLASSES OF OPERATION AND ARE AS FOLLOWS							
CLASS 5 - PRODUCT PRODUCED AN UNDERFLOW							
FRACTION RESULTS IN FAC(SF) WITH THE EXPONENT OFF BY 400 OCTAL AND INTEGER PORTION IS EXACT ZERO IN FAC(SF+1)							
CLASS 4 - ABS(PROD) IS < 1 BUT NOT UNDERFLOWED							
FRACTION RESULTS IN FAC(SF) AND INTEGER IS = 0 IN FAC(SF+1)							
CLASS 3 - 1 < ABS(PROD) < 2**L WHERE L IS THE NUMBER OF BITS AVAILABLE FOR PRECISION AND ARE 24 FOR SINGLE PRECISION AND 56 BITS FOR DOUBLE PRECISION							
THIS IS THE ONLY CLASS WHERE THIS INSTRUCTION IS OF MOST VALUE. THE INTEGER RESULT IN FLOATING POINT FORMAT WILL BE IN FAC(SF+1) AND THE FRACTION NORMALIZED RESULT WILL BE IN FAC(SF)							
CLASS 2 - ABS(PROD) < 2**L BUT NOT OVERFLOW							
INTEGER RESULT WILL BE FAC(SF+1) AND FRACTION = 0 IN FAC(SF)							
CLASS 1 - ABS(PROD) PRODUCED AN OVERFLOW							
INTEGER RESULT OFF BY 400 OCTAL IN EXPONENT WILL BE IN FAC(SF+1) AND FRACTION = 0 IN FAC(SF)							

```

CASE 8 OF BWFORK
    F/SETCLASS3      <--      207 1239 403
    F/WFORK          <--      474 1318 429
    *****
    *NEXT,          CALL FETCHFLT,      *
    *                RETURN+MULMODW    *
    ***** -->
    *****
    VV
    2152 1408 458
    347
    0010 00 00 11 01 010 100 0000 0
    00000 000000 11100 110001100
  
```



# L08

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1483	1 OF B100W3C MOD4W:2125	F/MODW3C	<-- 2272 1482 482	2125			000000001000
	*0 - MOD4W 1 - MOD6W TEST IF PRODUCT IS *NORMALIZED UPDATE R(ER) DUE TO LEFT *SHIFT			1101 11 00 10 00 00000 000010 11010 0100 0			110 000 0100 0 010111100
	----- *P2, D+R(ER) MINUS 1, *P3, R(ER)+D (A ADDR), *NEXT, BUTR(RESET RES), * J/MOD5W		--> VV				
1484	MOD5W:2274	F/MOD4W	<-- VV	2274			000000001000
	*NEXT, CALL LEFTSHFSF, * RETURN+MOD6W			0010 00 00 10 10 00000 000000 11100 110010110			111 010 0000 0 110010110
	----- *P2, D+CRI D(C)+ALU15, *NEXT, BUTR(RESET RES), * J/MOD7W		--> VV				
.CASE 1485	2 OF B100W3C MOD6W:2127	F/MODW3C	<-- 2272 1482 482	2127			000000001000
	* REASSEBLE *SIGN			1111 00 00 10 00 00000 000000 11010 010111101			101 100 0100 0 010111101
	----- *P2, D+R(ER) AND NOT HIBYTE MASK, * D(C)+D(C), *NEXT, J/MOD8W		--> VV				
1486	MOD7W:2275	F/MOD6W	<-- VV	2275			000000001000
	*P2, D+R(ER) AND NOT HIBYTE MASK, * D(C)+D(C), *NEXT, J/MOD8W			0111 10 00 10 00 00111 000000 11000 010111110			110 111 0100 0 010111110
	----- *P2, D+R(ER) MINUS 1, *P3, R(ER)+D (A ADDR), *NEXT, BUTR(RESET RES), * J/MOD5W		--> VV				
	----- *P2, D+CRI D(C)+ALU15, *NEXT, BUTR(RESET RES), * J/MOD7W		--> VV				
	----- *P2, D+R(ER) AND NOT HIBYTE MASK, * D(C)+D(C), *NEXT, J/MOD8W		--> VV				

# M08

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION		CLOCKS
					BUS	SP	UBF	RIF	COU	
1487	MOD8W:2276	F/MOD7W	<--	2275 1486 483	2276					000000001000
	* GENERATE SIGN AND * EXPONENT				00101	001110	0110	01100000		0100 0
	*P2, D+D SWAP RIGHT 1, D(C)+D(C), *P3, R(T1)+D (B ADDR), *NEXT, J/MOD9W		--> VV							
1488	MOD9W:2300	F/MOD8W	<-- VV		2300					100000001000
	* REMOVE HIDDEN * BIT				0111	10 00	10 11	000 000		0100 0
	*P2, D+FAC3(SF) AND NOT HIDDENBIT, *P3, FAC3(SF)+D (A ADDR), *NEXT, J/MOD10W		--> VV		01111	000010	11000	011000010		
1489	MOD10W:2302	F/MOD9W	<-- VV		2302					100000001000
	* ASSEMBLE SIGN EXPONENT AND * FRACTION				1110	01 10	10 11	110 000		0100 0
	*P2, D+FAC3(SF) OR R(T1), *P3, FAC3(SF)+D (A ADDR), *NEXT, J/MOD11W		--> VV		00000	000010	11000	011000100		
1490	MOD11W:2304	F/MOD10W	<-- VV		2304					000000001000
	* D(C)=0				1011	10 00	10 00	110 000		0100 0
	*P2, D+R(ER) AND HIBYTE MASK, * D(C)+CIN, *NEXT, J/MOD12W		-->	2305 1491 485	00111	000000	11000	011000101		



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	RIF COUT	CLOCKS
1494	MOD15M:2073	F/MOD13M <--		2062	1492	485		
	*****			2073			000000001000	
	#0 - MOD16M 1 - MOD4CLSS 56 DECIMAL	*		0000	10 00	00 00	111 000	0000 0
	*TARGETS - 0 -	*		00010	100000	10011	010001001	
	*MOD16M	*						
	-----							
	*P3, MD+70 (BC),	*						
	*NEXT, BUTR(D(C)),	*						
	* J/MOD16M	* -->	01 2211	1495	486			
	* J/MOD4CLSS	* -->	11 2213	1552	504			
	*****							
1495	MOD16M:2211	F/MOD14M <--		2072	1493	485		
	*****			2211			000000001000	
	#1 - MOD4CLSS PERFORM FURTHER CLASS	*		1101	11 10	11 00	110 100	0100 0
	*DECODE	*		00000	000000	11000	011001000	
	-----							
	*P2, D+R(T1) MINUS MD,D(C)+ALU15,	*						
	*NEXT, J/MOD17M	* --> VV						
	*****							
1496	MOD17M:2310	F/MOD16M <--						
	*****			2310			000000001000	
	* TARGETS	*		1001	10 00	11 00	110 111	0100 0
	*-	*		01110	010110	10011	000010001	
	-----							
	*P2, D+R(T1) PLUS CNSTB,D(C)+D(C),	*						
	*P3, R(T1)+D (A ADDR),	*						
	*NEXT, BUTR(D(C)),	*						
	* J/MOD2CLSS	* -->	01 2021	1516	492			
	* J/MOD3CLSS	* -->	11 2023	1517	493			
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1497	MOD1CLSS:2060 F/MOD12W	<--	2305 1491 485	2060			000000001000
	*0 - MOD2CLASS 1 - MOD3CLASS				1111 00 00	11 00	011 000 0100 0
	----- CLASS 1 FOR MOD				00000 000000	11000	011001010
	*EXECUTION POINT REACHED WHERE						
	*MULTIPLICATION PRODUCED AN						
	*OVERFLOW						
	*P2, D+FPSHIFEC,						
	*NEXT, J/MOD1CLSS2	-->	VV				
1498	MOD1CLSS2:2312 F/MOD1CLSS	<--	VV	2312			000000001000
	* ALIGN FIV				1111 00 00	01 11	000 011 0100 0
	*BIT				00000 000000	11000	011001100
	-----						
	*P2, D+D RIGHT 2,D(C)+ALU07,						
	*NEXT, J/MOD1CLSS3	-->	VV				
1499	MOD1CLSS3:2314 F/MOD1CLSS2	<--	VV	2314			000000001000
	* SET OVERFLOW CONDITION BRANCH ON				1110 11 11	10 01	101 111 0100 0
	*CONDITION				00000 000010	10011	011000001
	-----						
	* SET CR2.OFLO,D(C)+D(C),						
	*NEXT, BUTR(D(C)),						
	* J/MOD1CLSS4	-->	01 2301 1500 488				
	* J/MOD1CLSS5	-->	11 2303 1502 488				
	-----						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1500	1 OF BMOD1CLSS3							
	MOD1CLSS4:2301	F/MOD1CLSS3	<--	2314 1499 487				
	*****							
	*ENABLED TARGETS - 0 - MOD1CLSS4 1 -							100000001000
	*MOD1CLSS6 INTERRUPT							0011 00 00 00 11 000 000 0100 0
	*DISABLED							00000 000110 10010 011001101
	-----							
	*P2, D+0							
	*P3, FAC32(SF)+D (A ADDR),							
	*NEXT, BUT(ROR1)							
* J/MOD1CLSS5		-->	VV					
*****								
1501	MOD1CLSS5:2315	F/MOD1CLSS4	<--	2301 1500 488				
	*****	F/MOD1CLSS4	<--	2421 1556 505				
	* TARGETS - 0 - F -							100000001000
	*MOD1CLSS18							0011 00 00 00 11 000 000 0100 0
	-----							00000 000110 10011 011011010
	*P2, D+0							
	*P3, FAC32(SF+1)+D (A ADDR),							
	*NEXT, BUTR(BA00)							
	* J/MOD1CLSS18		-->	10 2332 1514 492				
	* J/MOD1CLSS19		-->	11 2333 1515 492				
*****								
.CASE 1502	2 OF BMOD1CLSS3							
	MOD1CLSS6:2303	F/MOD1CLSS3	<--	2314 1499 487				
	*****							
	*1 - 0 - MOD1CLSS19 INTERRUPT IS ENABLED							100000001000
	*TRANSFER INTEGER TO							1111 00 00 10 11 000 000 0100 0
	*FAC(SF+1)							00000 000000 10010 011010000
	-----							
	*P2, D+FAC3(SF),							
	*NEXT, BUT(ROR1)							
	* J/MOD1CLSS7		-->	2320 1503 489				
*****								





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS	
1510	MOD1CLSS14:2331 ***** #P2, D=FAC0(SF), #NEXT, BUT(ROR1), # J/MOD1CLSS15 *****	F/MOD1CLSS13 (--	2330 1509 490	2331	1010 00000	01 01 000000	00 00 10010	000 000 011011100	100000001000 0100 0	
1511	MOD1CLSS15:2334 ***** #P3, FAC0(SF+1)+D (A ADDR), #NEXT, # J/MOD1CLSS16 *****	F/MOD1CLSS14 (-- VV		2334	0000 00000	00 00 010100	00 11 11000	000 000 011011101	100000001000 0000 0	
1512	MOD1CLSS16:2335 ***** # CLEAR OUT # ACCUMULATOR ----- #P2, D=0, #P3, FAC32(SF)+D (A ADDR), #NEXT, # J/MOD1CLSS17 *****	F/MOD1CLSS15 (-- VV		2335	0011 00000	00 00 000110	00 11 11000	000 000 011100000	100000001000 0100 0	
1513	MOD1CLSS17:2340 ***** # WHEN ENTERED FROM MOD1CLSS19 # FAC10(SF+1) IS # CLEARED ----- #P2, D=0, #P3, FAC10(SF)+D (A ADDR), #NEXT, BUT(GO TO), PAGE=2, # J/FINISH *****	F/MOD1CLSS16 F/MOD1CLSS19 (-- (--	2335 1512 491 2333 1515 492	2340	0011 00000	00 00 010110	00 11 11100	000 010 101100010	100000001000 0100 0	
			2542 1962 633							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA U&F	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BMOD1CLSS5						
1514	MOD1CLSS18:2332	F/MOD1CLSS5 F/MOD1CLSS9 F/MOD1CLSS11	(-- (-- (--	2315 1501 488 2717 1505 489 2306 1507 490			
	***** * REFLIP FD *BIT *-----* *NEXT, CALL FD-TOGGLE * RETURN+NRROUND2! *-----* *****						2332 000000001000 0010 00 10 10 00 110 001 0000 0 00000 000000 11100 110010011
				***** 1623 2219 732 ***** VV -1 -1 -1 2 1 1			
.CASE	2 OF BMOD1CLSS5						
1515	MOD1CLSS19:2333	F/MOD1CLSS5 F/MOD1CLSS9 F/MOD1CLSS11	(-- (-- (--	2315 1501 488 2717 1505 489 2306 1507 490			
	***** *P2, D+0 *P3, FAC10(SF)+D (A ADDR), *NEXT, BUT(ROR1) * J/MOD1CLSS17 *-----* *****						2333 100000001000 0011 00 00 00 11 000 000 0100 0 00000 010110 10010 011100000
.CASE	1 OF BMOD17W						
1516	MOD2CLSS:2021	F/MOD17W	(--	2310 1496 486			
	***** *-----* *----- POINT *REACHED WHERE CLASS 2 OPERATION OF MOD *IS EXECUTED OVERFLOW HAS NOT OCCURRED *BUT THE ABS(PROD) IS GREATER THAN *2*#L *-----* *P2, D+FAC3(SF), *NEXT, BUT(ROR1) * J/MOD1CLSS7 *-----* *****						2021 100000001000 1111 00 00 10 11 000 000 0100 0 00000 000000 10010 011010000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COU' CLOCKS
1517	MOO3CLSS:2023 F/MO017W	<--	2310 1496 486	2023			000000001000
	*-----*						
	*POINT REACHED*						
	*WHERE 1 < ABS(PROD) < 2**L INTEGER*						
	*SEPARATION OCCURS AND INTEGER S PLACED*						
	*IN FAC(SF+1) FRACTION BECOMES NORMALIZED*						
	*AND RESULT IS PLACED IN FAC(SF) SHIFT*						
	*RIGHT 4 FOR CHECK ON*						
	*WHICH*						
	*-----*						
	*P2, D+D RIGHT 4, SR+D RIGHT 4,*						
	*NEXT,*						
	* J/MO03CLSS2 --> VV						
1518	MOO3CLSS2:2341 F/MO03CLSS	<-- VV		2341			000000001000
	*-----*						
	*GET LO 4 BIT*						
	*MASK*						
	*-----*						
	*P3, MD+17 (BC),*						
	*NEXT,*						
	* J/MO03CLSS2B --> VV						
1519	MOO3CLSS2B:2342 F/MO03CLSS2	<-- VV		2342			000000001000
	*-----*						
	*SET INDICATOR TO RESTORE FAC(SF+1) IF*						
	*INSTRUCTION*						
	*GETS*						
	*-----*						
	*P2, D+CR2 OR CNSTB,*						
	*P3, CR2+D (A ADDR),*						
	*NEXT,*						
	* J/MO03CLSS3 -->		2343 1520 494				
	*-----*						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSB UBF	EXTENSION RIF COUT	CLOCK
1520	MOD3CLSS3:2343 ***** *ABORTED MASK IN LO 4 *BITS *-----* *P2, D+R(T1) AND MD *P3, R(T1)+D (A ADDR), *NEXT, BUT(ROR1), * J/MOD3CLSS3B *****	<--	2342 1519 493	2343				000000001000	
					1011 11 10 11 00 110 000 0100 0				
					00000 010110 10010 011100100				
1521	MOD3CLSS3B:2344 ***** * SAVE *FAC(SF+1) *-----* *P2, D+FAC3(SF+1), *P3, FDST3+D (B ADDR), *NEXT, BUT(ROR1), * J/MOD3CLSS3C *****	<-- VV		2344				100000001000	
					1111 00 11 10 11 011 000 0100 0				
					00000 001010 10010 011100101				
1522	MOD3CLSS3C:2345 ***** *P2, D+FAC2(SF+1), *P3, FDST2+D (A ADDR), *NEXT, BUT(ROR1), * J/MOD3CLSS3D *****	<-- VV		2345				100000001000	
					1010 00 01 00 01 011 000 0100 0				
					00000 000100 10010 011101000				
1523	MOD3CLSS3D:2350 ***** *P2, D+FAC1(SF+1), *P3, FDST1+D (B ADDR), *NEXT, BUT(ROR1), * J/MOD3CLSS3E *****	<-- VV		2350				100000001000	
					1111 00 11 11 11 011 000 0100 0				
					00000 011010 10010 011101010				
			2352 1524 495						





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
.CASE	1 OF BMOD3CLSS8								
1527	MOD3CLSS8:2000	F/MOD3CLSS6 F/MOD3CLSS8	<-- <--	2361 2000	1526 1527	495 496			
	*****								
	* WHEN COUNT SATISFIED GO TO								
	*MOD3CLSS9								
	-----								
	*P2, D+D RIGHT 1, D(C)+D(C),								
	*P3, R(T1)+D (B ADDR),								
	*NEXT, BUT(COUNT IS -1),								
	* J/MOD3CLSS8								
	* J/MOD3CLSS8		-->	0 2000	1527	496			
	* J/MOD3CLSS9		-->	1 2001	1528	496			
	*****								
.CASE	2 OF BMOD3CLSS8								
1528	MOD3CLSS9:2001	F/MOD3CLSS6 F/MOD3CLSS8	<-- <-- VV	2361	1526	495			
	*****								
	* CHECK ON EVEN OR ODD								
	*ACCUMULATOR								
	-----								
	*P3, MD+177777 (BC),								
	*NEXT, BUTR(IRD6)								
	* J/MOD3CLSS10								
	* J/MOD3CLSS10		-->	1110 2476	1529	496			
	* J/MOD3CLSS10B		-->	1111 2477	1530	497			
	*****								
.CASE	1 OF BMOD3CLSS9								
1529	MOD3CLSS10:2476	F/MOD3CLSS9	<-- VV						
	*****								
	*TARGETS - 0 - MOD3CLSS10 1 - MOD3CLSS10B								
	-----								
	*NEXT, BUT(ROR1),								
	* J/MOD3CLSS11		-->	2364	1531	497			
	*****								

2000  
1111 00 10 01 10 110 111 0100 0  
00000 011110 10101 000000000

2001  
1111 10 11 11 11 111 111 0000 0  
00010 100000 00100 100111110

2476  
0000 00 00 00 00 000 000 0000 0  
00000 000000 10010 011110100

# M09

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSB	BUSB	EXTENSION	CLOCK
1530	MOD3CLS108:2477	F/MOD3CLSS9	<--	2001	1528	496				
	*****									
	* BRANCH ON WORD TO BE									
	* MASKED									
	-----									
	*NEXT, BUT(CASE)	J/MOD3CLSS13	* -->	1100	2174	1533	498			
		J/MOD3CLSS14	* -->	1101	2175	1534	498			
		J/MOD3CLSS15	* -->	1110	2176	1535	499			
		J/MOD3CLSS16	* -->	1111	2177	1536	499			
	*****									
1531	MOD3CLSS11:2364	F/MOD3CLSS10	<--	2476	1529	496				
	*****									
	* BRANCH ON SR<1:0> TARGETS - 00 -									
	* MOD3CLSS13 01 - MOD3CLSS14 10 -									
	* MOD3CLSS15 11 - MOD3CLSS16									
	-----									
	*P2, D+0									
	*P3, FAC32(SF+1)+D (A ADDR),									
	*NEXT, BUT(ROR1)	J/MOD3CLSS12	* --> VV							
	*****									
1532	MOD3CLSS12:2365	F/MOD3CLSS11	<-- VV							
	*****									
	* BRANCH ON SR<1:0> TARGETS									
	* -									
	-----									
	*P2, D+0									
	*P3, FAC10(SF+1)+D (A ADDR),									
	*NEXT, BUT(CASE)	J/MOD3CLSS13	* -->	1100	2174	1533	498			
		J/MOD3CLSS14	* -->	1101	2175	1534	498			
		J/MOD3CLSS15	* -->	1110	2176	1535	499			
		J/MOD3CLSS16	* -->	1111	2177	1536	499			
	*****									

2477  
 0000 00 00 00 00 000 000 0000 0  
 00000 000000 00000 001111100

2364  
 0011 00 00 00 11 000 000 0100 0  
 00000 000110 10010 011110101

2365  
 0011 00 00 00 11 000 000 0100 0  
 00000 010110 00000 001111100

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1 OF BMOD3CLS108							
1533	MOD3CLSS13:2174	F/MOD3CLS108 F/MOD3CLSS12 F/MOD3CLSS25	<-- <-- <--	2477 1530 497 2365 1532 497 2374 1545 502			2174 100000001000 0111 01 10 10 11 110 000 0110 0 00000 000000 00100 110011110
***** *00 - MOD3CLSS13 01 - MOD3CLSS14 10 - * *MOD3CLSS15 11 - MOD3CLSS16 SEPARATE * *FRACTION CHECK ODD OR EVEN * *ACCUMULATOR * *-----*							
*P2, D+FAC3(SF) * NOT R(T1), * * SR+FAC3(SF) * NOT R(T1), * *NEXT, BUTR(IRD6) * * J/MOD3CLSS26 * * J/MOD3CLSS26 * --> 1110 2636 1546 502 * J/MOD3CLSS27 * --> 1111 2637 1547 502 *****							
.CASE 2 OF BMOD3CLS108							
1534	MOD3CLSS14:2175	F/MOD3CLS108 F/MOD3CLSS12 F/MOD3CLSS25	<-- <-- <--	2477 1530 497 2365 1532 497 2374 1545 502			2175 100000001000 0010 00 01 11 00 110 000 0110 0 00000 000000 00100 101111110
***** *TARGETS - 0 - MOD3CLSS26 1 - MOD3CLSS27 * *MASK FRACTION FOR IN 2ND WORD TARGETS - * *0 - * *MOD3CLSS23 * *-----*							
*P2, D+NOT R(T1) * FAC2(SF), * * SR+NOT R(T1) * FAC2(SF), * *NEXT, BUTR(IRD6) * * J/MOD3CLSS23 * * J/RTSHFSF8 * --> 1110 2567 2316 764 * J/RTSHFSF11 * --> 1111 2573 2319 765 *****							





# D10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 1541	2 OF B/M003CLSS15 M003CLSS21:2517	F/M003CLSS15	<--	2176 1535 499						
	* STORE FRACTION IF SF = *000									
	-----									
	*P2,            D+SR *P3,            FAC1(SF)+D (B ADDR), *NEXT, *                            J/M003CLSS22		-->	VV						
	*****									
1542	M003CLSS22:2371	F/M003CLSS21	<--	VV						
	*ELSE STORE INTEGER GENERATE *177777									
	-----									
	*P2,            D+MD *P3,            R(T1)+D (A ADDR), *NEXT, *                            J/M003CLSS14		-->	VV						
	*****									
.CASE 1543	1 OF R/M003CLSS14 M003CLSS23:2576	F/RTSHFSF7	<--	2417 2314 764						
	*P2,            SR+R(T1) * FAC2(SF), *P3,            FAC2(SF)+D (B ADDR), *NEXT,            BUT(ROR1) *                            J/M003CLSS24		-->	VV						
	*****									
.CASE 1544	2 OF B/M003CLSS14 M003CLSS24:2577	F/RTSHFSF7	<--	2417 2314 764						
	*P2,            D+SR *P3,            FAC2(SF)+D (B ADDR), *NEXT, *                            J/M003CLSS25		-->	VV						
	*****									

ADDR	ALU BUS	BUSB SP	BUSA UBF	RIF	COUT	CLOCKS
2517	1111 00 01 00 00	000 000	0100 0	10000000	1000	
	00000 011010 11000	011111001				
2371	1010 11 10 00 00	110 000	0100 0	00000000	1000	
	00000 010110 11000	001111101				
2576	1011 00 01 11 00	110 000	0010 0	10000000	1000	
	00000 001100 10010	101111111				
2577	1111 00 01 00 00	000 000	0100 0	10000000	1000	
	00000 001100 11000	011111100				

# E10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION					
				ADDR ALU BUS	BUSB SP	BUSA UBF	RIF UPF	COUT CLOCKS	
1545	MOD3CLSS25:2374 ***** * GENERATE *177777 *-----*	F/MOD3CLSS24 2577 1544 501	<--	2374	1010 11 10 00 00	0000 010110 11000	110 000 0100 0	000000001000	001111100
	*P2, D+MD *P3, R(T1)+D (A ADDR), *NEXT, J/MOD3CLSS13 *-----*		-->	2174 1533 498					
CASE 1546	1 OF BMOD3CLSS13 MOD3CLSS26:2636 ***** * GENERATE INTEGER STORE *FRACTION *-----*	F/MOD3CLSS13 2174 1533 498	<--	2636	1011 01 10 10 11	00000 000010 10010	110 000 0010 0	100000001000	100111111
	*P2, SR+FAC3(SF) * R(T1), *P3, FAC3(SF)+D (A ADDR), *NEXT, BUT(ROR1), * J/MOD3CLSS27 *-----*		--> VV						
CASE 1547	2 OF BMOD3CLSS13 MOD3CLSS27:2637 ***** * STORE FRACTION IF SF = 000 ELSE STORE *INTEGER *D(C)=0 *-----*	F/MOD3CLSS13 2174 1533 498	<--	2637	1001 10 01 00 00	00001 001010 10011	000 000 0100 0	100000001000	011110010
	*P2, D+SR PLUS 0(D), D(C)+CIN, *P3, FAC3(SF)+D (B ADDR), *NEXT, BUTR(BA00), * J/NROUND *-----*		-->	11 2362 1906 615					



# F10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COOT CLOCKS
.CASE	2 OF BM003CLSS27							
1548	M003CLSS28:2363	F/M003CLSS27 F/LDCTW27 F/LDCTW31	<-- <-- <--	2637 4341 4532	1547 1884 1888	502 608 609		
	***** *TARGETS - 0 - NROUND 1 - M003CLSS28 *DECREMENT EXP BY THREE *D(C)=0 *-----* *P2, D+R(ER) PLUS NOT 2 PLUS D(C), *P3, R(ER)+D (A ADDR), *NEXT, * J/M003CLSS29 *****			2363				000000001000 0101 11 11 10 00 110 000 0100 0 00000 000010 11000 011111101
1549	M003CLSS29:2375	F/M003CLSS28	<-- VV					
	***** *NEXT, CALL LEFTSHFSF * RETURN+M003CLSS30 *****			2375				000000001000 0010 00 10 00 00 000 010 0000 0 00000 000000 11100 110010110
	***** *-----* *P2, D+R(ER) PLUS NOT 2 PLUS D(C), *P3, R(ER)+D (A ADDR), *NEXT, * J/M003CLSS29 *****			2626 2223 734 VW 2400 1550 503				
1550	M003CLSS30:2400							
	***** *NEXT, CALL LEFTSHFSF * RETURN+M003CLSS31 *****			2400				000000001000 0010 00 10 00 00 001 010 0000 0 00000 000000 11100 110010110
	***** *-----* *P2, D+R(ER) PLUS NOT 2 PLUS D(C), *P3, R(ER)+D (A ADDR), *NEXT, * J/M003CLSS29 *****			2626 2223 734 VW 2401 1551 503				
1551	M003CLSS31:2401							
	***** * GO TO NORMALIZATION *ROUTINE *-----* *NEXT, CALL LEFTSHFSF, * RETURN+NROUND *****			2401				000000001000 0010 00 01 11 10 010 010 0000 0 00000 000000 11100 110010110
	***** *-----* *P2, D+R(ER) PLUS NOT 2 PLUS D(C), *P3, R(ER)+D (A ADDR), *NEXT, * J/M003CLSS29 *****			2626 2223 734 VW -1 -1 -1 2 1 1				

# G10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								UPF
1552	MOD4CLASS:2213	F/MOD14W F/MOD15W	<-- <--	2072 2073	1493 1494	485 486		
	*****							
	----- POINT OF ENTRY -----							
	*WHERE CLASS 4 MOD OPERATIONS ARE PERFORMED ABS(PROD) < 1 AND UNDERFLOW HAS NOT OCCURRED RE-SEPARATE FRACTION AND EXPONENT							
	*P2, D+FAC3(SF) OR HIDDENBIT, *P3, FAC3(SF)+D (A ADDR), *NEXT, J/MOD5CLSS5B							
			-->	2410	1558	506		
	*****							
.CASE 1553	MOD5CLSS:2061	F/MOD12W	<--	2305	1491	485		
	*****							
	----- POINT REACHED -----							
	*WHERE ABS(PROD) PRODUCED AN UNDERFLOW EXPONENT IS OFF BY 400 OCTAL FAC(SF+1) = 0 FAC(SF) HOLD THE FRACTION *RESULT							
	*P2, D+FPSHIFEC, *NEXT, J/MOD5CLSS2							
			--> VV					
	*****							
1554	MOD5CLSS2:2404	F/MOD5CLSS	<-- VV					
	*****							
	* SET UP TO LOOK AT FIU *BIT							
	*P2, D+D RIGHT 3,D(C)+ALU07, *NEXT, J/MOD5CLSS3							
			-->	2405	1555	505		
	*****							

```

2213      100000001000
          1110 10 00 10 11 000 000 0100 0
          00100 000010 11000 100001000
    
```

```

2061      000000001000
          1111 00 00 11 00 011 000 0100 0
          00000 000000 11000 100000100
    
```

```

2404      000000001000
          1111 00 00 01 00 000 011 0100 0
          01000 000000 11000 100000101
    
```

# H10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION			
				ADDR ALU BUS	BUSB SP	BUSA UBF	RIF COUT CLOCKS UPF
1555	MODSCLSS3:2405 ***** * BRANCH ON FIU BIT TARGETS * *- -----* * SET CR2.UFLO,D(C)+D(C), * *NEXT, BUTR(D(C)), * * J/MODSCLSS4 * * J/MODSCLSS4 * --> 01 2421 1556 505 * J/MODSCLSS5 * --> 11 2423 1557 505 *****	<--	2404 1554 504	2405	1110 10 00 10 01 101 111 0100 0 01100 000010 10011 100010001	000000001000	
CASE 1556	1 OF BMODSCLSS3 MODSCLSS4:2421 ***** *0 - MODSCLSS4 1 - MODSCLSS5 INTERRUPT * *IS DISABLED CLEAR THE ACCUMULATORS FINIS * *OFF * -----* *P2, D+0, * *P3, FAC32(SF)+D (A ADDR), * *NEXT, BUT(ROR1), * * J/MODSCLSS5 * --> 2315 1501 488 *****	<-- VV		2421	0011 00 00 00 11 000 000 0100 0 00000 000110 10010 011001101	100000001000	
CASE 1557	2 OF BMODSCLSS3 MODSCLSS5:2423 ***** *IN THE CLASS 1 OPERATIONS REINSERT THE * *HIDDEN BIT THAT WAS * *REMOVED * -----* *P2, D+FAC3(SF) OR HIDDENBIT, * *P3, FAC3(SF)+D (A ADDR), * *NEXT, * * J/MODSCLSS5B * --> 2410 1558 506 *****	<--	2405 1555 505	2423	1110 10 00 10 11 000 000 0100 0 00100 000010 11000 100001000	100000001000	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								UPF
1558	MOD5CLSS5B:2410	F/MOD4CLSS F/MOD5CLSS5	<-- <--	2213 2423	1552 1557	504 505		
	***** * INTERRUPT IS ENABLED REMOVE THE HI BYTE * * INSERTED PREVIOUSLY CHECK EVEN OR * *000 *-----*							2410 10000001000 0111 10 00 10 11 000 000 0100 0 00111 000010 00100 001011110
	*P2, D+0 *P3, FAC3(SF)+D (A ADDR), *NEXT, BUTR(I06), * J/MOD5CLSS6 * J/MOD5CLSS9			1110 1111	2136 2137	1559 1564	506 508	
.CASE	1 OF BMOD5CLSS5B							
1559	MOD5CLSS6:2136	F/MOD5CLSS5B	<-- VV					
	***** * ACCUMULATORS TARGETS - 0 - MOD5CLSS6 1 - * * MOD5CLSS9 EVEN ACCUMULATOR BEING * *USED *-----*							2136 00000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 10010 100001001
	*NEXT, BUT(R01), * J/MOD5CLSS7							<-- VV
1560	MOD5CLSS7:2411	F/MOD5CLSS6	<-- VV					
	***** * TARGETS- CLEAR OUT INTEGER F - * *MOD5CLSS7B *-----*							2411 10000001000 0011 00 00 00 11 000 000 0100 0 00000 000110 10011 010011010
	*P2, D+0 *P3, FAC32(SF+1)+D (A ADDR), *NEXT, BUTR(BA00), * J/MOD5CLSS7B * J/MOD5CLSS7C			10 11	2232 2233	1561 1562	507 507	
	*****							



# K10

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB ALU BUS SP	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
.CASE 1564	2 OF BMO05CLSS58 MO05CLSS9:2137	F/MO05CLSS58	<--	2410 1558 506				
	***** * GET BIT TO BE ROUNDED FOR SINGLE * PRECISION TARGETS *-----*						2137 100000001000 1111 00 00 11 11 000 100 0100 0 00000 000000 10011 101101010	
	*P2, D+FA1(SF), D(C)+ALU15, *NEXT, BUTR(BA00), * J/NROUND53							
		J/NROUND53	* -->	10 2552 1958 632				
		J/NROUND54	* -->	11 2553 1959 632				
	*****							
.TOC	" FLOATING POINT ADD AND SUBTRACT #FLPT#"							
:::ADD	172ACFSRC, SF(AC) PLUS DF(FSRC)							
:::SUB	173ACFSRC, SF(AC) MINUS DF(FSRC)							
:::ALTERNATE	REGISTERS FOR DOUBLE PRECISION A PLUS B							
:::REFER	TO START REGISTERS 2,3 FOR SINGLE PRECISION							
:::START	SF(AC) FAC3(SF), FAC2(SF), FAC1(SF), FAC0(SF)							
:::START	DF(FSRC) FDST3, FDST2, FDST1, FDST0							
:::ALTERNATE	REG FDST2, SR, FDST0, FDST3							
:::RESULTANT	FAC3(SF), FAC2(SF), FAC1(SF), FAC0(SF)							
.CASE 1565	9 OF BMFORK ADDZM:0350	F/SETCLASS3 F/MFORK	<-- <--	207 1239 403 474 1318 429				
	***** *0 - F - NROUND53 1 - D - NROUND54 ADD, *FLOATING POINT FETCH, MODE *0 *-----*							
	*NEXT, CALL FETCHFLT, * RETURN+ADDW01							
	*****							
				4614 2039 661			350 000000001000 0100 00 01 00 11 010 100 0000 0 00000 000000 11100 110001100	
				VV				
				4232 1570 510				

L10

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BOX NO.	TAG: ADDRESS	OFST ADDR	BOX	PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UB	EXTENSION RIF	COUT	CLOCKS
.CASE 1566	ADDNZH:0351											
	F/SETCLASS3		207	1239	403							
	F/WFORK		474	1318	429							
	*****											
	* ADD, FLOATING POINT											
	* FETCH											
	-----											
	* NEXT, CALL FETCHFLT,											
	* RETURN+ADDW01											
	***** -->											
			4614	2039	661							
			4232	1570	510							
.CASE 1567	SUBZWH:0355											
	F/SETCLASS3		207	1239	403							
	F/WFORK		474	1318	429							
	*****											
	* SUBTRACT, FLOATING POINT											
	* MODE											
	* 0											
	-----											
	* NEXT, CALL FETCHFLT,											
	* RETURN+SUBW01											
	***** -->											
			4614	2039	661							
			4230	1569	510							
.CASE 1568	SUBNZH:0356											
	F/SETCLASS3		207	1239	403							
	F/WFORK		474	1318	429							
	*****											
	* SUBTRACT, FLOATING POINT											
	* FETCH0											
	-----											
	* NEXT, CALL FETCHFLT,											
	* RETURN+SUBW01											
	***** -->											
			4614	2039	661							
			4230	1569	510							

ADDR	ALU BUS	BUSB SP	BUSA UB	EXTENSION RIF	COUT	CLOCKS
351				000000001000		
	0100 00 01 00 11		010 100 0000 0			
	00000 000000 11100		110001100			
355				000000001000		
	0100 00 01 00 11		000 100 0000 0			
	00000 000000 11100		110001100			
356				000000001000		
	0100 00 01 00 11		000 100 0000 0			
	00000 000000 11100		110001100			

# M10

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UZF	EXTENSION RIF COUT CLOCKS
1569	SUBW01:4230 ***** * CHANGE SIGN, DO * *ADD * -----* *P2, D+FDST3 XOR SIGNBIT, * *P3, FDST3+D (A ADDR), * *NEXT, * * J/ADDW01 * --> VV *****			4230	0110 00101	10 00 000010	10 01 11000	000000001000 011 000 0100 0 010011010
1570	ADDW01:4232 F/SUBW01 <-- VV ***** * CHECK FOR ZERO EXPONENT, EXP CODE IN SR * *(00) BOTH EXP NOT * *0 * -----* *NEXT, CALL EXPTST * * RETURN+ADDW02 * ***** -->		2621 2213 730 VV -1 -1 -1 0 1 1	4232	0100 00000	00 01 000000	00 11 11100	000000001000 100 010 0000 0 110010001
1571	ADDW02:4234 ***** *(01) SF EXP=0 (10) DF EXP=0 (11) BOTH * *EXP=0 * *BUT(CASE) CASE=SR03#SR02#SR01#SR00 * *TARGETS (0) ADDW03, BOTH EXPONENTS NOT * *ZERO * -----* *NEXT, BUTR(SR01#SR00), * * J/ADDW03 * * J/ADDW03 * --> 1100 4414 1572 511 * J/ADDSFEZ * --> 1101 4415 1580 513 * J/ADDFEZ * --> 1110 4416 1581 513 * J/ADDSDFEZ * --> 1111 4417 1582 514 *****			4234	0000 00000	00 00 000000	00 00 00000	000000001000 000 000 0000 0 100001100



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION R/F COUT	CLOCKS
1572	1 OF BADDW02 ADDW03:4414 ***** *(1) 0005FEZ, SF EXPONENT 0 (2) 000DFEZ, *OF EXPONENT 0 (3) 0005DFEZ, BOTH *EXPONENTS 0 SF(AC) SIGN IN *CRI *-----* *P2, D+FAC3(SF) AND SIGNBIT, *P3, CRI+D (B ADDR), *NEXT, * J/ADDW04 *****	<--	4234 1571 510	4414	1011 10 10 10 11	00101 001010 11000	101 000 0100 0	10000001000	0100 0
1573	ADDW04:4235 ***** * SAVE SIGNS, EXPONENTS,,,ADD HIDDEN *BITS EXPONENTS IN R(ES), *R(ED) *-----* *NEXT, CALL DATAPREP, * RETURN+ADDW05 *****	<-- VV -->	2571 2196 725 VV -1 -1 -1 0 1 1	4235	0100 00 01 01 00	00000 000000 11100	000 010 0000 0	00000001000	0000 0
1574	ADDW05:4240 ***** *EXIT D(C)=0 (LIKE SIGNS) EXIT D(C)=1 *(UNLIKE SIGNS) GUARDEN=4000, GUARD *ENABLE *-----* *P3, MD+4000, *NEXT, * J/ADDW06 *****	<-- VV -->		4240	0000 10 10 00 00	00010 100000 11000	000 000 0000 0	00000001000	0000 0
1575	ADDW06:4241 ***** * GUARD DIGIT=0 ON NEXT *CLOCKSR *-----* *P2, D+CR2, D(C)+ALU15, RES+MD, *NEXT, * J/ADDW07 *****	<-- VV -->		4241	1111 11 10 10 01	00000 010001 11000	101 100 0100 0	00000001000	0100 0
			4244 1576 512						



# C11

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 1579	2 OF BADDW08									
	DIFP:4333	F/ADDW08	(--	4245	1577	512				
	*****									
	*(1) SUNDGSGF, DF>SF, EXP DIF NEG									
	*SINGLE, DECIMAL 26 TEST SIGN TARGETS									
	*(0) DIFSFGDF, SF>DF, EXP DIF									
	*POS									
	-----									
	*P3, MD+32									
	*NEXT, BUTR(015)									
* J/DIFSFGDF										
* J/DIFDFGSGF										
*****										
4333										
0000 10 00 00 00 011 010 0000 0										
00010 100000 01101 110100110										
.CASE 1580	2 OF BADDW02									
	ADDSFEZ:4415	F/ADDW02	(--	4234	1571	510				
	*****									
	*(1) DIFDFGSGF, DF>SF, EXP DIF NEG									
	-----									
	*SF(AC) OR DF(FSRC) EXPONENTS EQUAL TO									
	*ZERO MOVE DF(FSRC) TO									
	*SF(AC)									
	-----									
	*NEXT, CALL MOVFDSTSF,									
* RETURN+LOADZM										
*****										
4415										
0011 00 01 00 10 010 100 0000 0										
00000 000000 11100 111100101										
*****										
4745 2235 738										
*****										
W										
3222 1645 535										
.CASE 1581	3 OF BADDW02									
	ADDSFEZ:4416	F/ADDW02	(--	4234	1571	510				
	*****									
	* CALL SETFZFN, ALL RESTOREGRS,									
	*FETO1									
	-----									
	*NEXT, BUT(GO TO), PAGE+3,									
	* J/LOADZM									
	*****									
	4416									
0000 00 00 00 00 000 011 0000 0										
00000 000000 11100 010010010										
*****										
3222 1645 535										

D11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSB UBF	EXTENSION		RIF COUT	CLOCKS
								UPF	UPF		
CASE 1582	4 OF BADD02	F/ADD02	<--	4234	1571	510					
	ADDSDFEZ: 4417						4417	0000	00 00	00 00	00000001000
	*****										
	#BOTH SF(AC) AND DF(FSRC) EXPONENTS EQUAL *										
	#TO ZERO RESET FAC32(SF) AND *										
	#FAC10(SF),,,,FD *										
	#DEPENDENT *										
	-----										
	*NEXT, BUT(GO TO),PAGE+2, *										
	* J/MULMODW6 *										
CASE 1583	2 OF BDIFP	F/DIFP	<--	4333	1579	513					
	DIFDFGSF: 4647						4647	0100	00 00	00 11	011 100 0000 0
	*****										
	#SF,,, EXPONENT DIFFERENCE NEGATIVE *										
	#DF>SF' 2'S COMP SMALLER *										
	#FRACTION *										
	-----										
	*NEXT, CALL SF2SCOMP *										
	* RETURN+SUMDFGSF *										
	*****										
CASE 1584	2 OF BSUMP	F/SUMP	<--	4033	1578	512					
	SUMDFGSF: 4033						4033	1101	01 11	10 00	110 000 0100 0
	*****										
	# UPDATE RESULTANT EXPONENT CIN=1 *										
	#BUT(FOVPSAVE H#FPS07) TARGETS (0) *										
	#ADD10, *										
	#SINGLE *										
	-----										
	*P2, D+R(ER) MINUS R(EDIFF), *										
	* D(C)+CIN, *										
*P3, R(ER)+D (A ADDR), *											
*NEXT, BUTR(FD), *											
* J/ADDW10 *											
* J/ADDW09 *											
*****											
* 10 4052 1589 516											
* 11 4053 1588 516											

E11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
CASE	OFST ADDR BOX	PAGE	COORD CARD	BUS	SP	UBF	RIF	COUT CLOCKS
1585	DIFSFGDF:4646 F/DIFP	<--	4333 1579 513	4646				000000001000
	*(1) ADDW09, DOUBLE			0100	00 00	00 11	010 100	0000 0
	----- SF )			00000	000000	11100	011001001	
	*DF, EXPONENT DIFFERENCE POSITIVE							
	*SF)DF, 2'S COMPLEMENT SMALLER							
	*FRACTION							
	*NEXT, CALL FDST2SC							
	* RETURN+SUMSFGDF	-->	*****					
	*****		4311 1634 532					
			*****					
			VV					
			4032 1586 515					
1586	SUMSFGDF:4032 F/SUMP	<--	4331 1578 512	4032				000000001000
	* 2'S COMP R(EDIFF) 0 TO SR			0011	00 00	00 00	000 010	0110 0
	*D(C)+0			00000	000000	11000	010101100	
	*P2, D+0, SR+0, GUARD+0, D(C)+ALU00,							
	*NEXT, J/SUMSFGDF 1	-->	VV					
1587	SUMSFGDF1:4254 F/SUMSFGDF	<--	VV	4254				000000001000
	* R(EDIFF) IS NEGATIVE RETAIN D(C)			1101	01 11	00 00	110 111	0100 0
	*BUT(FOVPSAVE H#FPS07) TARGETS (0)			00000	011110	10111	000101010	
	*ADDW10,							
	*SINGLE							
	*P2, D+SR MINUS R(EDIFF), D(C)+D(C),							
	*P3, R(EDIFF)+D (B ADDR),							
	*NEXT, BUTR(FD),							
	* J/ADDW10	-->	10 4052 1589 516					
	* J/ADDW09	-->	11 4053 1588 516					
	*****							

# F11

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
.CASE	2 OF BSUMDFGSF								
1588	ADDW09:4053	F/SUMDFGSF F/SUMSFGDF1 F/ADDW09	<-- <-- <--	4033 4254 4053	1584 1587 1588	514 515 516			
	***** *(1) ADDW09, DOUBLE ----- * *DOUBLE,,,DECIMAL *58 ----- * *P3, MD+72, *NEXT, * J/ADDW10 *****							4053	000000001000 0000 10 00 00 00 111 010 0000 0 00010 100000 11000 000101010
.CASE	1 OF BSUMDFGSF								
1589	ADDW10:4052	F/SUMDFGSF F/SUMSFGDF1 F/ADDW09	<-- <-- <-- VV	4033 4254	1584 1587	514 515			
	***** * BIG EXPONENT DIFFERENCE? RETAIN *D(C) ----- * *P2, D+R(EDIFF) PLUS MD,D(C)+D(C), *NEXT, * J/ADDW11 *****							4052	000000001000 1001 11 10 11 01 110 111 0100 0 00000 000000 11000 010101101
1590	ADDW11:4255	F/ADDW10	<-- VV						
	***** * BUT(D(14-00) IS 0 # D15) TARGETS (0) *ADDW12, SMALL EXP *DIFFERENCE ----- * *NEXT, BUTR(D15), * J/ADDW12 * J/ADDW12 * J/BIGEXPDIFF *****							4255	000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 0:101 101001010
				10 4512	1594	518			
				11 4513	1591	517			

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 1591	2 OF BADDW11 BIGEXPDI:4513	F/ADDW11	<--	4255	1590	516				
	***** *(1) BIGEXPDI, BIG EXP DIFFERENCE ----- *----- BIG *EXPONENT DIFFERENCE SF>DF OR DF>SF? *TARGETS (0) BIGEXPDI, SF>DF, BIG EXP *DIF ----- *NEXT, BUTR(D(C)), * J/BIGEXPDI * J/BIGEXPDI * J/BIGEXPDI GSF									
				01 4225	1593	517				
				11 4227	1592	517				
	*****									
.CASE 1592	2 OF BBIGEXPDI BIGEXPDI GSF:4227	F/BIGEXPDI	<-- VV							
	***** *(2) BIGEXPDI GSF, DF>SF, BIG EXP DIF MOVE *FDST TO *SF(AC) ----- *NEXT, CALL MOVFDSTSF, * RETURN+NROUND46 *****									
				4745	2235	738				
.CASE 1593	1 OF BBIGEXPDI BIGEXPDI:4225	F/BIGEXPDI	<--	4513	1591	517				
	***** *NEXT, BUT(GO TO),PAGE+2, * J/NROUND46 *****									
				2311	1951	630				

```

4513          000000001000
0000 00 00 00 00 000 000 0000 0
00000 000000 10011 010010101
    
```

```

4227          000000001000
0010 00 01 10 01 001 100 0000 0
00000 000000 1110C 111100101
    
```

```

4225          000000001000
0000 00 00 00 00 000 010 0000 0
00000 000000 11100 011001001
    
```





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1597	1 OF BADSHFSF ADDSHFSFF:4306	F/ADDHFSF	<--	4267 1596 518			
	***** *(1) ADDSHFSFD, DOUBLE SINGLE D(C) = *SIGN OF SF EXTRA COUNT TARGETS (0) *ADDHFSFF1, *SHIFT ----- *P2, D+FAC3(SF), D(C)+ALU15, * RES+RESRIGHTGO *NEXT, BUT(COUNT IS -1), * J/ADDHFSFF1 * J/ADDHFSFF1 * J/ADDHFSFF2 *****						4306 1111 10 00 10 11 000 100 0100 0 01000 010001 10101 000001000
				0 4010 1598 519			
				1 4011 1599 519			
.CASE 1598	1 OF BADSHFSFF ADDHFSFF1:4010	F/ADDHFSFF F/ADDHFSFF1	<-- <--	4306 1597 519 4010 1598 519			
	***** *(1) ADDHFSFF2, SHIFT END RIGHT SHIFT *RETAIN D(C) COUNT SHIFTS TARGETS (0) *ADDHFSFF1, KEEP *SHIFTING ----- *P2, D+D RIGHT 1, D(C)+D(C), * SHIFT SR *P3, FAC3(SF)+D (B ADDR), *NEXT, BUT(COUNT IS -1), * J/ADDHFSFF1 * J/ADDHFSFF1 * J/ADDHFSFF2 *****						4010 1111 00 01 01 10 000 111 0110 0 00000 001010 10101 000001000
				0 4010 1598 519			
				1 4011 1599 519			
.CASE 1599	2 OF BADSHFSFF ADDHFSFF2:4011	F/ADDHFSFF F/ADDHFSFF1	<-- <-- VV	4306 1597 519			
	***** *(1) ADDHFSFF2, SHIFT OVER RESTORE *FAC2(SF) ----- *P2, D+SR, *P3, FAC2(SF)+D (B ADDR), *NEXT, BUTR(RESET RES), * J/ADDW20A *****						4011 1111 00 01 00 00 000 000 0100 0 00000 001100 11010 000110001
				4061 1602 520			

J11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1600	2 OF BADDSHFSF						
	ADDSHFSFD:4307	F/ADDSHFSF	<--	4267 1596 518			
	*****						
	* DF>SF EXTRA COUNT, COUNT SHIFTS TARGETS *						
	* (0) ADDSHFSFD1, KEEP *						
	* SHIFTING *						
	-----						
	*P3, MD+24000 *						
	*NEXT, BUT(COUNT IS -1), *						
	* J/ADDSHFSFD1 *						
	J/ADDSHFSFD1	-->	0 4060 1601 520				
	J/ADDW20A	-->	1 4061 1602 520				
	*****						
.CASE 1601	1 OF BADDSHFSFD						
	ADDSHFSFD1:4060	F/ADDSHFSFD	<-- VV				
	*****						
	* (1) ADDW20A, SHIFTING IS OVER RIGHT *						
	* SHIFT *						
	* SF *						
	-----						
	*NEXT, CALL RTSHFSFSN *						
	* RETURN+ADDSHFSFD *						
	*****						
		-->	2726 2320 766				
			VV				
			4307 1600 520				
			4307 1600 520				
	*****						
.CASE 1602	2 OF BADDSHFSFD						
	ADDW20A:4061	F/ADDSHFSFD	<--				
	*****						
	* SAVE FDST2 IN SR, DO FRACTION ADD *						
	* CIN=0 *						
	-----						
	*P2, D+FDST2 SR+FDST2,D(C)+CIN, *						
	* J/ADDW21 *						
	*****						
			-->	4262 1610 523			

K11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1603	1 OF BADDW128 ADDSHDF:4265 F/BDDW128	<--	4260 1595 518	4265				00000001000
	*-----*							1010 00 11 00 00 011 000 0010 0
	*SINGLE, RIGHT SHIFT OF, EXP DIF 0 PATH							00000 00000 10111 100001010
	*SINGLE OR DOUBLE TARGETS (0) ADDSHDF, *							
	*SINGLE							
	*-----*							
	*P2, SR+FDST2, *							
	*NEXT, BUTR(FD), *							
	* J/ADDSHDF							
	* J/ADDSHDF	-->	10 4412 1604 521					
	* J/ADSHDF	-->	11 4413 1607 522					
	*-----*							
.CASE 1604	1 OF BADDSHDF ADDSHDF:4412 F/ADDSHDF	<-- VV		4412				00000001000
	*-----*							1111 10 00 10 01 011 100 0100 0
	*(1) ADDSHDF, DOUBLE SINGLE D(C) =							01000 010001 10101 001000000
	*SIGN OF FDST EXTRA COUNT TARGETS (0)							
	*ADDSHDF1,							
	*SHIFT							
	*-----*							
	*P2, D+FDST3 D(C)+ALU15, *							
	* RES+RESRIGHTGO *							
	*NEXT, BUT(COUNT IS -1), *							
	* J/ADDSHDF1							
	* J/ADDSHDF1	-->	0 4100 1605 522					
	* J/ADDSHDF2	-->	1 4101 1606 522					
	*-----*							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	1 OF BADSHFDF						
1605	ADDSHFDF1:4100	F/ADDSHFDF1	<-- 4412 1604 521				
	*****	F/ADDSHFDF1	<-- 4100 1605 522	4100			00000001000
	*(1) ADDSHFDF2, SHIFT END RIGHT SHIFT			1111	00 11	01 10	011 111 0110 0
	*RETAIN D(C) COUNT SHIFTS TARGETS (0)			00000	001010	10101	001000000
	*ADDSHFDF1, KEEP						
	*SHIFTING						
	-----						
	*P2, D+D RIGHT 1, D(C)+D(C),						
	* SHIFT SR						
	*P3, FDST3+D (B ADDR),						
	*NEXT, BUT(COUNT IS -1),						
	* J/ADDSHFDF1						
		J/ADDSHFDF1	* --> 0 4100 1605 522				
		J/ADDSHFDF2	* --> 1 4101 1606 522				
	*****						
.CASE	2 OF BADSHFDF						
1606	ADDSHFDF2:4101	F/ADDSHFDF1	<-- 4412 1604 521				
	*****	F/ADDSHFDF1	<-- VV 4101 1605 522	4101			00000001000
	*(1) ADDSHFDF2, SHIFT OVER RESTORE			1111	00 11	00 00	011 000 0100 0
	*FDST2			00000	001100	11010	001011001
	-----						
	*P2, D+SR						
	*P3, FDST2+D (B ADDR),						
	*NEXT, BUTR(RESET RES),						
	* J/ADDW20						
		J/ADDW20	* --> 4131 1609 523				
	*****						
.CASE	2 OF BADSHFDF						
1607	ADDSHFDFD:4413	F/ADDSHFDFD	<-- 4265 1603 521				
	*****			4413			00000001000
	* SF)DF EXTRA COUNT, COUNT SHIFTS TARGETS			0010	10 10	00 00	000 000 0000 0
	*(0) ADDSHFDFD1, KEEP			00010	100000	10101	001011000
	*SHIFTING						
	-----						
	*P3, MD+24000						
	*NEXT, BUT(COUNT IS -1),						
	* J/ADDSHFDFD1						
		J/ADDSHFDFD1	* --> 0 4130 1608 523				
		J/ADDW20	* --> 1 4131 1609 523				
	*****						

# M11

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1608	1 OF BADDSHFDFD ADDSHFDFD1:4130 F/ADDSHFDFD	<--	4413 1607 522	4130			000000001000
	***** *(1) ADDW20, SHIFTING IS OVER RIGHT *SHIFT *FDST ----- *NEXT, CALL RSHFDSTSN, * RETURN+ADDSHFDFD *****						0100 00 10 00 01 01 010 0000 0 00000 000000 11100 111001101
		-->	2715 2299 758 VW				
.CASE 1609	2 OF BADDSHFDFD ADDW20:4131 F/ADDSHFDFD	<--	4413 1607 522	4131			000000001000
	***** * SAVE FDST2 IN SR, DO FRACTION ADD *CIN=0 ----- *P2, D+FDST2,SR+FDST2,D(C)+CIN, *NEXT, * J/ADDW21 *****						1010 00 11 00 00 011 000 0110 0 00000 000000 11000 010110010
		-->	VV				
1610	ADDW21:4262 F/ADDW20A F/ADDW20	<-- <-- VV	4061 1602 520	4262			000000001000
	***** *----- *STORE FDST3 IN FDST2, FRACTION ADD *RETAIN D(C)=0 BUT(FOVPSAVE H#FPS07) *TARGETS (0) ADDFO1, *SINGLE ----- *P2, D+FDST3,D(C)+D(C), *P3, FDST2+D (B ADDR), *NEXT, BUTR(FD), * J/ADDFO1 * J/ADDFO1 * J/ADDFO1 *****						1111 00 11 10 01 011 111 0100 0 00000 001100 10111 101010010
		-->	10 4522 1615 525				
		-->	11 4523 1611 524				



BOX NO.	TAG: ADDRESS	F/ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS BUSA EXTENSION RIF COUT CLOCKS
1614	AD0004:4270	F/AD0003	<--	4266 1613 524	4270 0100 01 11 11 11 011 110 0100 0 00000 010010 11000 101010010
	*#DOUBLE				
	*#P2,	D+*FAC1(SF) PLUS FDST0			
	*#P3,	PLUS D(C), D(C)+COUT15,			
	*#NEXT,	FAC1(SF)+0 (A ADDR),			
		J/ADDF01	-->	VV	
.CASE	1 OF BADDW21				
1615	ADDF01:4522	F/AD0021 F/AD0004	<-- <--	VV VV	4522 0100 00 01 00 00 000 110 0100 0 00000 001100 11000 010111001
	*#SINGLE,DOUBLE				
	*#P2,	D+SR PLS FAC2(SF) PLUS D(C),			
	*#P3,	D(C)+COUT15			
	*#NEXT,	FAC2(SF)+0 (B ADDR),			
		J/ADDF02	-->	VV	
1616	ADDF02:4271	F/ADDF01	<--	VV	4271 0100 00 11 10 11 011 011 0100 0 00000 000010 11000 010111100
	*#SINGLE,DOUBLE	D(C)=HIDDEN			
	*#BIT				
	*#P2,	D+*FAC3(SF) PLUS FDST2			
	*#P3,	PLUS D(C), D(C)+ALU07,			
	*#NEXT,	FAC3(SF)+0 (A ADDR),			
		J/ADDF03	-->	4274 1617 526	





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
CASE 1620	1 OF BNROUNDEND NROUNDEND1: 4533	F/NROUNDEND (--	4326 1619 526	4533			000000001000
	***** *(4) NROUNDEND2, FRAC OFLW LEFT SHIFT? *HID BIT * NEXT TO HID BIT TARGETS (0) *NROUNDEND3, *NROUND			1101 11 00 10 00 00000 000010 00000		110 000 0100 0 101101100	
	----- *P2, D+R(ER) MINUS 1 *P3, R(ER)+D (A ADDR), *NEXT, BUTR(SR01#SR00), * J/NROUNDEND3 * J/NROUNDEND4 * J/NROUNDEND5 * J/NROUNDEND6		1100 4554 1622 527 1101 4555 1623 528 1110 4556 1624 528 1111 4557 1625 528				
CASE 1621	2 OF BNROUNDEND NROUNDEND2: 4537	F/NROUNDEND (--	4326 1619 526	4537			000000001000
	***** *(1) NROUNDEND4, NROUND32 (2) NROUNDEND5, *NROUND32 (3) NROUNDEND6, NROUND32 FRAC *OFLW, CHECK FOR EXP *OFLW			0100 00 10 11 01 00000 000000 11100		111 010 0000 0 111010110	
	----- *NEXT, CALL RTSHFSFSN, * RETURN+NROUNDEND6 *****	-->	2726 2320 766				
			4557 1625 528				
CASE 1622	1 OF BNROUNDEND1 NROUNDEND3: 4554	F/NROUNDEND1 (--	4533 1620 527	4554			000000001000
	***** * LEFT SHIFT *SF			0010 00 01 11 10 00000 000000 11100		010 010 0000 0 110010110	
	----- *NEXT, CALL LEFTSHFSF, * RETURN+NROUND *****	-->	2626 2223 734				
			2362 1906 615				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1623	2 OF BNROUNDEND1 NROUNDEND4:4555 * LEFT SHIFT *SF ----- *NEXT, CALL LEFTSHFSF * RETURN+NROUND32 *****	<--	4533 1620 527	4555	0010 00 01 00 01	110 010 0000 0	000000001000
		-->	2626 2223 734 ***** W 2216 1937 625		00000 000000 11100 110010110		
.CASE 1624	3 OF BNROUNDEND1 NROUNDEND5:4556 * RESULTANT EXP,,,NO CHANGE NORMALIZE *FRACTION ----- *P2, D+R(ER) PLUS 1 *P3, R(ER)+D (A ADDR) *NEXT, BUT(GO TO),PAGE+2, * J/NROUND32 *****	<--	4533 1620 527	4556	1001 11 00 10 00	110 010 0100 0	000000001000
		-->	2216 1937 625		00000 000010 11100 010001110		
.CASE 1625	4 OF BNROUNDEND1 NROUNDEND6:4557 * RESULTANT EXP,,,FRAC OFLW NORMALIZE *FRACTION ----- *P2, D+R(ER) PLUS 1 *P3, R(ER)+D (A ADDR) *NEXT, BUT(GO TO),PAGE+2, * J/NROUND32 *****	<--	4533 1620 527	4557	1001 11 00 10 00	110 010 0100 0	000000001000
		-->	2216 1937 625		00000 000010 11100 010001110		

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BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION	MICROFICHE			ADDR	ALU	BUSB	BUS	EXTENSION									
			OFST	ADDR	BOX					PAGE	COORD	CARD	BUS	UBF	UPF	RIF	COUT	CLOCKS	
		F/DIEDEGSF	<--	4647	1583	514													
		F/ADDF04	<--	4327	1618	526													
*****																			
*	SUBROUTINE SF2SCOMP		*																
		RETURN/SUMDFGSF	* -->	4033	1584	514													
		RETURN/ADDF03	* -->	4274	1617	526													
*****																			

```

1626 SF2SCOMP:4275
*****
-----*
-----*
#SUBROUTINE, TWOS COMPLEMENT SF(AC)
#CHANGE RESULTANT SIGN REVERSE
#SIGN
-----*
#P2, D+CR1 XOR SIGNBIT,
#P3, CR1+D (A ADDR),
#NEXT, J/SF2SCOMP F --> VV
*****
1627 SF2SCOMP F:4300 F/SF2SCOMP <-- VV
*****
# SET D(C)=1 CIN=1 NOT FAC3(SF) IN
#FAC3(SF)
-----*
#P2, D+NOT FAC3(SF), D(C)+CIN,
#P3, FAC3(SF)+D (B ADDR),
#NEXT, J/SF2SCOMP F1 --> VV
*****
1628 SF2SCOMP F1:4301 F/SF2SCOMP F1 <-- VV
*****
# RESET SR, CIN=0 BUT(FOVPSAVE
#H#FPS07), SINGLE, DOUBLE TARGETS (0)
#SF2SCOMP F2,
#SINGLE
-----*
#P2, SR+0, GUARD+0,
#NEXT, BUTR(FD),
# J/SF2SCOMP F2 --> 10 4506 1632 531
# J/SF2SCOMP D1 --> 11 4507 1629 530
*****

```

```

4275 000000001000
0110 10 00 10 00 101 000 0100 0
00101 000010 11000 011000000

```

```

4300 100000001000
0000 00 01 10 11 000 000 0100 0
00000 001010 11000 011000001

```

```

4301 000000001000
0011 00 00 00 00 000 000 0010 0
00000 000000 10111 101000110

```



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BSF2SCOMPF1							
1632	SF2SCOMPF2:4506	F/SF2SCOMPF1 F/SF2SCOMP03	<-- <--	4301 1628 529 4305 1631 530	4506			100000001000
	*DOUBLE				0101 00 01 00 00	0000 001100	11000 011001000	0100 0
	*P2, * D+SR PLUS NOT FAC2(SF) * PLUS D(C),D(C)+COUT15, *P3, * FAC2(SF)+D (B ADDR), *NEXT, * J/SF2SCOMPF3			--> VV				
1633	SF2SCOMPF3:4310	F/SF2SCOMPF2	<--	VV	4310			100000001000
	* DOUBLE SIGN IN *D(C)				0100 11 01 10 11	0000 001010	11111 000000000	0100 0
	*P2, * D+FAC3(SF) PLUS 0 PLUS D(C), * D(C)+ALU15, *P3, * FAC3(SF)+D (B ADDR), *NEXT, * BUT(RETURN)			--> VV				

J12

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUS A	EXTENSION		CLOCKS
								OFST	ADDR	
		F/DIFSFGDF								
		4646 1585 515								
*	SUBROUTINE FDST2SC									
		RETURN/SUMSFGDF								
		4032 1586 515								

```

1634 FDST2SC:4311
*****
*-----*
*SUBROUTINE, TWO'S COMPLEMENT FDST SET *
*D(C)=1 CIN=1 NOT FDST3 IN *
*FDST3 *
*-----*
*P2, D+NOT FDST3,D(C)+CIN, *
*P3, FDST3+D (A ADDR), *
*NEXT, *
* J/FDST2SCF1 --> VV
*****

```

```

4311 0000 00 00 10 01 011 000 0100 0
      00000 000010 11000 011001100

```

```

1635 FDST2SCF1:4314 F/FDST2SC <-- VV
*****
* RESET SR CIN=0 SINGLE OR DOUBLE *
*TARGETS (0)'FDST2SCF2, *
*SINGLE *
*-----*
*P2, SR+0 GUARD+0, *
*NEXT, BUTR(FD) *
* J/FDST2SCF2 *
* J/FDST2SCF2 --> 10 4526 1639 533
* J/FDST2SCD1 --> 11 4527 1636 532
*****

```

```

4314 0011 00 00 00 00 000 000 0010 0
      00000 000000 10111 101010110

```

.CASE 2 OF BFDST2SCF1

```

1636 FDST2SCD1:4527 F/FDST2SCF1 <-- 4314 1635 532
      F/FDST2SCD3 <-- 4320 1638 533
*****
*(1) FDST2SCD1, DOUBLE *
*-----*
*P2, D+SR MINUS FDST0,D(C)+COUT15, *
*P3, FDST0+D (B ADDR), *
*NEXT, *
* J/FDST2SCD2 --> 4315 1637 533
*****

```

```

4527 1101 01 11 00 00 011 110 0100 0
      00000 011100 11000 011001101

```



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION RIF COUT	CLOCKS
1637	FDST2SC02:4315	F/FDST2SC01	<--	4527 1636 532	4315	0000	00 00	11 01 011 111	0100 0
	*P2, D+NOT FDST1, D(C)+D(C),				0000	010010	11000	011010000	
	*P3, FDST1+D (A ADDR),								
	*NEXT,								
	J/FDST2SC03		--> VV						
1638	FDST2SC03:4320	F/FDST2SC02	<-- VV		4320	0100	11 01 11 01	011 110	0100 0
	*P2, D+FDST1 PLUS 0 PLUS D(C),				0000	010010	11000	101010110	
	* D(C)+COUT15,								
	*P3, FDST1+D (A ADDR),								
	*NEXT,								
	J/FDST2SCF2		--> VV						
.CASE	1 OF BFDST2SCF1								
1639	FDST2SCF2:4526	F/FDST2SCF1 F/FDST2SC03	<-- <-- VV	4314 1635 532	4526	0101	00 11 00 00	011 110	0100 0
	*P2, D+SR PLUS NOT FDST2 PLUS D(C),				0000	001100	11000	011010001	
	* D(C)+COUT15,								
	*P3, FDST2+D (B ADDR),								
	*NEXT,								
	J/FDST2SCF3		--> VV						
1640	FDST2SCF3:4321	F/FDST2SCF2	<-- VV		4321	0100	11 01 10 01	011 100	0100 0
	* SINGLE, DOUBLE SIGN IN				0000	000010	11111	000000000	
	*D(C)								
	*-----*								
	*P2, D+FDST3 PLUS 0 PLUS D(C),								
	* D(C)+ALU15,								
	*P3, FDST3+D (A ADDR),								
	*NEXT,								
	BUT(RETURN)		--> VV						

# M12

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
.TOC " FLOATING POINT LOAD INSTRUCTION ##FLPT##"									
.CASE 11 OF BWFORK									
1641	LOADZW:0352	F/SETCLASS3 F/WFORK	<-- <--	207 474	1239 1318	403 429			
	***** * FROM WFORK WHEN 0*07 LOAD * DMO TEST * *FOR ILLEGAL INSTR TARGETS * *- ----- *NEXT, BUTR(NOT DST REG 6-7), * * J/LOADZW2 * * J/LOADZW2 * --> 10 172 1642 534 * J/LOADZW2B * --> 11 173 1643 534 *****							352	0000 00 00 00 00 00000001000 00000 000000 10001 001111010
.CASE 1 OF BLOADZW									
1642	LOADZW2:0172	F/LOADZW	<-- VV						
	***** *0 - LOADZW2 1 - LOADZW2B ILLEGAL * *INSTRUCTION * ----- *NEXT, BUT(GO TO), PAGE+2, * * RETURN+OPCODERR, * * J/TPREAMBLE * --> 2544 1969 637 *****							172	0100 00 10 11 00 001 010 0000 0 00000 000000 11100 101100100
.CASE 2 OF BLOADZW									
1643	LOADZW2B:0173	F/LOADZW	<--	352	1641	534			
	***** *P2, D+FAC3(DF), * *P3, FAC3(SF)+D (B ADDR), * *NEXT, BUT(GO TO), PAGE+3, * * J/LOADZW3 * --> 3665 1644 535 *****							173	1111 00 01 10 10 000 011 0100 0 00000 001010 11100 110110101

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1644	LOADZW3:3665	F/LOADZW2B	<--	173 1643 534				
	*****							
	* COMPLETE THE TRANSFER TARGETS - F - *							
	*LOADZW4							
	-----*							
	*P2, D+FAC2(DF), *							
	*P3, FAC2(SF)+D' (A ADDR), *							
	*NEXT, BUTR(FD) *							
	* J/LOADZW4 * -->	10 3222	1645 535					
	* J/LDDW * -->	11 3223	1646 535					
	*****							
.CASE	1 OF BLOADZW3	F/ADDDFEZ	<--	4416 1581 513				
		F/LOADZW3	<--	3665 1644 535				
1645	LORLZW4:3222	F/LDDW2	<--	3666 1647 536				
	*****							
	*D - LDDW SET FLPT *							
	*CC'S *							
	-----*							
	*NEXT, CALL SETFZFN, *							
	* RETURN+BRADS *							
	***** -->	*****						
		2727 2323 768						
		*****						
		VV						
		3 283 126						
.CASE	2 OF BLOADZW3	F/ADDDFEZ	<--	4416 1581 513				
		F/LOADZW3	<--	3665 1644 535				
1646	LDDW:3223	F/LDDW2	<--	3666 1647 536				
	*****							
	*P2, D+FAC1(DF), *							
	*P3, FAC1(SF)+D' (B ADDR), *							
	*NEXT, *							
	* J/LDDW2 * -->	3666 1647 536						
	*****							

ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
3665				100000001000
	1010 00 00 00 11	0000 000100	10111 000 000	0100 0
	00000		010010010	
3222				000000001000
	0000 00 00 00 00	0000 000000	011 010 0000 0	0000 0
	00000		11100 111010111	
3223				100000001000
	1111 00 01 11 10	0000 011010	11000 110110110	0100 0
	00000			

BOX NO.	TAG: ADDRESS	OPERATION	COND	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1647	LDM2: 3666	F/LDM	<--	3223 1646 535		3666			10000001000
	*P2, D+FAC0(DF),		*			1010	01 00	00 11	000 000 0100 0
	*P3, FAC0(SF)+D (A ADDR),		*			00000	010100	11000	010010010
	*NEXT,		*						
	J/LOADZM4		-->	3222 1645 535					
.CASE	12 OF BNFORK								
1648	LOADSIXM: 0353	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429		353			00000001000
	* FROM WFORK WHEN		*			0100	00 01	10 10	100 100 0000 0
	*0*DB		*			00000	000000	11100	1100011110
	*NEXT, CALL FFLTDEFER,		*						
	RETURN+LOADSIXM2		*						
			-->	4616 2040 662					
				4324 1649 536					
1649	LOADSIXM2: 4324					4324			00000001000
	* PERFORM CHECK ON NEG ZERO BRANCH ON		*			0000	00 00	00 01	000 000 0000 0
	*SR(00) TARGETS		*			11001	000000	00000	000111110
	*-		*						
	*SELECT, EMIT		*						
	*NEXT, BUT(CASE)		*						
	J/LOADNZM2		*						
	J/LOADNZM2		-->	1110 4076 1651 537					
	J/LOADNZM3		-->	1111 4077 1652 537					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	13 OF BMFORK						
1650	LOADNZH:0354	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429			
	***** *0 - LOADNZH2 1 - LOADNZH3 FROM WFORK *WHEN *0#014 *-----* *NEXT, CALL FFLTDEFER, * RETURN+LOADSIXM2 *****		<-->				354 0100 00 01 10 10 100 100 0000 0 00000 000000 11100 110001110
			<-->	4616 2040 662			
			<-->	4324 1649 536			
.CASE	1 OF BLOADSIXM2						
1651	LOADNZH2:4076	F/LOADSIXM2	<--	4324 1649 536			
	***** *NEXT, CALL MOVFDSTSF, * RETURN+LOADZM4 *****		<-->				4076 0011 00 01 00 10 010 100 0000 0 00000 000000 11100 111100101
			<-->	4745 2235 738			
			<-->	3222 1645 535			
.CASE	2 OF BLOADSIXM2						
1652	LOADNZH3:4077	F/LOADSIXM2	<--	4324 1649 536			
	***** * RETURN+LOADNZH2, PAGE+4, *NEXT, BUT(GO TO) * J/LOADNZH3 *****		<-->				4077 0100 00 00 01 11 110 100 0000 0 00000 000000 11100 011010101
			<-->	4325 1653 538			
			<-->	4076 1651 537			



```

1653 LOADNZM38:4325
*****
# FETCH OF NEG ZERO OCCURRED SET
#CONDITION CODES FOR NEG ZERO
#FETCH
-----
#P3, MD+14 (BC),
#NEXT, J/LOADNZM4 --) VV
*****
1654 LOADNZM4:4330 F/LOADNZM38 (-- VV
*****
#GO SET COND CODES ** NOTE ** LOADNZM3
#CALLED AS SUBROUTINE FROM LDCP! *****
-----
#P2, D+MD,
#NEXT, J/LOADNZM5 --) VV
*****
1655 LOADNZM5:4332 F/LOADNZM4 (-- VV
*****
# SET FN AND FZ IN FPS GO CHECK IF TRAPS
#ENABLED
-----
#SELECT, FPSCC(DBUF),
#P3, FPSCC+DATA,
#NEXT, BUT(DIAGNOSE),
# J/NZERO2 --)
*****

```

```

4325 0000 10 00 00 00 001 100 0000 0
      00010 100000 11000 011011000

```

```

4330 1010 11 10 00 00 000 000 0100 0
      00000 000000 11000 011011010

```

```

4332 0000 00 00 00 00 000 000 0000 0
      00000 000000 11011 011101101

```

4355 2193 723

*Done.*

# F13

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 539

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
---------	--------------	--	--------------------------	-----------------	------------	-------------	-------------------------------------

TCC = WARM FLOATING COMPARE INSTRUCTION #DELPT#  
 CONDITION CODES ARE SET ACCORDING TO THE OPERATION FDST - FAC(SF)

FC+0  
 FV+0  
 FZ+1 IF FDST - FAC(SF) = 0 ELSE FZ+0  
 FN+1 IF FDST - FAC(SF) < 0 ELSE FN+0

INSTRUCTION IS USED TO DETERMINE LOGICAL GREATER QUANTITY  
 BY SUBTRACTING FDST FROM FAC3(SF)

CASE 16 OF BNFORK

1656	CMPW:0357 ***** * FETCH * OPERANDS *-----* * NEXT, CALL FETCHFLT, * RETURN+CMPL2 *****	F/SETCLASS3 F/WFORK <-- <--	207 1239 403 474 1318 429				
				357			000000001000 0100 00 01 10 11 100 139 0000 0 00000 000000 11100 11000:100
			***** 4614 2039 661 ***** VV 4334 1657 539				
1657	CMPL2:4334 ***** * P2, D+FDST3, * NEXT, * J/CMPL3 *****						4334 1111 00 00 10 01 011 000 0100 0 00000 000000 11000 011011101
1658	CMPL3:4335 ***** * P3, R(T1)+D (A ADDR), * NEXT, * J/CMPL4 *****	F/CMPL2 F/CMPL2 <-- VV <-- VV					4335 0000 00 00 00 00 110 000 0000 0 00000 010110 11000 011100000



# G13

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1659	CMPW4:4340 ***** *P2, D+FAC3(SE) MINUS R(T1), * D(C)+COUT15, *NEXT, * J/CMPW5 *****	<--	4335 1658 539	4340	1101 00000	01 10 000000	10 11 11000	110 110 0100 0 011100010
1660	CMPW5:4342 ***** * CALL SUBROUTINE WORD *COMPARE *-----* *NEXT, CALL WORDCMP, * RETURN+CMPW6 *****	<-- VV VV <-- VV -->	2414 1670 543 VV 4344 1661 540	4342	0100 00000	00 01 000000	11 00 100 010 0000 0 11100 100001100	000000001000
1661	CMPW6:4344 ***** * DO SECOND WORD COMPARE TARGETS - F - *CMPW7 *-----* *P2, D+SR MINUS FDST2,D(C)+COUT15, *NEXT, BUTR(FD), * J/CMPW7 * J/CMPW8 *****	<-- <-- --> -->	10 4056 1662 540 11 4057 1663 541	4344	1101 00000	00 11 00 00 10111	011 110 0100 0 000101110	000000001000
.CASE 1 OF BCMPW6			4344 1661 540 4360 1669 542					
1662	CMPW7:4056 ***** *D - CMPW8 IF 2ND WORDS *ARE *-----* *NEXT, CALL WORDCMP * RETURN+CMPWEQUAL *****	<-- <-- -->	2414 1670 543 VV -1 -1 -1 2 ! 1	4056	0010 00000	00 10 00 01 110 010 0000 0 00000 000000 11100 100001100	000000001000	

# H13

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 541

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	CLOCKS
.CASE		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT UPF	
1663	CMPW8:4057	F/CMPW6 F/CMPW14	(-- (--	4344 1661 540 4360 1669 542					
	***** *EQUAL THEN SET Z BIT *-----* *NEXT, CALL WORDCMP, * RETURN+CMW9 *****								
			-->	***** 2414 1670 543 ***** VV 4345 1664 541					
1664	CMPW9:4345								
	***** *P2, D+FDST1, *NEXT, J/CMPW10 *****								
			--> VV						
1665	CMPW10:4350	F/CMPW9	<-- VV						
	***** *P3, R(T2)+D (A ADDR), *NEXT, J/CMPW11 *****								
			--> VV						
1666	CMPW11:4352	F/CMPW10	<-- VV						
	***** *P2, D+FAC1(SF) MINUS R(T2), * D(C)+COUT15, *NEXT, J/CMPW12 *****								
			-->	4354 1667 542					

ADDR	ALU	BUSB	BUSA	EXTENSION	CLOCKS
	BUS	SP	UBF	RIF COUT UPF	
4057	0100 00 01 11 00	00000 000000	1100	000000001000	0000 0
	00000	000000	1100	100001100	
4345	1111 00 00 11 01	00000 000000	1100	000000001000	0100 0
	00000	000000	1100	011101000	
4350	0000 00 00 00 01	00000 010110	1100	000000001000	0000 0
	00000	010110	1100	011101010	
4352	1101 01 11 11 11	00000 000000	1100	100000001000	0100 0
	00000	000000	1100	011101100	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE OFST ADDR BOX PAGE	COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1667	CMPW12:4354 ***** *NEXT, CALL WORDCMP * * RETURN+*CMPW13 * *****	F/CMPW11 <--	4352	1666 541	4354	0100 00000	00 01 000000	11 01 11100	110 010 100001100	00000001000 0000 0
			2414	1670 543 ***** VV *****						
1668	CMPW13:4356 ***** * TEST 4TH WORD OF DOUBLE * *PRECISION * -----* *P2, D+*FACO(SF), SR+*FACO(SF), * *NEXT, * * J/CMPW14 * --> VV *****		4356	1668 542	4356	1010 00000	01 01 000000	00 00 11000	000 000 011110000	100000001000 0110 0
1669	CMPW14:4360 ***** *P2, D+*SR MINUS *FSTO, D(C)+*COUT15, * *NEXT, * * J/CMPW7 * -->	F/CMPW13 <-- VV	4056	1662 540	4360	1101 00000	01 11 000000	00 00 11000	011 110 000101110	000000001000 0100 0

# J13

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 543

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COUT
		F/CMPW5	<--	4342	1660	540						
		F/CMPW7	<--	4056	1662	540						
		F/CMPW8	<--	4057	1663	541						
		F/CMPW12	<--	4354	1667	542						
*****												
*	SUBROUTINE WORDCMP		*									
		RETURN/CMPW6	* -->	4344	1661	540						
		RETURN/CMPW EQUAL	* -->	-1	-1	-1	2	1	1			
		RETURN/CMPW9	* -->	4345	1664	541						
		RETURN/CMPW13	* -->	4356	1668	542						
*****												

K13

```

1670 WORDCMP:2414
*****
* SUBROUTINE CALLED BY FLOATING COMPARE *
* INSTRUCTION TO TEST RESULT OF WORD *
* SUBTRACTION OPERATION THIS ROUTINE WILL *
* DETERMINE THE PROPER CONDITION CODES TO *
* SET MESH OPERANDS FAC3 AND FDST3 TARGETS *
*-
*-----*
*P2,      SR+DAC3(SF) OR R(T1), *
*NEXT,    BUT(D(14-00) IS 0 & 015), *
*          J/WORDCMP2 *
*          J/WORDCMP2 * -->
*          J/WORDCMP3 * -->
*          J/WORDCMP4 * -->
*          J/WORDCMP5 * -->
*****

```

```

2414      1110 01 10 10 11 10 000 0010 0
          00000 000000 01101 11010000

```

```

00 2640 1671 543
01 2641 1672 544
10 2642 1673 544
11 2643 1674 544

```

```

CASE 1 OF BWORDCMP
1671 WORDCMP2:2640 F/WORDCMP <-- VV
*****
* 00 - WORDCMP2 01 - WORDCMP3 10 - *
* WORDCMP4 11 - WORDCMP5 WORDS ARE NOT *
* EQUAL THEIR SIGNS ARE CONTAINED IN *
* D(C) *
*-----*
*P2,      D+SR AND SEXPMASK,D(C)+D(C), *
*P3,      R(T1)+D (B ADDR), *
*NEXT,    *
*          J/WORDCMP6 * -->
*****

```

```

2640      000000001000
          1011 10 10 00 00 110 111 0100 0
          00110 011110 11000 100001101

```

```

2415 1675 545

```

# L13

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY AOSYS 020377

PAGE 544

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
.CASE 1672	2 OF BWORDCMP	F/WORDCMP	<--	2414	1670	543			
	WORDCMP3:2641			2641				000000001000	
	* SAME AS * *WORDCMP2 *			1011 10 10 00 00 110 111 0100 0 00110 011110 11000 100001101					
.CASE 1673	3 OF BWORDCMP	F/WORDCMP	<--	2414	1670	543			
	WORDCMP4:2642			2642				100000001000	
	* LAST WORDS COMPARED ARE EQUAL, GO * *TO *			1010 00 01 00 00 000 000 0010 0 00000 000000 11111 000000000					
.CASE 1674	4 OF BWORDCMP	F/WORDCMP	<--	2414	1670	543			
	WORDCMP5:2643			2643				000000001000	
	* MAIN FLOWS AND COMPARE NEXT TWO WORDS * *SAME AS * *WORDCMP2 *			1011 10 10 00 00 110 111 0100 0 00110 011110 11000 100001101					
	D+SR AND SEXPMASK,D(C)+D(C), R(T1)+D (B ADDR),	J/WORDCMP6	-->	2415	1675	545			
	BUT(RETURN)		-->	VV					

# M13

PROGRAM FLOWS    11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377    PAGE 545

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
							RIF	COUT CLOCKS	
1675	WORDCMP6:2415	F/WORDCMP2	<--	2640	1671	543			
		F/WORDCMP3	<--	2641	1672	544			
		F/WORDCMP5	<--	2643	1674	544			
	*****							2415	00000001000
	* OPERATION GETS D(C) INTO D15 FOR							0110	01 10 01 10 110 000 0010 0
	*SETTING							00000	000000 01101 110111001
	*SIGN								
	*-----*								
	*P2, SR+D RIGHT 1 XOR R(T1),								
	*NEXT, BUTR(D(14-00) IS 0),								
		J/WORDCMP7	-->	01	2671	1676	545		
		J/WORDCMP8	-->	11	2673	1677	545		
*****									
.CASE	1 OF BWORDCMP6								
1676	WORDCMP7:2671	F/WORDCMP6	<--	2415	1675	545			
		F/CMPEQUAL2	<--	2420	1679	546			
	*****							2671	00000001000
	*AND XOR OPERATION FLIPS RESULT OF THE							1111	00 00 00 00 000 011 0100 0
	*COMPARE OPERATION IF ANY OF THE OPEANDS							00000	000000 11100 100101101
	*WERE NEGATIVE SINCE OPERANDS WERE								
	*COMPARED AS UNSIGNED INTEGERS, ALSO								
	*GUARANTEES SR .NE. ZERO TARGETS - 0 -								
	*WORDCMP7 1 - WORDCMP8 USE FLIPPED SIGN								
	*RESULT								
*-----*									
		D+SR							
		BUT(GO TO),PAGE+3,							
		J/TSTZM	-->	3455	1367	446			
*****									
.CASE	2 OF BWORDCMP6								
1677	WORDCMP8:2673	F/WORDCMP6	<--	2415	1675	545			
		F/CMPEQUAL2	<--	2420	1679	546			
	*****							2673	10000001000
	* BOTH OPERAND'S EXP FIELD ARE = 0							0011	00 00 00 11 000 000 0100 0
	*GENERATE EXACT ZERO AND SET COND							00000	000110 10111 000000110
	*CODES								
	*-----*								
			D+0,						
			FAC32(SF)+D (A ADDR),						
			BUTR(FD),						
		J/MULMODW11	-->	10	2006	1418	462		
		J/MULMODW12	-->	11	2007	1419	462		
*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
1678	CMPWEQUAL:2416 ***** * POINT ENTERED IF OPERANDS BEING * * COMPARED ARE EQUAL ISOLATE EXPONENT OF * * ONE ARG - THE OTHER IS OBVIOUSLY EQUAL * * TO * * IT. * *-----* * P2, D+R(T1) AND EXPMASK, * * NEXT, * * J/CMPWEQUAL2 * --> VV *****			2416 1011 10 00 11 00 110 000 0100 0 01111 000000 11000 100010000
1679	CMPWEQUAL2:2420 F/CMPWEQUAL ***** * TEST FOR ZERO EXP TARGETS * *-----* * P2, SR+0 * * NEXT, BUTR(D(14-00) IS 0), * * J/WORDCMP7 * * J/WORDCMP8 * --> 01 2671 1676 545 * J/WORDCMP8 * --> 11 2673 1677 545 *****			2420 0011 00 00 00 00 000 000 0010 0 00000 000000 01101 110111001
.TOC - .CASE	FLOATING STORE INSTRUCTIONS ##FLPT## 17 OF BWFORK			
1680	STIW:0360 F/SETCLASS3 F/WFORK ***** * 0 - WORDCMP7 1 - WORDCMP8 FROM WFORK * * WHEN 1=DO LOAD RETURN * * REGISTER * *-----* * NEXT, CALL MOVSEFFDST, * * RETURN+STW * ***** -->			360 0011 00 11 01 11 000 100 0000 0 00000 000000 11100 111100111
				***** 4747 2239 740 ***** VV -1 -1 -1 0 1 1



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA LBF	EXTENSION RIF COUT CLOCKS UPF
1681	ST24:0361	F/SETCLASS3 F/WFORK	(-- (--	207 1239 403 474 1318 429			
	* FROM WFORK WHEN 1*01 LOAD RETURN						000000001000
	* REGISTER						0000 000000 11100 111100111
	* NEXT, CALL MOVSFDDST,						
	* RETURN+STW						
			-->	4747 2239 740			
				VV			
				-1 -1 -1 2 1 1			
1682	STW:3670						
	* NEXT, CALL STOREFLT,						000000001000
	* RETURN+BRAS						0000 000000 11100 110101100
			-->	4654 2061 674			
				VV			
				3 283 126			

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
---------	-------------	---------------------------------------	-----------------------	--------------	---------	----------	---------------------------

TOC = FLOATING POINT DIVISION ##FLPT##  
 WARM FLOATING POINT DIVISION ROUTINE  
 ALGORITHM USED IN NON-RESTORING DIVIDE

TEMPORARY REGISTERS USED ARE AS FOLLOWS -

- DSORD - FAC0(DF)
- DSOR1 - R(T2B)
- DSOR2 - FAC2(DF)
- DSOR3 - R(T1B)
- RMDRD - FAC3(DF)
- RMDR1 - R(T2A)
- RMDR2 - FAC1(DF)
- RMDR3 - R(T1A)

FLOATING POINT ACCUMULATOR REFERRED TO AS FAC(DF) IN THIS ROUTINE ARE ACCUMULATORS FDST3-FDST0.

A FORCE TO ACCUMULATOR 7 IS PERFORMED SUCH THAT REFERENCE TO FDST ACCUMULATORS (RIF=7) AND R(T1B) AND R(T2B) (RIF=2) CAN BE MADE WITHOUT THE EXISTANCE OF CONFLICT IN MICRO FIELD CONTROL. THIS ALSO PERMITS THE DIVISION ROUTINE TO PROCEED QUICKER.

QUOTIENT IS DEVELOPED IN FAC(SF) THROUGH LEFT SHIFTS OF THE CARRY OUT FOLLOWING AN ARITHMETIC OPERATION.

26 BITS ARE ALWAYS DEVELOPED FOR SINGLE AND 58 BITS FOR DOUBLE

CASE 19 OF BNFORK

1683	DIVN24:0362	F/SETCLASS3	<--	207	1239	403						
		F/WFORK	<--	474	1318	429						

362  
 0100 00 00 00 00 00000001000  
 11011 000000 11000 101100110

\*\*\*\*\*  
 \* FROM \*  
 \*FLPDECODE \*  
 \*-----\*  
 \*P3, DBUF LATCH+D, \*  
 \*NEXT, \*  
 \* J/DIVFDW2 \* -->  
 \*\*\*\*\*

CASE 20 OF BNFORK

1684	DIVN24:0363	F/SETCLASS3	<--	207	1239	403						
		F/WFORK	<--	474	1318	429						

363  
 0100 00 00 00 00 00000001000  
 11011 000000 11000 101100110

\*\*\*\*\*  
 \*WHEN 1#011 DBUF LATCH GETS A COPY IF THE \*  
 \*INSTRUCTION FROM FLPDECODE \*  
 \*WHEN \*  
 \*-----\*  
 \*P3, DBUF LATCH+D, \*  
 \*NEXT, \*  
 \* J/DIVFDW2 \* -->  
 \*\*\*\*\*

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS	
1685	DIVFDW2:0546 ***** #1#012 DBUF LATCH GETS A COPY OF THE #INSTRUCTION SELECT EMIT EMITCON #GETS ----- #P3, EMITCON+DBUF LATCH, #NEXT, BUT(CLEAR FLAGS), * J/DIVFDW3 *****	(-- (--	362 1683 548 363 1684 548	546	0000 10 00 00 00 01001 100000 11010 101100111			000000001000 000 000 0000 0	
1686	DIVFDW3:0547 ***** #INSTRUCTION DO OPERAND #FETCH ----- #NEXT, CALL FETCHFLT, * RETURN+DIVFDW4 *****	(-- VV (-- VV --)	4614 2039 661 VV 2422 1687 549	547	0010 00 10 00 10 00000 000000 11100 110001100		000000001000 010 100 0000 0		
1687	DIVFDW4:2422 ***** # CHECK FOR ZERO #EXP ----- #NEXT, CALL EXPTST, * RETURN+DIVFDW5 *****	(--)	2621 2213 730 VV 2424 1688 549	2422	0010 00 10 00 10 00000 000000 11100 110010001		000000001000 100 010 0000 0		
1688	DIVFDW5:2424 ***** # BRANCH ON SR<1:0> TARGETS *- ----- #P2, D+FDST3, #NEXT, BUT(CASE), * J/DIVFDW6 * J/DIVFDW6 * J/DIVFDW7 * J/DIVFDW8 * J/DIVFDW9 *****	(--> (--> (--> (-->	1100 2354 1689 550 1101 2355 1690 550 1110 2356 1691 550 1111 2357 1692 551	2424	1111 00 00 10 01 00000 000000 00000 011000 0100 0		000000001000 011000 0100 0		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA	ALU BUS SP	EXTENSION RIF COUT CLOCKS
.CASE 1689	1 OF BDIVDWS DIVFDW6:2354	F/DIVDWS	<--	2424 1688 549		2354 0000 00 00 00 00 110 011 0000 0 00000 010110 11100 110111001
	*ZERO *EXPONENT *-----*					
	*P3, R(T1)+D (A ADDR) *NEXT, BUT(GO TO), PAGE+3, * J/DIVFDW10		-->	3671 1693 551		
.CASE 1690	2 OF BDIVDWS DIVFDW7:2355	F/DIVDWS	<--	2424 1688 549		2355 0011 00 00 00 11 000 000 0100 0 00000 000110 10111 000000110
	*SOURCE OPERAND HAS ZERO EXPONENT *TARGETS *- *-----*					
	*P2, D+0 *P3, FAC32(SF)+D (A ADDR), *NEXT, BUTR(FD), * J/MULMODW11		-->	10 2006 1418 462		
	* J/MULMODW12		-->	11 2007 1419 462		
.CASE 1691	3 OF BDIVDWS DIVFDW8:2356	F/DIVDWS	<--	2424 1688 549		2356 0100 00 10 11 00 010 010 0000 0 00000 000000 11100 101100100
	*0 - MULMODW11 1 - MULMODW12 GO TO *MULMODW11 OR 12 TO CLEAR ACCUMULATORS *DESTINATION OPERAND IS ZERO DIVISION BY *ZERO IS BEING *ATTEMPTED *-----*					
	*NEXT, BUT(GO TO), PAGE+2, * RETURN+ZERODIV, * J/TPREAMBLE		-->	2544 1969 637		

# F14

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1692	DIVFDW9:2357 ***** * BOTH OPERANDS ARE ZERO DIVISION BY ZERO * * IS BEING * * ATTEMPTED * ----- * NEXT, BUT(GO TO) PAGE+2, * * RETURN+ZERODIV, * * J/TPREXIBLE * *****	<--	2424 1688 549	2357	0100 00 10 11 00	00000 000000 11100	010 010 0000 0	00000001000
1693	DIVFDW10:3671 ***** * NEXT, CALL DATAPREP * * RETURN+DIVFDW11 * *****	<--	2354 1689 550	3671	0011 00 11 01 11	00000 000000 11100	010 010 0000 0	00000001000
		-->	2544 1969 637					
		<--	2354 1689 550					
		-->	2571 2196 725					
			VV					
1694	DIVFDW11:3672 ***** * PUT SIGN IN * * CR1 * ----- * P2, D+CR2, * * P3, CR1+D' (B ADDR), * * NEXT, * * J/DIVFDW12 * *****	<--	3672 1694 551	3672	1111 00 10 10 01	00000 001010 11000	101 000 0100 0	00000001000
1695	DIVFDW12:3673 ***** * DO EXPONENT PROCESSING D(C) = * * 0 * ----- * P2, D+R(ES) PLUS CNST200,D(C)+CIN, * * P3, R(ER)+D (A ADDR), * * NEXT, * * J/DIVFDW13 * *****	<-- VV	3673 1696 552	3673	1001 10 00 11 00	00100 000010 11000	110 000 0100 0	00000001000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1696	DIVFDW13:3674 ***** * EXPONENT * * OPERATION * *-----* *P2, * * D+R(ER) PLUS NOT R(ED) * * PLUS D(C), * *P3, R(ER)+D (A ADDR), * *NEXT, * * /DFRAC * *****	<--	3673 1695 551	3674	0101 0000	01 11 000010	10 00 11000	110 000 110111101	0100 0
	*-----* *P2, D+EMITCON, * *NEXT, * * J/DIVFDW16 * *****	-->	3675 1701 553						
CASE 1697	3 OF BRMDRLEFT10 DIVFDW14:2326 ***** *IS R(ES) MINUS R(ED) PLUS CNST200 MINUS * *1 BY CONSTANT 200 AND INCREMENT BY ONE * *DUE TO FRACTION GENERATED IN DFRAC NOTE * *THAT EXPONENT IS RIGHT JUSTIFIED * *RESTORE THE IR TO BE REFERENCED BY ABORT * *FLOWS * *-----* *P2, D+EMITCON, * *NEXT, * * J/DIVFDW16 * *****	<--	2465 1749 568	2326	1010 01001	10 00 000000	00 00 11000	000 000 100010101	0100 0
	*-----* *P2, D+EMITCON, * *NEXT, * * J/DIVFDW16 * *****	-->	2425 1699 553						
CASE 1698	4 OF BRMDRLEFT10 DIVFDW15:2327 ***** * RESTORE THE IR TO BE REFERENCED BY * *ABORT * *FLOWS * *-----* *P2, D+EMITCON, * *NEXT, * * J/DIVFDW16 * *****	<--	2465 1749 568	2327	1010 01001	10 00 000000	00 00 11000	000 000 100010101	0100 0
	*-----* *P2, D+EMITCON, * *NEXT, * * J/DIVFDW16 * *****	-->	2425 1699 553						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1699	DIVFDW16:2425	F/DIVFDW14 F/DIVFDW15	<-- <--	2326 2327	1697 1698	552 552			
	*P3, * DBUF LATCH+D AND *ENABLE CLKIR, *NEXT, * J/DIVFDW17								
1700	DIVFDW17:2426	F/DIVFDW16	<-- VV						
	* CLEAR R(T1) TO ACCUMULATE SHIFTS GO TO *NROUND TO NORMALIZE *AND *----- *P2, IR+DBUF LATCH,D+D, *P3, R(T1)+D (A ADDR), *NEXT, * J/NROUND13								
1701	DFRAC:3675	F/DIVFDW13	<--	3674	1696	552			
	*----- *ROUND - DIVFD GUARANTEES TO EXECUTED AT *LEAST ONE RIGHT SHIFT IN NROUND FLOWS AT *NROUND13 : DIVISION FRACTION PROCESSING *ROUTINE FOR WARM ; FLOATING POINT ; THE *ALGORITHM USED IS NON - RESTORING *DIVIDE. ; DUE TO THE SOURCE OF THE *QUOTIENT BIT (SIGN BIT ; OF THE LAST *ARITHMETIC OPERATION), THE FRACTION *WILL HAVE THE FOLLOWING FORM ; EITHER OF *TWO FORMATS IS POSSIBLE - ; 01.XXXX * OR * ; 1X.XXXX *----- *P2, D+EMITCON,SR+EMITCON, *NEXT, BUT(CLEAR FLAGS), * J/DFRAC2								

2425  
0100 00 00 00 01 000 100 0000 0  
11011 000000 11000 100010110

2426  
0011 00 00 00 00 110 000 0100 0  
11010 010110 11000 001100001

3675  
1010 10 00 00 00 000 000 0110 0  
01001 000000 11010 110111110

--> 2141 1919 620

--> 3676 1702 554





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS SP	BUS SP	BUSA DEF	EXTENSION RLE COUT	CLOCKS
1706	DFRAC6: 3703 ***** *P3, * MD+GUARD * ENABLE, * NEXT, * J/DFRAC7 *****	<--	3702 1705 554	3703	0000 00010	10 10 100000	00 00 11000	000 000 111000100	000000001000 0000 0
1707	DFRAC7: 3704 ***** * CONSTANT TO ENABLE GUARD * REGISTER ----- *P2, D+MD, RES+MD, * NEXT, * J/DFRAC8 *****	<-- VV		3704	1010 00000	11 10 010001	00 00 11000	000 000 111000101	000000001000 0100 0
1708	DFRAC8: 3705 ***** * PUT DIVISOR IN B SIDE TARGETS - F - * DFRAC9 ----- *P2, D+FAC3(DF) *P3, R(T1B)+D (B ADDR), * NEXT, BUTR(FD), * J/DFRAC9 * J/DFRAC10 *****	<-- VV		3705	1111 00000	00 10 011100	10 10 10111	110 000 010011010	100000001000 0100 0
CASE 1709	1 OF BDFRAC8 DFRAC9: 3232 ***** *D - DFRAC10 CONSTANT 26 FOR * COUNTER ----- *P3, MD+-32 (BC), * NEXT, * J/DFRAC14 *****	<-- VV	10 3232 1709 555 11 3233 1710 556	3232	1111 00010	10 11 100000	11 11 11000	100 110 111001010	000000001000 0000 0
		-->	3712 1714 557						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1710	DFRAC10:3233 ***** * TRANSFER DIVISOR TO B *SIDE ----- *P2, D+FAC1(DF), *P3, R(T2B)+D (B ADDR), *NEXT, * J/DFRAC11 *****	<--	3705 1708 555	3233	1111 00 11 11 10 00000 011100 11000 110 000 0100 0			100000001000 111000110	
1711	DFRAC11:3706 ***** * CONSTANT 58 FOR COUNTER FOR DOUBLE *PRECISION ----- *P3, MD+-72 (BC), *NEXT, * J/DFRAC12 *****	<-- VV		3706	1111 10 11 11 11 00010 100000 11000 110 000 0000 0		000000001000 111000111		
1712	DFRAC12:3707 ***** * TRANSFER DIVIDEND TO A *SIDE ----- *P2, D+FAC0(SF), *P3, RMDR0+D (A ADDR), *NEXT, * J/DFRAC13 *****	<-- VV		3707	1010 01 01 00 10 00000 000010 11000 110 000 0100 0		100000001000 111001000		
1713	DFRAC13:3710 ***** *P2, D+FAC1(SF), *P3, RMDR1+D (B ADDR), *NEXT, * J/DFRAC14 *****	<-- VV		3710	1111 00 11 11 11 00000 011010 11000 110 000 0100 0		100000001000 111001010		
		-->	3712 1714 557						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
		OFST	ADDR	BOX						PAGE	RIF	COUT
1714	DFRAC14:3712	F/DFRAC9	<--	3232	1709	555						
		F/DFRAC13	<--	3710	1713	556						
	*****											
	*P2, D+FAC2(SF),											
	*P3, RMDR2+D (A' ADDR),											
	*NEXT,											
	* J/DFRAC15		-->	VV								
	*****											
1715	DFRAC15:3714	F/DFRAC14	<--	VV								
	*****											
	* TARGETS - F -											
	* DFRAC16											
	-----											
	*P2, D+FAC3(SF),											
	*P3, RMDR3+D (B' ADDR),											
	*NEXT, BUTR(FD)											
	* J/DFRAC16		-->	10	3432	1716	557					
	* J/DFRAC17		-->	11	3433	1717	558					
	*****											
.CASE	1 OF BDFRAC15											
1716	DFRAC16:3432	F/DFRAC15	<--	3714	1715	557						
		F/DFRAC17	<--	3433	1717	558						
	*****											
	*D - DFRAC17 CLEAR GUARD AND FAC3(SF)											
	*AND											
	*FAC2(SF)											
	-----											
	*P2, D+0, SR+0, GUARD+0,											
	*P3, FAC32(SF)+D (A ADDR),											
	*NEXT, BUT(GO TO),PAGE+2,											
	* J/DFRAC18		-->	2427	1718	558						
	*****											

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3712      100000001000
1010 00 01 00 10 000 000 0100 0
00000 010010 11000 111001100

3714      100000001000
1111 00 10 10 11 110 000 0100 0
00000 011010 10111 100011010

3432      100000001000
0011 00 00 00 11 000 010 0110 0
00000 000110 11100 100010111

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# M14

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 558

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS	
1717	DFRAC17:3433	F/DFRAC15 F/DFRAC17	<-- <--	3714 3433	1715 1717	557 558			
	*****							3433	100000001000
	*P2, D=0			0011	00 00	00 11	000 000	0100 0	
	*P3, FAC10(SF)+D (A ADDR),			00000	010110	11000	100011010		
	*NEXT,								
	* J/DFRAC16		-->	3432	1716	557			
1718	DFRAC18:2427	F/DFRAC16	<--	3432	1716	557			
	*****							2427	000000001000
	* D(C)=1 LOAD COUNTER TARGETS - 0 -			1111	11 10	01 01	000 000	0100 0	
	*DFRACSUB4			00000	000101	10111	011111010		
	*-----*								
	*P2, D=D, D(C)+CIN, COUNTER+MD,								
	*NEXT, BUTR(FD),								
	* J/DFRACSUB4		-->	10 2372	1722	559			
	* J/DFRACSUB2		-->	11 2373	1720	559			
	*****								
.CASE 1719	2 OF BRMDRLEFT10								
1719	DFRACSUB:2325	F/RMDRLEFT10	<--	2465	1749	568			
	*****							2325	000000001000
	*1 - DFRACSUB2 ROUTINE PERFORMS			1111	00 00	01 01	000 000	0100 0	
	*SUBTRACTION OPERATION BETWEEN DIVISOR			00000	000000	10111	011111010		
	*AND REMAINDER TO GENERATE QUOTIENT BIT								
	*IN D(C) D(C)=1 TARGETS								
	*-----*								
	*P2, D=D, D(C)+CIN,								
	*NEXT, BUTR(FD),								
	* J/DFRACSUB4		-->	10 2372	1722	559			
	* J/DFRACSUB2		-->	11 2373	1720	559			
	*****								

# N14

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 559

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
		OFST	ADDR	BOX					PAGE	RIF	COUT
.CASE	2 OF BDFRAC18										
1720	DfracSub2:2373	F/DFRAC18	<--	2427	1718	558					
		F/DFRACSUB	<--	2325	1719	558					
		F/DFRACSUB3	<--	2430	1721	559					
	*****					2373			100000001000		
	*F - DFRACSUB4 D - DFRACSUB2						1101	01 00	10 10	000 110	0100 0
	*-----*						00000	000010	11000	100011000	
	*P2,	D+RMDRO MINUS DSORO,	*								
	*	D(C)+COUT15,	*								
	*P3,	RMDRO+D (A ADDR),	*								
	*NEXT,		*								
	*	J/DFRACSUB3	* -->	VV							
1721	DfracSub3:2430	F/DFRACSUB2	<--	VV							
	*****					2430			000000001000		
	*P2,						0101	01 11	11 01	110 110	0100 0
	*	D+RMDR1 PLUS NOT DSOR1	*				00000	010010	11000	01111010	
	*	PLUS D(C),D(C)+COUT15,	*								
	*P3,	RMDR1+D (A ADDR),	*								
	*NEXT,		*								
	*	J/DFRACSUB4	* -->	VV							
.CASE	1 OF BDFRAC18										
1722	DfracSub4:2372	F/DFRAC18	<--	2427	1718	558					
		F/DFRACSUB	<--	2325	1719	558					
		F/DFRACSUB3	<--	VV							
	*****					2372			100000001000		
	*P2,						0101	00 00	11 10	000 110	0100 0
	*	D+RMDR2 PLUS NOT DSOR2	*				00000	010010	11010	100011001	
	*	PLUS D(C),D(C)+COUT15,	*								
	*P3,	RMDR2+D (A ADDR),	*								
	*NEXT,	BUTR(RESET RES),	*								
	*	J/DFRACSUB5	* -->	2431	1723	560					
	*****										

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
1723	DFRACSUBS: 2431	F/DFRACSUB4	<--	2372 1722 559						
	*****				2431				00000000	1000
	* TARGETS - F -				0101	01 10	11 00	110 110	0100	0
	* QUOLEFT7				00000	010010	10111	100111010		
	-----									
	*P2,									
	* D+RMDR3 PLUS NOT DSOR3									
	* PLUS D(C),D(C)+COUT15,									
	*P3, RMDR3+D (A ADDR),									
	*NEXT, BUTR(FD)									
	* J/QUOLEFT7		-->	10 2472 1733 563						
	* J/QUOLEFT1		-->	11 2473 1729 562						
	*****									
CASE 1724	1 OF BFRMDRLEFT10	F/RMDRLEFT10	<--	2465 1749 568						
	DFRACADD: 2324									
	*****				2324				00000000	1000
	*D - QUOLEFT1 ROUTINE PERFORMS ADDITION				0011	00 00	00 00	000 010	0100	0
	*OPERATION BETWEEN OPERANDS IN				00000	000000	10111	101110010		
	*NON-RESTORING DIVIDE ALOGORITHM BETWEEN									
	*DIVISOR AND REMAINDER D(C)=0 TARGETS - F									
	*-									
	*DFRACADD4									
	-----									
	*P2, D+D, D(C)+ALUD0,									
	*NEXT, BUTR(FD)									
	* J/DFRACADD4		-->	10 2562 1727 561						
	* J/DFRACADD2		-->	11 2563 1725 560						
	*****									
CASE 1725	2 OF BDFRACADD	F/DFRACADD	<--	2324 1724 560						
	DFRACADD2: 2563	F/DFRACADD3	<--	2432 1726 561						
	*****				2563				10000000	1000
	*D - DFRACADD2				1001	01 00	10 10	000 110	0100	0
	-----									
	*P2, D+RMDR0 PLUS DSOR0,									
	* D(C)+COUT15,									
	*P3, RMDR0+D (A ADDR),									
	*NEXT, J/DFRACADD3		-->	2432 1726 561						
	*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION RIF COUT CLOCKS
1726	DFRACADD3:2432	F/DFRACADD2	<--	2563	1725	560		2432 000000001000 0100 01 11 11 01 110 110 0100 0 00000 010010 11000 101110010
	*P2, D+RMDR1 PLUS DSOR1 PLUS D(C), *							
	* D(C)+COUT15, *							
	*P3, RMDR1+D (A ADDR), *							
	*NEXT, *							
	J/DFRACADD4		--> VV					
CASE 1 OF BOFRACADD								
1727	DFRACADD4:2562	F/DFRACADD0 F/DFRACADD3	<-- <-- VV	2324	1724	560		2562 100000001000 0100 00 00 11 10 000 110 0100 0 00000 010010 11010 100011100
	*P2, D+RMDR2 PLUS DSOR2 PLUS D(C), *							
	* D(C)+COUT15, *							
	*P3, RMDR2+D (A ADDR), *							
	*NEXT, BUTR(RESET RES), *							
	J/DFRACADD5		--> VV					
1728	DFRACADD5:2434	F/DFRACADD4	<-- VV					2434 000000001000 0100 01 10 11 00 110 110 0100 0 00000 010010 10111 100111010
	* TARGETS - F - *							
	*QUOLEFT7 *							
	*P2, D+RMDR3 PLUS DSOR3 PLUS D(C), *							
	* D(C)+COUT15, *							
	*P3, RMDR3+D (A ADDR), *							
	*NEXT, BUTR(FD), *							
	J/QUOLEFT7		-->	10	2472	1733	563	
	J/QUOLEFT1		-->	11	2473	1729	562	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	2 OF BOFRACSUBS	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UP	RIF	COUT CLOCKS
1729	QUOLEFT1:2473	F/DFRACSUBS F/DFRACADDS F/QUOLEFT4	<-- <-- <--	2431 2434 2443	1723 1728 1732	560 561 563		
	*****			2473				100000001000
	*D - QUOLEFT1 QUOTIENT LEFT SHIFT *			1010	01 01	00 00	000 000	0010 0
	*ROUTINE. D(C) SIGN BIT PRODUCED THROUGH *			00000	000000	11000	100011101	
	*AN ARITHMETIC OPERATION IS PUSHED INTO *							
	*FAC(SF) THROUGH A LEFT SHIFT *							
	*OPERATION *							
	-----*							
	*P2, SR+FAC0(SF), *							
	*NEXT, *							
	* J/QUOLEFT2 *		--> VV					
1730	QUOLEFT2:2435	F/QUOLEFT1	<-- VV	2435				100000001000
	*****			0100	01 01	00 00	000 000	0100 0
	*P2, D+SR PLUS FAC0(SF) PLUS D(C), *			00000	011100	11000	100011110	
	*P3, FAC0(SF)+D (B ADDR), *							
	*NEXT, *							
	* J/QUOLEFT3 *		--> VV					
1731	QUOLEFT3:2436	F/QUOLEFT2	<-- VV	2436				100000001000
	*****			1111	00 00	11 11	000 100	0100 0
	* SAVE NEXT CARRY IN D(C) *			00000	000000	11000	100100011	
	*NOW *							
	-----*							
	*P2, D+FAC1(SF),D(C)+ALU15, *							
	*NEXT, *							
	* J/QUOLEFT4 *		-->	2443	1732	563		
	*****							





# F15

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1735	2 OF BQUOLEFT8 QUOLEFT9:2707	F/QUOLEFT8	<--	2444	1734	563	
	*****			2707			100000001000
	*0 QUOLEFT9B 1 - QUOLEFT9		*	1111	00 01	01 00	000 000 0110 0
			*	00000	001010	11010	100100101
	*P2, D+0 LEFT 1, SHIFT SR, *P3, FAC3(SF)+0 (B ADDR), *NEXT, BUTR(RESET RES), * J/QUOLEFT10		-->	2445	1737	564	
.CASE 1736	1 OF BQUOLEFT8 QUOLEFT9B:2703	F/QUOLEFT8	<--	2444	1734	563	
	*****			2703			000000001000
	* INSTRUCTION IS TO BE ABORTED RESTORE IR		*	1010	10 00	00 00	000 000 0100 0
	*FOR RESTART FLOWS FETCH IR FROM *EMITCON		*	01001	000000	11000	100100110
	*P2, D+EMITCON, *NEXT, J/QUOLEFT11		-->	2446	1738	565	
1737	QUOLEFT10:2445	F/QUOLEFT9	<--	2707	1735	564	
	*****			2445			100000001000
	* D(C)=0 TARGETS		*	1001	10 01	00 00	000 000 0100 0
			*	00001	001100	10111	011110110
	*P2, D+SR PLUS 0(D), D(C)+CIN, *P3, FAC2(SF)+0 (B ADDR), *NEXT, BUTR(FD) * J/RMDRLEFTS		-->	10	2366	1744	566
			-->	11	2367	1740	565
*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
1738	QUOLEFT11:2446	F/QUOLEFT98	<--	2703 1736 564	2446			00000000	1000	
	*F RMDLEFTS D RMDLEFT1		*		0100 00 00	00 01	000 100	0000 0		
	*-----*		*		11011 000000	11000	100101100			
	*P3,		*							
	* DBUF LATCH+D AND		*							
	*ENABLE CLKIR,		*							
	*NEXT,		*							
	* J/QUOLEFT12		* --> VV							
1739	QUOLEFT12:2454	F/QUOLEFT11	<-- VV		2454			00000000	1000	
	* RESTORE IR GO TO RESTART		*		0000 00 00	00 00	000 010	0000 0		
	*FLOWS		*		11010 000000	11100	110011011			
	*-----*		*							
	*P2, IR+DBUF LATCH,		*							
	*NEXT, BUT(GO TO),PAGE+2,		*							
	* J/RESTART		* -->	2633 2244 742						
	*-----*		*							
.CASE	2 OF BQUOLEFT10									
1740	RMDLEFT1:2367	F/QUOLEFT10 F/RMDLEFT4	<-- <--	2445 1737 564 2461 1743 566	2367			10000000	1000	
	* ROUTINE PERFORMS LEFT SHIFT OF THE		*		1111 00 00	10 10	000 300	0010 0		
	*REMAINDER		*		00000 000000	11000	100101110			
	*-----*		*							
	*P2, SR+RMDRO,		*							
	*NEXT,		*							
	* J/RMDLEFT2		* --> VV							
1741	RMDLEFT2:2456	F/RMDLEFT1	<-- VV		2456			00000000	1000	
	*P2, D+RMDR1,D(C)+ALU15,		*		1111 10 00	11 01	110 100	0100 0		
	* RES+RESLEFTGO,		*		01010 010001	11000	100110000			
	*NEXT,		*							
	* J/RMDLEFT3		* -->	2460 1742 566						
	*-----*		*							

# H15

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
1742	RMDRLEFT3:2460	F/RMDRLEFT2	<--	2456	1741	565	2460	00000000	1000
	*P2,            D←D LEFT 1, D(C)←D(C), SHIFT SR, *							1111	00 11 01 00 110 111 0110 0
	*PJ,            RMDR1←D (B ADDR), *							00000	011010 11000 100110001
	*NEXT, *								
	*                J/RMDRLEFT4		--> VV						
1743	RMDRLEFT4:2461	F/RMDRLEFT3	<-- VV	2461			2461	10000000	1000
	*P2,            D←SR D(C)←D(C), *							1111	00 00 00 00 000 111 0100 0
	*P3,            RMDR0←D (B ADDR), *							00000	001010 11010 011110110
	*NEXT,        BUTR(RESET RES), *								
	*                J/RMDRLEFT5		--> VV						
.CASE	1 OF BQUOLEFT10			2445	1737	564			
1744	RMDRLEFT5:2366	F/BQUOLEFT10 F/RMDRLEFT4	<-- VV	2366			2366	10000000	1000
	*P2,            SR←RMDR2, *							1111	00 00 11 10 000 000 0010 0
	*NEXT, *							00000	000000 11000 100110010
	*                J/RMDRLEFT6		--> VV						
1745	RMDRLEFT6:2462	F/RMDRLEFT5	<-- VV	2462			2462	00000000	1000
	*P2,            D←RMDR3, D(C)←D(C), *							1111	10 00 11 00 110 111 0100 0
	*                RES←RESLEFTD(C), *							01011	010001 11000 100110100
	*NEXT, *								
	*                J/RMDRLEFT7		-->	2464	1746	567			



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF COUT	EXTENSION UPF	CLOCKS
1749	RMDRLEFT10: 2465	F/RMDRLEFT8 F/RMDRLEFT9	(-- (--	2646 1747 567 2647 1748 567				
	*****			2465			100000001000	
	* STORE RMDR2 TARGETS - 00 -			1111 00 00 00 00 000 111 0100 0				
	*DFRACADD			00000 011010 01111 011010100				
	-----							
	*P2, D+SR D(C)+D(C)							
	*P3, RMDR2+D (B ADDR)							
	*NEXT, BUT(COUNT IS -1#D(C)),							
	* J/DFRACADD		-->	00 2324 1724 560				
	* J/DFRACSUB		-->	01 2325 1719 558				
	* J/DIVFDW14		-->	10 2326 1697 552				
	* J/DIVFDW15		-->	11 2327 1698 552				
	*****							
.TOC "	FLOATING POINT STORE EXPONENT ##FLPT##"							
.CASE	21 OF BWFORK							
1750	STOREXPW: 0364	F/SETCLASS3 F/BFORK	(-- (--	207 1239 403 474 1318 429				
	*****			364			100000001000	
	*01 - DFRACSUB 10 - DIVFDW14 11 -			1011 10 00 10 11 000 000 0100 0				
	*DIVFDW15 INSTRUCTION EXTRACTS EXPONENT			01111 000000 11000 110000000				
	*FROM FAC3(SF) UNBIASES EXPONENT FROM							
	*EXCESS 200 NOTATION AND CONVERTS TO 2'S							
	*COMPLEMENT NOTATION AND STORED FAC(SF)							
	*DATA IS LEFT INTACT EXTRACT EXP D(C) =							
	*0							
	-----							
	*P2, D+FAC3(SF) AND EXPMSK,							
	* D(C)+CIN,							
	*NEXT, J/STEXP2		-->	600 1753 569				
	*****							

# K15

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	22 OF BWFORK						
1751	STOREXP0W:0365	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429			
	***** * SECONDARY ENTRY POINT FROM FLPDECODE * WHEN * I#D1 *-----* * P2, D+FAC3(SF) AND EXPMSK, * D(C)+CIN, * NEXT, * J/STEXP2		<-->	600 1753 569			365 1011 10 00 10 11 000 000 0100 0 01111 000000 11000 110000000
.CASE	23 OF BWFORK						
1752	STOREXPXW:0366	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429			
	***** * THIRD ENTRY POINT FROM FLPDECODE WHEN * I#D15 *-----* * P2, D+FAC3(SF) AND EXPMSK, * D(C)+CIN, * NEXT, * J/STEXP2		<--> VV				366 1011 10 00 10 11 000 000 0100 0 01111 000000 11000 110000000
		F/STEXP0T2 F/STOREXPW F/STOREXP0W F/STOREXPXW	<-- <-- <-- <--	411 1268 411 364 1750 568 365 1751 569			
1753	STEXP2:0600		<--				
	***** * ENTRY FROM * HFPP *-----* * P2, D+D RIGHT 7 D(C)+D(C), * P3, R(T3)+D (B ADDR), * NEXT, * J/STEXP3		<-->	610 1754 570			600 1111 00 11 01 00 011 111 0100 0 00110 001110 11000 110001000





M15

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UBF
<pre> .TOC * STORE CONVERT FLOATING TO INTEGER  **FLPT** : THIS INSTRUCTION CONVERTS FROM FLOATING FORMAT TO INTEGER FORMAT. : CONVERSION MAY BE FROM SINGLE OR DOUBLE PRECISION (FD BIT OF FPS) : TO SHORT OR LONG INTEGER (FL BIT OF FPS) DEPENDENT ON FPS STATUS : BITS - : STORE COVERT INTEGER CONVERSION ERROR MAY EXIST IF NUMBER CONVERTED : IS OUTSIDE THE RANGE CAPABILITY OF THE INTEGER TYPE. : DESTINATION = C(XJ) IF -JL &lt; C(XJ) &lt; JL+1, ELSE DEST=0. : WHERE C(XJ) SPECIFIES CONVERSION FROM FLOATING MODE X TO INTEGER : MODE J, AND J=SHORT IF FL=0 OR LONG IF FL=1 AND X=SINGLE IF FD=0 : OR X=DOUBLE IF FD=1. : JL = IS THE LARGEST INTEGER 2**15-1 FOR FL=0 :           2**31-1 FOR FL=1 : CONDITION CODES - : C+FC+0 IF -JL-1 &lt; C(XJ) &lt; JL+1, ELSE FC+1 : V+FV+0 : Z+FZ+1 IF DEST=0 ELSE FZ=0 : N+FN+1 IF DEST &lt; 0 ELSE FN CASE 24 OF BNFORK </pre>							
1757	STCTW:0367	F/SETCLASS3 F/BNFORK	<-- <--	207 1239 403 474 1318 429			
	***** *NEXT, CALL MOVSFDDST, * RETURN+STCTW2 *****		-->	4747 2239 740 *****			367 0100 00 01 11 10 010 100 0000 0 00000 000000 11100 111100111
				VV 4362 ~1758 571 4732 ~1289 417 4733 1290 417			
1758	STCTW2:4362	F/SICT5 F/SICT6	<-- <--	4362 ~1758 571 4732 ~1289 417 4733 1290 417			
	***** * READ FPS FOR * FL ----- *SELECT, FPS(READ) *P3 EMITCON+DATA, *NEXT, * J/STCTW3 *****		-->	4364 1759 572			4362 0000 10 00 11 01 000 000 0000 0 11001 100000 11000 011110100

# N15

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
1759	STCTW3:4364 ***** *P2, D+EMITCON, *NEXT, * J/STCTW4 *****	<--	4362 1758 571	4364	1010 01001	10 00 000000	00 00 11000	000 000 011110110	0100 0
1760	STCTW4:4366 ***** * ALIGN FL BIT TO *SR<00> ----- *P2, D+D RIGHT 6,SR+D RIGHT 6, *NEXT, * J/STCTW5 *****	<-- VV		4366	1111 01000	00 00 000000	01 11 11000	000 000 011111000	0110 0
1761	STCTW5:4370 ***** * ISOLATE EXPONENT *D(C)=0 ----- *P2, D+FDST3 AND EXPMASK,D(C)+CIN, *NEXT, * J/STCTW6 *****	<-- VV		4370	1011 01111	10 00 000000	10 01 11000	011 000 011111010	0100 0
1762	STCTW6:4372 ***** * RIGHT JUSTIFY EXPONENT D(C)=0 SELECT *EMIT ----- *P2, D+D RIGHT 7,D(C)+D(C), *P3, R(T1)+D (B ADDR), *NEXT, BUT(CLEAR FLAGS), * J/STCTW7 *****	<-- VV		4372	1111 00110	00 10 011110	01 00 11010	110 111 011111100	0100 0
			4374 1763 573						

BOX NO.	TAG: ADDRESS	OPERATION	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA USF	EXTENSION RIF COUT CLOCKS UPF
1763	STCTW7:4374	F/STCTW6	4372 1762 572		4374			000000001000
		* UNBIAS EXPONENT D(C)=0 CHECK SIGN			0101	10 00	11 00	110 100 0100 0
		* OPERATION EQUIVALENT TO R(T1) MINUS			00100	010110	11000	011111110
		* #201						
		* P2,						
		* D+R(T1) PLUS NOT CNST2						
		* 00 PLUS D(C), D(C)+ALU15,						
		* P3, R(T1)+D (A ADDR),						
		* NEXT,						
		* J/STCTW8	-->	VV				
1764	STCTW8:4376	F/STCTW7			4376			000000001000
		* CHECK UNBIASED			1111	00 00	10 01	011 111 1100 0
		* EXPONENT			00000	000000	01101	000000010
		* P3, D+FDST3 (P3), D(C)+D(C),						
		* NEXT, BUTR(D15),						
		* J/STCTW9	-->	10 4002 1765 573				
		* J/STCTW10	-->	11 4003 1766 574				
.CASF	1 OF BSTCTW8							
1765	STCTW9:4002	F/STCTW8			4002			000000001000
		* TARGETS - 00 - STCTW9 01 - STCTW10 LOAD			0000	00 11	00 00	110 000 0001 0
		* FL INTO BA<00> SAVE			00000	011110	11000	100000000
		* SIGN						
		* P1, BA+SR,						
		* P3, R(T2)+D (B ADDR),						
		* NEXT,						
		* J/STCTW11	-->	4400 1767 574				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSB	BUSA	EXTENSION
CASE		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF	COUT CLOCKS
1766	STCTW10:4003 F/STCTW8	<--	4376 1764 573	4003					000000001000
	* UNBIASED EXPONENT IS NEGATIVE INTEGER				0011	00 11	00 00	011 010	0101 1
	* RESULT IS ZERO LOAD BA<00> WITH				00000	001110	11000	100011010	
	* FL								
	* P1, BA+SR								
	* P2, D+0 D(C)+ALU00								
	* P3, FDST3+0 (B ADDR),								
	* DEFER, SET CC,								
	* NEXT,								
	* J/STCTW35	-->	4432 1791 581						
1767	STCTW11:4400 F/STCT 9	<--	4002 1765 573	4400					000000001000
	* INSERT HIDDEN BIT SET CC S =				1110	10 00	10 01	011 111	0100 1
	* 0				00100	000000	11000	100000001	
	* P2, D+FDST3 OR HIDDENBIT,								
	* D(C)+D(C),								
	* DEFER, SET CC,								
	* J/STCTW12	-->	VV						
1768	STCTW12:4401 F/STCTW11	<--	VV	4401					000000001000
	* TARGETS - BUT(FL) 0 -				1111	00 11	01 01	011 000	0100 0
	* STCTW13				00101	001010	10011	000000110	
	* P2, D+0 SWAP								
	* P3, FDST3+0 (B ADDR),								
	* NEXT, BUTR(BA00),								
	* J/STCTW13	-->	10 4006 1769 575						
	* J/STCTW14	-->	11 4007 1770 575						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION RIF COUT CLOCKS UPF
CASE 1769	1 OF BSTCTW12 STCTW13:4006	F/STCTW12	<--	4401 1768 574				
	*1 - STCTW14 FETCH 16 *DECIMAL							4006 0000 10 00 00 00 010 000 0000 0 00010 100000 11000 100000100
	*P3, MD+20 (BC), *NEXT, * J/STCTW15		-->	4404 1771 575				
CASE 1770	2 OF BSTCTW12 STCTW14:4007	F/STCTW12	<--	4401 1768 574				
	* FETCH 32 *DECIMAL							4007 0000 10 00 00 00 100 000 0000 0 00010 100000 11000 100000100
	*P3, MD+40 (BC), *NEXT, * J/STCTW15		--> VV					
1771	STCTW15:4404	F/STCTW13 F/STCTW14	<-- <-- VV	4006 1769 575				
	* TEST FOR CONVERSION *ERROR							4404 1101 11 10 11 00 110 100 0100 0 00000 000000 11000 100000.01
	*P2, D+R(T1) MINUS MD,D(C)+ALU15, *NEXT, * J/STCTW16		--> VV					
1772	STCTW16:4405	F/STCTW15	<-- VV					
	* STORE SHIFT COUNT TEST CONVERSION *TARGETS							4405 0000 00 11 00 00 011 000 0000 0 00000 011100 10011 000010001
	*P3, FDST0+D (B ADDR), *NEXT, BUTR(D(C)), * J/STCTW17		-->	01 4021 1773 576				
	* J/STCTW18		-->	11 4023 1774 576				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUF CLOCKS UPF
.CASE 1773	1 OF BSTCTW16 STCTW17:4021	F/STCTW16	<--	4405 1772 575	4021			000000001000
	*0 - STCTW17 1 - STCTW18 D(C)=1 *CONVERSION ERROR HAS *OCCURRED				1111 00 00 01 01 00000 000000 11000 100011010			0100 0
	*P2, D+D,D(C)+CIN, *NEXT, * J/STCTW35		-->	4432 1791 581				
.CASE 1774	2 OF BSTCTW16 STCTW18:4023	F/STCTW16	<--	4405 1772 575	4023			000000001000
	* FETCH RIGHT SHIFT *CONTROL				0010 10 00 00 00 00010 100000 11000 100001000			0000 0
	*P3, MD+RESRIGHT, *NEXT, * J/STCTW19		--> VV					
1775	STCTW19:4410	F/STCTW18	<-- VV		4410			000000001000
	* FOR SHIFT RIGHT *FOLLOWING				1010 00 11 00 00 00000 000000 11000 100001001			0100 0
	*P2, D+FDST2, *NEXT, * J/STCTW20		--> VV					
1776	STCTW20:4411	F/STCTW19	<-- VV		4411			000000111000
	*BYTE SHIFT LEFT				1111 00 11 01 01 00101 001010 11000 100010000			0100 0
	*P2, D+D SWAP, *P3, FDST3(LBYTE)+D (B ADDR), *NEXT, * J/STCTW21		-->	4420 1777 577				



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1781	STCTW25:4425 ***** * LOAD DATA TO BE SHIFTED TO PROPER * * INTEGER LOAD RESIDUAL * * CONTROL * ----- *P2, D+FDST3,D(C)+D(C),RES+MD, * *NEXT, * * J/STCTW26 * *****	<--	4000 1780 577	4425	1111 0000	11 10 010001	10 01 11000	011 111 0107 0 000101000
.CASE 1 OF BSTCTW26	STCTW26:4050 ***** * SHIFT DATA WHEN COUNT IS * *SATISFIED * ----- *P2, D+D RIGHT 1,D(C)+D(C), * * SHIFT SR * *P3, FDST3+D (B ADDR), * *NEXT, BUT(COUNT IS -1), * * J/STCTW26 * * J/STCTW26 * * J/STCTW27 * *****	<-- <--	4425 1781 578 4050 1782 578	4050	1111 0000	00 11 01 10 001010	01 10 011 111 0110 0 000101000	
.CASE 2 OF BSTCTW26	STCTW27:4051 ***** *GO TO STCTW27 STORE 2ND * *WORD * ----- *P2, D+SR, * *P3, FDST2+D (B ADDR), * *NEXT, BUT(CLEAR FLAGS), * * J/STCTW28 * *****	<-- <-- VV	4425 1781 578	4051	1111 0000	00 11 00 00 001100	01 000 0100 0 000000001	
1783	STCTW28:4001 *****	<--	4001 1784 579					



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1784	2 OF BSTCTW23 STCTW28:4001	F/STCTW23	<-- 4424 1779 577	4001			000000001000
	* LOOK AT ORIGINAL			1111 00 00	11 01	110 100	0100 0
	* SIGN			00000 000000	11000	100010110	
	*P2 D+R(T2A),D(C)+ALU15,						
	*NEXT, J/STCTW29		--> VV				
1785	STCTW29:4426	F/STCTW28	<-- VV	4426			000000001000
	* TEST ORIGINAL SIGN BIT TARGETS			0011 00 00	00 00	000 000	0010 0
	*-			00000 000000	10011	000100001	
	*P2 SR+0						
	*NEXT, BUTR(D(C)),						
	* J/STCTW30		--> 01 4041 1786 579				
	* J/STCTW31		--> 11 4043 1787 580				
.CASE 1786	1 OF BSTCTW29 STCTW30:4041	F/STCTW29	<-- VV	4041			000000001000
	*0 - STCTW30 1 - STCTW31			1111 00 00	10 01	011 000	0100 0
	*P2 D+FDST3,			00000 000000	11000	100011000	
	*NEXT, J/STCTW34		--> 4430 1790 581				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA LBF	EXTENSION		CLOCK			
								RIF	COUT				
.CASE 1787	2 OF BSTCTW29 STCTW31:4043	F/STCTW29 *-----*	<--	4426	1785	579							
	* 2'S COMPLEMENT INTEGER BUT(FL), 0 - *STCTW32			4043				00000000	1000				
	*-----*			0000	00 00	10 01	011 111	0100	0				
	*P2, D+NOT FDST3, D(C)+D(C), *P3, FDST3+D (A ADDR), *NEXT, BUTR(BA00), * J/STCTW32						00000	000010	10011	000110010			
	* J/STCTW32		-->	10	4062	1788	580						
	* J/STCTW33		-->	11	4063	1789	580						
.CASE 1788	1 OF BSTCTW31 STCTW32:4062	F/STCTW31 F/STCTW33 *-----*	<-- <--	4043 4063	1787 1789	580 580							
	*1 - STCTW33 *D(C)=0			4062				00000000	1000				
	*-----*			0100	11 01	10 01	011 001	0100	1				
	*P2, D+FDST3 PLUS 0 PLUS D(C), * D(C)+PS(C), *P3, FDST3+D (A ADDR), *DEFER, SET CC, *NEXT, J/STCTW34						00000	000010	11000	100011000			
	* J/STCTW34		-->	4430	1790	581							
.CASE 1789	2 OF BSTCTW31 STCTW33:4063	F/STCTW31 F/STCTW33 *-----*	<-- <--	4043 4063	1787 1789	580 580							
	*P2, D+SR MINUS FDST2, D(C)+COUT15, *P3, FDST2+D (B ADDR), *NEXT, J/STCTW32			4063				00000000	1000				
	* J/STCTW32		-->	4062	1788	580		1101	00 11	00 00	011 110	0100	0
	*-----*			00000	001100	11000	000110010						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
1790	STCTW34:4430	F/STCTW30 F/STCTW32	<-- <--	4041 1786 579 4062 1788 580					000000001000
	* DETECT SIGN CHANGE AND FINAL CONVERSION * * ERROR *								0110 01 11 01 01 110 100 0100 0 00000 000000 11000 100011010
	* P2, D+D XOR R(T2),D(C)+ALU15, * NEXT, * J/STCTW35		--> VV						
1791	STCTW35:4432	F/STCTW10 F/STCTW17 F/STCTW34	<-- <-- <-- VV	4003 1766 574 4021 1773 576					000000001000
	* P2, D+PC (A),D(C)+D(C), * P3, FPA+D (B ADDR), * NEXT, * J/STCTW36		--> VV						1111 00 10 10 01 111 111 0100 0 00000 011100 11000 100011100
1792	STCTW36:4434	F/STCTW35	<-- VV						000000001000
	* TARGETS * -								0000 10 00 10 01 000 000 0000 0 11001 100000 10011 000001101
	* SELECT, PS(READ), * P3, EMITCON+DATA, * NEXT, BUTR(D(C)), * J/STCTW37		-->	01 4015 1793 581					
	* J/STCTW41		-->	11 4017 1797 583					
.CASE 1793	1 OF BSTCTW36 STCTW37:4015	F/STCTW36	<-- VV						000000001000
	* 0 - STCTW37 1 - STCTW41 DATA * OK								1010 10 00 00 00 000 000 0100 0 01001 000000 11000 100011101
	* P2, D+EMITCON, * NEXT, * J/STCTW38		-->	4435 1794 582					

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1794	STCTW38:4435 ***** *GO SET FCC'S BUT(FL) TARGETS *- ----- *SELECT, FPSCC(DBUF), *P3, FPSCC+DATA, *NEXT, BUTR(BA00), * J/STCTW39 * J/STCTW40 *****	<--	4015 1793 581	4435	0000 00000	00 00 000000	00 00 10011	011000001000 000 000 0000 0 000011110
CASE 1795	1 OF BSTCTW38 STCTW39:4036 ***** *0 - STCTW39 1 - STCTW40 ----- *NEXT, CALL STOREINT, * RETURN+BRA05 *****	<-- VV	10 4036 1795 582 11 4037 1796 582	4036	0000 00000	00 00 000000	00 00 11100	000000001000 011 010 0000 0 101101001
CASE 1796	2 OF BSTCTW38 STCTW40:4037 ***** *NEXT, CALL STOREINTLG, * RETURN+BRA05 *****	<--	2551 2010 651 VV 3 283 126 4435 1794 582	4037	0000 00000	00 00 000000	00 00 11100	000000001000 011 100 0000 0 110011010
		-->	4632 2048 667 VV 3 283 126					

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF LPF	COUT	CLOCKS
.CASE 1797	STCTW41:4017	F/STCTW36	<--	4434 1792 581						
	*****									
	* CONVERSION ERROR HAS OCCURRED *									
	-----									
	*P2, D←D, D(C)←D(C), SR←D, *DEFER, SET CC, *P3, FDST32←D (A ADDR), *NEXT, J/STCTW42									
			-->	VV						
1798	STCTW42:4436	F/STCTW41	<--	VV						
	*****									
	*P2, D←FDST3 PLUS CNST4 PLUS 1, *NEXT, J/STCTW43									
			-->	VV						
1799	STCTW43:4440	F/STCTW42	<--	VV						
	*****									
	* SET FZ AND FC BITS TARGETS *									
	-----									
	*SELECT, FPSCC(DBUF), FPSCC←DATA, *NEXT, BUTR(BA00), J/STCTW44									
		J/STCTW44	-->	10 4046 1800 583						
		J/STCTW45	-->	11 4047 1801 584						
.CASE 1800	STCTW44:4046	F/STCTW43	<--	VV						
	*****									
	* 0 - STCTW44 1 - STCTW45 *									
	-----									
	*NEXT, CALL STOREINT, RETURN←STCTW46									
			-->							
	*****									
				2551 2010 651						
	*****									
				VV						
				4442 1802 584						

```

4017      000000001000
0011 00 00 00 01 011 111 0110 1
0000 000110 11000 100011110

4436      000000001000
1100 10 00 10 01 011 000 0100 0
0110 000000 11000 100100000

4440      011000001000
0000 00 00 00 00 000 000 0000 0
0000 000000 10011 000100110

4046      000000001000
0100 00 10 01 00 010 010 0000 0
0000 000000 11100 101101001
    
```

# M16

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 1801	2 OF BSTCTW43 STCTW45:4047	F/STCTW43	<--	4440 1799 583						
	***** *NEXT, CALL STOREINTLG, * RETURN+STCTW45 *****		-->	4632 2048 667						
				VV 4442 1802 584						
1802	STCTW46:4442 ***** * GO TO TRAPS TO PROCESS CONVERSION *ERROR *-----* *NEXT, BUT(GO TO), PAGE+2, * RETURN+CONVTRAP, * J/TPREAMBLE *****									
			-->	2544 1969 637						
.TOC " STORE CONVERT PRECISION ##FLPT##" : INSTRUCTION PERFORMS CONVERSION OF OF DATA IN FAC(SF) : FROM PRECISION SPECIFIED IN FD BIT TO OPPOSITE PRECISION : DATA IN FAC(SF) IS LEFT UNCHANGED : IF THE EXPONENT FIELD IS EQUAL TO ZERO, AND EXACT ZERO : BECOMES STORED										
.CASE 1803	25 OF BIFORK STCPZW:0370	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429						
	***** * FROM FLPDECODE *1*DS *-----* *P2, D+FAC3(SF) AND EXPMASK, *NEXT, BUTR(NOT DST REG 6-7), * J/STCPW2 * J/STCPW2 * J/STCPW3 *****									
			-->	10 142 1804 585						
			-->	11 143 1805 585						

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1804	1 OF BSTCPZW STCPW2:0142	F/STCPZW	<-- 370 1803 584	142			000000001000
	*NEXT, BUT(GO TO), PAGE+2, * RETURN+OPCODEERR, * J/TPREAMBLE		--> 2544 1969 637	0100 00 10 11 00 00000 000000 11100			001 010 0000 0 101100100
.CASE 1805	2 OF BSTCPZW STCPW3:0143	F/STCPZW	<-- 370 1803 584	143			000000001000
	*NEXT, CALL MOVSFDDST, * RETURN+STCPW4		4747 2239 740 VV 4444 1807 585	0100 00 10 01 00 00000 000000 11100			100 100 0000 0 111100111
.CASE 1806	26 OF BWFORK STCPWZ:0371	F/SETCLASS3 F/WFORK	<-- 207 1239 403 <-- 474 1318 429	371			000000001000
	* FROM FLPDECODE * 1*06 *-----* *NEXT, CALL MOVSFDDST, * RETURN+STCPW4		4747 2239 740 VV -1 -1 -1 0 1 1	0100 00 10 01 00 00000 000000 11100			100 100 0000 0 111100111
1807	STCPW4:4444			4444			000000001000
	*P2, D+FDST3 AND EXPMASK, *NEXT, J/STCPW5		4445 1808 586	1011 10 00 10 01 011 000 0100 0 01111 000000 11000 100100101			





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UPF	EXTENSION RIF COUT CLOCKS
.CASE 1812	1 OF BSTCPW6 STCPW9:4132	F/STCPW6	<-- 4121 1809 586	4132			000000001000
	* CONVERT FROM SINGLE TO * *DOUBLE * -----*			0011 00 00 00 01 011 000 0100 0 00000 010110 11000 001011101			
	*P2, D+0, * *P3, FDST10+D (A ADDR), * *NEXT, * * J/STCPW10 * --> VV						
.CASE 1813	1 OF BSTCPW12 STCPW10:4135	F/STCPW9 F/STCPW12	<-- 4132 1812 587 <-- 4452 1815 588	4135			000000001000
	* SET * *FCC'S * -----*			0100 00 10 01 11 '10 010 0000 0 00000 000000 11100 111010111			
	*NEXT, CALL SETFZFN, * * RETURN+STCPW31 * -----*		***** --> 2727 2323 768 *****				
			4476 1834 593				
.CASE 1814	2 OF BSTCPW6 ST.PW11:4133	F/STCPW6	<-- 4121 1809 586	4133			100000001000
	* CONVERT DOUBLE TO * *SINGLE * -----*			1111 00 00 11 11 000 100 0100 0 00000 000000 11000 100101010			
	*P2, D+FAC1(SF),D(C)+ALU15, * *NEXT, * * J/STCPW12 * -->		4452 1815 588				

# EO1

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		RIF	COUT	CLOCKS
								UPF	UPF			
1815	STCPW12:4452	F/STCPW11	<--	4133	1814	587						
	*****											
	* BRANCH ON ROUND BIT TARGETS *											
	*-----*											
	*P2,            SR+0,											
	*NEXT,        BUTR(D(C)),											
		J/STCPW10	-->	01	4135	1813	587					
		J/STCPW13	-->	11	4137	1816	588					
	*****											
.CASE	2 OF BSTCPW12	F/STCPW9	<--	4132	1812	587						
1816	STCPW13:4137	F/STCPW12	<-- VV									
	*****											
	*0 - STCPW10 1 - STCPW13 BRANCH ON FT *											
	*BIT TARGETS *											
	*-----*											
	*SELECT,      EMIT											
	*NEXT,        BUTR(FPS05),											
		J/STCPW14	-->	110	4146	1817	588					
		J/STCPW15	-->	111	4147	1818	589					
	*****											
.CASE	1 OF BSTCPW13	F/STCPW13	<-- VV									
1817	STCPW14:4146	F/STCPW13	<-- VV									
	*****											
	*0 - STCPW14 1 - STCPW15 *											
	*-----*											
	*P2,            D+SR PLUS FOST2 PLUS 1,											
	*P3,            D(C)+COUT15,											
	*NEXT,        FOST2+D (B ADDR),											
		J/STCPW16	-->	4454	1819	589						
	*****											

ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		RIF	COUT	CLOCKS
4452				00000000	1000			
	0011	00 00	00 00	000 000	0010	0		
	00000	000000	10011	001011101				
4137				00000000	1000			
	0000	00 00	00 01	000 000	0000	0		
	11001	000000	01000	001100110				
4146				00000000	1000			
	1100	00 11	00 00	011 110	0100	0		
	00000	001100	11000	100101100				

# FO1

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1818	STCPW15:4147	F/STCPW13	<-- 4137 1816 588	4147			000000001000
	* TRUNCATE			0100 00 10	01 11	110 010	0000 0
	*MODE			00000 000000	11100	111010111	
	*NEXT, CALL SETFZN,						
	* RETURN+STCPW31		--> 2727 2323 768				
1819	STCPW16:4454	F/STCPW14	<-- 4476 1834 593 4146 1817 588	4454			000000001000
	* FINISH			0100 11 01	10 01	011 000	0100 0
	*ROUNDING			00000 000010	11000	100101110	
	*P2, D+FDST3 PLUS 0 PLUS D(C),						
	*P3, FDST3+D (A ADDR),						
	*NEXT, J/STCPW17		--> VV				
1820	STCPW17:4456	F/STCPW16	<-- VV	4456			000000001000
	* CHECK			0110 01 10	01 01	110 100	0100 0
	*OVERFLOW			00000 000000	11000	100110000	
	*P2, D+D XOR R(T1),D(C)+ALU15,						
	*NEXT, J/STCPW18		--> VV				
1821	STCPW18:4460	F/STCPW17	<-- VV	4460			000000001000
	* BRANCH ON OVERFLOW TARGETS			1111 00 00	10 01	011 111	0100 0
	*-			00000 000000	10011	001100001	
	*P2, D+FDST3,D(C)+D(C),						
	*NEXT, BUTR(D(C)),						
	* J/STCPW19		--> 01 4141 1822 590				
	* J/STCPW20		--> 11 4143 1823 590				

# G01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SF	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1 OF BSTCPW18							
1822	STCPW19:4141	F/STCPW8 F/STCPW18	<-- <--	4450 1811 586 4460 1821 589			
	*****						4141 000000001000
	*0 - STCPW19 1 - STCPW20 NO OVERFLOW OCCURRED						0100 00 10 01 11 110 010 0000 0 00000 000000 11100 111011000
	*NEXT, BUT(GO TO), PAGE+2, RETURN+STCPW31, J/SETFZFN2		-->	2730 2324 769			
.CASE 2 OF BSTCPW18							
1823	STCPW20:4143	F/STCPW8 F/STCPW18	<-- <--	4450 1811 586 4460 1821 589			
	*****						4143 000000001000
	* OVERFLOW OCCURRED REFLIP SIGN						0110 10 00 10 01 011 100 0100 0 00101 000010 11000 100110010
	*P2, D+FDST3 XOR SIGNBIT, D(C)+ALU15, *P3, FDST3+D (A ADDR), *NEXT, J/STCPW21		-->	VV			
1824	STCPW21:4462	F/STCPW20	<--	VV			
	*****						4462 000000001000
	* FOR COND CODES BRANCH ON SIGN TARGETS						0000 10 00 00 00 000 110 0000 0 00010 100000 10011 001101001
	*P3, MD+6 (BC), *NEXT, BUTR(D(C)), J/STCPW22		-->	01 4151 1825 591			
		J/STCPW22 J/STCPW23	-->	11 4153 1826 591			
	*****						

# H01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
1825	STCPW22:4151	F/STCPW21 F/STCPW23	<-- <--	4462 1824 590 4153 1826 591				
	*****			4151				000000001000
	*0 - STCPW22 1 - STCPW23				1010 11 10	00 00	000 000	0100 0
	-----*				00000 000000	11000	100110100	
	*P2, D+MD,							
	*NEXT,							
	* J/STCPW24		-->	4464 1827 591				
	*****							
1826	STCPW23:4153	F/STCPW21 F/STCPW23	<-- <--	4462 1824 590 4153 1826 591				
	*****			4153				000000001000
	* FOR COND				0000 10 00	00 00	001 110	0000 0
	*CODES				00010 100000	11000	001101001	
	-----*							
	*P3, MD+16 (BC),							
	*NEXT,							
	* J/STCPW22		-->	4151 1825 591				
	*****							
1827	STCPW24:4464	F/STCPW22	<--	4151 1825 591				
	*****			4464				011000001000
	* LOAD COND				0000 00 00	00 00	000 000	0000 0
	*CODES				00000 000000	11000	100110110	
	-----*							
	*SELECT, FPSCC(DBUF),							
	*P3, FPSCC+DATA,							
	*NEXT,							
	* J/STCPW25		--> VV					
	*****							
1828	STCPW25:4466	F/STCPW24	<-- VV					
	*****			4466				000000001000
	* CHECK ON INTERRUPT				1111 00 00	11 00	011 000	0100 0
	*ENABLED				00000 000000	11010	100111000	
	-----*							
	*P2, D+FPSHIFEC,							
	*NEXT, BUT(CLEAR FLAGS),							
	* J/STCPW26		-->	4470 1829 592				
	*****							



# J01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
1832	STCPW29:4157 F/STCPW27 ***** * INTERRUPT ENABLED STORE * *DATA * *-----* *NEXT, CALL STCFLT, * * RETURN+STCPW30 * *****	<-- 4472 1830 592		4157			00000000	1000
				0100 00 10 01 11	100 100	0000 0		
				00000 000000	11100	110010001		
				*****				
		--> 4621 2042 664						
				VV				
		-1 -1 -1 0 1 1						
1833	STCPW30:4474 ***** *NEXT, BUT(GO TO) PAGE+2, * * RETURN+OFL0TRAP, * * J/TPREAMBLE * *****	--> 2544 1969 637		4474			00000000	1000
				0100 00 10 11 10	000 010	0000 0		
				00000 000000	11100	101100100		
1834	STCPW31:4476 F/STCPW28 ***** * STORE * *DATA * *-----* *NEXT, CALL STCFLT, * * RETURN+BRA05 * *****	<-- 4155 1831 592		4476			00000000	1000
				0000 00 00 00 00	011 100	0000 0		
				00000 000000	11100	110010001		
				*****				
		--> 4621 2042 664						
				VV				
		3 283 126						

# K01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
		OFST	ADDR	BOX					PAGE	RIF
.TOC = LOAD EXPONENT INSTRUCTION ##FLPT## .INSTRUCTION LOADS EXPONENT INTO FAC3(SF) .OVERFLOW OR UNDERFLOW MAY OCCUR DEPENDENT ON SIZE OF EXPONENT .FETCHED .-207 < EXPONENT < 200 ELSE UNDERFLOW OR OVERFLOW										
.CASE 27 OF BWFORK										
1835	LDEXPZW:0372	F/SETCLASS3	<--	207	1239	403				
		F/WFORK	<--	474	1318	429				
	*****								000000001000	
	* HERE FROM FLPDECODE AND 1*07 PREPARE								1111 00 10 10 01 111 011 0100 0	
	*FOR FPA								00000 011100 11100 111001101	
	*LOAD									
	-----									
	*P2, D+PC (A),									
	*P3, FPA+D (B ADDR),									
	*NEXT, BUT(GO TO),PAGE+3,									
	* J/LDEXP3		-->	3715	1838	595				
*****										
.CASE 28 OF BWFORK										
1836	LDEXPOM6W:0373	F/SETCLASS3	<--	207	1239	403				
		F/WFORK	<--	474	1318	429				
	*****								000000001000	
	* HERE FROM FLPDECODE AND								1111 00 10 10 01 111 011 0100 0	
	*1*08								00000 011100 11100 111001101	
	-----									
	*P2, D+PC (A),									
	*P3, FPA+D (B ADDR),									
	*NEXT, BUT(GO TO),PAGE+3,									
	* J/LDEXP3		-->	3715	1838	595				
*****										
.CASE 29 OF BWFORK										
1837	LDEXPNZW:0374	F/SETCLASS3	<--	207	1239	403				
		F/WFORK	<--	474	1318	429				
	*****								000000001000	
	* HERE FROM FLPDECODE AND								1111 00 10 10 01 111 011 0100 0	
	*1*014								00000 011100 11100 111001101	
	-----									
	*P2, D+PC (A),									
	*P3, FPA+D (B ADDR),									
	*NEXT, BUT(GO TO),PAGE+3,									
	* J/LDEXP3		-->	3715	1838	595				
*****										





# M01

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 596

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSC UBF	EXTENSION	
								RIF	COUT CLOCKS
.CASE 1841	1 OF BLDEXPS								
	LDEXP6:3140	F/LDEXPS	<--	3723	1840	595	3140		000000001000
	*00 - LDEXP6 01 - LDEXP7 10 - LDEXP8 11 - *								1011 10 00 11 00 110 000 0100 0
	*LDEXP9 CHECK OVERFLOW D(C) = * *0 * *-----*								00111 000000 11000 111010110
*P2, D+R(T1) AND HIBYTE MASK, *									
*NEXT, D(C)+CIN, *									
* J/LDEXP10		-->	3726	1845	597				
.CASE 1842	2 OF BLDEXPS								
	LDEXP7:3141	F/LDEXPS	<--	3723	1840	595	3141		000000001000
	* OVERFLOW OR *								1010 10 00 00 00 000 000 0010 0
	* UNDERFLOW * *-----*								01100 000000 11000 111010111
*P2, SR+CNST4, *									
*NEXT, *									
* J/LDEXP13		-->	3727	1848	597				
.CASE 1843	3 OF BLDEXPS								
	LDEXP8:3142	F/LDEXPS	<--	3723	1840	595	3142		000000001000
	* ZERO EXPONENT RESULT SET UNDEFLOW *								1010 10 00 00 00 000 000 0010 0
	* FLAG * *-----*								01100 000000 11000 110000111
*P2, SR+CNST4, *									
*NEXT, *									
* J/LDEXP12		-->	3407	1847	597				
.CASE 1844	4 OF BLDEXPS								
	LDEXP9:3143	F/LDEXPS	<--	3723	1840	595	3143		000000001000
	* OVERFLOW OR *								1010 10 00 00 00 000 000 0010 0
	* UNDERFLOW * *-----*								01100 000000 11000 111010111
*P2, SR+CNST4, *									
*NEXT, *									
* J/LDEXP13		-->	3727	1848	597				

# NO1

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY AOSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1845	LDEXP10:3726	F/LDEXP6	<--	3140 1841 596	3726			000000001000
	* SET FOR DATA OK BRANCH ON OVERFLOW				0011 00 03	00 00	000 000	0010 0
	*TEST				00000 00000	01101	100000101	
	*P2, SR+0							
	*NEXT, BUTR(D(14-00) IS 0),							
	* J/LDEXP11		-->	01 3405 1846 597				
	* J/LDEXP12		-->	11 3407 1847 597				
CASE 1846	1 OF BLDEXP10	F/LDEXP10	<-- VV		3405			000000001000
	*TARGETS - 0 - OVERFLOW - LDEXP11 1 - OK				1010 11 11	00 00	000 000	0010 0
	* - LDEXP12 SET OVERFLOW				00000 00000	11000	100000111	
	*FLAG							
	*P2, SR+2,							
	*NEXT, J/LDEXP12		-->	VV				
CASE 1847	2 OF BLDEXP10	F/LDEXP10	<--	3726 1845 597	3407			000000001000
	*P2, D+R(T1) AND NOT HIBYTE MASK,				0111 10 00	11 00	110 111	0100 0
	* D(C)+D(C),				00111 00000	11000	111011001	
	*NEXT, J/LDEXP16		-->	3731 1851 598				
1848	LDEXP13:3727	F/LDEXP7 F/LDEXP9	<-- <--	3141 1842 596 3143 1844 596	3727			000000001000
	* BRANCH ON SIGN CHANGE TARGETS				0000 00 00	00 00	000 000	0000 0
	*-				00000 00000	01101	011011010	
	*NEXT, BUTR(D15),							
	* J/LDEXP14		-->	10 3332 1849 598				
	* J/LDEXP15		-->	11 3333 1850 598				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	HDDR ALU BUS	BUSB SP	BUSA JBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BLDEXP13						
1849	LDEXP14:3332	F/LDEXP13 F/LDEXP15	<-- <--	3727 1848 597 3333 1850 598			
	***** *0 - LDEXP14 1 - LDEXP15 *-----* *P2, D+R(T1) AND NOT HIBYTE MASK, * D(C)+D(C), *NEXT, * J/LDEXP16 *****						3332 000000001000 0111 10 00 11 00 110 111 0100 0 00111 000000 11000 111011001
.CASE	2 OF BLDEXP13						
1850	LDEXP15:3333	F/LDEXP13 F/LDEXP15	<-- <--	3727 1848 597 3333 1850 598			
	***** * SET OVERFLOW *FLAG *-----* *P2, SR+2, *NEXT, * J/LDEXP14 *****						3333 000000001000 1010 11 11 00 00 000 000 0010 0 00000 000000 11000 011011010
1851	LDEXP16:3731	F/LDEXP12 F/LDEXP14	<-- <--	3407 1847 597 3332 1849 598			
	***** * TARGETS - WARM - *LDEXP17 *-----* *P2, D+D SWAP RIGHT 1, D(C)+D(C), *P3, R(T1)+D (B ADDR), *NEXT, BUTR(HOTWARM), * J/LDEXP17 * J/LDEXP17 * J/LDEXPHOT *****						3731 000000001000 1111 00 10 01 10 110 111 0100 0 00101 011110 10100 000101010
				10 3052 1852 599 11 3053 1855 599			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1852	1 OF BLDEXP16 LDEXP17:3052	F/LDEXP16	<--	3731 1851 598				
	***** *HOT - LDEXPHOT *-----* *P2, D+NOT EXPMSK AND FAC3(SF), *P3, FAC3(SF)+D (A ADDR), *NEXT, * J/LDEXP18		--> VV					
1853	LDEXP18:3732	F/LDEXP17	<-- VV	3732				100000001000
	***** * ASSEMBLE *EXP *-----* *P2, D+FAC3(SF) OR R(T1), *P3, FAC3(SF)+D (A ADDR), *NEXT, * J/LDEXP19		--> VV					
1854	LDEXP19:3733	F/LDEXP18	<-- VV	3733				000000001000
	***** *NEXT, CALL SETFZFN, * RETURN+FINISH4 *-----* *****		-->	2727 2323 768				
				VV 3740 1965 634				
.CASE 1855	2 OF BLDEXP16 LDEXPHOT:3053	F/LDEXP16	<--	3731 1851 598				
	***** * HOT FPP UNIT ACCEPTS 8 BIT EXPONENT AT *P2 AND ACCEPTS CODE ON EXP IN NEXT CYCLE *AT *P2 *-----* *P3, D+SR (P3), FLPGO, *NEXT, BUT(GO ^0), PAGE+0, * J/BRA05		-->	3 283 126				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC " LOAD AND CONVERT TYPE ##FLPT##" .: INSTRUCTION PERFORMS LOAD OF 2'S COMPLEMENT DATA SHORT OR .: LONG INTEGER DEPENDENT ON FL BIT OF FPS AND CONVERTS TO .: FLOATING POINT DATA FORMAT .: NO INTERRUPTS CAN OCCUR IN THIS INSTRUCTION .CASE 30 OF BWFORK							
1856	LDCTZW:0375	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429			
	***** * HERE FROM FLPDECODE *1*09 *-----* *P3, * EMITCON+GUARD *ENABLE, *NEXT, * J/LDCTW2 *****		<-->	630 1858 600			375 0100 10 10 00 00 000 000 0000 0 01001 100000 11000 110011000
.CASE 31 OF BWFORK							
1857	LDCTNZW:0376	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429			
	***** * HERE FROM FLPDECODE *1*D10 *-----* *P3, * EMITCON+GUARD *ENABLE, *NEXT, * J/LDCTW2 *****		<--> VV				376 0100 10 10 00 00 000 000 0000 0 01001 100000 11000 110011000
*****							
1858	LDCTW2:0630	F/LDCTZ F/LDCTNZ F/LDCTZW F/LDCTNZW	<-- <-- <-- <-- VV	275 1275 413 276 1276 414 375 1856 600			
	***** *SELECT, FPS(READ), *P2, RES+EMITCON, *P3, EMITCON+FPS, *NEXT, * J/LDCTW3 *****		<-->	640 1859 601			630 0000 10 00 11 01 000 000 0000 0 11001 110001 11000 110100000

E02

BC/NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ALDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
1859	LDCTW3:0640 F/LDCTW2	<-- 630 1858 600		640				000000001000
	*FPS IS FETCHED SR DOESN'T MATTER - THIS *			1010	10 00	00 00	000 100	0110 0
	*SETS GUARD REG TO *0			01001	000000	11100	101000000	
	*-----*							
	*P2, D+EMITCON, SHIFT SR, *							
	*NEXT, BUT(GO TO), PAGE+4, *							
	* J/LDCTW4 *	--> VV						
1860	LDCTW4:4500 F/LDCTW3	<-- VV		4500				000000001000
	* D(C)+FL FETCHINTLG NEEDS *			1111	00 00	01 11	000 010	0100 0
	*EMIT *			01000	000000	11010	101000010	
	*-----*							
	*P2, D+D RIGHT 6, D(C)+ALU00, *							
	*NEXT, BUT(CLEAR FLAGS), *							
	* J/LDCTW5 *	--> VV						
1861	LDCTW5:4502 F/LDCTW4	<-- VV		4502				000000001000
	* TARGETS *			1111	00 10	10 01	111 111	0100 0
	*- *			00000	011100	10100	111001010	
	*-----*							
	*P2, D+PC (A), D(C)+D(C), *							
	*P3, FPA+D (B ADDR), *							
	*NEXT, BUTR(HOTWARM), *							
	* J/LDCTW6 *	-->	10 4712 1862 602					
	* J/LDCTW7 *	-->	11 4713 1863 602					
	*-----*							





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
1866	LDCTW10:4505 ***** * SET UP ASP NOT *EQUAL *-----* *P2, D+WHAMI OR CNST8, *P3, WHAMI+D (A ADDR), *NEXT, * J/LDCTW10B *****	<--	4504 1865 602	4505				000000001000		
					1110 10 00 11 00		101 000 0100 0			
					01110 010010 11000		101001000			
1867	LDCTW10B:4510 ***** * TARGETS - BRANCH ON *IR<5:4> *-----* *P2, D+D, *P3, R(GRINC-SAV)+D (A ADDR), *NEXT, BUTR(DM) * J/LDCTW11 * J/LDCTW11 * J/LDCTW12 * J/LDCTW13 * J/LDCTW14 *****	<-- VV		4510				000000001000		
					0011 00 00 00 01		110 000 0100 0			
					00000 000010 00101		100101001			
			1001 4451 1868 603							
			1011 4453 1869 604							
			1101 4455 1870 604							
			1111 4457 1871 604							
.CASE 1868	1 OF BLDCTW10B LDCTW11:4451 ***** *00 - LDCTW11 01 - LDCTW12 10 - LDCTW13 *11 - LDCTW14 *-----* *P2, D+D, *P3, FDS12+D (A ADDR), *NEXT, * J/LDCTW15 *****	<-- VV		4451				000000001000		
					0011 00 00 00 01		011 000 0100 0			
					00000 000100 11000		101001001			
			4511 1872 605							

# H02

PROGRAM FLOWS

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BOX	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	PJSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
1869	LDCTW12:4453	F/LDCTW108	<--	4510	1867	603		
	*****							
	* FOR INTERRUPT							000000001000
	*LATENCY							1010 11 11 00 01 110 000 0100 0
	-----							
	*P2, D+2,							
	*P3, R(GRINC-SAV)+D (A ADDR),							
	*NEXT,							
	* J/LDCTW14		-->	4457	1871	604		
	*****							
1870	LDCTW13:4455	F/LDCTW108	<--	4510	1867	603		
	*****							
	*R(GRINC-SAV)+-2							000000001000
								1101 11 11 10 01 110 000 0100 0
								00000 000010 11000 100101111
	-----							
	*P2, D+R(GRINC-SAV) MINUS 2,							
	*P3, R(GRINC-SAV)+D (A ADDR),							
	*NEXT,							
	* J/LDCTW14		-->	VV				
	*****							
1871	LDCTW14:4457	F/LDCTW108	<--	4510	1867	603		
	*****							
	*P2, D+0,							000000001000
	*P3, FDST2+D (A ADDR),							0011 00 00 00 01 011 000 0100 0
	*NEXT,							00000 000100 11000 101001001
	* J/LDCTW15		-->	4511	1872	605		
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
1872	LDCTW15:4511	F/LDCTW11 F/LDCTW14	<-- <--	4451 1868 603 4457 1871 604	4511			00000000	1000	0
	* GENERATE DUMMY EXPONENT TARGETS - F -				0000	10 00	00 10	001 000	0000	0
	* LDCTW20				00010	100000	10111	111110010		
	*P3, MD+210 (BC),									
	*NEXT, BUTR(FD)									
	* J/LDCTW20		-->	10 4762 1877 606						
	* J/LDCTW22		-->	11 4763 1879 607						
CASE 1873	2 OF BLDCTW6 LDCTW16:4443	F/LDCTW6	<--	4712 1862 602	4443			00000000	1000	0
	*D - LDCTW22 FETCH DOUBLE				0100	00 10	10 01	100 100	0000	0
	*OPERAND				00000	000000	11100	110010100		
	*NEXT, CALL FETCHINTLG,									
	* RETURN+LDCTW17		-->	4624 2043 665						
				VV						
				-1 -1 -1 0 1 1						
1874	LDCTW17:4514				4514			00000000	1000	0
	* SET FLAG FOR FOR ASP NOT				1110	10 00	11 00	101 000	0100	0
	*EQUAL				01110	010010	11000	101001110		
	*P2, D+WHAMI OR CNST8,									
	*P3, WHAMI+D (A ADDR),									
	*NEXT, J/LDCTW18		-->	VV						
1875	LDCTW18:4516	F/LDCTW17	<--	VV	4516			00000000	1000	0
	*P2, D+R(GRINC),				1010	01 11	00 00	110 000	0100	0
	*P3, R(GRINC-SAV)+D (B ADDR),				00000	001010	11010	101010000		
	*NEXT, BUT(CLEAR FLAGS),									
	* J/LDCTW19		-->	4520 1876 606						

# J02

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 606

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS	
								RIF	COUT		
1876	LDCTW19:4520	F/LDCTW18	<--	4516	1875	605					
	*****							4520		000000001000	
	* GENERATE DUMMY EXPONENT TARGETS - F -								0000 10 00 00 10 011 000 0000 0		
	*LDCTW20								00010 100000 10111 111110010		
	-----										
	*P3, MD+230 (BC),										
	*NEXT, BUTR(FD)										
	* J/LDCTW20										
		J/LDCTW20	-->	10	4762	1877	606				
		J/LDCTW22	-->	11	4763	1879	607				
	*****										
.CASE	1 OF BLDCTW15	F/LDCTW15	<--	4511	1872	605					
1877	LDCTW20:4762	F/LDCTW19	<-- VV								
	*****							4762		100000001000	
	*D - LDCTW22 FAC3(SF) AND FAC2(SF) ARE								1111 00 10 11 11 111 000 0100 0		
	*NOT SAVED AS THIS IS A LOAD								00000 001010 11000 101010001		
	*INSTRUCTION										
	-----										
	*P2, D+FAC1(SF)										
	*P3, FAC1(SAV)+D (B ADDR),										
	*NEXT, J/LDCTW21										
		J/LDCTW21	--> VV								
	*****										
1878	LDCTW21:4521	F/LDCTW20	<-- VV								
	*****							4521		100000001000	
	*P2, D+FAC0(SF)								1010 01 01 00 01 111 000 0100 0		
	*P3, FAC0(SAV)+D (A ADDR),								00000 000010 11000 111110011		
	*NEXT, J/LDCTW22										
		J/LDCTW22	-->	4763	1879	607					
	*****										

# K02

PROGRAM FLOWS 11/60 MICROCODE ON: 09-Mar-77 BY ADSYS 020377 PAGE 607

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BLDCTW15							
1879	LDCTW22:4763	F/LDCTW15 F/LDCTW19	<-- <--	4511 1872 605 4520 1876 606				
	***** * HOLD SIGN FOR COMPLEMENT *CHECK *-----* *P2, D+FDST3,D(C)+ALU15, *P3, FAC3(SF)+D (B ADDR), *NEXT, * J/LDCTW23 *****							4763 1111 00 01 10 01 011 103 0100 0 00000 001010 11000 101010100
1880	LDCTW23:4524	F/LDCTW22	<-- VV					
	***** * TARGETS- *-----* *P2, D+FDST2,D(C)+D(C), *P3, FAC2(SF)+D (A ADDR), *NEXT, BUTR(FD) * J/LDCTW24 * J/LDCTW24 * J/LDCTW25 *****			10 4312 1881 607 11 4313 1882 608				4524 1010 00 11 00 11 011 111 0100 0 00000 000100 10111 011001010
.CASE	1 OF BLDCTW23							
1881	LDCTW24:4312	F/LDCTW23 F/LDCTW25	<-- <--	4524 1880 607 4313 1882 608				
	***** *F - LDCTW24 D - LDCTW25 FOR TWO'S COMP *IN *LDCTW28 *-----* * CLEAR CR2,D(C)+D(C),SR+0, *NEXT, * J/LDCTW26 *****							4312 0011 00 00 00 01 101 111 0110 0 00000 000010 11000 101010101

# L02

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 608

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BLDCTW23							
1882	LDCTW25:4313	F/LDCTW23 F/LDCTW25	<-- <--	4524 1880 607 4313 1882 608				
	*****				4313			100000001000
	* DOUBLE PRECISION ENTRY LOAD ZEROS IN LO *							0011 00 00 00 11 000 111 0100 0
	*END							00000 010110 11000 011001010
	*-----*							
	*P2,            D+D, D(C)+D(C),							
	*P3,            FAC10(SF)+D (A ADDR),							
	*NEXT,							
	*                J/LDCTW24		-->	4312 1881 607				
	*****							
1883	LDCTW26:4525	F/LDCTW24	<--	4312 1881 607				
	*****				4525			000000001000
	* TARGETS - BUT(SIGN BIT) 0 -							1010 11 10 00 00 110 111 0100 0
	*LDCTW27							00000 000010 10011 011100001
	*-----*							
	*P2,            D-MD, D(C)+D(C),							
	*P3,            R(ER)+D (A ADDR),							
	*NEXT,            PUTR(D(C)),							
	*                J/LDCTW27		-->	01 4341 1884 608				
	*                J/LDCTW28		-->	11 4343 1885 609				
	*****							
.CASE	1 OF BLDCTW26							
1884	LDCTW27:4341	F/LDCTW26	<-- VV					
	*****				4341			000000001000
	*1 - LDCTW28 GO ROUND THE							0011 00 00 00 00 101 010 0100 0
	*DATA							00000 000010 11100 011110010
	*-----*							
	*                CLEAR CR1,							
	*NEXT,            BUT(GO TO), PAGE+2,							
	*                J/NROUND		-->	2362 1906 615				
	*****							

# M02

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
							RIF	COUT	
1885	LDCTW28:4343	F/LDCTW26	<--	4525 1883 608					
	* PERFORM 2'S								
	* COMPLEMENT								
	*P2, D+SR MINUS FAC2(SF),								
	* D(C)+COUT15								
	*P3, FAC2(SF)+D (B ADDR),								
	* NEXT,								
	* J/LDCTW29		-->	VV					
1886	LDCTW29:4530	F/LDCTW28	<--	VV					
	*P2, D+NOT FAC3(SF) D(C)+D(C),								
	*P3, FAC3(SF)+D (A ADDR),								
	* NEXT,								
	* J/LDCTW30		-->	VV					
1887	LDCTW30:4531	F/LDCTW29	<--	VV					
	*P2, D+FAC3(SF) PLUS D PLUS D(C),								
	*P3, FAC3(SF)+D (A ADDR),								
	* NEXT,								
	* J/LDCTW31		-->	VV					
1888	LDCTW31:4532	F/LDCTW30	<--	VV					
	* SET SIGN BIT IN CR1 GO NORMALIZE								
	* RESULT								
	*P2, D+CNST100000,								
	*P3, CR1+D (A ADDR),								
	* NEXT, BUT(GO TO), PAGE+2,								
	* J/NROUND		-->	2362 1906 615					

# N02

PROGRAM FLOWS    11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377    PAGE 610

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU B'S	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC	LOAD AND CONVERT PRECISION ##FLPT##						
.CASE	32 JF BWFORK						
1889	LDCPW1:0377	F/SETCLASS3 F/WFORK	<-- <--	207 1239 403 474 1318 429			
	*****						
	*NEXT, CALL LDCFETCH,						
	* RETURN=LDCPW2						
	*****						
			-->	4620 2041 663			
				VV			
				2466 1890 610			
1890	LDCPW2:2466						
	*****						
	*NEXT, BUT(CLEAR FLAGS),						
	* J/LDCPW3		--> VV				
	*****						
1891	LDCPW3:2470	F/LDCPW2	<-- VV				
	*****						
	* ISOLATE EXPONENT TEST FETCH OF -0 TEST						
	*SR<00>						
	-----						
	*P2, D+FDST3 AND EXPMASK,						
	*NEXT, BUT(CASE),						
	* J/LDCPW4						
		J/LDCPW4	-->	1110 2316 1892 610			
		J/LDCPW5	-->	1111 2317 1893 611			
	*****						
.CASE	1 OF B/LDCPW3						
1892	LDCPW4:2316	F/LDCPW3	<-- VV				
	*****						
	*TARGETS - 2 LDCPW4 1 - LDCPW5 TEST						
	*EXP = 0 - 0 IS						
	*-						
	-----						
	*NEXT, BUTR(D(14-00) IS 0),						
	* J/LDCPW6						
		J/LDCPW6	-->	01 2545 1894 611			
		J/LDCPW7	-->	11 2547 1895 611			
	*****						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA EXTENSION RIF COUT CLOCKS
				ALU BUS SP UBF UPF
.CASE 1893	2 OF BLDCPW3 LDCPW5:2317 F/LDCPW3	<--	2470 1891 610	2317 0010 00 10 11 00 111 100 0000 0 00000 000000 11100 011010101
	*0 - LDCPW6 1 - LDCPW7 FETCH OF MINUS *ZERO HAS OCCURRED GO SET FN AND FZ IN *FPS THEN TO *TRAPS *-----*			
	*NEXT, BUT(GO TO), PAGE+4, * RETURN+LDCPW7, * J/LOADNZW3B	-->	4325 1653 536	
.CASE 1894	1 OF BLDCPW4 LDCPW6:2545 F/LDCPW4	<--	2316 1892 610	2545 0100 00 10 10 11 100 100 0000 0 00000 000000 11100 111100101
	* MOVE DATA * INTO *-----*			
	*NEXT, CALL MOVFDSTSF, * RETURN+LDCPW8	-->	***** 4745 2235 738 ***** WV -1 -1 -1 @ 1 1	
.CASE 1895	2 OF BLDCPW4 LDCPW7:2547 F/LDCPW4	<--	2316 1892 610	2547 0011 00 00 00 11 000 000 0100 0 00000 000110 10111 000000110
	*ACCUMULATORS EXPONENT IS ZERO , GO SET *EXACT ZERO GO TO MULMODW * TO *-----*			
	*P2, D+0, *P3, FAC32(SF)+D (A ADDR), *NEXT, BUTR(FD), * J/MULMODW11	-->	10 2006 1418 462	
	* J/MULMODW12	-->	11 2007 1419 462	
	*-----*			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COJT CLOCKS UPF
1896	LDCPW8:4534			4534				000000001000
	*CLEAR FAC10(SF) AND SET FCC'S SET ASP				1110 10 00	11 00	101 000	0100 0
	*NOT EQUAL TARGETS - F -				01110 0100:0	10111	001000110	
	*LDCPW9							
	*P2, D+WHAMI OR CNST8,							
	*P3, WHAMI+D (A ADDR),							
	*NEXT, BUTR(FD),							
	* J/LDCPW9	-->	10 4106 1897 612					
	* J/LDCPW10	-->	11 4107 1898 612					
	*****							
CASE 1897	1 OF BLDCPW8 LDCPW9:4106	F/LDCPW8	<-- VV	4106				000000001000
	*D - LDCPW10 TEST FT BIT IN FPS TARGETS				1011 10 00	10 01	011 000	0100 0
	*-				00101 000000	01000	001010110	
	*P2, D+FDST3 * SIGNBIT,							
	*NEXT, BUTR(FPS05),							
	* J/LDCPW11	-->	110 4126 1899 613					
	* J/LDCPW16	-->	111 4127 1904 614					
	*****							
CASE 1898	2 OF BLDCPW8 LDCPW10:4107	F/LDCPW8	<--	4534 1896 612				100000001000
	*0 - LDCPW11 1 - LDCPW16				0011 00 00	00 11	000 000	0100 0
	*P2, D+0				00000 010110	11000	001010111	
	*P3, FAC10(SF)+D (A ADDR),							
	*NEXT, J/LDCPW16	-->	4127 1904 614					
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
1899	LDCPW11:4126 * SAVE * SIGN *-----* *P3, CR1+D (B ADDR), *NEXT, * J/LDCPW12	<--	4106 1897 612	4126	0000 0000	00 10 001010	00 00 11000	000000001000 101 000 0000 0 101011101
1900	LDCPW12:4535 *NEXT, CALL DATAPREP2, * RETURN+LDCPW13 *-----* *P2, D+R(ES) (A), *P3, R(ER)+D (B ADDR), *NEXT, * J/LDCPW14	<-- VV --> VV	4536 1901 613	4535	0100 0000	00 10 000000	10 11 11100	000000001000 110 010 0000 0 110000010
1901	LDCPW13:4536 * SAVE * EXPONENT *-----* *P2, D+R(ES) (A), *P3, R(ER)+D (B ADDR), *NEXT, * J/LDCPW14	<-- VV --> VV	4536 1901 613	4536	1111 0000	00 10 001010	11 00 11000	000000001000 110 000 0100 0 101100000
1902	LDCPW14:4540 *P2, D+D, *P3, CR2+D (A ADDR), *NEXT, BUT(GO TO),PAGE+2, * J/LDCPW15	<-- VV -->	2471 1903 614	4540	0011 0000	00 00 000010	00 01 11100	000000001000 101 010 0100 0 100111001

E03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SF	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
1903	LDCPW15:2471	F/LDCPW14	<--	4540 1902 613	2471			000000001000
	* FETCH ROUNDING				1111 00 00	11 01	011 100	0100 0
	*BIT				00000 000000	11000	100000110	
	*P2, D+FDST1,D(C)+ALU15,							
	*NEXT, J/NROUND35		-->	2406 1940 626				
CASE 1904	2 OF BLDCPW9 LDCPW16:4127	F/LDCPW9	<--	4106 1897 612	4127			000000001000
	* CLEAR WHAMI FLAG SET				0111 10 00	11 00	101 000	0100 0
	*PREVIOUSLY				01110 010010	11000	101101000	
	*P2, D+WHAMI AND NOT CNSTB,							
	*P3, WHAMI+D (A ADDR),							
	*NEXT, J/LDCPW17		--> VV					
1905	LDCPW17:4550	F/LDCPW16	<-- VV		4550			000000001000
	* CHECK ADD-SUB				0000 00 00	00 00	011 010	0000 0
	*FOR				00000 000000	11100	111010111	
	*NEXT, CALL SETFZFN,							
	* RETURN+BRA05		-->	2727 2323 768				
					VV			
					-1 -1 -1		0 1 1	

# F03

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 615

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS	SP	UBF	RIF COUT CLOCKS
								UPF

```

:TOC - ROUTINE FOR NORMALIZATION AND ROUNDING  ##FLPT##"
:ROUTINE USED FOR NORMALIZATION AND ROUNDING
:OF DATA IN FAC(SF).
:ROUTINE WILL PERFORM LEFT OR RIGHT SHIFTS REQUIRED
:TO NORMALIZE FRACTION.
:CHECKS ARE ALSO MADE IF FRACTION IS ZERO
:IF THIS CONDITION EXISTS, NUMBER IS DECLARED AN
:AN EXACT ZERO.
  
```

```

:EXPONENT IS MODIFIED APPROPRIATELY DEPENDENT ON
:SHIFT DIRECTION
:UFLO AND OFLO CONDITIONS ARE MONITORED AND WILL
:BE READJUSTED IF REQUIRED
  
```

```

:ROUTINE WILL FLOW INTO ROUNDING PROCEDURE WHERE
:CHECK ON FT BIT OF FPS IS PERFORMED AND ROUNDING
:WILL TAKE PLACE IF REQUIRED.
  
```

```

:REASSEMBLING OF FRACTION, EXPONENT, AND SIGN ALSO
:TAKES PLACE IN THIS ROUTINE
  
```

```

:EXIT FROM THIS ROUTINE WILL LEAD TO FINISH ROUTINE
:WHERE THE FOLLOWING WILL TAKE PLACE:
:SET CONDITION CODES FZ AND FN
:SAVE OFLO AND UFLO CONDITIONS
:RESTORE ALL GENERAL REGISTERS OF A SIDE
:EXIT WILL THEN BE TO OFLOTRAP CHECK,
:OR UFLOTRAP CHECK, OR TO FETO1 DEPENDING
:ON CONDITIONS OF NORMALIZATION
  
```

- PREQUISITES-
1. UPON ENTRY INTO THIS POINT, FAC(SF) CONTAINS THE FRACTION.
  2. R(ER) CONTAINS THE PRESENT EXPONENT
  3. CONDITION REGISTER CR1 CONTAINS SIGN
  4. CONDITION REGISTER CR2 CONTAINS UFLO OR OFLO CONDITIONS UP TO THIS POINT

CASE 1 OF BMOD3CLSS27

	F/MOD3CLSS27	<--	2637	1547	502	
	F/LDCTW27	<--	4341	1864	608	
1936	F/LDCTW31	<--	4532	1888	609	

```

2362 0000 00 00 00 01 000 000 0000 0
11001 000000 'C111 001011010
  
```

```

*****
*EQUIVALENT STEP TARGETS - F - *
*NROUND2 *
*-----*
*SELECT,      EMIT *
*NEXT,        BUTR(FD), *
*              J/NROUND2 *
* * *
*              J/NROUND2 * --> 10 2132 1907 617
*              J/NROUND3 * --> 11 2133 1908 617
*****
  
```

G03

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar--77 BY ADSYS 020377

PAGE 616

BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADCU ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COU' CLOCKS  
UPF

# H03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 617

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
CASE 1907	1 OF BNROUND								
	NROUND2:2132	F/NROUND	<--	2362	1906	615			
	*****				2132			000000001000	
	*D - NROUND3	FETCH -2 FOR	*COUNTER				1111 10 11 11 11 11 11 11 11 11 11 11	0000 0	
-----*									
	*P3, MD+-2 (BC),								
	*NEXT,								
	* J/NROUND4		-->	2474	1909	617			
*****									
CASE 1908	2 OF BNROUND								
	NROUND3:2133	F/NROUND	<--	2362	1906	615			
	*****				2133			000000001000	
	* FETCH -4 FOR	*COUNTR					1111 10 11 11 11 11 11 11 11 11 11 11	0000 0	
-----*									
	*P3, MD+-4 (BC),								
	*NEXT,								
	* J/NROUND4		--> VV						
*****									
1909	NROUND4:2474	F/NROUND2 F/NROUND3	<-- <-- VV	2132	1907	617			
	*****				2474			000000001000	
	* LOAD COUNTER FOR WORD	*SHIFTS					0000 11 10 00 00 000 000 0000 0		
							00000 000101 11000 100111101		
-----*									
	*P2, COUNTER+MD,								
	*NEXT,								
	* J/NROUND4B		--> VV						
*****									
1910	NROUND4B:2475	F/NROUND4	<-- VV						
	*****				2475			000000001000	
	* D(C)=0 INITIALIZE EXP	*DELTA					0011 00 00 00 00 110 010 0100 0		
							00000 010110 11000 101000000		
-----*									
	*P2, D+D D(C)+ALU00,								
	*P3, R(T1)+D (A ADDR),								
	*NEXT,								
	* J/NROUND5		-->	2500	1911	618			
*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
		OFST	ADDR	BOX						PAGE	RIF	
1911	NROUND5:2500	F/NROUND4B	<--	2475	1910	617						
		F/NROUND12	<--	2504	1918	620						
	*****											
	* TEST FOR ALL *											
	*ZEROS *											
	*-----*											
	*P2, *											
	* D+FAC3(SF) PLUS NOT 0 *											
	* PLUS D(C),D(C)+COUT15, *											
	*NEXT, *											
	* J/NROUND6 * --> VV											
	*****											
1912	NROUND6:2501	F/NROUND5	<--									
	*****											
	* FETCH 16 FOR WORD SHIFTS CORRECTION OF *											
	*EXPONENT TARGETS *											
	*-----*											
	*P3, MD+20 (BC) *											
	*NEXT, BUT(COUNT IS -1#D(C)), *											
	* J/NROUND7 * -->											
	* J/NROUND13 * -->											
	* J/NROUND14 * -->											
	* J/NROUND15 * -->											
	*****											
.CASE	1 OF BNROUND6											
1913	NROUND7:2140	F/NROUND6	<--									
	*****											
	*00 - NROUND7 01 - NROUND13 10 - NROUND14 *											
	*11 - NROUND15 POINT ENTERED WHERE COUNT *											
	*IS NOT SATISFIED BUT WORD IS STILL ZERO *											
	*- DO ANOTHER WORD SHIFT TARGETS *											
	*-----*											
	*P2, D+FAC2(SF), *											
	*P3, FAC3(SF)+D' (A ADDR), *											
	*NEXT, BUTR(FD) *											
	* J/NROUND8 * -->											
	* J/NROUND9 * -->											
	*****											

2500  
 0101 11 01 10 11 000 110 0100 0  
 00000 000000 11000 101000001

2501  
 0000 10 00 00 00 010 000 0000 0  
 00010 100000 01111 001100000

00 2140 1913 618  
 01 2141 1919 620  
 10 2142 1920 620  
 11 2143 1921 621

2140  
 1010 00 01 00 11 000 000 0100 0  
 00000 000010 10111 001110010

10 2162 1914 619  
 11 2163 1915 619





# K03

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS
1918	NROUND12:2504	F/NROUND8 F/NROUND11	<-- <--	2162 1914 619 2502 1917 619				
	***** * ACCUMULATE EXPONENT CONTINUE * TEST ----- * P2,            D+R(T1) MINUS MD, D(C)+D(C), * P3,            R(T1)+D (A ADDR), * NEXT, *                            J/NROUND5 *****		-->	2504			000000001000	
				1101 11 10 11 00 110 111 0100 0 00000 010110 11000 10100000				
CASE 1919	2 OF BNROUND6 NROUND13:2141	F/NROUND6	<--	2501 1912 618				
	***** * POINT REACHED WHERE COUNT IS NOT * SATISFIED BUT WORD IS NO LONGER * ZERO ----- * P2,            SR+FAC3(SF) AND HIBYTE MASK, * NEXT, *                            J/NROUND23 *****		-->	2141			100000001000	
				1011 10 00 10 11 000 000 0010 0 00111 000000 11000 101001001				
CASE 1920	3 OF BNROUND6 NROUND14:2142	F/NROUND6	<--	2501 1912 618				
	***** * POINT REACHED WHERE COUNT IS SATISFIED * AND WORD IS STILL ZERO - ANSWER IS EXACT * ZERO GET CONDITION * REGISTER ----- * P2,            SR+CR2, * NEXT, *                            J/NROUND16 *****		-->	2142			000000001000	
				1111 00 00 10 01 101 000 0010 0 00000 000000 11000 101000101				
				2505 1922 621				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1921	4 OF BNROUND6 NROUND15:2143	F/NROUND6	<--	2501 1912 618			
	*****			2143			100000001000
	* POINT REACHED WHERE COUNT IS SATISFIED *				1011 10 00	10 11	000 000 0010 0
	*AND WORD IS NO LONGER * *ZERO *				00111 000000	11000	101001001
1922	*P2, SR+*FAC3(SF) AND HIBYTE MASK, *NEXT, J/NROUND23		-->	2511 1929 623			
	NROUND16:2505	F/NROUND14	<--	2142 1920 620			
	*****			2505			000000001000
	* BRANCH ON SR<00> FOR MOD 0 - *NROUND17 *				0000 00 00	00 00	000 000 0000 0
.CASE 1923	*NEXT, BUT(CASE), J/NROUND17		-->	1110 2376 1923 621			
	J/NROUND18		-->	1111 2377 1924 621			
	1 OF BNROUND16 NROUND17:2376	F/NROUND16	<-- VV				
	*****			2376			000000001000
*1 - NROUND18 SET CONDITION *CODES *				0011 00 11	10 11	100 010 0000 0	
.CASE 1924	*NEXT, RETURN+FINISH2,BUT(GO TO), PAGE+2, J/FCCHEX2		-->	2032 2327 770			
	2 OF BNROUND16 NROUND18:2377	F/NROUND16	<--	2505 1922 621			
	*****			2377			000000001000
	* MOD INSTRUCTION TARGETS - *BUT(FD) *				0000 00 00	00 00	000 000 0000 0
*NEXT, BUTR(BA00), J/NROUND19							
*****							
* J/NROUND19 *			-->	10 2222 1925 622			
* J/NROUND20 *			-->	11 2223 1926 622			
*****							

# M03

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1925	1 OF BNROUND18 NROUND19:2222	F/NROUND18	<--	2377	1924	621		
	*****			2222				000000001000
	*F - NROUND19 D - NROUND20 REFLIP FD BIT							0010 00 10 10 00 110 001 0000 0
	*IN							00000 000000 11100 110010011
	*FPS							
	-----							
	*NEXT, CALL FD-TOGGLE							
	* RETURN+NROUND21							
	*****		-->	1623	2219	732		
				2506	1927	622		
.CASE 1926	2 OF BNROUND18 NROUND20:2223	F/NROUND18	<--	2377	1924	621		
	*****			2223				000000001000
	* GO SET CONDITION							0011 00 11 10 11 100 010 0000 0
	*CODES							00000 000000 11100 000011010
	-----							
	*NEXT, RETURN+FINISH2,BUT(GO TO),							
	* PAGE+2,							
	* J/FCHEX2		-->	2032	2327	770		
	*****							
1927	NROUND21:2506			2506				100000001000
	*****							
	* RESTORE LO							1111 00 01 10 01 111 000 0100 0
	*ACCUMULATORS							00000 011100 11000 101001000
	-----							
	*P2, D+FAC0(SAV)							
	*P3, FAC0(SF)+D (B ADDR),							
	*NEXT,							
	* J/NROUND22		--> VV					
	*****							
1928	NROUND22:2510	F/NROUND21	<-- VV	2510				100000001000
	*****							
	* GO SET CONDITION							1111 00 01 10 00 111 000 0100 0
	*CODES							00000 011010 11000 010010011
	-----							
	*P2, D+FAC1(SAV)							
	*P3, FAC1(SF)+D (B ADDR),							
	*NEXT,							
	* J/NROUND20		-->	2223	1926	622		
	*****							

# N03

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION									
				ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	RIF UPF	COUT CLOCKS				
1929	NROUND23:2511	F/NROUND13 F/NROUND15	<-- <--	2141 2143	1919 1921	620 621							
	***** * D(C)=0 IF SR WAS 0, ELSE *1 *-----*						2511					000000001000	
	*P2,            D+SR MINUS 1,D(C)+COUT15, *                J/NROUND24		--> VV					1101	11 00	00 00	000 110	0100 0	
	*****							00000	000000	11000	101001010		
1930	NROUND24:2512	F/NROUND23	<-- VV										
	***** * INCREMENT EXP DELTA TARGETS - 0 - *NROUND26,    1 - *NROUND27 *-----*						2512					000000001000	
	*P2,            D+R(T1) PLUS 1 D(C)+D(C), *P3,            R(T1)+D (A ADDR), *NEXT,         BUTR(D(C)), *                J/NROUND26		-->	01	2201	1931	623						
	*****	J/NROUND26 J/NROUND27	-->	11	2203	1932	624						
	*****												
.CASE	1 OF BNROUND24												
1931	NROUND26:2201	F/MULFDW F/MFRACF25 F/NROUND24	<-- <-- <-- VV	2273 2270	407 1478	458 480							
	***** * CHECK IF *NORMALIZED *-----*						2201					100000001000	
	*P2,            D+FAC3(SF),D(C)+ALU07, *NEXT, *                J/NROUND28		-->	2513	1933	624		1111	00 00	10 11	000 011	0100 0	
	*****							00000	000000	11000	101001011		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BNROUND24						
1932	NROUND27:2203	F/MULFDW F/MFRACF25 F/NROUND24	<-- <-- <--	2273 1407 458 2270 1478 480 2512 1930 623			2203 0010 00 00 11 00 001 010 0000 0 00000 000000 11100 111010000
	*NEXT, CALL RTSHFSF, * RETURN+NROUND13			2720 2306 761			
1933	NROUND28:2513	F/NROUND26	<--	2141 1919 620 2201 1931 623			2513 1101 11 00 11 00 110 111 0100 0 00000 010110 10011 001001001
	* DECREMENT EXP DELTA TARGETS - 0 - *NROUND29						
	*P2, D+R(T1) MINUS 1,D(C)+D(C), *P3, R(T1)+D (A ADDR), *NEXT, BUTR(D(C)), * J/NROUND29						
	* J/NROUND29 * J/NROUND30			01 2111 1934 624 11 2113 1935 625			
.CASE	1 OF BNROUND28						
1934	NROUND29:2111	F/NROUND28	<-- VV				2111 0010 00 01 00 00 001 010 0000 0 00000 000000 11100 110010110
	*1 - NROUND30 PERFORM LEFT SHIFT FOR *NORMALIZATION						
	*NEXT, CALL LEFTSHFSF, * RETURN+NROUND26			2626 2223 734			
				VV -1 -1 -1 0 1 1			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1935	2 OF BNROUND28 NROUND30:2113	F/NROUND28	<-- 2513 1933 624	2113			00000001000
	* FETCH CONDITION			1111	00 00	10 01	101 000 0010 0
	* REGISTER			00000	000000	11000	101001100
	*-----*						
	*P2, SR+CR2,						
	*NEXT, J/NROUND31		--> VV				
1936	NROUND31:2514	F/NROUND30	<-- VV	2514			00000001000
	* CORRECT EXPONENT BY EXP DELTA D(C)=1			1001	01 10	10 00	110 111 0100 0
	* DUE TO NORMALIZATION BUT(SR<00) 0 -			00000	000010	00000	010001110
	* NROUND32						
	*-----*						
	*P2, D+R(ER) PLUS R(T1),D(C)+D(C),						
	*P3, R(ER)+D (A ADDR),						
	*NEXT, BUT(CASE)						
	* J/NROUND32		--> 1110 2216 1937 625				
	* J/NROUND52		--> 1111 2217 1957 632				
	*-----*						
.CASE 1937	1 OF BNROUND31 NROUND32:2216	F/NROUNDENDS F/NROUNDEND6 F/NROUND31	<-- 4556 1624 528 <-- 4557 1625 528 <-- VV	2216			00000001000
	*1 - NROUND52 D(C)=1 FOR ROUNDING CHECK			1111	00 00	01 01	000 000 0100 0
	*FOR ROUNDING			00000	000000	01010	100101101
	*BIT						
	*-----*						
	*P2, D+D, D(C)+CIN,						
	*NEXT, BUTR(G003),						
	* J/NROUND33		--> 01 2455 1938 626				
	* J/NROUND34		--> 11 2457 1939 626				
	*-----*						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BNROUND32							
1938	NROUND33:2455	F/NROUND32 F/NROUND40 F/NROUND54	<-- <-- <--	2216 2522 2553	1937 1945 1959	625 628 632		
	*****							
	*TARGETS - 0 - NROUND33 1 - NROUND34 00							000000001000
	*CHECK ON							1011 10 00 10 00 110 000 0100 0
	*EXCEPTIONS							00111 000000 11000 100000111
	-----							
	*P2, D+R(ER) AND HIBYTE MASK,							
	*NEXT,							
	* J/NROUND41		-->	2407	1946	628		
	*****							
.CASE	2 OF BNROUND32							
1939	NROUND34:2457	F/NROUND32 F/NROUND40 F/NROUND54	<-- <-- <--	2216 2522 2553	1937 1945 1959	625 628 632		
	*****							
	*CHECK FT BIT TARGETS							000000001000
	*-							1011 10 00 10 00 110 111 0100 0
	-----							00111 000000 01000 100000110
	*P2, D+R(ER) AND HIBYTE MASK,							
	* D(C)+D(C),							
	*NEXT, BUTR(FPS05),							
	* J/NROUND35		-->	110 2406	1940	626		
	* J/NROUND41		-->	111 2407	1946	628		
	*****							
.CASE	1 OF BNROUND34							
1940	NROUND35:2406	F/LDCPW15 F/NROUND34	<-- <-- VV	2471	1903	614		
	*****							
	*0 - ROUND - NROUND35 1 - TRUNCATE -							000000001000
	*NROUND41 POINT REACHED WHERE ROUNDING							0011 00 00 00 01 110 111 0100 0
	*OCCURS TARGETS							00000 010110 10111 000100010
	*-							
	-----							
	*P2, D+0, D(C)+D(C),							
	*P3, R(T2)+D (A ADDR),							
	*NEXT, BUTR(FD),							
	* J/NROUND38		-->	10 2042	1943	627		
	* J/NROUND36		-->	11 2043	1941	627		
	*****							



# E04

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
.CASE	2 OF BNROUND35									
1941	NROUND36:2043	F/NROUND35 F/NROUND37	<-- <--	2406 1940 626 2515 1942 627						
	*****									
	*0 - F - NROUND38 1 - D - NROUND36 *									
	*-----*									
	*P2,	D+R(T2) PLUS FAC0(SF) PLUS 1,	*							
	*	D(C)+COUT15,	*							
	*P3,	FAC0(SF)+D (B ADDR),	*							
	*NEXT,		*							
	*	J/NROUND37	* --> VV							
	*****									
1942	NROUND37:2515	F/NROUND36	<-- VV							
	*****									
	*P2,	D+FAC1(SF) PLUS R(T2)	*							
	*	PLUS D(C) D(C)+COUT15,	*							
	*P3,	FAC1(SF)+D (A ADDR),	*							
	*NEXT,		*							
	*	J/NROUND38	* --> VV							
	*****									
.CASE	1 OF BNROUND35									
1943	NROUND38:2042	F/NROUND35 F/NROUND37	<-- <-- VV	2406 1940 626						
	*****									
	*P2,	D+R(T2) PLUS D(C) PLUS	*							
	*	FAC2(SF) D(C)+COUT15,	*							
	*P3,	FAC2(SF)+D (B ADDR),	*							
	*NEXT,		*							
	*	J/NROUND39	* -->	2520 1944 628						
	*****									

```

2043
1100 01 01 11 01 110 110 0100 0
0000 011100 11000 101001101

```

```

2515
0100 01 11 11 11 110 110 0100 0
0000 010010 11000 000100010

```

```

2042
0100 00 01 11 01 110 110 0100 0
0000 001100 11000 101010000

```



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 1947	1 OF BNROUND41 NROUND42:2440	F/NROUND41	<--	2407 1946 628	2440			000000001000
	*01 - NROUND43 10 - NROUND44 11 - *IMPOSSIBLE OVERFLOW *OCCURRED				.110	11 11	10 01	101 000 0100 0
	-----				00000	000010	11000	011001001
	* SET CR2.OFLO, *NEXT, * J/NROUND46		-->	2311 1951 630				
.CASE 1948	2 OF BNROUND41 NROUND43:2441	F/NROUND41	<--	2407 1946 628	2441			000000001000
	* UNDERFLOW *OCCURRED				1110	10 00	10 01	101 000 0100 0
	-----				01100	000010	11000	011001001
	* SET CR2.UFLO, *NEXT, * J/NROUND46		-->	2311 1951 630				
.CASE 1949	3 OF BNROUND41 NROUND44:2442	F/NROUND41	<--	2407 1946 628	2442			000000001000
	*P2, D+R(ER), *NEXT, * J/NROUND45		--> VV		1111	00 00	10 00	110 000 0100 0
	-----				00000	000000	11000	101010100
1950	NROUND45:2524	F/NROUND44	<-- VV		2524			000000001000
	* TARGETS - 0 - *NROUND46				0000	00 00	00 00	000 000 0000 0
	-----				00000	000000	01101	011001001
	*NEXT, BUTR(D(14-00) IS 0), * J/NROUND46 * J/NROUND46 * J/NROUND47		-->	01 2311 1951 630				
	-----		-->	11 2313 1952 630				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BNROUND45						
		F/BIGEXPEND	<--	4225	1593	517	
		F/NROUND42	<--	2440	1947	629	
		F/NROUND43	<--	2441	1948	629	
		F/NROUND45	<--	2524	1950	629	
		F/NROUND47	<--	2313	1952	630	
1951	NROUND46:2311						
	*****						
	*1 - NROUND47 FETCH THE						
	*SIGN						
	-----						
	*P2, D+CR1,D(C)+ALU15,						
	*NEXT,						
	* J/NROUND48	-->		2525	1953	630	
	*****						
.CASE	2 OF BNROUND45						
		F/BIGEXPEND	<--	4225	1593	517	
		F/NROUND42	<--	2440	1947	629	
		F/NROUND43	<--	2441	1948	629	
		F/NROUND45	<--	2524	1950	629	
		F/NROUND47	<--	2313	1952	630	
1952	NROUND47:2313						
	*****						
	* UNDERFLOW						
	*OCCURRED						
	-----						
	* SET CR2.UFLO,						
	*NEXT,						
	* J/NROUND46	-->		2311	1951	630	
	*****						
1953	NROUND48:2525						
	*****						
	* SAVE THE LO BYTE OF						
	*EXP						
	-----						
	*P2, D+R(ER) AND NOT HIBYTE MASK,						
	* D(C)+D(C),						
	*NEXT,						
	* J/NROUND49	-->		2530	1954	631	
	*****						

2311 000000001000  
 1111 00 00 10 00 101 100 0100 0  
 00000 000000 11000 101010101

2313 000000001000  
 1110 10 00 10 01 101 000 0100 0  
 01100 000010 11000 011001001

2525 000000001000  
 0111 10 00 10 00 110 111 0100 0  
 00111 000000 11000 101011000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
1954	NROUND49:2530 ***** * ALIGN EXP AND * *SIGN * *-----* *P2, D+D SWAP RIGHT 1, * *P3, R(T1)+D (B ADDR), * *NEXT, * * J/NROUND50 * --> VV *****	<--	2525 1953 630	2530	1111 00 10 01 10	00101 0:1110 11000	110 000 0100 0	000000001000	101011001	
1955	NROUND50:2531 ***** * REMOVE HIDDEN BIT AND FRAC * *OVERFLOW * *-----* *P2, D+FAC3(SF) * - SEXPMASK, * *P3, FAC3(SF)+D (A ADDR), * *NEXT, * * J/NROUND51 * --> VV *****	<-- VV		2531	0111 10 00 10 11	00110 000010 11000	000 000 0100 0	100000001000	101011001	
1956	NROUND51:2534 ***** * MERGE * *FRAC, SIGN, EXP * *-----* *P2, D+FAC3(SF) OR R(T1), * *P3, FAC3(SF)+D (A ADDR), * *NEXT, * * J/FINISH * --> VV *****	<-- VV	2542 1962 633	2534	1110 01 10 10 11	00000 000010 11000	110 000 0100 0	100000001000	101100010	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BNROUND31						
1957	NROUND52:2217	F/NROUNDEND5 F/NROUNDEND6 F/NROUND31	<-- <-- <--	4556 1624 528 4557 1625 528 2514 1936 625			2217 1111 00 00 11 11 000 100 0100 0 00000 000000 10011 101101010
	* ROUNING OPERATION PERFORMED FOR MOD						
	* INSTRUCTION CHECK ON SINGLE OR DOUBLE						
	* TARGETS						
	* -						
	* P2, D+FAC1(SF),D(C)+ALU15,						
	* NEXT, BUTR(BA00),						
	* J/NROUND53	J/NROUND53	-->	10 2552 1958 632			
	* J/NROUND54	J/NROUND54	-->	11 2553 1959 632			
.CASE	1 OF BMOD5CLSS9						
1958	NROUND53:2552	F/MOD5CLSS7B F/MOD5CLSS9 F/NROUND52	<-- <-- <-- VV	2232 1561 507 2137 1564 508			2552 0010 00 10 10 11 101 001 0000 0 00000 000000 11100 110010011
	* 0 - NROUND53 1 - NROUND54						
	* NEXT, CALL FD-TOGGLE,						
	* RETURN+NROUND55						
	* -						
	* -						
.CASE	2 OF BMOD5CLSS9						
1959	NROUND54:2553	F/MOD5CLSS7B F/MOD5CLSS9 F/NROUND52	<-- <-- <--	2232 1561 507 2137 1564 508 2217 1957 632			2553 0000 00 00 00 00 000 000 0000 0 00000 000000 01010 100101101
	* TARGETS- 0 -						
	* NROUND33						
	* NEXT, BUTR(G003),						
	* J/NROUND33	J/NROUND33	-->	01 2455 1938 626			
	* J/NROUND34	J/NROUND34	-->	11 2457 1939 626			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COLT UPF	CLOCKS
1960	NROUND55:2535 ***** *1 - NROUND34 *-----* *P2, D+FAC0(SAV) D(C)+D(C), *P3, FAC0(SF)+D (B ADDR), *NEXT, * J/NROUND56 *****			2535	1111 00 01 0000 01110C	10 01	1111 111	10000001000 101100000	0100 0
1961	NROUND56:2540 ***** * GO TO ROUNDING *ROUTINE *-----* *P2, D+FAC1(SAV) D(C)+D(C), *P3, FAC1(SF)+D (B ADDR), * J/NROUND34 *****			2540	1111 00 01 0000 011010	10 00	111 111	10000001000 100101111	0100 0
				2457 1939 626					
1962	FINISH:2542 ***** * ROUTINE SET FZ AND FN CONDITION CODES *SAVES OFLO AND UFLO CONDITIONS RESTORE *GENERAL REGISTERS CR1, CR2, AND R(ER) *THEN EXITS VIA OFLOTRAP, UFLOTRAP OR *FETO1 *-----* *NEXT, CALL SETFZFN, * RETURN+FINISH2 *****			2340 1513 491 2534 1956 631					
				2542	0011 00 11 0000 000000	10 11	100 010	00000001000 111010111	0000 0
				2727 2323 768					
				3734 1963 633					
1963	FINISH2:3734 ***** * D(C)=1 AS AN INDICATOR FOR REGINIT *ROUTINE TO *RETURN *-----* *P2, D+CR2, D(C)+CIN, SR+CR2, *NEXT, * J/FINISH3 *****			3734	1111 00 00 0000 000000	10 01	101 000	00000001000 111011101	0110 0
				3735 1964 634					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
1964	FINISH3:3735	F/FINISH2	<--	3734	1963	633	3735	00000000	1000	
	* RESTORE GENERAL			0011	00 11	11 00	000 011	0000	0	
	*REGISTERS			00000	000000	11100	101011111			
	*NEXT, BUT(GO TO), PAGE+3,									
	* RETURN+FINISH4,									
	* J/REGINITO1		-->	3537	896	301				
1965	FINISH4:3740			3740			00000000	1000		
	* TARGETS - SR<2:1> 00 -			0000	00 00	00 00	000 000	0000	0	
	*FINISH5			00000	000000	00000	101101001			
	*NEXT, BUT(CASE),									
	* J/FINISH5		-->	1001	3551	1966	634			
	* J/FINISH6		-->	1011	3553	1967	634			
	* J/FINISH7		-->	1101	3555	1968	635			
	* UNDEFINED CASE									
.CASE 1966	1 OF BFINISH4 FINISH5:3551	F/FINISH4	v v	3551			00000000	1000		
	*01 - FINISH6 10 - FINISH7 11 -			0000	00 00	00 00	000 000	0000	0	
	*IMPOSSIBLE			00000	000000	11100	000000011			
	*NEXT, BUT(GO TO), PAGE+0,									
	* J/BRAOS		-->	3	283	126				
.CASE 1967	2 OF BFINISH4 FINISH6:3553	F/FINISH4	<--	3740	1965	634	3553	00000000	1000	
	*NEXT, BUT(GO TO), PAGE+2,			0100	00 10	11 10	000 010	0000	0	
	* RETURN+OFL0TRAP,			00000	000000	11100	101100100			
	* J/TPREAMBLE		-->	2544	1969	637				



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
							RIF	COUT	
.CASE 1968	3 OF BFINISH4 FINISH7:3555								
	F/FINISH4	<--	3740 1965 634						
	*****								
	*NEXT, BUT(GO TO) PAGE+2,								
	* RETURN+UFL0TRAP,								
	* J/TPREAMBLE	-->	2544 1969 637						
	*****								
				3555				000000001000	
				0100 00 10 11 00			101 010 0000 0		
				00000 000000 11100			101100100		

# N04

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BOX  
NO. TAG:ADDRESS

SOURCE/DESTINATION  
OFST ADDR BOX PAGE

MICROFICHE  
COORD CARD

ADDR ALU  
BUS

BUSB  
SP

BUSA  
UBF

EXTENSION  
RIF COUT CLOCKS  
UPF

BOX NO. TAG:ADDRESS SOURCE/DESTINATION MICROFICHE ADDR ALU BUSB BUSA EXTENSTON  
OFST ADDR BOX PAGE COORD CARD BUS SP JBF UPF RIF COLT CLOCKS

- .TOC = TRAPS ##FLPT##
- I. FLOATING POINT EXCEPTIONS -
- =====
- 1. TRAP VECTOR 244
- 2. TYPES OF ERROR (BY ORDER OF FEC ASSIGNMENT)
- 2 OPCODE ERROR CLASS C
- 4 DIVIDE BY ZERO CLASS B
- OVERFLOW CLASS A
- U 12 UNDERFLOW CLASS A
- UV 14 UNDEFINED VARIABLE CLASS A
- 16 MICROBREAK TRAP CLASS D

3. ACTIONS ON THE OCCURRENCE OF THE EXCEPTION CONDITION

CLASS A

=====

ON EXCEPTIONS DUE TO OVERFLOW AND UNDERFLOW, STORING OF AN EXACT ZERO WILL OCCUR IN THE SPECIFIED ACCUMULATOR (IR<7:6>). IF THE CORRESPONDING INTERRUPT IS DISABLED (FIV,FIU = 0) AS SET IN THE FLOATING POINT STATUS REGISTER (FPS), IN THE CASE OF AN UNDEFINED VARIABLE, IF THE FIUV BIT IS DISABLED, PASSAGE OF CONTROL IS RETURNED TO THE INSTRUCTION WHICH FETCHED THE UNDEFINED VARIABLE AND WILL BE USED AS AN OPERAND IN THAT INSTRUCTION.

ON THE OCCURANCE OF A CONVERSION ERROR IN THE STCT INSTRUCTION AN EXACT ZERO WILL BE STORED IN THE SPECIFIED DESTINATION (IR<5:0>) IF THE FIC BIT IS DISABLED (FIC=0).

IF THE CORRESPONDING INTERRUPTS ARE ENABLED (1) NO ACTION IS TAKEN IN THE ACCUMULATORS AS ABOVE AND THE CALCULATED ANSWERS WILL BE LEFT INTACT. THE ADDRESS OF THE OFFENDING INSTRUCTION IS STORED IN THE FLOATING EXCEPTION ADDRESS (FEA) AND THE CORRESPONDING EXCEPTION CODE IS STORED IN THE FLOATING EXCEPTION CODE REGISTER (FEC). A TEST IS THEN MADE ON THE FLOATING INTERRUPT DISABLE BIT OF THE FPS (FPS<14>).

IF FID IS DISABLED (1) PASSAGE OF CONTROL IS GIVEN TO THE NEXT INSTRUCTION. IF FID IS ENABLED (0), A TRAP TO VECTOR 244 OCCURS AND CONTROL PASSES TO THE TRAP FLOWS.

CLASS B,C,D

=====

FOR ALL EXCEPTIONS IN THESE CLASSES, UPDATE OF THE FEA AND FEC OCCURS. THE FEA IS LOADED WITH THE ADDRESS OF THE OFFENDING INSTRUCTION AND THE CORRESPONDING FEC CODE IS LOADED IN THE FLOATING EXCEPTION CODE REGISTER. A TEST IS MADE ON FID (INTERRUPT DISABLE). IF FID = 1 THEN THE INTERRUPT IS DISABLED AND CONTROL IS GIVEN TO THE NEXT INSTRUCTION. IF FID = 0 THEN A TRAP TO VECTOR 244 OCCURS.

ALL EXCEPTIONS WHICH CAUSE AN UPDATE OF THE FEA AND FEC TO OCCUR WILL ALSO SET THE FER BIT IN THE FPS (FPS<15>).

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARS	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RI: COUT CLOCKS
	F/HFPTRAP6	<--	4220 1313 426				
*	SUBROUTINE TPREAMBLE	*					
	RETURN/HFPTRAP7	* -->	4222 1314 426				

1969 TPREAMBLE:2544  
 \*\*\*\*\*  
 \* TRAPS PREAMBLE LOADS SR WITH \*  
 \*FPSHI,FEC. SETS R(TRAPSEN) TO FPS.FID \*  
 \*SELECTS EMIT THEN JUMPS TO ONE OF THE \*  
 \*SEVEN TRAP TYPES FOR TRAP SPECIFIC \*  
 \*PROCESSING NOTE - HFPP REQUIRES SR TO BE \*  
 \*INTACT SELECT \*  
 \*EMIT \*

2544 000000001000  
 1111 00 00 11 03 011 000 0100 0  
 00000 000000 11010 101100110

-----  
 \*P2 D+FPSHIFEC \*  
 \*NEXT, BUT(CLEAR FLAGS), \*  
 \* J/TRPE2 \* --> 2546 1970 638

1970 TRPE2:2546 F/TPREAMBLE <-- 2544 1969 637

2546 000000001000  
 1111 00 00 01 00 000 100 0100 0  
 00000 000000 11111 000000000

\*\*\*\*\*  
 \* SHIFT FID INTO D(C) D(C) GETS \*  
 \*FID \*  
 \*-----\*

\*P2 D+D LEFT 1,D(C)+ALUIS, \*  
 \*NEXT, \*  
 \* BUT(RETURN) \* --> VV

-----  
 .CASE 2 OF BHFPTRAP7  
 1971 OPCOERR:4541 F/HFPTRAP7 <-- 4222 1314 426

4541 000000001000  
 0000 10 00 00 00 000 010 0000 0  
 00010 100000 10100 110000010

\*\*\*\*\*  
 \* TARGETS \*  
 \*-----\*

\*P3 MD+FEC2 \*  
 \*NEXT, BUTR(HOTWARM), \*  
 \* J/OPERR2 \*  
 \* J/OPERRHOT \* --> 10 4602 1972 639

-----  
 \* J/OPERRHOT \* --> 11 4603 1973 639  
 \*\*\*\*\*

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 1972	OPERR2:4602 F/OPCODERR ***** *F - OPERR2 H - OPERRHOT *-----* *P2, D+PC (A),D(C)+D(C), *P3, FPA+D (B ADDR), *NEXT, * J/STATUPDT1 *****	<--	4541 1971 638	4602	1111 00 10 10 01 111 111 0100 0 00000 011100 11000 101001111			000000001000
.CASE 1973	OPERRHOT:4603 F/OPCODERR ***** * INSERT FER IN *FPS<15> *-----* *P2, D+FPSHIFEC OR CNST100000, * D(C)+D(C), *P3, FPSHIFEC+D (A ADDR), *NEXT, * J/STATUPDT2 *****	<--	4541 1971 638	4603	1110 10 00 11 00 011 111 0100 0 00101 010010 11000 110000001			000000001000
.CASE 1974	ZERODIV:4542 F/HFPPTRAP7 ***** *P3, MD+FEC4, *NEXT, * J/STATUPDT1 *****	<--	4222 1314 426	4542	0000 10 00 00 00 000 100 0000 0 00010 100000 11000 101001111			000000001000
.CASE 1975	CONVTRAP:4543 F/HFPPTRAP7 ***** *P3, MD+FEC6, *NEXT, * J/CTRAP2 *****	<--	4222 1314 426	4543	0000 10 00 00 00 000 110 0000 0 00010 100000 11000 101101001			000000001000









BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION				MICROFICHE COORD CARD	ADDR BUS	BUSB SP	BUSB UBF	EXTENSION RIF COUT CLOCKS
		OFST	ADDR	BOX	PAGE					
1988	TRAPEND:4576	F/CTRAP2	<--	4551	1976	640				
		F/UTRAP2	<--	4571	1984	642				
		F/NZTRAP2	<--	4574	1986	642				
	*****									
	*ERROR FLOWS GET FEC CODE BRANCH ON									
	*COND-ENABLED (D07) TARGETS -									
	*BUT(D07)									
	-----									
	*P2, SR+MD,									
	*NEXT, BUT(FNORM),									
	* J/DISAB									
		J/DISAB	-->	101	4515	1989	643			
		J/STATUPDT1	-->	111	4517	2001	647			
	*****									
CASE 1989	1 OF BTRAPEND									
	DISAB:4515	F/TRAPEND	<-- VV							
	*****									
	*D - DISAB 1 - STATUPDT1 FOR COND CODES									
	*SR<2:1>									
	*D0 V									
	-----									
	*P3, MD+6 (BC),									
	*NEXT, BUT(CASE),									
	* J/VDIS									
		J/VDIS	-->	1001	4611	1990	643			
		J/UOIS	-->	1011	4613	1991	644			
		J/UVDIS	-->	1101	4615	1997	646			
		J/CDIS	-->	1111	4617	2000	646			
	*****									
CASE 1990	1 OF BDISAB									
	VDIS:4611	F/DISAB	<-- VV							
	*****									
	*O1 C TARGETS									
	*-									
	-----									
	*P2, D+MD,									
	*NEXT, BUTR(HOTWARM),									
	* J/WARMDIS									
		J/WARMDIS	-->	10	4446	1992	644			
		J/HOTDIS	-->	11	4447	1996	645			
	*****									

```

4576
1010 11 10 00 00 000 000 0010 0
00000 000000 01000 101001101

4515
0000 10 00 00 00 000 110 0000 0
00010 100000 00000 110001001

4611
1010 11 10 00 00 000 000 0100 0
00000 000000 10100 100100110

```

# J05

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION		CLOCK
								OFST	ADDR	
.CASE 1991	UDIS:4613	F/DISAB	<--	4515	1989	643				
	*****									
	*F - WARMDIS D - HOTDIS TARGETS F -									
	*WARMDIS									
	-----									
	*P2, D+CNST4,									
	*NEXT, BUTR(HOTWARM),									
	* J/WARMDIS									
	* J/WARMDIS	-->		10	4446	1992	644			
	* J/HOTDIS	-->		11	4447	1996	645			
	*****									
.CASE 1992	WARMDIS:4446	F/VDIS	<--	4611	1990	643				
		F/UDIS	<-- VV							
	*****									
	*D - HOTDIS									
	-----									
	*SELECT, FPSCC(DBUF),FPSCC+DATA,									
	*NEXT, J/WARMDIS2									
	* J/WARMDIS2	-->		VV						
	*****									
.CASE 1993	WARMDIS2:4600	F/WARMDIS	<--	VV						
	*****									
	* TARGETS - 0 -									
	*WARMDIS3									
	-----									
	*P2, D+0,									
	*P3, FAC32(SF)+D (A ADDR),									
	*NEXT, BUTR(FD),									
	* J/WARMDIS3									
	* J/WARMDIS3	-->		10	4406	1994	645			
	* J/WARMDIS4	-->		11	4407	1995	645			
	*****									

# K05

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 645

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT CLOCKS UPF	
.CASE 1994	1 OF BWARMDIS2									
	WARMDIS3:4406	F/WARMDIS2	<--	4600	1993	644				
	*****							4406	000000001000	
	*1 - WARMDIS4 GO FETCH NEXT							000000000000	0	
	*INSTRUCTION							000000	111010010	
	-----									
	*NEXT, BUTR(SERVICE),									
	* J/FETO1F									
	* J/FETO1F		-->	10	4722	1316	427			
	* J/SERO2F		-->	11	4723	1317	428			
.CASE 1995	2 OF BWARMDIS2									
	WARMDIS4:4407	F/WARMDIS2	<--	4600	1993	644				
	*****							4407	100000001000	
	* GO FETCH NEXT							001100000000	01000	
	*INSTRUCTION							000000	01011010000	
	-----									
	*P2, D+0									
	*P3, FAC10(SF)+D (A ADDR),									
	*NEXT, BUTR(SERVICE),									
	* J/FETO1F		-->	10	4722	1316	427			
* J/SERO2F		-->	11	4723	1317	428				
.CASE 1996	2 OF BVDIS									
	HOTDIS:4447	F/VDIS F/UDIS	<-- <--	4611 4613	1990 1991	643 644				
	*****							4447	011000001000	
	* GO FETCH NEXT							000000000000	00000	
	*INSTRUCTION							000000	00000100010	
	-----									
	*SELECT, FPSCC(DBUF),									
	*P3, FPSCC+DATA,									
	*NEXT, BUTR(SERVICE),									
	* J/FETO1F		-->	10	4722	1316	427			
* J/SERO2F		-->	11	4723	1317	428				

# L05

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 646

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF L'PF	COUT	CLOCKS	
.CASE 1997	3 OF BDISAB										
	UVDIS:4615	F/DISAB	<--	4515	1989	643					
	*****										
	* TARGETS - 0 -										
	*UVIDS2										
	-----										
	*NEXT,	BUTR(HOTWARM),									
	*	J/UVDIS2			10	4642	1998	646			
	*	J/UVDIS3			11	4643	1999	646			
	*****										
.CASE 1998	1 OF BUVDIS										
	UVDIS2:4642	F/UVDIS	<-- VV								
	*****										
	*1 - UVIDS3										
	-----										
	*NEXT,	BUT(RETURN)									
*****											
.CASE 1999	2 OF BUVDIS										
	UVDIS3:4643	F/UVDIS	<--	4615	1997	646					
	*****										
	* FETCH NEXT										
	*INSTRUCTIONH										
	-----										
	*NEXT,	BUTR(SERVICE),									
	*	J/FETO1F			10	4722	1316	427			
	*	J/SERO2F			11	4723	1317	428			
	*****										
.CASE 2000	4 OF BDISAB										
	CDIS:4617	F/DISAB	<--	4515	1989	643					
	*****										
	* GO FOR NEXT										
	*INSTRUCTION										
	-----										
	*NEXT,	BUTR(SERVICE),									
	*	J/FETO1F			10	4722	1316	427			
	*	J/SERO2F			11	4723	1317	428			
	*****										

ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF L'PF	COUT	CLOCKS
4615	0000	00 00	00 00	00000000	1000	0000 0
	00000	000000	10100	110100010		
4642	0000	00 00	00 00	00000000	1000	0000 0
	00000	000000	11111	000000000		
4643	0000	00 00	00 00	00000000	1000	0000 0
	00000	000000	10000	111010010		
4617	0000	00 00	00 00	00000000	1000	0000 0
	00000	000000	10000	111010010		

# M05

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 B: ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
								RIF	COU	CLOCKS	
2001	STATUPDT1:4517	F/TRAPEND	<--	4576	1988	643					
	*****							4517		00000000	1000
	* UPDATE						1110	10 00	11 00	011 111 0100 0	
	* FER						00101	010010	11000	110000001	
	-----										
	* P2,	D+FPSHIFEC OR CNST100000,									
	* D(C)+D(C)										
	* P3,	FPSHIFEC+D (A ADDR),									
	* NEXT,										
	* J/STATUPDT2		-->	VV							
2002	STATUPDT2:4601	F/OPERRHOT F/STATUPDT1	<-- <-- VV	4603	1973	639					
	*****							4601		00000000	1000
	* CLEAR						1011	10 00	11 00	011 111 0100 0	
	* FEC						00111	010010	11000	110000100	
	-----										
	* P2,	D+FPSHIFEC AND HIBYTE MASK,									
	* D(C)+D(C)										
	* P3,	FPSHIFEC+D (A ADDR),									
	* NEXT,										
	* J/STATUPDT3		-->	VV							
2003	STATUPDT3:4604	F/STATUPDT2	<-- VV								
	*****							4604		00000000	1000
	* UPDATE						1110	11 10	11 00	011 111 0100 0	
	* FEC						00000	010010	11000	110000101	
	-----										
	* P2,	D+FPSHIFEC OR MD D(C)+D(C),									
	* P3,	FPSHIFEC+D (A ADDR),									
	* NEXT,										
	* J/STATUPDT4		-->		4605	2004	648				
	*****										



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION												
								OFST	ADDR	BOX	PAGE	COORD	CARD	BUS	SP	UBF	UPF	RIF	COUT	CLOCKS
2008	2 OF BSTATUPDTS NOTRAP:4027	F/STATUPDTS	<--	4610	2005	648														
	* GO FETCH NEXT																			
	* INSTRUCTION																			
	* NEXT, BUTR(SERVICE),																			
	J/FETO1F																			
		J/FETO1F	-->	10	4722	1316	427													
		J/SERO2F	-->	11	4723	1317	428													

4027  
 0000 00 00 00 00 00000001000  
 00000 000000 10000 111010010



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC	I/O SUBROUTINES	##FLPT##					
.TOC	FETCH STORE INTEGER SUBROUTINE	##FLPT##					
	F/LDCT3	<--	1251 1278 414				
	F/LDFPS	<--	505 1346 439				
	F/LDEXP3	<--	3715 1838 595				
	F/LDCTW8	<--	4441 1864 602				
	F/EISO1	<--	42 2331 771				
*****							
*	SUBROUTINE FETCHINT	*					
	RETURN/LDCT4	* -->	424 1279 415				
	RETURN/LDFPS2	* -->	472 1347 439				
	RETURN/LDEXP4	* -->	3722 1839 595				
	RETURN/LDCTW9	* -->	4504 1865 602				
	RETURN/EISO2	* -->	1527 2332 771				
*****							

2009 FETCHINT:2550

2550 000000001011  
 1010 00 00 10 10 000 000 0111 0  
 00000 000000 00101 000101000

```

*****
*SUBROUTINE PERFORMS A FETCH OR STORE OF *
*A SINGLE OPERAND FROM MEMORY OR GENERAL *
*REGISTER DEPENDENT ON THE DESTINATION *
*MODE FETCH OPERATION PLACES THE OPERAND *
*IN R(DST) = R(T2) STORE OPERATION *
*PERFORMS A STORE INTO MEMORY FROM R(T3) *
*ENTRY POINT TO PERFORM A FETCH OPERATION *
*D(C)=0 FOR FETCH INDICATOR TARGETS *
*- *
*-----*
*P1, BA+R(DF), CURRENT MODE *
*P2, SR+R(DF) (B), D+R(DF) (B), *
* D(C)+CIN, *
*NEXT, BUTR(DM) *
* J/FDMOINT *
* J/FDM1INT *
* J/FDM2INT *
* J/FDM3INT *
* J/FDM4INT *
* J/FDM5INT *
* J/FDM6INT *
* J/FDM7INT *
*****

```

-->	1000	2050	2011	651
-->	1001	2051	2012	652
-->	1010	2052	2013	652
-->	1011	2053	2014	652
-->	1100	2054	2015	653
-->	1101	2055	2016	653
-->	1110	2056	2017	653
-->	1111	2057	2018	654

E06

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG:ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	EXTENSION		
			OFST	ADDR	BOX PAGE				BUSA RIF	COUT	CLOCKS
		F/STEXP5	<--	1622	1756	570					
		F/STCTW39	<--	4036	1795	582					
		F/STCTW44	<--	1046	1800	583					
*****											
*	SUBROUTINE STOREINT		*								
		RETURN/BRA05	* -->	3	283	126					
		RETURN/BRA05	* -->	3	283	126					
		RETURN/STCTW46	* -->	4442	1802	584					
*****											

2010 STOREINT:2551

```

*****
*FDMOINT - FDM7INT
*-----*
*----- ENTRY POINT TO
*PERFORM A STORE OPERATION TO MEMORY OR
*GENERAL REGISTER USED TO SATISFY STCT
*HOT CODE FOR A DOUBLE FLPGO IN SHORT AND
*LONG INTEGER D(C)=1 FOR STORE INDICATOR
*TARGETS - STDMOINT -
*STDM7INT
*-----*
*          FLPGO
*P1,      BA+R(DF), CURRENT MODE,
*P2,      SR+R(DF) (A), D+R(DF) (A),
*          D(C)+CIN,
*NEXT,    BUTR(DM),
*          J/STDMOINT
*          J/STDMOINT
*          J/STDM1INT
*          J/STDM2INT
*          J/STDM3INT
*          J/STDM4INT
*          J/STDM5INT
*          J/STDM6INT
*          J/STDM7INT
*****

```

```

2551      000000001011
1111 00 00 10 10 000 000 0111 0
11100 000000 00101 000001000

```

J/STDMOINT	-->	1000	2010	2019	654
J/STDM1INT	-->	1001	2011	2020	654
J/STDM2INT	-->	1010	2012	2021	655
J/STDM3INT	-->	1011	2013	2022	655
J/STDM4INT	-->	1100	2014	2023	655
J/STDM5INT	-->	1101	2015	2024	656
J/STDM6INT	-->	1110	2016	2025	656
J/STDM7INT	-->	1111	2017	2026	656

.CASE 1 OF BFETCHINT  
2011 FDMOINT:2050

```

*****
F/FETCHINT
*-----*
*----- DESTINATION MODE
*0 FETCH OPERATION SR GETS DATA FOR 9SH
*INSTRUCTION
*-----*
*P2,      D+R(DF) (A), SR+R(DF) (A),
*P3,      R(DST)+D (B ADDR),
*NEXT,    BUT(RETURN)
*****

```

<-- 2550 2009 650

```

2050      000000001000
1111 00 11 10 10 110 000 0110 0
00000 011110 11111 000000000

```

--> VV

BOX NO.	TAG: ADDRESS	SOURCE / DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
.CASE 2012	2 OF BFETCHINT FDM1INT:2051	F/FETCHINT	<-- 2550 2009 650	2051	0000	00 00	00 00	000000001000
	*****				10001	000000	11000	01110100
	----- DESTINATION MODE							
	*1 FETCH							
	*OPERATION							
	*P3 U,DATI NOINT,							
	*NEXT,							
	* J/FETCH2		--> 2564 2034 659					
.CASE 2013	3 OF BFETCHINT FDM2INT:2052	F/FETCHINT	<-- 2550 2009 650	2052	1001	11 11	10 10	000 000 0110 0
	*****				10001	000110	11000	101110100
	----- DESTINATION MODE							
	*2 FETCH							
	*OPERATION							
	*P2, D+R(DF) PLUS 2,							
	* SR+R(DF) PLUS 2,							
	*P3, R(DF)+D (A ADDR),							
	*P3 U,DATI NOINT,							
	*NEXT,							
	* J/FETCH2		--> 2564 2034 659					
.CASE 2014	4 OF BFETCHINT FDM3INT:2053	F/FETCHINT	<-- 2550 2009 650	2053	1001	11 11	10 10	000 111 0100 0
	*****				10001	000110	11000	101101100
	*CONTINUE							
	*P2, D+R(DF) PLUS 2 D(C)+D(C),							
	*P3, R(DF)+D (A ADDR),							
	*P3 U,DATI NOINT,							
	*NEXT,							
	* J/FSDM3INT		--> 2554 2027 657					
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 2018	8 OF BFETCHINT FDM7INT:2057	F/FETCHINT	<--	2550	2009	650	2057	000000001011 1001 11 11 10 01 111 111 0101 0 10001 000110 11000 101110001
	***** ----- *----- *7 FETCH OPERATION FETCH INDEX *OF *----- *P1, B.+PC CURRENT MODE *P2, D+PC PLUS 2, D(C)+D(C), *P3, PC+D (A ADDR), *P3, U,DATI NOINT, *NEXT, * J/FSDM6INT		-->	2561	2030	658		
.CASE 2019	1 OF BSTOREINT STDMOINT:2010	F/STOREINT	<--	2551	2010	651	2010	000000001000 1111 00 00 10 01 011 000 0100 0 00000 001110 11:11 000000000
	***** *OERAND ADDRESS *----- *----- *0 STORE *OPERATION *----- *P2, D+R(T3) (A), *P3, R(DF)+D (B ADDR), *NEXT, * BUT(RETURN)		--> V'					
.CASE 2020	2 OF BSTOREINT STDMIINT:2011	F/STOREINT	<--	2551	2010	651	2011	000001001000 1111 00 00 10 01 011 000 0100 0 10010 000000 11000 101111000
	***** *----- *----- *1 STORE *OPERATION *----- *P2, D+R(T3) (A), *P3, U,DATO, *ENABLE, KJ, *NEXT, * J/STORE3		-->	2570	2038	660		

# JOB

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA	ALU BUS SP UBF	EXTENSION RIF COUT CLUCKS
.CASE 2021	3 OF BSTOREINT					
	STDM2INT:2012	F/STOREINT	<--	2551	2010	651
	*****					
	----- DESTINATION MODE -----					
	*2 STORE					
	*OPERATION					
	-----					
	*P2, D+R(DF) PLUS 2,					
	*P3, R(DF)+D (A ADDR),					
	*NEXT, J/STORE2					
*****						
----- DESTINATION MODE -----						
*3 STORE						
*OPERATION						
-----						
*P2, D+R(DF) PLUS 2, D(C)+D(C),						
*P3, R(DF)+D (A ADDR),						
*P3, U, DATI NOINT,						
*NEXT, J/FSDM3INT						
*****						
.CASE 2022	4 OF BSTOREINT					
	STDM3INT:2013	F/STOREINT	<--	2551	2010	651
	*****					
	----- DESTINATION MODE -----					
	*3 STORE					
	*OPERATION					
	-----					
	*P2, D+R(DF) PLUS 2, D(C)+D(C),					
	*P3, R(DF)+D (A ADDR),					
	*P3, U, DATI NOINT,					
*NEXT, J/FSDM3INT						
*****						
----- DESTINATION MODE -----						
*4 STORE						
*OPERATION						
-----						
*P2, D+R(DF) MINUS 2,						
* SR+R(DF) MINUS 2,						
*P3, R(DF)+D (A ADDR),						
*NEXT, J/STORE						
*****						
.CASE 2023	5 OF BSTOREINT					
	STDM4INT:2014	F/STOREINT	<--	2551	2010	651
	*****					
	----- DESTINATION MODE -----					
	*4 STORE					
	*OPERATION					
	-----					
	*P2, D+R(DF) MINUS 2,					
	* SR+R(DF) MINUS 2,					
	*P3, R(DF)+D (A ADDR),					
*NEXT, J/STORE						
*****						
----- DESTINATION MODE -----						
*5 STORE						
*OPERATION						
-----						
*P2, D+R(DF) MINUS 2,						
* SR+R(DF) MINUS 2,						
*P3, R(DF)+D (A ADDR),						
*NEXT, J/STORE						
*****						

```

2012
1001 11 11 10 10 000 000 0100 0
0000 000110 11000 101110110

```

```

2013
1001 11 11 10 10 000 111 0100 0
10001 000110 11000 101101100

```

```

2014
1101 11 11 10 10 000 000 0110 0
00000 000110 11000 001111011

```



# K06

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA USF	EXTENSION RIF COUT	CLOCKS
.CASE 2024	6 OF BSTOREINT							
	STDM5INT:2015	F/STOREINT	<--	2551	2010	651		
	*****							
	-----							
	*----- DESTINATION MODE *							
	*5 STORE							
	*OPERATION							
	*-----							
	*P2, D+R(DF) MINUS 2, D(C)+D(C),							
	* SR+R(DF) MINUS 2,							
*P3, R(DF)+D (A ADDR),								
*NEXT,								
* J/FSDM5INT								
* -->								
*****								
.CASE 2025	7 OF BSTOREINT							
	STDM6INT:2016	F/STOREINT	<--	2551	2010	651		
	*****							
	-----							
	*----- DESTINATION MODE *							
	*6 STORE							
	*OPERATION							
	*-----							
	*P1, BA+PC, CURRENT MODE,							
	*P2, D+PC PLUS 2, D(C)+D(C),							
*P3, PC+D (A ADDR),								
*P3, U, DATI NOINT,								
*NEXT,								
* J/FSDM6INT								
* -->								
*****								
.CASE 2026	8 OF BSTOREINT							
	STDM7INT:2017	F/STOREINT	<--	2551	2010	651		
	*****							
	-----							
	*----- DESTINATION MODE *							
	*7 STORE							
	*OPERATION							
	*-----							
	*P1, BA+PC, CURRENT MODE,							
	*P2, D+PC PLUS 2, D(C)+D(C),							
*P3, PC+D (A ADDR),								
*P3, U, DATI NOINT,								
*NEXT,								
* J/FSDM7INT								
* -->								
*****								
	2015			1101	1111	1010	000111	01100
				00000	000110	11000	101110000	
	2016			1001	1111	1001	111111	01010
				10001	000110	11000	101110001	
	2017			1001	1111	1001	111111	01010
				10001	000110	11000	101110001	



M06

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
		OFST	ADDR	BOX							
2030	FSDM6INT:2561	F/EDM6INT	<--	2056	2017	653					
		F/FDM7INT	<--	2057	2018	654					
		F/SDM6INT	<--	2016	2025	656					
		F/SDM7INT	<--	2017	2026	656					
	*****										
	-----*										
	*----- MD GETS INDEX *										
	*CHECK FOR MODE 6 OR 7 TARGETS *										
	*-----*										
	*P3, MD+DATA *										
	*NEXT, BUTR(DM) *										
	* J/FSDM6INT2 *										
	* J/FSDM7INT *										
	*****										
CASE 2031	1 OF BFSM6INT	F/FSDM6INT	<-- VV								
	FSDM6INT2:2336										
	*****										
	*0 - FSDM6INT2 1 - FSDM7INT ADD INDEX *										
	*TARGETS - 0 - *										
	*FETCH *										
	-----*										
	*P2, D+R(DF) PLUS MD, D(C)+D(C), *										
	* SR+R(DF) PLUS MD, *										
	*NEXT, BUTR(D(C)), *										
	* J/FETCH *										
	* J/STORE *										
	*****										
CASE 2032	2 OF BFSM6INT	F/FSDM6INT	<--								
	FSDM7INT:2337										
	*****										
	*1 - STORE *										
	-----*										
	*----- ADD INDEX TO FIND *										
	*ADDRESS OF *										
	*OPERAND *										
	-----*										
	*P2, D+R(DF) PLUS MD, D(C)+D(C), *										
	* SR+R(DF) PLUS MD, *										
	*NEXT, *										
	* J/FSDM5INT *										
	*****										

2561 0000 11 10 00 00 000 000 0000 0  
00000 100000 00101 011011110

2336 1001 11 10 10 10 000 111 0110 0  
00000 000000 10011 001111001

2337 1001 11 10 10 10 000 111 0110 0  
00000 000000 11000 101110000

# N06

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 659

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX	MICROFICHE PAGE	COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUNT	CLOCKS
2033	FETCH: 2171	F/FDM4INT F/FSDM3INT2 F/FSDM6INT2	<-- <-- <--	2054 2555 2336	2015 2028 2031	653 657 658					
	*****										
	----- INITIATE DATI FOR -----										
	* OPERAND										
	* FETCH										
	-----										
	* P1, BA+SR, CURRENT MODE,										
	* P3, U, DATI NOINT,										
	* NEXT,										
	* J/FETCH2 --> VV										
	*****										
2034	FETCH2: 2564	F/FDM1INT F/FDM2INT F/FETCH	<-- <-- <--	2051 2052	2012 2013	652 652					
	*****										
	* MD GETS										
	* DATA										
	-----										
	* P3, MD+DATA,										
	* NEXT,										
	* J/FETCH3 --> VV										
	*****										
2035	FETCH3: 2565	F/FETCH2	<--	VV							
	*****										
	* SR GETS DATA FOR ASH										
	* INSTRUCTION										
	-----										
	* P2, D+MD, SR+MD,										
	* P3, R(DST)+D (A ADDR),										
	* NEXT,										
	* BUT(RETURN) --> VV										
	*****										

```

2171 0000 00 00 00 00 000000001011
      10001 000000 11000 10110100

2564 0000 11 10 00 00 000000001000
      00000 100000 11000 101110101

2565 1010 11 10 00 01 110 000 0110 0
      00000 010110 11111 000000000
  
```

BOX NO. .CASE	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
2036	STORE:2173	F/FDM4INT F/FSDM3INT2 F/FSDM6INT2	<-- <-- <--	2054 2555 2336	2015 2028 2031	653 657 658			
	*****								
	*PI, BA+SR, CURRENT MODE,								
	*NEXT, J/STORE2		-->	VV					
2037	STORE2:2566	F/STDM2INT F/STORE	<-- <-- VV	2012	2021	655			
	*****								
	*P2, D+R(T3) (A),								
	*P3, U, DATO,								
	*ENABLE, KJ,								
	*NEXT, J/STORE3		-->	VV					
2038	STORE3:2570	F/STDM1INT F/STORE2	<-- <-- VV	2011	2020	654			
	*****								
	* NULL TO PERMIT DATA								
	*OUT								
	*NEXT, BUT(RETURN)		-->	VV					
	*****								

```

2173      000000001011
0000 00 00 20 00 000 000 0001 0
00000 000000 11000 101110110

2566      000001001000
1111 00 00 10 01 011 000 0100 0
10010 000000 11000 101111000

2570      000000001000
0000 00 00 00 00 000 000 0000 0
00000 000000 11111 000000000

```

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION OF ST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SF	B'JSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC = PREFIXES FOR FETCH STORE FLOAT SUBROUTINE ##FLPT##									
	F/MULFZW	<--	344	1404	457				
	F/MULDZW	<--	345	1405	457				
	F/MULXW	<--	346	1406	458				
	F/MODW	<--	347	1479	481				
	F/ADDZW	<--	350	1565	508				
	F/ADDNZW	<--	351	1566	509				
	F/SUBZW	<--	355	1567	509				
	F/SUBNZW	<--	356	1568	509				
	F/CPW	<--	357	1656	539				
	F/DIVFW3	<--	547	1686	549				
*****									
*	SUBROUTINE FETCHFLT		*						
	RETURN/MULMODW	* -->	-1	-1	-1	2	1	1	
	RETURN/MULMODW	* -->	2152	1408	458				
	RETURN/MULMODW	* -->	-1	-1	-1	2	1	1	
	RETURN/MULMODW	* -->	2152	1408	458				
	RETURN/ADDW01	* -->	4232	1570	510				
	RETURN/ADDW01	* -->	4232	1570	510				
	RETURN/SUBW01	* -->	4230	1569	510				
	RETURN/SUBW01	* -->	4230	1569	510				
	RETURN/CPW2	* -->	4334	1657	539				
	RETURN/DIVFW4	* -->	2422	1687	549				
*****									

D07

2039 FETCHFLT:4614

```

*****
* ENTRY POINT FOR FETCHING OPERANDS USED *
* ONLY BY WARM FLOATING POINT LOAD *
* CONDITION *
* REGISTER *
*-----*
*P2,      D+D, *
*P3,      R(T2A)+D (A ADDR), *
*NEXT, *
*          J/FETCHFLT2 *
*****

```

--> 4651 2060 671

```

4614      000000001000
          0011 00 00 00 01 110 000 0100 0
          00000 010010 11000 110101001

```

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD	ADDR CARD	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OF ST	ADDR	BOX						PAGE	RIF	COUT
		F/TSTNZW	<--	2655	1380	450							
		F/ABSNZW	<--	2656	1387	452							
		F/NEGNZW	<--	2657	1401	456							
		F/LOADSIXW	<--	353	1648	536							
		F/LOADNZW	<--	354	1650	537							
*****													
*	SUBROUTINE FFLTDEFER		*										
		RETURN/TSTNZW2	* -->	2122	1381	451							
		RETURN/ABSNZW2	* -->	2126	1388	452							
		RETURN/NEGNZW2	* -->	2150	1402	456							
		RETURN/LOADSIXW2	* -->	4324	1649	536							
		RETURN/LOADSIXW2	* -->	4324	1649	536							
*****													



F07

2040 FFLTDEFER:4616

```
*****  
*-----*  
*----- ENTRY POINT *  
*USED BY CLEAR, TEST, ABSOLUTE, NEGATE AND *  
*LOAD FOR DEFERRAL OF NEGATIVE ZERO WHEN *  
*FETCHED FROM MEMORY LOAD CONDITION *  
*REGISTER *  
*-----*  
*P2, D+2 *  
*P3, R(T2A)+D (A ADDR), *  
*NEXT, *  
* J/FETCHFLT2 * -->  
*****
```

```
4616 000000001000  
1010 11 11 00 01 110 000 0100 0  
00000 010010 11000 110101001
```

4651 2060 671

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF COUT CLOCKS	EXTENSION UBF UPF
	F/LDCP	<-- 277 1291 418					
	F/FETCHFLT2	<-- 4651 2060 671					
	F/IA90	<-- 3014 624 235					
	F/UNDEFINED	<-- -1 -1 -1	2 1 1				
	F/LDCPW1	<-- 377 1889 610					
*****							
*	SUBROUTINE LDCFETCH	*					
	RETURN/UNDEFINED	* --> -1 -1 -1	2 1 1				
	RETURN/IA16	* --> 3000 618 233					
	RETURN/LDCTNZ	* --> 276 1276 414					
	RETURN/RTI03	* --> 4045 317 138					
	RETURN/LDCPW2	* --> 2466 1890 610					
*****							

# H07

2041 LDCFETCH:4620

```
*****
*-----*
*----- ENTRY POINT *
*USED BY LDCPW TO FETCH OPERANDS LOAD *
*CONDITION REGISTER D(C)=0 TRAP OF NEG *
*ZERO IS DEFERRED *
*UNTIL *
*-----*
*P2,      D+?,D(C)+ALUOO, *
*P3,      R(T2A)+D (A ADDR), *
*NEXT, *
*          J/MODEALTER *
*****
```

-->

4635 2052 668

```
4620      000000001000
1010 11 11 00 01 110 010 0100 0
00000 010010 11000 110011101
```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD	CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COLT CLOCKS UPF
	F/STCPN22	<--	4156	1271	412								
	F/IA68	<--	3127	636	239								
	F/UNDEFINED	<--	-1	-1	-1	0	1	1					
	F/STCPW29	<--	4157	1832	593								
	F/STCPW31	<--	4476	1834	593								
*****													
*	SUBROUTINE STCFLT	*											
	RETURN/UNDEFINED	* -->	-1	-1	-1	0	1	1					
	RETURN/UNDEFINED	* -->	-1	-1	-1	0	1	1					
	RETURN/RTIO9	* -->	4065	323	140								
	RETURN/STCPW30	* -->	-1	-1	-1	0	1	1					
	RETURN/BRA05	* -->	3	283	126								
*****													

J07

2042 STCFLT:4621

```

*****
*CONDITION CODES ARE CLOKED *
*-----*
*----- ENTRY POINT *
*USED BY STCPW TO STORE CONVERTED DATA *
*INTO MEMORY PREPARE TO LOAD CODE IN FLAG *
*REGISTER *
*-----*
*P3, MD+1200 (BC), *
*NEXT, *
* J/STINTLG3 *
*****

```

-->

4634 2050 667

4621

```

0000 10 00 10 10 000 000 0000 0
00010 100000 11000 110011100

```

K07

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
							RIF UPF	COU	
		F/LDCT5 <--	1253 1280 415						
		F/LDCTW16 <--	4443 1873 605						
*****									
*	SUBROUTINE FETCHINTLG								
		RETURN/LDCT6 * -->	425 1281 415						
		RETURN/LDCTW17 * -->	-1 -1 -1				2	1	1
*****									

```

2043  FETCHINTLG:4624
*****
*TO ALTER EFFECT OF BUTR(FD) TO BUTR(NOT
*FD)
*-----*
*                ENTRY POINT
*USED BY LDCLF/D TO FETCH TWO INTEGER
*WORD FROM MEMORY TO BE CONVERTED TO
*FLOATING DEFER NEG ZERU TRAP SINCE NOT
*APPLICABLE IN INTEGER FETCH TEST FOR DMO
*TARGETS
*-
*-----*
*P2,          D+2,D(C)+ALU00,
*P3,          R(T2A)+D (A ADDR),
*NEXT,        BUTR2(DMO),
*             J/FINTLG2
*             --> VV
*****
.CASE 1 OF BFETCHINTLG
2044  FINTLG2:4663          F/FETCHINTLG      <-- VV
*****
*0 - FINTLG2 1 - FINTLG3  SET UP FLAG BIT
*FOR TWO WORD
*FETCH
*-----*
*P3,          MD+3002 (BC),
*NEXT,
*             J/STINTLG3
*             -->
*****

```

```

4624
1010 11 11 00 01 110 010 0100 0
00000 010010 01001 110110011

```

```

4663
0000 10 01 10 00 000 010 0000 0
00010 100J00 11000 110011100

```

4634 2050 667

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS	
		OFST	ADDR	BOX								PAGE
2045	FINTLG3:4667	F/FETCHINTLG	<--	4624	2043	665						
	*****						4667			000000001000		
	*ALSO FOR WARM BRANCH ON BUTR(HOTWARM)							1111	00 11	10 10	011 000	0100 0
	*DNO DO GENERAL							00000	001010	11000	110010101	
	*REGISTER											
	-----											
	*P2, D+R(DF) (A)											
	*P3, FDST3+D (B ADDR),											
	*NEXT,											
	* J/FINTLG4		-->	VV								
	*****											
2046	FINTLG4:4625	F/FINTLG3	<--	VV								
	*****						4625			000000001000		
	*FETCH							0011	00 00	00 01	011 000	0100 0
	-----							00000	000100	11000	110011000	
	*P2, D+0											
	*P3, FDST2+D (A ADDR),											
	*NEXT,											
	* J/FINTLG5		-->	VV								
	*****											
2047	FINTLG5:4630	F/FINTLG4	<--	VV								
	*****						4630			000000001000		
	* R(GRINC) IS FOR POSSIBLE							0011	00 00	00 01	110 000	0100 0
	*ABORT							00000	010100	11111	000000000	
	-----											
	*P2, D+0											
	*P3, R(GRINC)+D (A ADDR),											
	*NEXT,											
	* BUT(RETURN)		-->	VV								
	*****											



N07

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COOT
		F/STST3	<--	1614	1359	443						
		F/STCTW40	<--	4037	1796	582						
		F/STCTW45	<--	4047	1801	584						
*****												
*	SUBROUTINE STOREINTLG		*									
		RETURN/BRA05	* -->	3	283	126						
		RETURN/BRA05	* -->	3	283	126						
		RETURN/STCTW46	* -->	4442	1802	584						
*****												

```

2048 STOREINTLG:4632
*****
-----
*----- ENTRY POINT *
*USED BY STCF/DL OR STST TO STORE TWO *
*INTEGER WORDS TARGETS -- 0 - *
*STINTLG2 *
-----
*SELECT,      EMIT, *
*NEXT,        BUTR2(DMD), *
*              J/STINTLG2 *
*****

```

```

4632      0000 00 00 00 01 000 000 0000 0
          11001 000000 01001 111000011

```

```

CASE 1 OF BSTOREINTLG
2049 STINTLG2:4703      F/STOREINTLG
*****
*1 - STINTLG4 CONSTANT TO *
*FORCE *
-----
*P3,      MD+3202 (BC), *
*NEXT, *
*              J/STINTLG3 *
*****

```

```

4703      0000 10 01 10 10 000 010 0000 0
          00010 '00000 11000 110011100

```

```

          F/STCFLT <--
          F/FINTLG2 <--
          F/STINTLG2 <-- VV

```

```

4621 2042 664
4663 2044 665

```

```

2050 STINTLG3:4634
*****
*0 ON BUTR(FD) AND 0 ON BUTR(HOTWARM) VIA *
*FLAG REGISTER BIT 7 IS SET FOR D(C) IN *
*NEXT STEP D(C)=1 FOR STORE, 0 FOR *
*FETCH *
-----
*P2,      D+MD, D(C)+ALU07, SR+MD, *
*NEXT, *
*              J/MODEALTER2 *
*****

```

```

4634      1010 11 10 00 00 000 011 0110 0
          00000 000000 11000 110100000

```

```

4640 2053 668

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
2051	2 OF BSTOREINTLG STINTLG4:4707	F/STOREINTLG <--	4632 2048 667	4707				000000001000
	* DMO OPERATION SIGNAL				1111 00 00	10 01	011 000	0100 0
	*HFPP				11100	001110	11111	000000000
	*P2, D+FDST3,							
	*P3, R(DF)+D (B ADDR),FLPGO,							
	*NEXT, BUT(RETURN)	--> VV						
2052	MODEALTER:4635	F/LDCFETCH <--	4620 2041 663	4635				000000001000
	*----- COMMON				1111 00 00	01 01	000 111	0110 0
	*ROUTINE USED TO ALTER BUTR(FD) USED IN				00101	000000	11000	110100000
	*FETCH STORE FLOAT SUBROUTINE ALTERATION							
	*IS VIA FLAG REGISTER ALIGN NUMBER FOR							
	*FLAG							
	*REGISTER							
	*P2, D+D SWAP,D(C)+D(C),SR+D SWAP,							
	*NEXT, J/MODEALTER2	--> VV						
2053	MODEALTER2:4640	F/STINTLG3 <-- F/MODEALTER <-- VV	4634 2050 667	4640				000000001000
	* READ FLAG				0000 10 00	11 01	000 000	0000 0
	*REGISTER				11001	100000	11000	110100001
	*SELECT, FLAGS(READ)							
	*P3, EMITCON+DATA,							
	*NEXT, J/MODEALTER2B	-->	4641 2054 669					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
2054	MODEALTER28:4641 ***** *P2, D+EMITCON D(C)+D(C), * *P3, R(T1)+D (A ADDR), * *NEXT, * * J/MODEALTER2C * --> VV *****	<--	4640 2053 668	4641	1010 01001	10 00 010110	00 00 11000	110 111 110100100	0100 0	000000001000
2055	MODEALTER2C:4644 ***** * MASK OUT GARBAGE LO * *BYTE * *-----* *P2, D+R(T1) AND HIBYTE MASK, * * D(C)+D(C) * *P3, R(T1)+D (A ADDR), * *NEXT, * * J/MODEALTER3 * --> VV *****	<-- VV		4644	1011 00111	10 00 010110	11 00 11000	110 111 110100101	0100 0	000000001000
2056	MODEALTER3:4645 ***** * INSERT NEW CONTROL * *BITS * *-----* *P2, D+SR OR R(T1),D(C)+D(C), * *NEXT, * * J/MODEALTER4 * --> VV *****	<-- VV		4645	1110 00000	01 10 000000	00 00 11000	110 111 110101000	0100 0	000000001000
2057	MODEALTER4:4650 ***** * CHECK TO ENTER FETCH OR STORE * *OPERATIONS * *-----* *SELECT, FLAGS(WRITE), * *P3, FLAGS+D * *NEXT, BUTR(D(C)), * * J/MODEALTER5 * --> 01 4501 2058 670 * J/MODEALTER6 * --> 11 4503 2059 670 *****	<-- VV		4650	0000 11011	00 00 000000	00 01 10011	000 001 101000001	0000 0	000000001000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2058	1 OF BMODEALTER4 MODEALTERS:4501	F/MODEALTER4	<--	4650 2057 669			4501 000000001000
	*TARGETS - 0 - MODEALTERS 1 - MODELATER6 *						0000 00 00 00 01 000 000 0000 0
	*-----*						11001 000000 11000 110101001
	*SELECT, EMIT, *						
	*NEXT, *						
	* J/FETCHFLT2 *		-->	4651 2060 671			
.CASE 2059	2 OF BMODEALTER4 MODELATER6:4503	F/MODEALTER4	<--	4650 2057 669			4503 000000001000
	*SELECT, EMIT, *						0000 00 00 00 01 000 000 0000 0
	*NEXT, *						11001 000000 11000 110101100
	* J/STOREFLT *		-->	4654 2061 674			
	*-----*						

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
---------	-------------	--	--------------------------	-----------------	------------	-------------	-------------------------------------

TOC " SUBROUTINE FETCH STORE FLOAT ##FLPT##"  
 :; FETCHSTOREFLOAT SUBROUTINE

THIS SUBROUTINE FETCHES OR STORES A FLOATING POINT NUMBER:-  
 32 BITS IF SINGLE 64 BITS IF DOUBLE.

ENTRY INTO THIS SUBROUTINE IS PREFIXED BY FETCHFLT, STOREFLT,  
 :; FETCHINTLONG, OR STOREINTLONG TO SET APPROPRIATE CONDITIONS  
 :; USED BY THIS SUBROUTINE THEREFORE THE USER SHOULD LOOK AT  
 :; THESE ENTRY POINTS .

PARAMETERS-

ON ENTRY:

R(T2A)<01> = 0 FOR FETCH TO ENTER TRAPS IF NZERO  
 IS OBTAINED FROM MEMORY  
 1 WILL DEFER TRAP EXECUTION -  
 RETURN TO CALLER IS PERFORMED  
 USED BY TST, NEG, ABS, LDG/D, LDCPW  
 D(C) = 0 TO INDICATE A DATI OPERATION FOLLOWING  
 ADDRESS CALCULATION  
 1 TO INDICATE A DATO OPERATION FOLLOWING  
 ADDRESS CALCULATION

ON EXIT:

R(WDADR) = R(T1A) CONTAINS ADDRESS OF FIRST  
 OPERAND FETCHED FROM MEMORY  
 FDST3, FDST2, FDST1, FDST0 LEFT INTACT  
 USING STORE SEQUENCE  
 DATA LOADED INTO THESE REGISTER ON LOAD  
 R(T2A)<15> = CONDITION REGISTER MODIFIED -  
 0 FOR NOT IMMEDIATE ADDRESSING  
 1 FOR IMMEDIATE (USED BY NEG AND ABS -DMO)  
 R(T2A)<00> - 0 INDICATES THAT NO NEG ZERO WAS FETCHED  
 WHEN RETURN FROM DEFER TRAP ENTRY  
 1 INDICATES THAT A NEG ZERO WAS FETCHED  
 BUT TRAP OPERATION HAS BEEN DEFERRED  
 AND RETURN TO CALLER IS PERFORMED

THIS SUBROUTINE IS COMPLEX AND THUS REQUIRES CAREFUL READING OF THE  
 FLOWS AND MICROCODE TO UNDERSTAND IT.

ITS MAIN FUNCTION IS TO FETCH OR STORE 32 OR 64 BITS AND TO  
 UPDATE THE GENERAL REGISTERS ACCORDING TO THE ADDRESS MODE. IT ALSO  
 DOES THE FOLLOWING:-

- TESTS FOR A MINUS-ZERO FETCH FROM MEMORY (SO THAT THE  
 FIUV TRAP CAN OCCUR)
- TESTS FOR IMMEDIATE (REGISTER 7 AND MODES 1, 2, OR 4). IF  
 IMMEDIATE THEN ONLY 16 BITS ARE FETCHED OR STORED.

THE CODE HAS BEEN WRITTEN SO THAT THE FETCHES AND STORES ARE  
 INITIATED AS SOON AS POSSIBLE. THUS THE UPDATING OF THE  
 GENERAL REGISTERS TAKES CYCLES AT THE END - THE CORRECT  
 PLACE SINCE WE FAVOR HOT OVER WARM. HOT CAN BE PROCESSING

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
...	THE FETCHED DATA WHILE THE BM IS UPDATING.						
...	GENERAL REGISTER UPDATING:- WE REQUIRE THE FOLLOWING:						
...	DM 0 1 2 3 4 5 6 7						
...	4 -4 -2 0 0						
...	8 2 -8 -2 0 0						
...	IMM 0 0 2 2 -2 -2 0 0						
...	TRANSFORMATION LEAVES R(GRINC) AT ZERO FOR THE MODES 0, 6 AND 7						
...	RETURN: - FETCH RETURNS BY A BUT(RETURN) IF NOT NZERO DATA OR R(T2A)<01> = 1 AND NZERO DATA ELSE WILL GO TO TRAPS AND EITHER RETURN OR TRAP STORE RETURNS BY BUT(RETURN)						
...	REGISTER MAP OF TEMPORARIES R(WADR2) = R(T1B) R(WADR) = R(T1A) R(GRINC) = R(T2B) R(T1A) USED FOR ADDR INCREMENTS R(T2A) = USED AS CONDITION REGISTER						
...	THIS SUBROUTINE IS USED BOTH BY HOT AND WARM FLOATING POINT TO PERFORM OPERAND FETCHES AND STORES TO MEMORY						
...	SPECIAL CONSIDERATION IS GIVEN TO DESTINATION MODES 1 OR 2 OR 4 AND DESTINATION REGISTER 7 (PC). IN THESE CASES, ONLY A ONE WORD FETCH OR STORE OPERATION IS PERFORMED AND THE INCREMENTING OR DECREMENTING OF REGISTER 7 REFLECTS THIS ONE WORD OPERATION REGARDLESS OF THE OPERAND MODE (FD OF FPS).						
...	WHEN USED BY HOT FLOATING POINT, A SYNCHRONIZATION OPERATION IS PERFORMED WITH THE HOT FPP VIA BUTR(SERVICE#D(C)#FPPACK). SYNCHRONIZATION IS ACCOMPLISHED BY BASE MACHINES ISSUANCE OF A MICROCODE GENERATED SIGNAL LABELLED AS "FLPGO". IN RESPONSE TO THIS SIGNAL, HOT FPP WILL ISSUE "FPPACK" PERMITTING BASE MACHINE TO BREAK OUT OF IT'S WAIT LOOP INDICATING THAT HOT FPP HAS ARRIVED HAS AT IT'S SYNC POINT. IF HOT FPP HAS ARRIVED AT IT'S SYNC POINT AHEAD OF BASE MACHINE, HOT FPP WILL SIT IN IT'S OWN WAIT LOOP MONITORING THE ISSUANCE OF "FLPGO" BY BASE MACHINE. FOLLOWING THE ISSUANCE OF "FLPGO" AND THE RESPONSE "FPPACK", BOTH HOT FPP AND BASE MACHINE WILL BE SYNCHRONIZED EITHER TO PASS DATA FROM HOT FPP TO BASE MACHINE OR TO FETCH OPERANDS FROM MEMORY TO THE HOT FPP UNIT UNDER BASE MACHINE'S CONTROL.						
...	IF A SERVICE CONDITION BECOMES PRESENT DURING THE MONITORING OF "FPPACK" BY THE BASE MACHINE OR IF BOTH CONDITIONS EXIST SIMULTANEOUSLY, THE SERVICE REQUEST WILL BE HONORED FIRST. AN ABORT OF THE PRESENT INSTRUCTION WILL BE PERFORMED ONLY ON OPERAND FETCHES. ON OPERAND STORES, THE INSTRUCTION WILL NOT BE ABORTED ON THE						

# H08

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO. TAG: ADDRESS  
 :: SIMULTANEOUS OCCURANCE OF "FPPACK" AND SERVICE BUT WILL CONTINUE  
 :: TO COMPLETION.

SOURCE/DESTINATION		MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
OFST	ADDR	BOX	PAGE	BUS	SP	UBF	RIF	COUT
		COORD	CARD				UPF	CLOCKS

F/MULXNZ	<--	246	1245	404
F/ADDNZ	<--	251	1247	405
F/LOADNZS	<--	254	1251	406
F/SUBNZ	<--	256	1253	407
F/MOD	<--	247	1260	409
F/CMP	<--	257	1261	409
F/DIVNZ	<--	263	1284	416
F/FETCHFLT	<--	4614	2039	661
F/FFLTDEFER	<--	4616	2040	662
F/MODEALTERS	<--	4501	2058	670

2060 FETCHFLT2:4651

4651	000000001011
1001	10 10 10 10 110 000 0111 0
00001	011010 00101 001110000

```

*****
* PREPARATION STATE AND ENTRY TO PERFORM *
* FETCH OPERATION D(C)=0 FOR FETCH *
* INDICATOR TARGETS - 00 - *
*07 *
*-----*
*P1, BA+R(DF), CURRENT MODE, *
*P2, D+R(DF) PLUS 0(D), *
* SR+R(DF) PLUS 0(D), D(C)+CIN, *
*P3, R(WOADR)+D (B ADDR), *
*NEXT, BUT(DST REG 7#DM), *
* J/FSDMOFLT *
* J/FSDMOFLT * -->
* J/FSDM1FLT * -->
* J/FSDM2FLT * -->
* J/FSDM3FLT * -->
* J/FSDM4FLT * -->
* J/FSDM5FLT * -->
* J/FSDM6FLT * -->
* J/FSDM7FLT * -->
* J/FS2MOFLT * -->
* J/FS2M1FLT * -->
* J/FS2M2FLT * -->
* J/FS2M3FLT * -->
* J/FS2M4FLT * -->
* J/FS2M5FLT * -->
* J/FS2M6FLT * -->
* J/FS2M7FLT * -->
*****
  
```

0000	4160	2062	675
0001	4161	2075	679
0010	4162	2076	680
0011	4163	2077	680
0100	4164	2080	681
0101	4165	2084	683
0110	4166	2088	684
0111	4167	2091	685
1000	4170	2151	708
1001	4171	2152	708
1010	4172	2153	709
1011	4173	2154	709
1100	4174	2155	710
1101	4175	2158	711
1110	4176	2159	711
1111	4177	2160	711



BOX NO.	TAG:ADDRESS		SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
			OFST ADDR BOX PAGE	COORD CARD	BUS	BUS	SP	UBF	RIF COUT CLOCKS
		F/STFD	<-- 260 1262 409						
		F/UNDEFINED	<-- -1 -1 -1	0 1 1					
		F/CLRNZWS	<-- 2120 1379 450						
		F/STSW	<-- 3670 1682 547						
*****									
	* SUBROUTINE STOREFLT		*						
IT*	--> 246 1245 404	RETURN/4'D0†							
		RETURN/IA60H	* --> 3112 631 237						
		RETURN/BRA05	* --> 3 283 126						
		RETURN/BRA05	* --> 3 283 126						
*****									

J08

2061 STOREFLT:4654

4654 000000001011  
1111 00 10 10 10 110 000 0111 0  
00000 011010 00101 001110000

```

*****
*FSDMOFLT - FSDM7FLT 10 - 17 FS2DMOFLT -
*FS2DM7FLT
*-----*
*----- ENTRY POINT
*AND PREPARATION STATE FOR STORE
*OPERATION D(C) = 1 FOR STORE INDICATOR
*TARGETS
*-
*-----*
*P1,      B(R(DF) CURRENT MODE,
*P2,      D(R(DF) (A) D(C)+CIN,
*         SR(R(DF) (A)
*P3,      R(WDADR)+D (B ADDR),
*NEXT,    BUT(DST REG 7#DM),
*         J/FSDMOFLT
*
*         J/FSDMOFLT      * --> 0000 4160 2062 675
*         J/FSDM1FLT     * --> 0001 4161 2075 679
*         J/FSDM2FLT     * --> 0010 4162 2076 680
*         J/FSDM3FLT     * --> 0011 4163 2077 680
*         J/FSDM4FLT     * --> 0100 4164 2080 681
*         J/FSDM5FLT     * --> 0101 4165 2084 683
*         J/FSDM6FLT     * --> 0110 4166 2088 684
*         J/FSDM7FLT     * --> 0111 4167 2091 685
*         J/FS2DMOFLT    * --> 1000 4170 2151 708
*         J/FS2DM1FLT    * --> 1001 4171 2152 708
*         J/FS2DM2FLT    * --> 1010 4172 2153 709
*         J/FS2DM3FLT    * --> 1011 4173 2154 709
*         J/FS2DM4FLT    * --> 1100 4174 2155 710
*         J/FS2DM5FLT    * --> 1101 4175 2158 711
*         J/FS2DM6FLT    * --> 1110 4176 2159 711
*         J/FS2DM7FLT    * --> 1111 4177 2160 711
*****

```

# K08

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE	1 OF BFETCHFLT2								
2062	FSDMOFLT:4160	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674			
	*****			4160				000000001000	
	*00 - 07 FSDMOFLT - FSDM7FLT 10 - 17							0011 00 00 00 01 110 111 0110 0	
	*FS2DMOFLT - FS2DM7FLT DESTINATION MODE							00000 010100 10100 110000110	
	*0 OPERATION ONLY USED BY WARM FLOATING								
	*POINT STORE CONSTANT IN GENERAL REGISTER								
	*INCREMENT TARGETS								
	*- *-----*								
	*P2, D+D, D(C)+D(C), SR+D,								
	*P3, R(GRINC)+D (A, ADDR),								
	*NEXT, BUTR(HOTWARM),								
	* J/FSDMOFLT2								
	* J/FSDMOFLT2		-->	10 4606	2063	675			
	* J/FSDMOFLT5		-->	11 4607	2066	676			
	*****								
.CASE	1 OF 8FSDMOFLT								
2063	FSDMOFLT2:4606	F/FSDMOFLT F/FS2DMOFLT	<-- <--	4160 4170	2062 2151	675 708			
	*****			4606				000000001000	
	*WARM - FSDMOFLT2 HOT - FSDMOFLT5 TEST							1111 00 00 10 01 111 111 0100 0	
	*ILLEGAL							00000 000000 10001 011100110	
	*ACCUMULATOR								
	*-----*								
	*P2, D+PC (A), D(C)+D(C),								
	*NEXT, BUTR(NOT DST REG 6-7),								
	* J/FSDMOFLT4								
	* J/FSDMOFLT4		-->	10 4346	2065	676			
	* J/FSDMOFLT3		-->	11 4347	2064	676			
	*****								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2064	2 OF BFSMOFLT2 FSDMOFLT3:4347	F/FSDMOFLT2 <--		4606	2063	675		
	***** *TARGETS - 0 - FSDMOFLT4 1 - FSDMOFLT3 * *STORE PC FOR EXCEPTION OCCURRANCE BRANCH * *ON FETCH OR * *STORE * *-----*							4347 0000 00 10 00 00 111 000 0000 0 00000 011100 10011 011101001
	*P3, FPA+D (B ADDR), * *NEXT, BUTR(D(C)), * * J/FDMOFLT * * J/STDMOFLT * *****	J/FDMOFLT --> J/STDMOFLT -->		01 4351 11 4353	2067 2071	677 678		
.CASE 2065	1 OF BFSMOFLT2 FSDMOFLT4:4346	F/FSDMOFLT2 <--		4606	2063	675		
	***** *TARGETS- 0 - FDMOFLT 1 - STDMOFLT STORE * *PC FOR EXCEPTION OCCURRANCE GO TO OPCODE * *ERROR * *-----*							4346 0000 00 00 00 00 111 000 0000 0 00000 010100 11100 011001011
	*P3, FPA+D (A ADDR) * *NEXT, BUT(GO TO),PAGE+D, * * J/ILLEGAL1 * *****	J/ILLEGAL1 -->		313	1321	432		
.CASE 2066	2 OF BFSMOFLT FSDMOFLT5:4607	F/FSDMOFLT <-- F/FS2DMOFLT <--		4160 4170	2062 2151	675 708		
	***** * GO TO PAGE 0 * *AND * *-----*							4607 1111 00 00 10 01 111 000 0100 0 00000 000000 11100 001110101
	*SELECT, FPSCC(FPP),FPSCC+DATA, * *P2, D+PC (A) * *NEXT, BUT(GO TO),PAGE+D, * * J/HOTDMOSYNC * *****	J/HOTDMOSYNC -->		165	1292	418		

# M08

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 677

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
.CASE 2067	1 OF BFSMOFLT3 FDMOFLT:4351	F/FDSMOFLT3 <--	4347 2064 676	4351					100000001000	
	*DO NOT DMO SYNC OPERATION FETCH *OPERATION TARGETS - F - 0 - *FDMOFLT4				1111 00 11 10 10 011 000 0100 0 00000 001010 10111 101110010					
	*-----*									
	*P2, D+FAC3(DF), *P3, FDST3+D (B' ADDR), *NEXT, BUTR(DF) * J/FDMOFLT4									
		J/FDMOFLT4 -->	10 4562 2070 678							
		J/FDMOFLT2 -->	11 4563 2068 677							
	*-----*									
.CASE 2068	2 OF BFSMOFLT FDMOFLT2:4563	F/FDMOFLT <-- F/FDMOFLT3 <--	4351 2067 677 4655 2069 677	4563					100000001000	
	*D - 1 - FDMOFLT2				1111 00 11 11 10 011 000 0100 0 00000 011010 11000 110101101					
	*-----*									
	*P2, D+FAC1(DF), *P3, FDST1+D (B' ADDR), *NEXT, J/FDMOFLT3									
		J/FDMOFLT3 --> VV								
.CASE 2069	FDMOFLT3:4655	F/FDMOFLT2 <-- VV		4655					100000001000	
	*P2, D+FAC0(DF), *P3, FDST0+D (A' ADDR), *NEXT, J/FDMOFLT4				1010 01 00 00 01 011 000 0100 0 00000 010100 11000 101110010					
		J/FDMOFLT4 -->	4562 2070 678							

# N08

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377      PAGE 678

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
							RIF	COO	
.CASE	1 OF BFDMOFLT								
2070	FDMOFLT4:4562	E/EDMOFLT F/FDMOFLT3	<-- <--	4351 2067 677 4655 2069 677					
	*****								
	*P2,            D+FAC2(DF),								
	*P3,            FDST2+D (A ADDR),								
	*NEXT,								
	*                BUT(RETURN)		--> VV						
	*****								
.CASE	2 OF BFSDMOFLT3								
2071	STDMOFLT:4353	F/FSDMOFLT3	<--	4347 2064 676					
	*****								
	----- STORE								
	*OPERATION TARGETS - F - 0 -								
	*STDMOFLT4								
	-----								
	*P2,            D+FDST3.								
	*P3,            FAC3(DF)+D (B ADDR),								
	*NEXT,        BUTR(FD),								
	*                J/STDMOFLT4								
		J/STDMOFLT4	-->	10 4112 2074 679					
		J/STDMOFLT2	-->	11 4113 2072 678					
	*****								
.CASE	2 OF BSTDMOFLT								
2072	STDMOFLT2:4113	F/STDMOFLT F/STDMOFLT3	<-- <--	4353 2071 678 4660 2073 679					
	*****								
	*D - 1 - STDMOFLT2								
	-----								
	*P2,            D+FDST1,								
	*P3,            FAC1(DF)+D (B ADDR),								
	*NEXT,								
	*                J/STDMOFLT3		-->	4660 2073 679					
	*****								

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE OFST	COORD	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	UPF	RIF COUT CLCKS
2773	STDMOFLT3:4660	F/STDMOFLT2	4113	2072	678				
	*****								
	*P2, D+FDST0								
	*P3, FAC0(DF)+D (A ADDR),								
	*NEXT,								
	* J/STDMOFLT4	--> VV							
*****									
.CASE	1 OF BSTDMOFLT	F/STDMOFLT	4353	2071	678				
2074	STDMOFLT4:4112	F/STDMOFLT3							
	*****								
	*P2, D+FDST2								
	*P3, FAC2(DF)+D (A ADDR),								
	*NEXT,								
	* BUT(RETURN)	--> VV							
*****									
.CASE	2 OF BFETCHFLT2	F/FETCHFLT2	4651	2060	671				
2075	FSDMIFLT:4161	F/STOREFLT	4654	2061	674				
	*****								
	----- DESTINATION -----								
	*MODE 1 OPERATIONS STORE VALUE IN GENERAL								
	*REGISTER								
	*INCREMENT								
	-----								
	* FLPG0								
	*P2, D+D,D(C)+D(C),								
	*P3, R(GRINC)+D (A ADDR),								
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),								
	* J/FFLTSYNC	-->	0001	4201	2096	687			
	* J/FFLT1	-->	0011	4203	2097	688			
	* J/STSYNC	-->	0101	4205	2115	694			
	* J/STFLT2	-->	0111	4207	2116	694			
	* J/FPPABORT1	-->	1001	4211	2176	717			
	* J/FPPABORT2	-->	1011	4213	2177	718			
	* J/FPPABORT3	-->	1101	4215	2178	718			
	* J/STFLT2A	-->	1111	4217	2117	695			
*****									

ADDR	ALU	BUSB	BUSA	EXTENSION
	BUS	SP	UBF	RIF COUT CLCKS
4660				100000001000
	1010	01 11	00 10	011 000 0100 0
	00000	010100	11000	001001010
4112				100000001000
	1010	00 11	00 10	011 000 0100 0
	00000	000100	11111	000000000
4161				000000001000
	0011	00 00	00 01	110 111 0100 0
	11100	010100	00111	010000001

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	3 OF BFETCHFLT2	CFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
2076	FSDM2FLT:4162	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674		
	*****			4162				000000001000
	*TARGETS - 000 - FFLTSYNC 001 - FFLT 010 *							1010 10 00 00 01 110 111 0100 0
	*- STSYNC 011 - STFLT 100 - FPPABORT1 101 *							11100 010100 00111 01000001
	*- FPPABORT2 110 - FPPABORT3 111 - STFLT2 *							
	----- DESTINATION -----							
	*MODE 2 OPERATIONS NOTE - ***** *							
	*CNST4 ADDRESS PICKED TO MESH WITH BC *							
	*CODE FOR FLPGO ***** TARGETS *							
	*- *							
	-----							
	*P2, D+CNST4,D(C)+D(C), *							
	*P3, R(GRINC)+D (A ADDR), FLPGO, *							
	*NEXT, BUTR(SERVICE#D(C)#FPPACK), *							
	* J/FFLTSYNC * -->	0001	4201	2096	687			
	* J/FFLT1 * -->	0011	4203	2097	688			
	* J/STSYNC * -->	0101	4205	2115	694			
	* J/STFLT2 * -->	0111	4207	2116	694			
	* J/FPPABORT1 * -->	1001	4211	2176	717			
	* J/FPPABORT2 * -->	1011	4213	2177	718			
	* J/FPPABORT3 * -->	1101	4215	2178	718			
	* J/STFLT2A * -->	1111	4217	2117	695			
	*****							
.CASE	4 OF BFETCHFLT2							
2077	FSDM3FLT:4163	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674		
	*****			4163				000000001000
	*SAME AS ABOVE *							1010 11 11 00 01 110 111 0100 0
	----- DESTINATION -----							10001 010100 11000 110110001
	*MODE 3 OPERATIONS STORE CONSTANT FOR *							
	*GENERAL *							
	*REGISTER *							
	-----							
	*P2, D+2,D(C)+D(C), *							
	*P3, R(GRINC)+D (A ADDR), *							
	*P3, U,DATI NOINT, *							
	*NEXT, *							
	* J/FSDM3FLT2 * -->	4661	2078	681				
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
											RIF	COUT	CLOCKS
2078	FSDM3FLT2:4661	F/FSDM3FLT F/FSDM5FLT4 F/FS2DM3FLT	<-- <-- <--	4163 4670 4173	2077 2087 2154	680 683 709							
	*INCREMENT GO FETCH ADDRESS											000000001000	
	*P3, MD+DATA,											0000 11 10 00 00 000 000 0000 0	
	*NEXT, J/FSDM3FLT3											00000 100000 11000 110110010	
2079	FSDM3FLT3:4662	F/FSDM3FLT2	<-- VV										
	* TARGETS												000000001000
	*- D+MD, D(C)+D(C), SR+MD												1010 11 10 00 00 110 111 0110 0
	*P2, R(ADDR)+D (A ADDR) FLPGO,												11100 010010 00111 010000001
	*P3, BUTR(SERVICE#D(C)#FPPACK),												
	*NEXT, J/FFLTSYNC												
	* J/FFLTSYNC		-->	0001	4201	2096	687						
	* J/FFLT1		-->	0011	4203	2097	688						
	* J/STSYNC		-->	0101	4205	2115	694						
	* J/STFLT2		-->	0111	4207	2116	694						
	* J/FPPABORT1		-->	1001	4211	2176	717						
	* J/FPPABORT2		-->	1011	4213	2177	718						
	* J/FPPABORT3		-->	1101	4215	2178	718						
	* J/STFLT2A		-->	1111	4217	2117	695						
.CASE	5 OF BFETCHFLT2												
2080	FSDM4FLT:4164	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674							
	*SAME AS DMO												000000001000
	*----- DESTINATION 4												1111 10 11 11 11 111 100 0000 0
	*OPERATIONS SELECT EMIT MUST BE												00010 100000 11000 110110100
	*DEFAULT												
	*P3, MD+-4 (BC),												
	*NEXT, J/FSDM4FLT2		-->	4664	2081	682							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
2081	FSDM4FLT2:4664	F/FSDM4FLT	<--	4164	2080	681		
	*****			4664				000000001000
	* STORE CONSTANT FOR GENERAL REGISTER							1010 11 10 00 01 110 111 0100 0
	* INCREMENT							00000 010100 10111 010100110
	-----							
	*P2, D+MD D(C)+D(C)							
	*P3, R(GRINC)+D (A ADDR),							
	*NEXT, BUTR(FD)							
	* J/FSDM4FLT3		-->	10	4246	2082	682	
	* J/FSDM4FLT4		-->	11	4247	2083	682	
	*****							
.CASE	1 OF BFSDM4FLT2	F/FSDM4FLT2	<--	4664	2081	682		
2082	FSDM4FLT3:4246	F/FSDM4FLT4	<--	4247	2083	682		
	*****			4246				000000001000
	*TARGETS - 0 - F - FSDM4FLT3 1 - D -							1001 11 10 10 10 110 111 0110 0
	*FSDM4FLT4 SPECIAL BSEL MATCH ON MD AND							11100 011010 00111 010000001
	*IMMEDO TARGETS - SAME AS							
	*DMO							
	-----							
	*P2, D+R(DF) PLUS MD D(C)+D(C),							
	* SR+R(DF) PLUS MD							
	*P3, R(WDADR)+D (B ADDR), FLPGO,							
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),							
	* J/FFLTSYNC		-->	0001	4201	2096	687	
	* J/FFLT1		-->	0011	4203	2097	688	
	* J/STSYNC		-->	0101	4205	2115	694	
	* J/STFLT2		-->	0111	4207	2116	694	
	* J/FPPABORT1		-->	1001	4211	2176	717	
	* J/FPPABORT2		-->	1011	4213	2177	718	
	* J/FPPABORT3		-->	1101	4215	2178	718	
	* J/STFLT2A		-->	1111	4217	2117	695	
	*****							
.CASE	2 OF BFSDM4FLT2	F/FSDM4FLT2	<--	4664	2081	682		
2083	FSDM4FLT4:4247	F/FSDM4FLT4	<--	4247	2083	682		
	*****			4247				000000001000
	*P3, MD+-8 (BC),							1111 10 11 11 11 111 000 0000 0
	*NEXT, J/FSDM4FLT3		-->	4246	2082	682		00010 100000 11000 010100110
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB	BUSA	EXTENSION RIF COUT CLOCKS
2088	FSDM6FLT:4166	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674		
	***** *OPERATION FLOWS TO COMPLETE FETCH *----- *----- DESTINATION *MODE 6 OPERATIONS GO FETCH THE *INDEX *----- *P1, BA+PC,CURRENT MODE, *P2, D+PC PLUS 2,D(C)+D(C), *P3, PC+D (A ADDR), *P3, U,DATI NOINT, *NEXT, * J/FSDM6FLT2 *****							4166 1001 11 11 10 01 111 111 0101 0 7001 000110 11000 110111001
2089	FSDM6FLT2:4671	F/FSDM6FLT F/FSDM7FLT F/FS2DM6FLT F/FS2DM7FLT	<-- <-- <-- <--	4166 4167 4176 4177	2088 2091 2159 2160	684 685 711 711		
	***** * BRANCH ON EVEN OR ODD *MODES *----- *P2, D+D,D(C)+D(C), *P3, MD+DATA,R(GRIINC)+D (A ADDR), *NEXT, BUTR(DM), * J/FSDM6FLT3 * J/FSDM6FLT3 * J/FSDM7FLT2 *****							4671 0011 11 10 00 01 110 111 0100 0 0000 110100 00101 011011110
				1110 1111	4336 4337	2090 2092	685 686	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BFSM6FLT2						
2090	FSDM6FLT3:4336	F/LOADSIX2 F/FSDM6FLT2	<-- <--	4154 1250 406 4671 2089 684			
	*****						
	*TARGETS - EVEN - FSDM6FLT3 ODD -						4336 000000001000
	*FSDM7FLT2 ADD INDEX SPECIAL BSEL MATCH						1001 11 10 10 10 110 111 0110 0
	*ON IMMEDO AND MD TARGETS						11100 011010 00111 011110001
	*- *-----*						
	*P2, D+R(DF) PLUS MD, D(C)+D(C),						
	* SR+R(DF) PLUS MD						
	*P3, R(WDADR)+D (B ADDR), FLPGO,						
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),						
	* J/FFLTSYNC2						
		J/FFLTSYNC2	* -->	0001 4361 2144 704			
		J/FDM67FLT	* -->	0011 4363 2146 706			
		J/STSYNC2	* -->	0101 4365 2145 705			
		J/STDM67FLT	* -->	0111 4367 2149 707			
		J/FPPABORT4	* -->	1001 4371 2179 718			
		J/FPPABORT5	* -->	1011 4373 2180 719			
		J/FPPABORT6	* -->	1101 4375 2181 719			
		J/STDM67FLT2	* -->	1111 4377 2150 707			
	*****						
.CASE	8 OF BFETCHFLT2						
2091	FSDM7FLT:4167	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 2060 671 4654 2061 674			
	*****						
	*000 - FFLTSYNC2 001 - FDM67FLT 010 -						4167 000000001011
	*STSYNC2 011 - STDM67FLT 100 - FPPABORT4						1001 11 11 10 01 111 111 0101 0
	*101 - FPPABORT5 110 - FPPABORT6 111 -						10001 000110 11000 110111001
	*STDM67FLT2						
	*-----*						
	*----- DESTINATION						
	*MODE 7						
	*OPERATIONS						
	*-----*						
	*P1, BA+PC, CURRENT MODE,						
	*P2, D+PC PLUS 2, D(C)+D(C),						
	*P3, PC+D (A ADDR),						
	*P3, U, DATI NOINT,						
	*NEXT,						
		J/FSDM6FLT2	* -->	4671 2089 684			
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF UPF	COUT	CLOCKS
2092	FSDM7FLT2:4337	F/LOADSIX2 F/FSDM6FLT2	<-- <--	4154 4671	1250 2089	406 684				
	* ADD			4337				000000001000		
	* INDEX				1001	11 10	10 10	000 111	0110	0
	-----				00000	000000	11000	110111100		
	*P2, D+R(DF) PLUS MD, D(C)+D(C),									
	* SR+R(DF) PLUS MD,									
	* NEXT, J/FSDM7FLT3		--> VV							
2093	FSDM7FLT3:4674	F/FSDM7FLT2	<-- VV							
	* FETCH			4674				000000001011		
	* ADDRESS				0000	00 00	00 00	000 000	0001	0
	-----				10001	000000	11000	110111101		
	*P1, BA+SR, CURRENT MODE,									
	*P3, U, DATA NOINT,									
	* NEXT, J/FSDM7FLT4		--> VV							
2094	FSDM7FLT4:4675	F/FSDM7FLT3	<-- VV							
	*P3, MD+DATA,			4675				000000001000		
	* NEXT, J/FSDM7FLT5		-->	4700	2095	687				
	-----				0000	11 10	00 00	000 000	0000	0
					00000	100000	11000	111000000		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION				
												RIF	COUT	CLOCKS		
2095	FSDM7FLT5:4700	F/FSDM7FLT4	<--	4675	2094	686		4700				00000000	1000			
	* DO ADDRESS TURNAROUND TARGETS							1010	11	10	00	00	110	111	0110	0
	*-----*							11100	010010	001111	011110001					
	*P2, D+MD, D(C)+D(C), SR+MD															
	*P3, R(WDADR)+D (A ADDR), FLPGO,															
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),															
	* J/FFLT5SYNC2															
	* J/FFLT6SYNC2															
	* J/FDM67FLT															
	* J/ST5SYNC2															
	* J/STDM67FLT															
	* J/FPPABORT4															
	* J/FPPABORT5															
	* J/FPPABORT6															
	* J/STDM67FLT2															
	*-----*															
.CASE	1 OF BFSDM1FLT															
	F/FSDM1FLT							4161	2075	679						
	F/FSDM2FLT							4162	2076	680						
	F/FSDM3FLT3							4662	2079	681						
	F/FSDM4FLT3							4246	2082	682						
	F/FFLT5SYNC							4201	2096	687						
	F/ST5SYNC							4205	2115	694						
2096	FFLT5SYNC:4201															
	* SAME AS FSDM6FLT3															
	*-----*															
	*-----* FETCH OPERATION															
	* SYNC POINT FOR DM'S 1-5 HOT FPP SYNC															
	* POINT															
	*-----*															
	* FLPGO,															
	* SELECT, FPSCC(FPP), F1 SCC+DATA															
	* NEXT, BUTR(SERVICE#D(C)#FPPACK),															
	* J/FFLT5SYNC															
	* J/FFLT5SYNC															
	* J/FFLT1															
	* J/ST5SYNC															
	* J/STFLT2															
	* J/FPPABORT1															
	* J/FPPABORT2															
	* J/FPPABORT3															
	* J/STFLT2A															
	*-----*															

```

4700
1010 11 10 00 00 110 111 0110 0
11100 010010 00111 011110001

```

```

4201
0000 00 00 00 00 000 000 0000 0
11100 000000 00111 010000001

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	2 OF BFSM1FLT	OFST ADDR BOX PAGE	COORD CARD	BUS	JP	UBF	UPF	RIF COUT CLOCKS
	F/FSDM1FLT	<--	4161 2075 679					
	F/FSDM2FLT	<--	4162 2076 680					
	F/FSDM3FLT3	<--	4662 2079 681					
	F/FSDM4FLT3	<--	4246 2082 682					
	F/FFLTSYNC	<--	4201 2096 687					
	F/STSYNC	<--	4205 2115 694					
2097	FFLT1:4203			4203				000000001011
	*****							1001 11 11 00 00 000 000 0011 0
	-----							10001 000000 11000 111000001
	*-----							
	*-----							
	*FOR FIRST							
	*OPERAND							
	*-----							
	*P1, BA+SR, CURRENT MODE,							
	*P2, SR+SR PLUS 2,							
	*P3, U, DATI NOINT,							
	*NEXT,							
	* J/FFLT2	-->	VV					
2098	FFLT2:4701	F/FFLT1	<--	VV				000000001000
	*****							1111 11 10 10 01 111 000 0100 0
	* FETCH FIRST OPERAND TARGETS - WARM -							00000 100000 10100 000110110
	*FFLT3							
	*-----							
	*P2, D+PC (A),							
	*P3, MD+DATA,							
	*NEXT, BUTR(HOTWARM),							
	* J/FFLT3	-->	10 4066 2099 688					
	* J/FFLT7	-->	11 4067 2103 690					
	*****							
.CASE	1 OF BFFLT2							
2099	FFLT3:4066	F/FFLT2	<--	4701 2098 688				000000001011
	F/FDM67FLT3	<--	4653 2148 706					0000 00 10 00 00 111 000 0001 0
	*****							10001 011100 11000 111000010
	*HOT - FFLT7 STORE PC FOR EXCEPTIONS							
	*FETCH 2ND							
	*WORD							
	*-----							
	*P1, BA+SR, CURRENT MODE,							
	*P3, FPA+D (B ADDR),							
	*P3, U, DATI NOINT,							
	*NEXT,							
	* J/FFLT4	-->	4702 2100 689					
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS	
2100	FFLT4:4702 F/FFLT3 ***** * STORE FIRST WORD GET 2ND WORD TARGETS * *- *-----* *P2, D+MD, *P3, FDST3+D (A ADDR), MD+DATA, *NEXT, BUTR(FD), * J/FFLT5 * J/FFLT6 *****	<--	4066 2099 688	4702	1010 00000	11 10 100010	00 01 10111	011 000 101101010	0100 0	000000001000
		-->	10 4552 2101 689							
		-->	11 4553 2102 689							
CASE 2101	1 OF BFFLT4 FFLT5:4552 F/FFLT4 ***** * STORE 2ND *WORD *-----* *P2, D+MD, *P3, FDST2+D (A ADDR), *NEXT, J/TSTNZERO *****	<-- VV		4552	1010 00000	11 10 000100	00 01 11000	011 000 011001111	0100 0	000000001000
		-->	4317 2187 721							
CASE 2102	2 OF BFFLT4 FFLT6:4553 F/FFLT4 ***** *P2, SR+SR PLUS 2, *NEXT, J/FFLT10 *****	<--	4702 2100 689	4553	1001 00000	11 11 000000	00 00 11000	000 000 111000100	0010 0	000000001000
		-->	4704 2106 691							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS UPF
.CASE	2 OF BFFLT2							
2103	FFLT7:4067	F/FFLT2 F/FDM67FLT3	<-- <--	4701 2098 688 4653 2148 706				
	*****							
	* FETCH 2ND WORD FOR HOT SAVE PC FOR							
	*EXCEPTIONS TARGETS - F - 0 -							
	*FFLT8							
	*-----*							
	*SELECT, FPSCC(FPP), FPSCC+DATA,							
	*P1, BA+SR, CURRENT MODE,							
	*P3, FPA+D (B ADDR),							
	*P3, U, DATI NOINT,							
	*NEXT, BUTR(FD),							
	* J/FFLT8							
		J/FFLT8	* -->	10 4102	2104	690		
		J/FFLT9	* -->	11 4103	2105	690		
	*****							
.CASE	1 OF BFFLT7							
2104	FFLT8:4102	F/FFLT7 F/FFLTIMM3	<-- <--	4067 2103 690 4273 2164 713				
	*****							
	*0 - 1 - FFLT9 UPDATE GENERAL REGISTER							
	*TARGETS							
	*-----*							
	*P2, D+R(DF) PLUS R(GRINC),							
	*P3, R(D)+D (A ADDR),							
	*NEXT, BUTR(SERVICE),							
	* J/FETO1F							
		J/FETO1F	* -->	10 4722	1316	427		
		J/SERO2F	* -->	11 4723	1317	428		
	*****							
.CASE	2 OF BFFLT7							
2105	FFLT9:4103	F/FFLT7 F/FFLTIMM3	<-- <--	4067 2103 690 4273 2164 713				
	*****							
	*0 - FETO1F 1 - SERO2F DO DOUBLE FETCH							
	*FOR							
	*HOT							
	*-----*							
	*P2, SR+SR PLUS 2,							
	*NEXT, J/FFLT10							
		J/FFLT10	* -->	4704	2106	691		
	*****							

4067  
0000 00 10 00 00 111 000 0001 0  
10001 011100 10111 001000010

4102  
1001 01 11 10 10 110 000 0100 0  
00000 000110 10000 111010010

4103  
1001 11 11 00 00 000 000 0010 0  
00000 000000 11000 111000100

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK	
								RIF	COOT		
2106	FFLT10:4704	F/FFLT6 F/FFLT9	<-- <--	4553 2102 689 4103 2105 690							
	***** * LOAD ADDRESS FOR 3RD *WORD *-----*							4704	000000001011		
	*P1, BA+SR, CURRENT MODE,										
	*P2, SR+SR PLUS 2,										
	*P3, U, DATI NOINT,										
	*NEXT, J/FFLT11		--> VV								
2107	FFLT11:4705	F/FFLT10	<-- VV								
	***** * TARGETS - WARM - *FFLT12 *-----*							4705	000000001000		
	*P2, D+MD,										
	*P3, FDST2+D (A ADDR), MD+DATA,										
	*NEXT, BUTR(HOTWARM),										
	* J/FFLT12		-->	10 4242 2108 691							
	* J/FFLT16		-->	11 4243 2112 693							
	*****										
.CASE 2108	1 OF BFFLT11 FFLT12:4242	F/FFLT11	<-- VV								
	***** *HOT - FFLT16 FETCH 4TH *WORD *-----*							4242	000000001011		
	*P1, BA+SR, CURRENT MODE,										
	*P2, SR+R(GRINC),										
	*P3, U, DATI NOINT,										
	*NEXT, J/FFLT13		-->	4706 2109 692							
	*****										

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
2109	FFLT13:4706	F/FFLT12	<--	4242 2108 691	4706			000000001000
	*P2, D+MD				1010 11 10	00 01	011 000	0100 0
	*P3, FDST1+D (A ADDR), MD+DATA,				00000 110010	11000	111001000	
	*NEXT, J/FFLT14		--> VV					
2110	FFLT14:4710	F/FFLT13	<-- VV		4710			000000001000
	* BRANCH ON INDIRECT MODE TARGETS				1010 11 10	00 01	011 000	0100 0
	*- -----*				00000 010100	00101	011001110	
	*P2, D+MD							
	*P3, FDST0+D (A ADDR),							
	*NEXT, BUTR(DM)							
	* J/FFLT15							
	* J/FFLT15		-->	1110 4316 2111 692				
	* J/TSTNZERO		-->	1111 4317 2187 721				
	*-----*							
.CASE 2111	1 OF BFFLT14 FFLT15:4316	F/FFLT14	<-- VV		4316			000000001000
	*EVEN - FFLT15 ODD - TSTNZERO DOUBLE				1001 01 11	00 00	110 000	0100 0
	*R(GRINC)				00000 011100	11000	011001111	
	*-----*							
	*P2, D+SR PLUS R(GRINC),							
	*P3, R(GRINC)+D (B ADDR),							
	*NEXT, J/TSTNZERO		-->	4317 2187 721				
	*-----*							

# C10

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 693

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
.CASE 2112	2 OF BFFLT11 FFLT16:4243	F/FFLT11	<--	4705	2107	691				
	***** * FOR NOT FP GO FETCH 4TH WORD TEST * INDIRECT MODE TARGETS *- ----- *P1, BA+SR CURRENT MODE, *P3, U,DATI NOINT, *NEXT, BUTR(DM), * J/FFLT17 * J/FFLT18 *****									
				4243				00000000	1011	
				0000	00 00	00 00	000 000	0001	0	
				10001	000000	00101	010111110			
.CASE 2113	1 OF BFFLT16 FFLT17:4276	F/FFLT16 F/STOREHOT9	<-- <--	4243 4734	2112 2143	693 703				
	***** * EVEN - FFLT17 ODD - FFLT18 UPDATE * GENERAL REGISTER ----- *P2, D+R(DF) PLUS R(GRINC), *P3, R(DF)+D (A ADDR), *NEXT, J/FFLT18 * --> VV *****									
				4276				00000000	1000	
				1001	01 11	10 10	110 000	0100	0	
				00000	000110	11000	010111111			
.CASE 2114	2 OF BFFLT16 FFLT18:4277	F/FFLT16 F/STOREHOT9	<-- <--	4243 4734	2112 2143	693 703				
	***** * UPDATE GENERAL REGISTER TARGETS *- ----- *P2, D+R(DF) PLUS R(GRINC), *P3, R(DF)+D (A ADDR), *NEXT, BUTR(SERVICE), * J/FETO1F * J/SER02F *****									
				4277				00000000	1000	
				1001	01 11	10 10	110 000	0100	0	
				00000	000110	10000	111010010			
				10	4722	1316	427			
				11	4723	1317	428			

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	CLOCKS
.CASE	3 OF BFSM1FLT	OFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT UPF	
		F/FSDM1FLT	<--	4161	2075	679			
		F/FSDM2FLT	<--	4162	2076	680			
		F/FSDM3FLT3	<--	4662	2079	681			
		F/FSDM4FLT3	<--	4246	2082	682			
		F/FFLTSYNC	<--	4201	2096	687			
2115	STSYNC:4205	F/STSYNC	<--	4205	2115	694			
	*****								
	*0 - FETOIF 1 - SEROIF								4205
	*-----*								0000 00 00 00 00 000 000 0000 0
	*----- STORE OPERATION								11100 000000 00111 010000001
	*SYNCHRONIZATION POINT FOR DM'S								
	*1-5								
	*-----*								
	FLPGO								
	*SELECT, FPSCC(FPP) FPSCC+DATA								
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),								
	J/FFLTSYNC								
	J/FFLTSYNC	* -->	0001	4201	2096	687			
	J/FFLT1	* -->	0011	4203	2097	688			
	J/STSYNC	* -->	0101	4205	2115	694			
	J/STFLT2	* -->	0111	4207	2116	694			
	J/FPPABORT1	* -->	1001	4211	2176	717			
	J/FPPABORT2	* -->	1011	4213	2177	718			
	J/FPPABORT3	* -->	1101	4215	2178	718			
	J/STFLT2A	* -->	1111	4217	2117	695			
	*****								
.CASE	4 OF BFSM1FLT								
		F/FSDM1FLT	<--	4161	2075	679			
		F/FSDM2FLT	<--	4162	2076	680			
		F/FSDM3FLT3	<--	4662	2079	681			
		F/FSDM4FLT3	<--	4246	2082	682			
		F/FFLTSYNC	<--	4201	2096	687			
2116	STFLT2:4207	F/STSYNC	<-- VV						
	*****								
	*----- D(C)=0 SET FOR								4207
	*INDICATOR OF NOT IMMED MODE FOR HOT								0011 00 00 00 00 000 010 0101 0
	*STOREHOT FLOWS TARGETS - WARM -								00000 000000 10100 000001010
	*STFLT3								
	*-----*								
	*P1, BA+SR								
	*P2, D+0, D(C)+ALU00, CURRENT MODE,								
	*NEXT, BUTR(HOTWARM),								
	J/STFLT3								
	J/STFLT3	* -->	10	4012	2118	695			
	J/STOREHOT	* -->	11	4013	2130	699			
	*****								

# E10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	8 OF BFSM1FLT							
	F/FSDM1FLT	<--	4161 2075 679					
	F/FSDM2FLT	<--	4162 2076 680					
	F/FSDM3FLT3	<--	4662 2079 681					
	F/FSDM4FLT3	<--	4246 2082 682					
	F/FFLTSYNC	<--	4201 2096 687					
	F/STSYNC	<--	4205 2115 694					
2117	STFLT2A:4217							
	*****							
	*HOT - STOREHOT SET D(C)=0 AS INDICATOR *							4217 0000000C1011
	*OF NOT IMMED MODE FOR STOREHOT FLOWS *							0011 00 00 00 00 000 010 0101 0
	*TARGETS - WARM - *							00000 000000 10100 000001010
	*STFLT3 *							
	-----							
	*P1, BA+SR, CURRENT MODE, *							
	*P2, D+D, D(C)+ALU00, *							
	*NEXT, BUT(4)WARM). *							
	* J/STFLT3 *							
	* J/STFLT3 * -->		10 4012 2118 695					
	* J/STOREHOT * -->		11 4013 2130 699					
	*****							
.CASE	1 OF BSTFLT2							
	F/STFLT2	<--	4207 2116 694					
	F/STFLT2A	<--	4217 2117 695					
	F/STDM67FLT	<--	4367 2149 707					
	F/STDM67FLT2	<--	4377 2150 707					
2118	STFLT3:4012							
	*****							
	*HOT - STOREHOT *							
	-----							
	*P2, D+FDST3, *							
	*P3, U, DATO, *							
	*ENABLE, KJ, *							
	*NEXT, *							
	* J/STFLT4 * -->		4711 2119 696					
	*****							

# F10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
2119	STFLT4:4711	F/STFLT3 F/STOREHOT2	<-- <--	4012 2118 695 4656 2131 699				
	*****			4711				000000001000
	* TARGETS - WARM -				1001 11 11	00 00	000 000	0010 0
	*STFLT5				00000 000000	10100	101111010	
	-----							
	*P2, SR+SR PLUS 2,							
	*NEXT, BUTR(HOTWARM),							
	*	J/STFLT5	* -->	10 4572 2120 696				
	*	J/STOREHOT3	* -->	11 4573 2137 701				
	*****							
.CASE 2120	1 OF BSTFLT4 STFLT5:4572	F/STFLT4	<-- VV					
	*****			4572				000001001011
	*HOT - STOREHOT3 TARGETS - F - 0 -				1010 00 11	00 00	011 000	0101 0
	*STFLT6				10010 000000	10111	010011110	
	-----							
	*P1, BA+SR CURRENT MODE,							
	*P2, D+FDST2,							
	*P3, U,DATO,							
	*ENABLE, KJ							
	*NEXT, BUTR(FD),							
	*	J/STFLT6	* -->	10 4236 2121 696				
	*	J/STFLT7	* -->	11 4237 2122 697				
	*****							
.CASE 2121	1 OF BSTFLT5 STFLT6:4236	F/STFLT5 F/STIMM3	<-- <--	4572 2120 696 4672 2172 716				
	*****			4236				000000001000
	*D - 1 - STFLT7 NULL ;NO OP DUE TO				0000 00 00	00 00	000 000	0000 0
	*STORE				00000 000000	11000	010101111	
	-----							
	*NEXT,							
	*	J/SIFLT14	* -->	4257 2129 698				
	*****							







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	2 OF BSTFLT2	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
2130	STOREHOT:4013	F/STFLT2	<--	4207	2116	694		
		F/STFLT2A	<--	4217	2117	695		
		F/STDM67FLT	<--	4367	2149	707		
		F/STDM67FLT2	<--	4377	2150	707		
		*****						
		-----						
		*----- FETCH DATA *-----						
		*FROM HOT FPP CHECK FOR HOT FPP EXCEPTION *						
		*IN *						
		*STORE *						
		*-----						
		*SELECT, FPSCC(FPP),FPSCC+DATA, *						
		*SELECT, FPP(READ), *						
		*P3, MD+DATA, *						
		*NEXT, BUTR(HOT EXCEPTION), *						
		* *						
		J/STOREHOT2	-->	1110	4656	2131	699	
		J/STOREHOT2B	-->	1111	4657	2132	700	
		*****						
.CASE	1 OF BSTOREHOT							
2131	STOREHOT2:4656	F/STOREHOT	<--	4013	2130	699		
		F/STOREHOT2E	<--	4725	2135	701		
		*****						
		*OPERATION - ACTIVE ONLY IF STCP *						
		*INSTRUCTION OVERFLOWS TARGETS - 0 - *						
		*STOREHOT2 1 - STOREHOT2E FETCH 2ND *						
		*WORD *						
		*-----						
		*P2, D+MD, *						
		*P3, MD+DATA, *						
		*P3, U, DATO, *						
		*ENABLE, KJ, *						
		*NEXT, *						
		J/STFLT4	-->	4711	2119	696		
		*****						

4013 010000001000  
 0000 11 10 00 00 001 000 0000 0  
 11001 100000 00111 110101110

4656 000001001000  
 1010 11 10 00 00 000 000 0100 0  
 10010 100000 11000 111001001

# J10

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSB	BUSB	EXTENSION	CLOCK
2132	STOREHOT28:4657	F/STOREHOT F/STOREHOT2E	<-- <--	4013 4725	2130 2135	699 701				
	*D(C)=0								000000001000	
	*P2, D+FPSHIFEC PLUS 0,D(C)+CIN,								1001 11 01 11 00 011 000 0100 0	
	*NEXT, FLPGO,								11100 000000 11000 111010001	
	*J/STOREHOT2C		-->	VV						
2133	STOREHOT2C:4721	F/STOREHOT2B F/STIMM6	<-- <--	4657 4677	2132 2175	700 717				
	*DO BYTE BYTE								000000001000	
	*SWAP								1111 00 00 01 01 000 111 0100 0	
	*P2, D+D SWAP,D(C)+D(C),								00101 000000 11000 111010100	
	*NEXT, J/STOREHOT2D		-->	VV						
2134	STOREHOT2D:4724	F/STOREHOT2C	<--	VV						
	*FETCH SAVED PC FOR FPA JUMP BACK TO								000000001000	
	*IMMED OR NOT IMMED STOREHOT								1111 00 00 10 01 011 111 0100 0	
	*FLOWS								00000 000000 10011 111010101	
	*P2, D+R(T3) (A),D(C)+D(C),									
	*NEXT, BUTR(D(C))									
	*J/STOREHOT2E		-->	01 4725	2135	701				
	*J/STOREHOT2F		-->	11 4727	2136	701				

# K10

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
							RIF	COUT CLOCKS	
.CASE 2135	1 OF BSTOREHOT2D								
	STOREHOT2E:4725	F/STOREHOT2D	<--	4724 2134 700					
	*****				4725			000000001000	
	*TARGETS - 0 - STOREHOT2E 1 - STOREHOT2F				0000	11 10	00 00	111 000	0000 0
	*FETCH FIRST WORD FROM				00000	110100	11000	110101110	
	*HOT								
	-----								
	*P3, FPA+D (A ADDR),MD+DATA,								
	*NEXT,								
	J/STOREHOT2		-->	4656 2131 699					
.CASE 2136	2 OF BSTOREHOT2D								
	STOREHOT2F:4727	F/STOREHOT2D	<--	4724 2134 700					
	*****				4727			000000001000	
	*FETCH FIRST WORD FROM HOT RETURN TO				0000	11 10	00 00	111 000	0000 0
	*IMMED				00000	110100	11000	110111110	
	*FLOWS								
	-----								
	*P3, FPA+D (A ADDR),MD+DATA,								
	*NEXT,								
	J/STIMMS		-->	4676 2174 717					
.CASE 2137	2 OF BSTFLT4								
	STOREHOT3:4573	F/STFLT4	<--	4711 2119 696					
	*****				4573			000001001011	
	*FETCH 3RD WORD TARGETS - F -				1010	11 10	00 00	000 000	0101 0
	*STOREHOT4				10010	100000	10111	110010010	
	-----								
	*P1, BA+SR, CURRENT MODE.								
	*P2, D+MD								
	*P3, MD+DATA,								
	*P3, U, DATO,								
*ENABLE, KJ									
*NEXT, BUTR(FD),									
J/STOREHOT4		-->	10 4622 2138 702						
J/STOREHOT5		-->	11 4623 2139 702						
*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF BSTOREHOT3						
2138	STOREHOT4:4622	F/STOREHOT3 F/STIMMS	<-- <--	4573 2137 701 4676 2174 717			
	*****						
	*D - STOREHOT5 NULL TO PERMIT DATA TO SETTLE						4622 0000 00 00 00 00 000 000 0000 0 00000 000000 11000 010111111
	*NEXT, J/FFLT18		-->	4277 2114 693			
.CASE	2 OF BSTOREHOT3						
2139	STOREHOT5:4623	F/STOREHOT3 F/STIMMS	<-- <--	4573 2137 701 4676 2174 717			
	*****						
	* CALCULATE 3RD WORD ADDRESS						4623 1001 11 11 00 00 000 000 0010 0 00000 000000 11000 111010110
	*P2, SR+SR PLUS 2, *NEXT, J/STOREHOT6		--> VV				
2140	STOREHOT6:4726	F/STOREHOT5	<-- VV				
	*****						
	* FETCH 4TH WORD						4726 1010 11 10 00 00 000 000 0101 0 10010 100000 11000 111011000
	*P1, BA+SR, CURRENT MODE, *P2, D+MD, *P3, MD+DATA, *P3, U, DATO, *ENABLE, KJ, *NEXT, J/STOREHOT7		-->	4730 2141 703			
	*****						



# N10

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE	1 OF BFSDM6FLT3								
		F/FSDM6FLT3	<--	4336 2090 685					
		F/FSDM7FLT5	<--	4700 2095 687					
		F/FFLTSYNC2	<--	4361 2144 704					
2144	FFLTSYNC2:4361	F/STSYNC2	<--	4365 2145 705					
	*****								
	-----								
	* SYNC POINT FOR *								
	* FETCH ROUTINE AND DESTINATION MODES 6 OR *								
	* 7 TARGETS *								
	*-----								
	* FLPGO,								
	* SELECT, FPSCC(FPP), FPSCC+DATA,								
	* NEXT, BUTR(SERVICE#D(C)#FPPACK),								
	* J/FFLTSYNC2								
		J/FFLTSYNC2	* -->	0001 4361 2144 704					
		J/FDM67FLT	* -->	0011 4363 2146 706					
		J/STSYNC2	* -->	0101 4365 2145 705					
		J/STDM67FLT	* -->	0111 4367 2149 707					
		J/FPPABORT4	* -->	1001 4371 2179 718					
		J/FPPABORT5	* -->	1011 4373 2180 719					
		J/FPPABORT6	* -->	1101 4375 2181 719					
		J/STDM67FLT2	* -->	1111 4377 2150 707					
	*****								

4361 010000001000  
 0000 00 00 00 00 000 000 0000 0  
 11100 000000 00111 011110001



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
		F/FSDM6FLT3	<--	4336	2090	685		
		F/FSDM7FLT5	<--	4700	2095	687		
		F/FFLTSYNC2	<--	4361	2144	704		
2145	STSYNC2:4365	F/STSYNC2	<--	4365	2145	705		
	*****							
	*000 - FFLTSYNC2 001 - FDM67FLT 010 -							010000001000
	*STSYNC2 011 - STDM67FLT 100 - FPPABORT4							0000 00 00 00 00 000 000 0000 0
	*101 - FPPABORT5 110 - FPPABORT6 111 -							11100 000000 00111 011110001
	*STDM67FLT2							
	*-----*							
	*----- SYNC POINT FOR							
	*STORE ROUTINE AND DESTINATION MODES 6 OR							
	*7 TARGETS							
	*-----*							
	*-----*							
	* FLP60							
	*SELECT, FPSCC(FPP), FPSCC+DATA,							
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),							
	* J/FFLTSYNC2							
	* J/FFLTSYNC2	* -->		0001	4361	2144	704	
	* J/FDM67FLT	* -->		0011	4363	2146	706	
	* J/STSYNC2	* -->		0101	4365	2145	705	
	* J/STDM67FLT	* -->		0111	4367	2149	707	
	* J/FPPABORT4	* -->		1001	4371	2179	718	
	* J/FPPABORT5	* -->		1011	4373	2180	719	
	* J/FPPABORTE	* -->		1101	4375	2181	719	
	* J/STDM67FLT2	* -->		1111	4377	2150	707	
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BFSDM6FLT3						
2146	FDM67FLT:4363	F/FSDM6FLT3 F/FSDM7FLT5 F/FFLTSYNC2 F/STSYNC2	<-- <-- <-- <--	4336 2090 685 4700 2095 687 4361 2144 704 4365 2145 705			
	***** *SAME AS ABOVE *****						4363 000000001011 1001 11 11 00 00 000 000 0011 0 10001 000000 10100 110101010
	----- ENTRY POINT *FOR FETCH OPERATION FO DM 6 AND 7 FETCH *FIRST OPERAND TARGETS - WARM - *FDM67FLT2 -----						
	*P1, BA+SR, CURRENT MODE, * SR+SR PLUS 2, *P3, J, DATA POINT, *NEXT, BUTR(HOTWARM), * J/FDM67FLT2 * J/FDM67FLT2 * J/FDM67FLT3						
	*****			10 4652 2147 706 11 4653 2148 706			
.CASE	1 OF BFDM67FLT						
2147	FDM67FLT2:4652	F/FDM67FLT	<-- VV				
	***** *HOT - FDM67FLT3 *****						4652 0000 11 10 00 00 000 000 0000 0 00000 100000 11000 110101011
	*P3, MD+DATA, *NEXT, J/FDM67FLT3 *****						
.CASE	2 OF BFDM67FLT						
2148	FDM67FLT3:4653	F/FDM67FLT	<--	4363 2146 706			
	***** * FOR OCCURRANCE OF EXCEPTION TARGETS - *WARM - *FFLT3 *****						4653 1101 11 11 10 01 111 000 0100 0 00000 000000 10100 000110110
	*P2, D+PC MINUS 2, *NEXT, BUTR(HOTWARM), * J/FFLT3 * J/FFLT3 * J/FFLT7 *****			10 4066 2099 688 11 4067 2103 690			



# E11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	9 OF BFETCHFLT2							
2151	FS2DMOFLT:4170	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674		
	*****							
	*1 - STOREHOT							4170 000000001000
	-----							0000 00 00 00 00 000 000 0000 0
	*----- ILLEGAL							00000 000000 10100 110000110
	*OPCODE TARGETS - 0 - WARM -							
	*FSDMOFLT2							
	-----							
	*NEXT, BUTR(HOTWARM),							
	* J/FSDMOFLT2							
	* J/FSDMOFLT5							
	-----							
	*10 4606 2063 675							
	*11 4607 2066 676							
.CASE	10 OF BFETCHFLT2							
2152	FS2DMIFLT:4171	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674		
	*****							
	*1 - HOT - FSDMOFLT5							4171 000000001000
	-----							0011 00 00 00 01 110 111 0100 0
	*----- DM1 AND REG							00000 010100 00111 100110001
	*7 (PC) DO ONLY ONE WORD OPERATICN							
	*TARGETS							
	*-							
	-----							
	*P2, D←D,D(C)←D(C),							
	*P3, R(GRINC)←D (A ADDR)							
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),							
	* J/FFLT5YNC3							
	* J/FFLT5YNC3							
	* J/FFLT5IMM							
	* J/ST5YNC3							
	* J/ST5IMM1							
	* J/FPPABORT7							
	* J/FPPABORT8							
	* J/FPPABORT9							
	* J/ST5IMM2							
	*****							

F11

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	PUISA UBF	EXTENSION RIF COUT CLOCKS
.CASE	11 OF BFETCHFLT2							
2153	FS2DM2FLT:4172	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674		
	*****							
	*000 - FFLTSYNC3 001 - FFLTIMM 010 -							4172 00000001000
	*STSYNC3 011 - STFLTIMM 100 - FPPABORT7							1010 11 11 00 01 110 111 0100 0
	*101 - FPPABORT8 110 - FPPABORT9 111 -							11100 010100 00111 100110001
	*STIMM2							
	-----							
	*----- DM2 AND							
	*REGISTER 7 - DO ONLY ONE WORD OPERATION							
	*TARGETS							
	*-							
	-----							
	*P2, D+2, D(C)+D(C),							
	*P3, R(GRINC)+D (A ADDR), FLPGO,							
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),							
	*							
		J/FFLTSYNC3	* -->	0001 4461	2161	712		
		J/FFLTIMM	* -->	0011 4463	2162	712		
		J/STSYNC3	* -->	0101 4465	2169	715		
		J/STIMM1	* -->	0111 4467	2170	715		
		J/FPPABORT7	* -->	1001 4471	2162	719		
		J/FPPABORT8	* -->	1011 4473	2183	720		
		J/FPPABORT9	* -->	1101 4475	2184	720		
		J/STIMM2	* -->	1111 4477	2171	716		
	*****							
.CASE	12 OF BFETCHFLT2							
2154	FS2DM3FLT:4173	F/FETCHFLT2 F/STOREFLT	-- ---	4651 4654	2060 2061	671 674		
	*****							
	*SAME AS ABOVE							4173 00000001000
	-----							1010 11 11 00 01 110 111 0100 0
	*----- GO TO							10001 010100 11000 110110001
	*DESTINATION MODE							
	*3							
	-----							
	*P2, D+2, D(C)+D(C),							
	*P3, R(GRINC)+D (A ADDR),							
	*P3, U, DATI NOINT,							
	*NEXT,							
	*	J/FSDM3FLT2	* --	4661	2078	681		
	*****							

# G11

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB	ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION RIF COUT UPF	CLOCKS
2155	FS2DM4FLT:4174	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 4654	2060 2061	671 674			
	*****								
	*FLOWS								
	*-----*								
	*----- DM4 AND								
	*DESTINATION REGISTER 7 DO ONLY ONE WORD								
	*OPERATION DEFAULT UCON MUST BE ON								
	*EMIT								
	*-----*								
	*P3, MD+-2 (BC),								
	*NEXT,								
	*	J/FS2DM4FLT2	-->	VV					
	*****								
2156	FS2DM4FLT2:4735	F/FS2DM4FLT	<--	VV					
	*****								
	*P2, D+R(DF) PLUS MD, D(C)+D(C)								
	* SR+R(DF) PLUS MD,								
	*P3, R(WDADR)+D (B ADDR),								
	*NEXT,								
	*	J/FS2DM4FLT3	-->	VV					
	*****								
2157	FS2DM4FLT3:4736	F/FS2DM4FLT2	<--	VV					
	*****								
	* TARGETS								
	*-								
	*-----*								
	*P2, D+MD, D(C)+D(C)								
	*P3, R(GRINC)+D (A ADDR)								
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),								
	*	J/FFLTSYNC3	-->	0001	4461	2161	712		
	*	J/FFLTI MM	-->	0011	4463	2162	712		
	*	J/STSYNC3	-->	0101	4465	2169	715		
	*	J/STIMM1	-->	0111	4467	2170	715		
	*	J/FPPABORT7	-->	1001	4471	2182	719		
	*	J/FPPABORT8	-->	1011	4473	2183	720		
	*	J/FPPABORT9	-->	1101	4475	2184	720		
	*	J/STIMM2	-->	1111	4477	2171	716		
	*****								

```

4174          000000001000
      1111  10 11  11 11  111 110  0000 0
      00010 100000 11000 111011101

4735          000000001000
      1001  11 10  10 10  110 111  0110 0
      00000 011010 11000 111011110

4736          000000001000
      1010  11 10  00 01  110 111  0100 0
      00000 010100 00111 100110001
  
```

# H11

PROGRAM FLOWS    11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377    PAGE 711

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALL BUS	BUSB SP	BUSA UBF	EXTENSION	
							RIF	COUT CLOCKS UPF
.CASE	14 OF BFETCHFLT2							
2158	FS2DM5FLT:4175	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 2060 671 4654 2061 674				
	*****						4175	000000001000
	*-----*							1111 10 11 11 11 111 110 0000 0
	*P3, MD+-2 (BC), *							00010 100000 11000 110110101
	*NEXT, *							
	* J/FSDM5FLT2 *		-->	4665 2085 683				
	*****							
.CASE	15 OF BFETCHFLT2							
2159	FS2DM6FLT:4176	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 2060 671 4654 2061 674				
	*****						4176	000000001011
	*INDEX *							1001 11 11 10 01 111 111 0101 0
	*-----*							10001 000110 11000 110111001
	*P1, BA+PC, CURRENT MODE, *							
	*P2, D+PC PLUS 2, D(C)+D(C), *							
	*P3, PC+D (A ADDR), *							
	*P3, U, DATI NOINT, *							
	*NEXT, *							
	* J/FSDM6FLT2 *		-->	4671 2089 684				
	*****							
.CASE	16 OF BFETCHFLT2							
2160	FS2DM7FLT:4177	F/FETCHFLT2 F/STOREFLT	<-- <--	4651 2060 671 4654 2061 674				
	*****						4177	000000001011
	*-----*							1001 11 11 10 01 111 111 0101 0
	*P1, BA+PC, CURRENT MODE, *							10001 000110 11000 110111001
	*P2, D+PC PLUS 2, D(C)+D(C), *							
	*P3, PC+D (A ADDR), *							
	*P3, U, DATI NOINT, *							
	*NEXT, *							
	* J/FSDM6FLT2 *		-->	4671 2089 684				
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	1 OF BFS2DM1FLT	CFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
2161	F/FS2DM1FLT	<--	4171 2152 708					
	F/FS2DM2FLT	<--	4172 2153 709					
	F/FS2DM4FLT3	<--	4736 2157 710					
	F/FFLTSYNC3	<--	4461 2161 712					
	F/STSYNC3	<--	4465 2169 715					
	FFLTSYNC3:4461			4461				010000001000
	*SAME AS FS2DM1FLT			0000	00 00	00 00	000 000	0000 0
	-----			11100	000000	00111	100110001	
	DM'S 1,2,4							
	*AND PC FETCH SYNCRONIZATION							
	*POINT							
	FLPG0							
	*SELECT, FPSCC(FPP) FPSCC+DATA							
	*NEXT, BUTR(SERVICE#D(C)#FPPACK),							
	J/FFLTSYNC3							
	J/FFLTSYNC3	*-->	0001 4461 2161 712					
	J/FFLTIMM	*-->	0011 4463 2162 712					
	J/STSYNC3	*-->	0101 4465 2169 715					
	J/STIMM1	*-->	0111 4467 2170 715					
	J/FPPABORT7	*-->	1001 4471 2182 719					
	J/FPPABORT8	*-->	1011 4473 2183 720					
	J/FPPABORT9	*-->	1101 4475 2184 720					
	J/STIMM2	*-->	1111 4477 2171 716					
.CASE	2 OF BFS2DM1FLT							
	F/FS2DM1FLT	<--	4171 2152 708					
	F/FS2DM2FLT	<--	4172 2153 709					
	F/FS2DM4FLT3	<--	4736 2157 710					
	F/FFLTSYNC3	<--	4461 2161 712					
	F/STSYNC3	<--	4465 2169 715					
2162	FFLTIMM:4463			4463				000000001011
	-----			1010	00 11	00 00	111 000	0101 0
	IMMEDIATE MODE			10001	000000	10100	010111010	
	*FETCH ROUTINE TARGETS - WARM -							
	*FFLTIMM2							
	*P1, BA+SR CURRENT MODE,							
	*P2, D+PC (B)							
	*P3, U, DATI NOINT,							
	*NEXT, BUTR(HOTWARM),							
	J/FFLTIMM2	*-->	10 4272 2163 713					
	J/FFLTIMM3	*-->	11 4273 2164 713					







BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
.CASE	3 OF BFS2DM1FLT	OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS	
2169	STSYNC3:4465	F/FS2DM1FLT <--	4171 2152 708						
		F/FS2DM2FLT <--	4172 2153 709						
		F/FS2DM4FLT3 <--	4736 2157 710						
		F/FFLTSYNC3 <--	4461 2161 712						
		F/STSYNC3 <--	4465 2169 715						
	*****							4465	01000000:000
	*THIS FLAG IS CHECKED BY CTAN *								0000 00 00 00 00 000 000 0000 0
	*INSTRUCTIONS *								11100 000000 00111 100110001
	*----- STORE SYNC *								
	*POINT FOR IMMEDIATE *								
	*DATA *								
	*-----								
	*SELECT, FLPGO								
	*NEXT, FPSCC(FPP) FPSCC+DATA								
	* J/FFLTSYNC3								
		J/FFLTSYNC3 * -->	0001 4461 2161 712						
		J/FFLTIMM * -->	0011 4463 2162 712						
		J/STSYNC3 * -->	0101 4465 2169 715						
		J/STIMM1 * -->	11 4467 2170 715						
		J/FPPABORT7 * -->	1001 4471 2182 719						
		J/FPPABORT8 * -->	1011 4473 2183 720						
		J/FPPABORT9 * -->	1101 4475 2184 720						
		J/STIMM2 * -->	1111 4477 2171 716						
	*****								
.CASE	4 OF BFS2DM1FLT								
		F/FS2DM1FLT <--	4171 2152 708						
		F/FS2DM2FLT <--	4172 2153 709						
		F/FS2DM4FLT3 <--	4736 2157 710						
		F/FFLTSYNC3 <--	4461 2161 712						
		F/STSYNC3 <-- VV							
2170	STIMM1:4467								
	*****							4467	000000001011
	*----- TARGETS - 0 - *								0000 00 00 00 00 000 000 0001 0
	*STIMM3 *								00000 000000 10100 110111010
	*-----								
	*P1, BA+SR, CURRENT MODE,								
	*NEXT, BUTR(HOTWARM),								
	* J/STIMM3								
		J/STIMM3 * -->	10 4672 2172 716						
		J/STIMM4 * -->	11 4673 2173 716						
	*****								

# M11

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	8 OF BFS2DM1FLT	OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
2171	STIMM2:4477	F/FS2DM1FLT	<--	4171	2152	708		
		F/FS2DM2FLT	<--	4172	2153	709		
		F/FS2DM4FLT3	<--	4736	2157	710		
		F/FFLTSYNC3	<--	4461	2161	712		
		F/STSYNC3	<--	4465	2169	715		
	*****							
	*1 - STIMM TARGETS - 0 -							000000001011
	*STIMM3							0000 00 00 00 00 000 000 0001 0
	-----							00000 000000 10100 110111010
	*P1, BA+SR, CURRENT MODE,							
	*NEXT, BUTR(HOTWARM),							
	* J/STIMM3		-->	10	4672	2172	716	
	* J/STIMM4		-->	11	4673	2173	716	
	*****							
.CASE	1 OF BSTIMM1	F/STIMM1	<--	4467	2170	715		
2172	STIMM3:4672	F/STIMM2	<-- VV					
	*****							
	*1 - STIMM							000001001000
	-----							1111 00 00 10 01 011 000 0100 0
	*P2, D+FDST3,							10010 000000 11000 010011110
	*P3, U, DATO,							
	*ENABLE, KJ,							
	*NEXT, J/STFLT6		-->	4236	2121	696		
	*****							
.CASE	2 OF BSTIMM1	F/STIMM1	<--	4467	2170	715		
2173	STIMM4:4673	F/STIMM2	<--	4477	2171	716		
	*****							
	* FETCH ONE WORD FROM HOT FPP TARGETS - 0							010000001000
	*-							0000 11 10 00 00 001 000 0000 0
	*STIMM5							11001 100000 00111 110111110
	-----							
	*SELECT, FPSCC(FPP),FPSCC+DATA,							
	*SELECT, FPP(READ),							
	*P3, MD+DATA,							
	*NEXT, BUTR(HOT EXCEPTION),							
	* J/STIMM5		-->	1110	4676	2174	717	
	* J/STIMM6		-->	1111	4677	2175	717	
	*****							

# N11

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COJT CLOCKS UPF
.CASE	1 OF BSTIMM4						
2174	STIMM5:4676	F/STOREHOT2F F/STIMM4	<-- <--	4727 2136 701 4673 2173 716			
	*****						4676 000001001000
	*1 - STIMM6						1010 11 10 00 00 000 000 0100 0
	-----*						10010 000000 11000 110010010
	*P2, D+MD						
	*P3, U,DATA,						
	*ENABLE, KJ,						
	*NEXT,						
	* J/STOREHOT4		-->	4622 2138 702			
.CASE	2 OF BSTIMM4						
2175	STIMM6:4677	F/STOREHOT2F F/STIMM4	<-- <--	4727 2136 701 4673 2173 716			
	*****						4677 000000001000
	* GET FPS HI						1111 00 00 11 00 011 000 0100 0
	*D(C)=1						11100 000000 11000 111010001
	-----*						
	*P2, D+FPSHIFEC, D(C)+CIN, FLPGO,						
	*NEXT,						
	* J/STOREHOT2C		-->	4721 2133 700			
.CASE	5 OF BFSM1FLT						
2176	FPPABORT1:4211	F/FSDM1FLT F/FSDM2FLT F/FSDM3FLT3 F/FSDM4FLT3 F/FFLTSYNC F/STSYNC	<-- <-- <-- <-- <-- <--	4161 2075 679 4162 2076 690 4662 2079 681 4246 2082 682 4201 2096 687 4205 2115 694			
	*****						4211 000000001000
	-----*						0000 00 00 00 00 001 001 0000 0
	----- SEND ABORT						11001 000000 11000 111100001
	*PATTERN						
	-----*						
	*SELECT, FPP(ABORT),						
	*NEXT,						
	* J/FPPABORT10		-->	4741 2185 720			
	*****						

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA JBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COUT
.CASE	6 OF BFSDM1FLT											
		F/FSDM1FLT	<--	4161	2075	679						
		F/FSDM2FLT	<--	4162	2076	680						
		F/FSDM3FLT3	<--	4662	2079	681						
		F/FSDM4FLT3	<--	4246	2082	682						
		F/FFLTSYNC	<--	4201	2096	687						
2177	FPPABORT2:4213	F/STSYNC	<--	4205	2115	694						
	*****											
	*SELECT, FPP(ABORT),											
	*NEXT,											
	* J/FPPABORT10		-->	4741	2185	720						
	*****											
.CASE	7 OF BFSDM1FLT											
		F/FSDM1FLT	<--	4161	2075	679						
		F/FSDM2FLT	<--	4162	2076	680						
		F/FSDM3FLT3	<--	4662	2079	681						
		F/FSDM4FLT3	<--	4246	2082	682						
		F/FFLTSYNC	<--	4201	2096	687						
		F/STSYNC	<--	4205	2115	694						
2178	FPPABORT3:4215											
	*****											
	*SELECT, FPP(ABORT),											
	*NEXT,											
	* J/FPPABORT10		-->	4741	2185	720						
	*****											
.CASE	5 OF BFSDM6FLT3											
		F/FSDM6FLT3	<--	4336	2090	685						
		F/FSDM7FLT5	<--	4700	2095	687						
		F/FFLTSYNC2	<--	4361	2144	704						
		F/STSYNC2	<--	4365	2145	705						
2179	FPPABORT4:4371											
	*****											
	*SELECT, FPP(ABORT),											
	*NEXT,											
	* J/FPPABORT11		-->	4742	2186	721						
	*****											

4213  
 0000 00 00 00 00 001 001 0000 0  
 11001 000000 11000 111100001

4215  
 0000 00 00 00 00 001 001 0000 0  
 11001 000000 11000 111100001

4371  
 0000 00 00 00 00 001 001 0000 0  
 11001 000000 11000 111100010

BOX NO.	TAC: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	6 OF BFS0M6FLT3						
2180	FPPABORT5:4373	F/FSDM6FLT3 <--	4336 2090 685				
		F/FSDM7FLT5 <--	4700 2095 687				
		F/FFLTSYNC2 <--	4361 2144 704				
		F/STSYNC2 <--	4365 2145 705				
	*****						4373 000000001000
	*SELECT, FPP(ABORT), *						0000 00 00 00 00 001 001 0000 0
	*NEXT, *						11001 000000 11000 111100010
	* J/FPPABORT11 * -->		4742 2186 721				
.CASE	7 OF BFS0M6FLT3						
2181	FPPABORT6:4375	F/FSDM6FLT3 <--	4336 2090 685				
		F/FSDM7FLT5 <--	4700 2095 687				
		F/FFLTSYNC2 <--	4361 2144 704				
		F/STSYNC2 <--	4365 2145 705				
	*****						4375 000000001000
	*SELECT, FPP(ABORT), *						0000 00 00 00 00 001 001 0000 0
	*NEXT, *						11001 000000 11000 111100010
	* J/FPPABORT11 * -->		4742 2186 721				
.CASE	5 OF BFS2DM1FLT						
2182	FPPABORT7:4471	F/FS2DM1FLT <--	4171 2152 708				
		F/FS2DM2FLT <--	4172 2153 709				
		F/FS2DM4FLT3 <--	4736 2157 710				
		F/FFLTSYNC3 <--	4461 2161 712				
		F/STSYNC3 <--	4465 2169 715				
	*****						4471 000000001000
	*SELECT, FPP(ABORT), *						0000 00 00 00 00 001 001 0000 0
	*NEXT, *						11001 000000 11000 111100001
	* J/FPPABORT10 * -->		4741 2185 720				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	6 OF BFS2DM1FLT						
2183	FPPABORT8:4473	F/FS2DM1FLT F/FS2DM2FLT F/FS2DM4FLT3 F/FFLTSYNC3 F/STSYNC3	<-- <-- <-- <-- <--	4171 2152 708 4172 2153 709 4736 2157 710 4461 2161 712 4465 2169 715			
	*****						4473 00000001000
	*SELECT, FPP(ABORT),						0000 00 00 00 00 001 001 0000 0
	*NEXT,						11001 000000 11000 111100001
	* J/FPPABORT10		-->	4741 2185 720			
.CASE	7 OF BFS2DM1FLT						
2184	FPPABORT9:4475	F/FS2DM1FLT F/FS2DM2FLT F/FS2DM4FLT3 F/FFLTSYNC3 F/STSYNC3	<-- <-- <-- <-- <--	4171 2152 708 4172 2153 709 4736 2157 710 4461 2161 712 4465 2169 715			
	*****						4475 00000001000
	*SELECT, FPP(ABORT),						0000 00 00 00 00 001 001 0000 0
	*NEXT,						11001 000000 11000 111100001
	* J/FPPABORT10		--> VV				
	*****						
	F/SETCLASS6		<--	335 1242 403			
	F/HTDMOSYNC5		<--	457 1296 420			
	F/HOTSINC3		<--	4575 1299 422			
	F/HOTSINC4		<--	4577 1300 422			
	F/FPPABORT1		<--	4211 2176 717			
	F/FPPABORT2		<--	4213 2177 718			
	F/FPPABORT3		<--	4215 2178 718			
	F/FPPABORT7		<--	4471 2182 719			
	F/FPPABORT8		<--	4473 2183 720			
2185	FPPABORT10:4741	F/FPPABORT9	<-- VV				
	*****						4741 00000001000
	* BACK THE PC UP TO BE REEXECUTED CLEAR						1101 11 11 10 01 111 000 0100 0
	*SHORT TERM						00000 000110 11010 111110100
	*FLAGS						
	-----						
	*P2, D+PC MINUS 2,						
	*P3, PC+D (A ADDR),						
	*NEXT, BUT(CLEAR FLAGS),						
	* J/RESTART!1		-->	4764 2255 745			
	*****						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUSB BUSA	EXTENSION RIF COUT CLOCKS
2186	FPPABORT11:4742	F/FPPABORT4 F/FPPABORT5 F/FPPABORT6	<-- <-- <--	4371 2179 718 4373 2180 719 4375 2181 719	4742 000000001000 1101 10 00 10 01 111 000 0100 0 01100 000110 11010 111110100
***** * CLEAR SHORT TERM FLAGS GO TO RESTART * * FLOWS * * TO * *-----*					
*P2, D+PC MINUS CNST4, * *P3, PC+D (A ADDR), * *NEXT, BUT(CLEAR FLAGS), * * J/RESTART11 * --> 4764 2255 745					
.CASE 2187	2 OF BFFLT14 TSTNZERO:4317	F/FFLT14	<--	4710 2110 692	4317 000000001000 1011 10 00 10 01 011 000 0100 0 00110 000000 11010 111100011
***** * SET T-BIT MASK THEN DO SERVICE * *-----*					
*----- DONE TO CLEAR * * FLAG REGISTER - MAY * * NOT * *-----*					
*P2, D+FDST3 AND SEXPMASK, * *NEXT, BUT(CLEAR FLAGS), * * J/TSTNZERO2 * --> VV					
2188	TSTNZERO2:4743	F/TSTNZERO	<-- VV	4743	000000001000 1111 00 00 11 01 110 000 0010 0 00000 000000 01101 010101000
***** * BE NECESSARY ***** LOOK AT CONDITION * * REGISTER FOR DEFERRAL * * OF * *-----*					
*P2, SR+R(T2A), * *NEXT, BUT(D(14-00) IS 0 * D15), * * J/NOTNZERO1 * --> 00 4250 2189 722 * J/NOTNZERO2 * --> 01 4251 2190 722 * J/NOTNZERO3 * --> 10 4252 2191 722 * J/NZERO * --> 11 4253 2192 723 *****					

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS	
.CASE 2187	1 OF BTSTNZERO2 NOTNZERO1:4250 F/TSTNZERO2	<--	4743 2188 721	4250	1001 0000	01 000110	11 11111	10 10 110 000	0100 0	000000001000
	*TRAP TARGETS- 00 - NOTNZERO1 01									
	*NOTNZERO2 10 - NOTNZERO3 11 - N.ERO									
	*UPDATE GENERAL									
	*REGISTER									
	*-----*									
	*P2, D+R(DF) PLUS R(GRINC),									
	*P3, R(DF)+D (A ADDR),									
	*NEXT,									
	* BUT(RETURN)	-->	VV							
.CASE 2190	2 OF BTSTNZERO2 NOTNZERO2:4251 F/TSTNZERO2	<--	4743 2188 721	4251	1001 0000	01 000110	11 11111	10 10 110 000	0100 0	000000001000
	* UPDATE GENERAL									
	*REGISTER									
	*-----*									
	*P2, D+R(DF) PLUS R(GRINC),									
	*P3, R(DF)+D (A ADDR),									
	*NEXT,									
	* BUT(RETURN)	-->	VV							
.CASE 2191	3 OF BTSTNZERO2 NOTNZERO3:4252 F/TSTNZERO2	<--	4743 2188 721	4252	1001 0000	01 000110	11 11111	10 10 110 000	0100 0	000000001000
	* UPDATE GENERAL									
	*REGISTER									
	*-----*									
	*P2, D+R(DF) PLUS R(GRINC),									
	*P3, R(DF)+D (A ADDR),									
	*NEXT,									
	* BUT(RETURN)	-->	VV							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 2192	4 OF BTSTNZERO2 NZERO:4253	F/TSTNZERO2	<-- 4743 2188 721	4253			000000001000
	* NEG ZERO HAS OCCURRED TEST FOR DEFERRAL * * OF NZERO * * TRAP * *-----*			1001 01 11 10 10	110 000	0100 0	
	*P2, D+R(DF) PLUS R(GRINC), * *P3, R(DF)+D (A ADDR), * *NEXT, BUT(CASE), * * J/NZERO2 * * J/NZERO3 *		--> 1101 4355 2193 723 --> 1111 4357 2194 723		00000 000110	00000 011101101	
.CASE 2193	1 OF BNZERO NZERO2:4355	F/LOADNZWS F/NZERO	<-- 4332 1655 538 <-- VV	4355			000000001000
	* TARGETS - SR<01> 0 - NZERO2 1 - NZERO3 * * PERFORM TRAP OPERATION ON NEGATIVE ZERO * * SELECT * * EMIT * *-----*			1111 00 00 11 00	011 000	0100 0	
	*P2, D+FPSHIFEC, * *NEXT, BUT(CLEAR FLAGS), * * J/NZERO4 *		--> 4744 2195 724		00000 000000	11010 111100100	
.CASE 2194	2 OF BNZERO NZERO3:4357	F/LOADNZWS F/NZERO	<-- 4332 1655 538 <-- 4253 2192 723	4357			000000001000
	* NEG ZERO TRAP IS DEFERRED RETURN TO * * CALLER * *-----*			1110 11 00 11 01	110 000	0110 0	
	*P2, D+R(T2A) OR 1, SR+R(T2A) OR 1, * *P3, R(T2A)+D (A ADDR), * *NEXT, BUT(RETURN) * *-----*		--> VV		00000 010010	11111 000000000	

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BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
								RIF	COUT	CLOCKS
2195	NZERO4:4744	F/TSTNZW7 F/NZERO2	<-- <--	4637 1386 452 4355 2193 723						
	*****									
	* GET FID IN									
	*D(C)									
	-----*									
	*P2, D+D LEFT 1,D(C)+ALU15,									
	*NEXT,									
	* J/NZEROTRAP		-->	4546 1985 642						
	*****									

4744 000000001000  
 1111 00 00 01 00 000 100 0100 0  
 00000 000000 11000 101100110

BOX NO.	TAG:ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
*****									
.TOC " SUBROUTINE DATA PREPARATION ##FLPT##"									
	F/MULMODW13	<--	2116	1420	462				
	F/ADDW04	<--	4235	1573	511				
	F/DIVFDW10	<--	3671	1693	551				
*****									
*	SUBROUTINE DATAPREP	*							
	RETURN/MULMODW14	* -->	2156	1421	463				
	RETURN/ADDW05	* -->	-1	-1	-1	0	1	1	
	RETURN/DIVFDW11	* -->	3672	1694	551				
*****									

```

2196 DATAPREP:2571
*****
* WARM FLOATING POINT DATA PREPARATION *
* SUBROUTINE: SUBROUTINE EXTRACTS *
* EXPONENT FROM FAC(SF) AND FAC(DF) ; AND *
* STORES THEM IN R(ES) AND R(ED) *
* RESPECTIVELY ; NOTE THAT EXPONENTS ARE *
* PLACED RIGHT JUSTIFIED IN R(ES) AND *
* R(ED)!!!!!!!!!!!! ; TEMPORARIES USED *
* ARE: R(ES), R(ED) ; SUBROUTINE ALSO *
* CLEANS OUT EXPONENT AND SIGN FROM *
* FAC3(SF) ; CONDITION REGISTER CR1 IS SET *
* FOR THE SOURCE *
* AND *
*-----*
*P2, D+WHAMI OR CNSTB, *
*P3, WHAMI+D (A ADDR), *
*NEXT, *
* J/DPREP2 --> VV
*****
2197 DPREP2:2572 F/DATAPREP <-- VV
*****
*P2, D+R(GRINC), *
*P3, R(GRINC-SAV)+D (B ADDR), *
*NEXT, *
* J/DPREP2B --> VV
*****
2198 DPREP2B:2574 F/DPREP2 <-- VV
*****
*P2, D+FAC3(SF), *
*P3, FAC3(SAV)+D (B ADDR), *
*NEXT, *
* J/DPREP3 -->
*****

```

```

2571
1110 10 00 11 00 101 000 0100 0
01110 010010 11000 101111010

```

```

2572
1010 01 11 00 00 110 000 0100 0
00000 001010 11000 101111100

```

```

2574
1111 00 10 10 11 100 000 0100 0
00000 001010 11000 101111101

```

2575 2199 726

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PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
2199	DPREP3:2575	F/DPREP28	<--	2574 2198 725	2575				10000000	1000
	*P2, D+FAC2(SF)				1010	00 01	00 01	100 000	0100	0
	*P3, FAC2(SAV)+D (A ADDR),				00000	000010	11000	110000000		
	*NEXT, J/DPREP4		--> VV							
2200	DPREP4:2600	F/DPREP3	<-- VV		2600				10000000	1000
	*P2, D+FAC1(SF)				1111	00 10	11 11	111 000	0100	0
	*P3, FAC1(SAV)+D (B ADDR),				00000	001010	11000	110000001		
	*NEXT, J/DPREP5		--> VV							
2201	DPREP5:2601	F/DPREP4	<-- VV		2601				10000000	1000
	*P2, D+FAC0(SF)				1010	01 01	00 01	111 000	0100	0
	*P3, FAC0(SAV)+D (A ADDR),				00000	000010	11000	110000010		
	*NEXT, J/DPREP6		--> VV							
2202	DPREP6:2602	F/DPREP5	<-- VV		2602				00000000	1000
	* D(C) =				1011	10 00	10 01	011 000	0100	0
	*0				01111	000000	11000	110000100		
	*P2, D+FDST3 AND EXPMASK, D(C)+CIN,									
	*NEXT, J/DPREP7		-->	2604 2203 727						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION			
				ADDR ALU BUS	BUSB SP	BUSA UBF	RIF COUT CLOCKS UPF
2203	DPREP7:2604 ***** * RIGHT JUSTIFY * *EXPONENT * -----* *P2, D+D RIGHT 7 * *P3, R(ED)+D (B ADDR). * *NEXT, * * J/DPREP8 * --> VV *****	<--	2602 2202 726	2604			000000001000 1111 00 11 01 00 110 000 0100 0 00110 011110 11000 110000101
2204	DPREP8:2605 ***** *P2, D+FAC3(SF), * *P3, R(T1)+D (B ADDR), * *NEXT, * * J/DPREP9 * --> VV *****	<-- VV		2605			100000001000 1111 00 10 10 11 110 000 0100 0 00000 011110 11000 110000110
2205	DPREP9:2606 ***** * INSERT HIDDEN * *BIT * -----* *P2, D+FDST3 OR HIDDENBIT, * * SR+FDST3 OR HIDDENBIT, * *P3, FDST3+D (A ADDR), * *NEXT, * * J/DPREP10 * --> VV *****	<-- VV		2606			000000001000 1110 10 00 10 01 011 000 0110 0 00100 000010 11000 110001000
2206	DPREP10:2610 ***** * XOR SIGN BITS OF FDST3 AND * *FAC3(SF) * -----* *P2, D+SR XOR R(T1), * * SR+SR XOR R(T1), * *NEXT, * * J/DPREP11 * --> VV *****	<-- VV		2610			000000001000 0110 01 10 00 00 110 000 0110 0 00000 000000 11000 110001001
			2611 2207 728				



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
2207	DPREP11:2611	F/DPREP10	<--	2610 2206 727	2611			00000000	1000	
	* ISOLATE SIGN				1011	10 11	00 00	101 000	0100	0
	*DATA				00101	001010	11000	11000	1010	
	*P2, D+SR AND SIGNBIT,									
	*P3, CR2+D (B ADDR),									
	*NEXT,									
	* J/DPREP12		-->	VV						
2208	DPREP12:2612	F/DPREP11	<--	VV	2612			00000000	1000	
	* REMOVE SIGN AND EXPONENT				0111	10 00	10 01	011 000	0100	0
	*DATA				00111	000010	11000	11000	1100	
	*P2, D+FDST3 * NOT HIBYTE MASK,									
	*P3, FDST3+D (A ADDR),									
	*NEXT,									
	* J/DPREP13		-->	VV						
2209	DPREP13:2614	F/DPREP12	<--	VV	2614			10000000	1000	
	* D(C)=0				1011	10 00	10 11	000 000	0100	0
	*DATA				01111	000000	11000	11000	1101	
	*P2, D+FAC3(SF) AND EXPMASK,									
	* D(C)+CIN,									
	*NEXT,									
	* J/DPREP14		-->	VV						
2210	DPREP14:2615	F/DPREP13	<--	VV	2615			00000000	1000	
	* RIGHT JUSTIFY				1111	00 10	01 00	110 000	0100	0
	*EXPONENT				00110	011110	11000	11000	1110	
	*P2, D+D RIGHT 7,									
	*P3, R(ES)+D (B ADDR),									
	*NEXT,									
	* J/DPREP15		-->							
				2616 2211 729						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD	ALU CARD	BUSB SP	BUSB UBF	EXTENSION RIF	COUT	CLOCKS UPF
*****													
* SUBROUTINE EXPTST *													
		F/MULMODW	<--	2152	1408	458							
		F/ADDW01	<--	4232	1570	510							
		F/DIVFDW4	<--	2422	1687	549							
*****													
		RETURN/MULMODW2	* -->	2154	1409	459							
		RETURN/ADDW02	* -->	-1	-1	-1	2	1	1				
		RETURN/DIVFDW5	* -->	2424	1688	549							
*****													

```

2213 EXPTST:2621
*****
* :SUBROUTINE EXPONENT TEST ;LEAVES DATA *
* IN FAC(SF) AND FDST INTACT ;SETS SR TO *
* THE FOLLOWING IF OPERANDS ARE ZERO ; ; *
* SR : 00 BOTH OPERANDS ARE NOT ZERO ; *
* 01 SF EXP IS ZERO ; 10 DF EXP IS ZERO ; *
* 11 BOTH OPERANDS ARE *
* ZERO *
*-----*
*P2,      D+FAC3(SF) AND EXPMASK, *
*          SR+FAC3(SF) AND EXPMASK, *
*NEXT, *
*          J/EXPTST2 * --> VV
*****
2214 EXPTST2:2622      F/EXPTST <-- VV
*****
*P2,      D+SR MINUS 1,D(C)+ALU15, *
*NEXT, *
*          J/EXPTST3 * --> VV
*****
2215 EXPTST3:2624      F/EXPTST2 <-- VV
*****
*P2,      D+FDST3 AND EXPMASK,D(C)+D(C), *
*NEXT, *
*          J/EXPTST4 * -->
*****

```

```

2621      100000001000
1011 10 00 10 11 000 000 0110 0
01111 000000 11000 110010010

```

```

2622      000000001000
1101 11 00 00 00 000 100 0100 0
00000 000000 11000 110010100

```

```

2624      000000001000
1011 10 00 10 01 011 111 0100 0
01111 000000 11000 110010101

```

2625 2216 731



# E13

PROGRAM FLOWS

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PAGE 732

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COUT
.TOC " FLIP OF FD IN FPS REGISTER ##FLPT##"												
		F/MULMODW18	<--	2722	1425	464						
		F/MODICLSS18	<--	2332	1514	492						
		F/NROUND19	<--	2222	1925	622						
		F/NROUND53	<--	2552	1958	632						
		F/RESTART16	<--	2452	2260	746						
*****												
*	SUBROUTINE FD-TOGGLE		*									
		RETURN/MULMODW19	* -->	-1	-1	-1	2	1	1			
		RETURN/NROUND21	* -->	-1	-1	-1	2	1	1			
		RETURN/NROUND21	* -->	2506	1927	622						
		RETURN/NROUND55	* -->	2535	1960	633						
		RETURN/RESTART17	* -->	-1	-1	-1	2	1	1			
*****												

F13

```
2219 FD-TOGGLE:1623
*****
*USED ONLY BY THE MOD INSTRUCTION TO
*OPERATE IN DOUBLE PRECISION ROUTINE
*FLIP FTHE FD BIT OF
*FPS
*-----*
*SELECT,   FPS(READ),
*P3,      EMITCON+DATA,
*NEXT,
*
*                J/FDTGL2
*****
2220 FDTGL2:1624                F/FD-TOGGLE
*****
*P2,      SR+CNST200,
*NEXT,
*
*                J/FDTGL3
*****
2221 FDTGL3:1625                F/FDTGL2
*****
* SAVE D(C) CONTAINS ROUNDING
*BIT
*-----*
*P2,      D+SR XOR EMITCON,D(C)+D(C),
*NEXT,
*
*                J/FDTGL4
*****
```

```
1623
0000 10 00 11 01 000 000 0000 0
11001 100000 11000 110010100
```

```
1624
1010 10 00 00 00 000 000 0010 0
00100 000000 11000 110010101
```

```
1625
0110 10 00 00 00 000 111 0100 0
01001 000000 11000 110010110
```

1626 2222 733

G13

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 733

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
2222	FDTGL4:1626			1626				000000001000
	F/FDTGL3	<--	1625 2221 732					
	*****							
	*SELECT, FPS(WRITE),				0000	00 00	00 01	100 000 0000 0
	*P3, FPS+D,				11011	000000	1111!	00000000
	*NEXT,							
	* BUT(RETURN)		--> VV					
	*****							



# H13

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 734

BOX NO.	TAG: ADDRESS	SOURCE FIELD	##FLPT##	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.TOC	SUBROUTINE LEFT SHIFT								
		F/MOD5W	<--	2274 1484 483					
		F/MOD3CLSS29	<--	2375 1549 503					
		F/MOD3CLSS30	<--	2400 1550 503					
		F/MOD3CLSS31	<--	2401 1551 503					
		F/NROUNDEND3	<--	4554 1622 527					
		F/NROUNDEND4	<--	4555 1623 528					
		F/NROUND29	<--	2111 1934 624					
*****									
*	SUBROUTINE LEFTSHFSF		*						
		RETURN/MOD6W	* -->	2127 1485 483					
		RETURN/MOD3CLSS30	* -->	2400 1550 503					
		RETURN/MOD3CLSS31	* -->	2401 1551 503					
		RETURN/NROUND	* -->	-1 -1 -1	0 1 1				
		RETURN/NROUND	* -->	2362 1906 615					
		RETURN/NROUND32	* -->	2216 1937 625					
		RETURN/NROUND26	* -->	-1 -1 -1	0 1 1				
*****									

```

2223 LEFTSHFSF:2626
*****
* SUBROUTINE PERFORMS LEFT SHIFT OF
* FAC(SF) : SINGLE SHIFT IS PERFORMED EACH
* TIME ROUTINE ; IS ENTERED ; LOW BIT IS
* ALWAYS PULLED IN FROM GUARD REGISTER.
* COMBINATION OF D, SR AND GUARD PERFORMS
* SINGLE LEFT ; SHIFT TARGETS - SINGLE -
* LFSHFSF2
*-----*
*P2,          SR+FAC2(SF),
*NEXT,        BUTR(FD),
*             J/LFSHFSF2
*             J/LFSHFSF2      * -->   10 2322  2224  734
*             J/LFSHFSF3      * -->   11 2323  2226  735
*****

```

```

2626
1010 00 01 00 00 10000001000
00000 000000 10111 011010010 0010 0

```

```

CASE 1 OF BLEFTSHFSF
2224 LFSHFSF2:2322          F/LEFTSHFSF      <-- VV
*****
* DOUBLE - LFSHFSF3 TARGETS - 0 -
* LFSHFSF2B
*-----*
*P2,          D+FAC3(SF), D(C)+ALU15,
*             RES+RESLEFTGD,
*NEXT,        BUTR(BG),
*             J/LFSHFSF2B
*             J/LFSHFSF2B      * -->   011 2603  2225  735
*             J/LFSHFSF9      * -->   111 2607  2233  737
*****

```

```

2322
1111 10 00 10 11 10000001000
01010 010001 01100 110000011 0100 0

```

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2225	1 OF BLFSHFSF2 LFSHFSF28:2603	F/LFSHFSF2 <--	2322 2224 734	2603	1111 00 01	10 00	100 000	0100 0
	*1 - LFSHFSF9 INSTRUCTION *ABORT				00000 001010	11000	110011100	
	*P2, D+FAC3(SAV) *P3, FAC3(SF)+D (B ADDR), *NEXT, J/RESTART2	* -->	2634 2245 742					
.CASE 2226	2 OF BLEFTSHFSF LFSHFSF3:2323	F/LEFTSHFSF <--	2626 2223 734	2323	1010 01 01	00 00	000 000	0010 0
	*GO RESTORE ORIGINAL STATE				00000 000000	11000	110011000	
	*P2, SR+FAC0(SF), *NEXT, J/LFSHFSF4	* --> VV						
2227	LFSHFSF4:2630	F/LFSHFSF3 <-- VV		2630	1111 10 00	11 11	000 100	0100 0
	*P2, D+FAC1(SF) D(C)+ALU15, * RES+RESLEFTGD, *NEXT, J/LFSHFSF5	* --> VV			01010 010001	11000	110011001	
2228	LFSHFSF5:2631	F/LFSHFSF4 <-- VV		2631	1111 00 01	01 00	000 111	0110 0
	*P2, D+D LEFT 1, D(C)+D(C), SHIFT SR, *P3, FAC1(SF)+D (B ADDR), *NEXT, J/LFSHFSF6	* -->	2632 2229 736		00000 011010	11000	110011010	





# M13

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 738

BOX NO.	TAG:ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COUT
.TOC " SUBROUTINE PERFORMS WORD MOVE FROM FOST TO FAC(SF) **FLPT**"												
		F/ADDSFEZ	<--	4415	1580	513						
		F/BIGEXDFGSF	<--	4227	1592	517						
		F/LOADNZW2	<--	4076	1651	537						
		F/LDCPW6	<--	2545	1894	611						
*****												
*	SUBROUTINE MOVFDSTSF		*									
		RETURN/LOADZW4	* -->	3222	1645	535						
		RETURN/NROUND46	* -->	2311	1951	630						
		RETURN/LOADZW4	* -->	3222	1645	535						
		RETURN/LDCPW8	* -->	-1	-1	-1	0	1	1			
*****												

N13

2235 MOVFDSTSF:4745

\*\*\*\*\*  
\* SUBROUTINE PERFORMS WORD TRANSFER \*  
\* OPERATION MOVING FDST3+FDSTO TO \*  
\* FAC3(SF)-FACO(SF) TARGETS - F - \*  
\* MOVFDSTSF4 \*  
\*-----\*

\*P2, D+FDST3, \*  
\*P3, FAC3(SF)+D (B ADDR), \*  
\*NEXT, BUTR(FD), \*  
\* J/MVFDSTSF4 \*  
\* J/MVFDSTSF2 \*  
\*\*\*\*\*

--> 10 4422 2238 739  
--> 11 4423 2236 738

.CASE 2 OF BMOVFDSTSF

F/MVFDSTSF  
F/MVFDSTSF3

<-- 4745 2235 738  
<-- 4746 2237 738

2236 MVFDSTSF2:4423

\*\*\*\*\*  
\* D - MOVFDSTSF2 \*  
\*-----\*

\*P2, D+FDST1, \*  
\*P3, FAC1(SF)+D (B ADDR), \*  
\*NEXT, \*  
\* J/MVFDSTSF3 \*  
\*\*\*\*\*

--> VV

2237 MVFDSTSF3:4746

F/MVFDSTSF2

<-- VV

\*\*\*\*\*  
\*P2, D+FDSTO, \*  
\*P3, FACO(SF)+D (A ADDR), \*  
\*NEXT, \*  
\* J/MVFDSTSF4 \*  
\*\*\*\*\*

--> 4422 2238 739

4745

100000001000  
1111 00 01 10 01 011 000 0100 0  
00000 001010 10111 100010010

4423

100000001000  
1111 00 01 11 01 011 000 0100 0  
00000 011010 11000 111100110

4746

100000001000  
1010 01 11 00 11 011 000 0100 0  
00000 010100 11000 100010010

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	1 OF 8MOVFDSTSF						
2238	MVFDSTSF4:4422	F/MVFDSTSF3	<--	4745 2235 738			
	*****	F/MVFDSTSF3	<--	4746 2237 738			
	*P2, D+FDST2						4422 10000001000
	*P3, FAC2(SF)+D (A ADDR).						1010 00 11 00 11 011 000 0100 0
	*NEXT,						00000 000100 11111 00000000
	* BUT(RETURN)		-->	VV			
	*****						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC	SUBROUTINE MOVE SOURCE OPERANDS TO FDST	***FLPT***					
	F/ST1W	<--	360 1680 546				
	F/ST2W	<--	361 1681 547				
	F/STCTW	<--	367 1757 571				
	F/STCPW3	<--	143 1805 585				
	F/STCPNZW	<--	371 1806 585				
*****							
*	SUBROUTINE MOVSFDDST	*					
	RETURN/STSW	* -->	-1 -1 -1	0 1 1			
	RETURN/STSW	* -->	-1 -1 -1	0 1 1			
	RETURN/STCTW2	* -->	4362 1758 571				
	RETURN/STCPW4	* -->	4444 1807 585				
	RETURN/STCPW4	* -->	-1 -1 -1	0 1 1			
*****							

```

2239 MOVFFDST:4747
*****
* SUBROUTINE PERFORMS WORD TRANSFER OF *
* FAC3(SF)-FAC0(SF) TO *
* FDST3-FDST0 *
*-----*
*P2,          D+FAC3(SF), *
*P3,          FDST3+D (B' ADDR), *
*NEXT, *
*          J/MVFFDST2 * --> VV
*****
2240 MVFFDST2:4760          F/MVFFDST <-- VV
*****
* TARGETS - 0 - *
* MVFFDST5 *
*-----*
*P2,          D+FAC2(SF), *
*P3,          FDST2+D (A' ADDR), *
*NEXT,        BUTR(FD), *
*          J/MVFFDST5 *
*          J/MVFFDST5 * --> 10 4072 2243 741
*          J/MVFFDST3 * --> 11 4073 2241 741
*****

```

```

4747
1111 00 11 10 11 011 000 0100 0
00000 001010 11000 111110000

```

```

4760
1010 00 01 00 01 011 000 0100 0
00000 000100 10111 000111010

```

# E14

PROGRAM FLOWS

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PAGE 741

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
CASE 2241	2 OF BMVSFFDST2 MVSFFDST3:4073	F/MVSFFDST2	<--	4760	2240	740		
	*****			4073				100000001000
	*1 - MVSFFDST3				1111	00 11	11 11	011 000 0100 0
	-----				00000	011010	11000	111110001
	*P2, D+FA1(SF),							
	*P3, FDST1+D (B ADDR),							
	*NEXT,							
	* J/MVSFFDST4		-->	VV				
CASE 2242	MVSFFDST4:4761	F/MVSFFDST3	<--	VV				
	*****			4761				100000001000
	*P2, D+FA1(SF),				1010	01 01	00 01	011 000 0100 0
	*P3, FDST0+D (A ADDR),				00000	010100	11111	000000000
	*NEXT,							
	* BUT(RETURN)		-->	VV				
CASE 2243	1 OF BMVSFFDST2 MVSFFDST5:4072	F/MVSFFDST2	<--	4760	2240	740		
	*****			4072				000000001000
	*P2, D+0				0011	00 00	00 01	011 000 0100 0
	*P3, FDST10+D (A ADDR),				00000	010110	11111	000000000
	*NEXT,							
	* BUT(RETURN)		-->	VV				
	*****							

# F14

PROGRAM FLOWS

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PAGE 742

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
							RIF	COUT	CLOCKS	
.TOC " INSTRUCTION ABORT ROUTINE RESTORES " .TOC " ORIGINAL STATE OF MACHINE " ; RESTART ROUTINE USED BY THE FOLLOWING INSTRUCTIONS - ; MULF/D ; DIV/D ; MODF/D ; ADDF/D ; SUBF/D ; LDCTW ; ; ROUTINE PERMITS INSTRUCTION RESTART AND RESTORES ALL REGISTERS ; TO ORIGINAL VALUES THAT EXISTED BEFORE EXECUTION ; ALL VALUES ARE TAKEN FROM A SIDE SCRATCH PAD WHICH WERE LOADED ; DURING DATAPREP SUBROUTINE BY ALL ARITHMETIC INSTRUCTIONS AND ; DONE SPECIFICALLY FOR LDCTW										
2244	RESTART:2633	F/QUOLEFT12	< -	2454	1739	565				
	*****									
	*P2,	D+FAC3(SAV)	*				2633		100000001000	
	*P3,	FAC3(SF)+D (B ADDR),	*					1111 00 01 10 00	100 000 0100 0	
	*NEXT,		*					00000 001010 11000	110011100	
	*	J/RESTART2	* --> VV							
	*****									
		F/MFRACF12	<--	2623	1463	476				
		F/LFSHFSF2B	<--	2603	2225	735				
		F/LFSHFSF8B	<--	2463	2232	736				
		F/RESTART	<--	2633	2244	742				
		F/RTSHFDST2C	<--	2063	2288	754				
		F/RTSHFDST7B	<--	2433	2294	756				
		F/RSHFDSTSN7	<--	2503	2305	760				
		F/RTSHFSF2C	<--	2243	2309	762				
		F/RTSHFSF7B	<--	2413	2315	764				
2245	RESTART2:2634									
	*****									
	*P2,	D+FAC2(SAV)	*				2634		100000001000	
	*P3,	FAC2(SF)+D (B ADDR),	*					1111 00 01 10 01	100 000 0100 0	
	*NEXT,	BUTR(RESET RES),	*					00000 001100 11010	110011101	
	*	J/RESTART3	* -->	2635	2246	743				
	*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
2246	RESTART3:2635	F/RESTART2	<--	2634	2245	742		
	*****			2635				00000001000
	* GET CONDITION REGISTER D(C) GETS MOD			1111	00 00	10 01	101 010	0110 0
	*FLAG			00000	000000	11000	110100100	
	-----							
	*P2, D+CR2, D(C)+ALU00, SR+CR2,							
	*NEXT,							
	* J/RESTART4		--> VV					
2247	RESTART4:2644	F/RESTART3	<-- VV					
	*****			2644				10000001000
	* TEST FOR MOD INSTRUCTION TARGETS			1111	00 01	10 00	111 111	0100 0
	*-			00000	011010	10011	100101000	
	-----							
	*P2, D+FAC1(SAV) D(C)+D(C),							
	*P3, FAC1(SF)+D (B ADDR),							
	*NEXT, BUT(D(C)#BA00),							
	* J/RESTART5		-->	00	2450	2248	743	
	* J/RESTART5B		-->	01	2451	2249	744	
	* J/RESTART16		-->	10	2452	2260	746	
	* J/RESTART17		-->	11	2453	2261	747	
	*****							
CASE 2248	1 OF BRESTART4	F/RESTART4	<-- VV					
	RESTART5:2450			2450				10000001000
	*00 - RESTARTS 01 - RSTART5B 10 -			1111	00 01	10 01	111 000	0100 0
	*RESTART16 11 - RESTART17			00000	011100	11000	110110111	
	-----							
	*P2, D+FAC0(SAV)							
	*P3, FAC0(SF)+D (B ADDR),							
	*NEXT,							
	* J/RESTART6		-->	2667	2250	744		
	*****							



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSB UBF	EXTENSION	
							RIF	COUT CLOCKS
2253	RESTART9:2650 ***** * D(C)= 1 FOR RETURN FROM *REGINIT01 *****	F/RESTART8 <--	2645 2252 744	2650			000000001000	
	*P2, D+SR MINUS 2(D),D(C)+CIN, *P3, PC+D (B ADDR) *NEXT, BUT(CLEAR FLAGS), * J/RESTART10 *****	<-- VV					1101 10 11 00 00 111 000 0100 0 00011 001110 11010 110101001	
2254	RESTART10:2651 ***** * REGINIT REQUIRES EMIT SELECTED ALSO *EMIT MUST REMAIN *SELECTED *****	F/RESTART9 <-- VV		2651			00030001000	
	*NEXT, BUT(GO TO) PAGE+3, * RETURN+RESTART11, * J/REGINIT01 *****	<-- VV					0100 00 11 11 10 100 011 0000 0 00000 000000 11100 101011111	
2255	RESTART11:4764 ***** *P2, MD+TMASK (BC), *NEXT, J/RESTART12 *****	F/FPPABORT10 F/FPPABORT11 <-- <--	4741 2185 720 4742 2186 721	4764			000000001000	
	*P2, MD+TMASK (BC), *NEXT, J/RESTART12 *****	<-- VV					0000 10 00 01 00 000 000 0000 0 00010 100000 11000 111110101	
2256	RESTART12:4765 ***** *P2, SR+MD, *NEXT, J/RESTART13 *****	F/RESTART11 <-- VV		4765			000000001000	
	*P2, SR+MD, *NEXT, J/RESTART13 *****	<-- VV					1010 11 10 00 00 000 000 0010 0 00000 000000 11000 111110110	
		<--	4766 2257 746					

# J14

PROGRAM FLO:JS

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PAGE 746

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
2257	RESTART13:4766	F/RESTART12	<--	4765 2256 745	4766			00000000	1000	
	*SELECT, FLAGS(READ)				0000	10 00	11 01	000 000	0000 0	
	*P3, EMITCON+DATA,				11001	100000	11000	111110111		
	*NEXT,									
	J/RESTART14		-->	VV						
2258	RESTART14:4767	F/RESTART13	<--	VV	4767			00000000	1000	
	*P2, D+SR OR EMITCON,				1110	10 00	00 00	000 000	0100 0	
	*NEXT, BUT(GO TO), PAGE+0,				01001	000000	11100	110100001		
	J/RESTART15		-->	VV						
2259	RESTART15:0641	F/RESTART14	<--	VV	641			00000000	1000	
	* CLEAR OUT COUNTER FOR SERVICE FLOWS				0000	00 00	00 01	000 001	0000 0	
	**				11011	000000	10000	111000011		
	-----									
	*SELECT, FLAGS(WRITE),									
	*P3, FLAGS+D,									
	*NEXT, BUTR(SERVICE),									
	J/SER02									
	J/FET03		-->	00 700 3 11						
	J/SER01		-->	01 701 385 160						
	J/FET01		-->	10 702 1 2						
	J/SER02		-->	11 703 387 162						
	-----									
CASE 2260	3 OF BRESTART4									
	RESTART16:2452	F/RESTART4	<--	2644 2247 743	2452			00000000	1000	
	***** INSTRUCTION ABORTED *				0010	00 10	01 01	011 001	0000 0	
	*WAS MODF - RESTORE F BIT IN				00000	000000	11100	110010011		
	*FPS<07>									
	-----									
	*NEXT, CALL FD-TOGGLE									
	RETURN+RESTART17		-->	*****						
	*****			1623 2219 732						
	*****			VV						
	*****			-1 -1 -1 0 1 1						



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2261	4 OF BRESTART4 RESTART17:2453	F/RESTART4	<-	2644 2247 743				
	* BRANCH ON SR(3) TO RESTORE * *FAC(SF+1) *				2453			100000001000
	-----				1111 00 01 10 01		111 000 0100 0	00000 011100 00000 110110111
	*P2, D+FAC(SAV) *							
	*P3, FAC(SF)+D (B ADDR), *							
	*NEXT, BUT(CASE), *							
	* J/RESTART6 *							
	* J/RESTART6 *	-->		0111 2667 2250 744				
	* J/RESTART17B *	-->		1111 2677 2262 747				
.CASE 2262	2 OF BRESTART17 RESTART17B:2677	F/RESTART5 F/RESTART5B F/RESTART17	<-- <-- <-- VV	2450 2248 743 2451 2249 744				
	*TARGETS - 0 - RESTART6 1 - RESTART17B *				2677			000000001000
	*CHECK EVEN OR ODD ACCUMULATOR TARGETS *				0000 00 11 10 01		110 000 0100 0	00000 011110 00100 000011110
	-----							
	*P2, D+NOT R(GRINC-SAV), *							
	*P3, R(T2)+C (B ADDR), *							
	*NEXT, BUTR(IRD6), *							
	* J/RESTART17C *							
	* J/RESTART17C *	-->		1110 2036 2263 747				
	* J/RESTART7 *	-->		1111 2037 2251 744				
.CASE 2263	1 OF BRESTART17B RESTART17C:2036	F/RESTART17B	<-- VV					
	*0 - RESTART17C 1 - RESTART7 RESTORE DST *				2036			000000001000
	*REGISTER GO RESTORE ODD *				1100 00 00 11 01		110 000 0100 0	00000 001110 10010 110101010
	*ACCUMULATOR *							
	-----							
	*P2, D+R(T2) PLUS 1 PLUS R(DF), *							
	*P3, R(DF)+D (B ADDR), *							
	*NEXT, BUT(ROR1) *							
	* J/RESTART17D *	-->		2652 2264 748				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
2264	RESTART17D:2652	F/RESTART17C	<--	2036 2263 747	2652				100000001000	
	* RESTORE				1111	00 01	10 01	011 000	0100 0	
	*FAC(SF+1)				00000	001010	10010	110101011		
	*-----*									
	*P2, D+FDST3,									
	*P3, FAC3(SF+1)+D (B ADDR),									
	*NEXT, BUT(ROR1)									
	* J/RESTART17E		--> VV							
2265	RESTART17E:2653	F/RESTART17D	<-- VV		2653				100000001000	
	*P2, D+FDST2,				1010	00 11	00 11	011 000	0100 0	
	*P3, FAC2(SF+1)+D (A ADDR),				00000	000100	10010	110110000		
	*NEXT, BUT(ROR1)									
	* J/RESTART17F		--> VV							
2266	RESTART17F:2660	F/RESTART17E	<-- VV		2660				100000001000	
	*P2, D+FDST1,				1111	00 01	11 01	011 000	0100 0	
	*P3, FAC1(SF+1)+D (B ADDR),				00000	011010	10010	110110001		
	*NEXT, BUT(ROR1)									
	* J/RESTART17G		--> VV							
2267	RESTART17G:2661	F/RESTART17F	<-- VV		2661				100000001000	
	*P2, D+FDST0,				1010	01 11	00 11	011 000	0100 0	
	*P3, FAC0(SF+1)+D (A ADDR),				00000	010100	11000	110100101		
	*NEXT, J/RESTART8		-->	2645 2252 744						

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
2268	RESTORECSP:2662	F/HFORKNVALD F/WFORKNVALD	<-- <--	477 1236 401 476 1319 431			
	***** * SUBROUTINE USED BY HOT AND WARM * * FLOATING POINT TO RESTORE CSP CONSTANTS * * AND CLEAR THE FLAG BIT INDICATING CSP * * INVALID * *-----* *P3, CSP(0)+EXPMASK, * *NEXT, * * J/RESTCSP2 * --> VV *****						2662 0111 10 11 11 10 000 000 0000 0 01111 100000 11000 110110011
2269	RESTCSP2:2663	F/RESTORECSP	<-- VV				
	***** *P3, CSP(1)+CNST8, * *NEXT, * * J/RESTCSP3 * --> VV *****						2663 0000 10 00 00 00 001 000 0000 0 01110 100000 11000 110110100
2270	RESTCSP3:2664	F/RESTCSP2	<-- VV				
	***** *P3, CSP(2)+RESRIGHT, * *NEXT, * * J/RESTCSP4 * --> VV *****						2664 0010 10 00 00 00 000 000 0000 0 01101 100000 11000 110110101
2271	RESTCSP4:2665	F/RESTCSP3	<-- VV				
	***** *P3, CSP(3)+CNST4, * *NEXT, * * J/RESTCSP5 * --> 2666 2272 750 *****						2665 0000 10 00 00 00 000 100 0000 0 01100 100000 11000 110110110





BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	LPF	RIF COUT CLOCKS
2281	RESTCSP14:2704	F/RESTCSP13	<--	2702 2280 751				
	*****			2704	0000	10 00	11 01	000 000 0000 0
	*SELECT, FLAGS(READ)				11001	100000	11000	11000101
	*P3, EMITCON+DATA,							
	*NEXT,							
	* J/RESTCSP15		--> VV					
2282	RESTCSP15:2705	F/RESTCSP14	<-- VV					
	*****			2705	1011	10 00	11 00	110 000 0100 0
	* LEAVE MD INTACT PRESENTLY CONTAINS				01001	000000	11100	110100100
	* INSTRUCTIO LO BYTE OF FLAGS							
	*AKE							
	-----							
	*P2, D+R(T1) AND EMITCON,							
	*NEXT, BUT(GO TO), PAGE+0,							
	* J/RESTCSP16		--> VV					
2283	RESTCSP16:0644	F/RESTCSP15	<-- VV					
	*****			644	0000	00 00	00 01	000 001 0000 0
	*ALSO CLEARED				11011	000000	11000	110100110
	-----							
	*SELECT, FLAGS(WRITE),							
	*P3, FLAGS+D.							
	*NEXT,							
	* J/RESTCSP17		-> VV					
2284	RESTCSP17:0646	F/RESTCSP16	<-- VV					
	*****			646	0000	00 00	00 01	000 000 0000 0
	* GO TO WFORX OR				11001	000000	10100	100111100
	*WFORX							
	-----							
	*SELECT, EMIT							
	*NEXT, BUTR(HOTWARM),							
	* J/WFORX		-->	00 474	1318	429		
	* J/WFORX		-->	01 475	1235	395		
	* J/WFORXN D		-->	10 476	1319	431		
	* J/WFORXNVALD		-->	11 477	1236	401		
	*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSB UBF	EXTENSION RIF COUT CLOCKS
.TOC	" SUBROUTINE RIGHT SHIFT FUS1 REGISTERS *#FLPT#*" F/MFRAC1? <--	2231 1450 472					
*	SUBROUTINE RTSHFDST RETURN/MFRAC10 * -->	2220 1443 470					

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```

2285 RTSHFDST:2706
*****
* : SUBROUTINE PERFORMS RIGHT SHIFT OF
* FOST : ONE SHIFT IS PERFORMED EACH TIME
* THIS ROUTINE ; IS ENTERED ; OPTION EXISTS
* FOR CALLER TO PUSH LOW BIT INTO GUARD
* OR NOT ; CHOICE IS DETERMINED BY CALLER
* PUTTING PROPER ; RESIDUAL CONTROL PATTERN
* IN MD REGISTER D(C) GETS 0 TARGETS -
* SINGLE -
* RTSHFDST2
-----
*P2,          D+FDST2,D(C)+CIN,SR+FDST2,
*NEXT,        BUTR(FD)
*              J/RTSHFDST2
*              J/RTSHFDST2
*              J/RTSHFDST3
*****
CASE 1 OF BRTSHFDST
2286 RTSHFDST2:2526          F/RTSHFDST      <-- VV
*****
*DOUBLE - RTSHFDST3 TARGETS - 0 -
*RTSHFDST2C
-----
*P2,          D+FDST3,D(C)+D(C),RES+MD,
*NEXT,        BUTR(BG)
*              J/RTSHFDST2C
*              J/RTSHFDST2C
*              J/RTSHFDST2B
*****

```

```

2706          000000001000
1010 00 11 00 03 0:1 000 0110 0
00000 000000 10111 101010110

```

```

--> 10 2526 2286 753
--> 11 2527 2289 754

```

```

2526          000000001000
1111 11 10 10 01 011 111 0100 0
00000 010001 01100 000110011

```

```

--> 011 2063 2288 754
--> 111 2067 2287 754

```



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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS
2287	RTSHFDST2B:2067	F/RTSHFDST2 F/RSHFDSTSN2	<-- <--	2526 2106	2286 2300	753 758		
	*1 - RTSHFDST2B							2067    000000001000
	*P2,            D+D RIGHT 1,D(C)+D(C),							1111 00 11 01 10 011 111 0110 0
	*                SHIFT SR,							00000 001010 11010 111001000
	*P3,            FDST3+D (B ADDR),							
	*NEXT,          BUTR(RESET RES),							
	*                J/RTSHFDST6		-->	2710	2292	755		
2288	RTSHFDST2C:2063	F/RTSHFDST2 F/RSHFDSTSN2	<-- <--	2526 2106	2286 2300	753 758		
	* EXTERNAL SERVICE REQUEST IS PRESENT GO							2063    100000001000
	* TO RESTART							1111 00 01 10 00 100 000 0100 0
	* ROUTINE							00000 001010 11000 110011100
	*P2,            D+FAC3(SAV)							
	*P3,            FAC3(SF)+D (B ADDR),							
	*NEXT,          J/RESTART2		-->	2634	2245	742		
2289	RTSHFDST3:2527	F/RTSHFDST	<--	2706	2285	753		
	* BRANCH ON SR<00> 0 -							2527    000000001000
	* RTSHFDST4							1111 10 00 10 01 011 111 0100 0
	*P2,            D+FDST3 D(C)+D(C),							01101 010001 00000 101101110
	*                RES+RESRIGHT,							
	*NEXT,          BUT(CASE)							
	*                J/RTSHFDST4		-->	1110	2556	2290	755	
	*                J/RTSHFDST5		-->	1111	2557	2291	755	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
.CASE 2290	1 OF BRTSHFDST3							
	RTSHFDST4:2556	F/RTSHFDST3	<--	2527	2289	754		
	*****							2556
	*1 - RTSHFDST5 CHECK EXTERNAL SERVICE						000000001000	
	*REQUEST TARGETS - 0 -						1111 00 11 01 10 011 111 0110 0	
	*RTSHFDST7B						00000 001010 01100 100011011	
	-----							
	*P2, D+D RIGHT 1,D(C)+D(C),							
	* SHIFT SR,							
	*P3, FDST3+D (B ADDR),							
*NEXT, BUTR(BG)								
*	J/RTSHFDST7B							
*		J/RTSHFDST7B	-->	011	2433	2294	756	
*		J/RTSHFDST7	-->	111	2437	2293	756	
*****								
.CASE 2291	2 OF BRTSHFDST3							
	RTSHFDST5:2557	F/RTSHFDST3	<--	2527	2289	754		
	*****							2557
	*1 - RTSHFDST7 D(C) GETS 1 CHECK						000000001000	
	*EXTERNAL SERVICE TARGETS						1111 00 11 01 10 011 000 0110 0	
	*-						00000 001010 01100 100011011	
	-----							
	*P2, D+D RIGHT 1 D(C)+CIN,SHIFT SR,							
	*P3, FDST3+D (B ADDR),							
	*NEXT, BUTR(BG)							
*	J/RTSHFDST7B							
*		J/RTSHFDST7B	-->	011	2433	2294	756	
*		J/RTSHFDST7	-->	111	2437	2293	756	
*****								
2292	RTSHFDST6:2710	F/RTSHFDST2B	<--	2067	2287	754		
	*****							2710
	*0 - RTSHFDST7B 1 - RTSHFDST7						000000001000	
	-----							
	*P2, D+SR,D(C)+D(C)						1111 00 11 00 00 011 111 0100 0	
	*P3, FDST2+D (B ADDR),						00000 001100 11111 00000000	
	*NEXT,							
	*	BUT(RETURN)		-->	VV			
	*****							

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE	2 OF BRTSHFDST4							
2293	RTSHFDST7:2437	F/RTSHFDST4 F/RTSHFDST5 F/RSHFDSTSN5	<-- <-- <--	2556 2290 755 2557 2291 755 2737 2303 759				
	* DOUBLE PRECISION * ENTRY *-----* *P2, D+SR, D(C)+D(C) *P3, FDST2+D (B ADDR), *NEXT, BUTR(RESET RES), * J/RTSHFDST8						2437	000000001000 111 00 11 00 00 011 111 0100 0 00000 001100 11010 111001001
			-->	2711 2295 756				
.CASE	1 OF BRTSHFDST4							
2294	RTSHFDST7B:2433	F/RTSHFDST4 F/RTSHFDST5 F/RSHFDSTSN5	<-- <-- <--	2556 2290 755 2557 2291 755 2737 2303 759				
	*P2, D+FAC3(SAV) *P3, FAC3(SF)+D (B ADDR), *NEXT, * J/RESTART2						2433	100000001000 1111 00 01 10 00 100 000 0100 0 00000 001010 11000 110011100
			-->	2634 2245 742				
2295	RTSHFDST8:2711	F/RTSHFDST7 F/RSHFDSTSN6	<-- <--	2437 2293 756 2507 2304 759				
	*P2, SR+FDST0, *NEXT, * J/RTSHFDST9						2711	000000001000 1010 01 11 00 00 011 000 0010 0 00000 000000 11000 1110010.0
			-->	VV				
2296	RTSHFDST9:2712	F/RTSHFDST8	<--	VV				
	*P2, D+FDST1, D(C)+D(C), RES+MD, *NEXT, * J/RTSHFDST10						2712	000000001000 1111 11 10 11 01 011 111 0100 0 00000 010001 11000 111001011
			-->	2713 2297 757				





# K15

```

2299 RSHFDSTSN:2715
*****
* SUBROUTINE PERFORMS RIGHT SHIFT OF FDST *
* REGISTER SIGN EXTEND FOR ADDF/D AND *
* SUBF/D DIFFERENCE OPERATIONS TARGETS *
*-
*-----*
*P2,          D+FDST2,SR+FDST2,          *
*NEXT,        BUTR(FD),                  *
*              J/RSHFDSTSN2             *
*              J/RSHFDSTSN2             * -->   10 2106  2300  758
*              J/RSHFDSTSN3             * -->   11 2107  2301  758
*****
.CASE 1 OF BRSHFDSTSN
2300 RSHFDSTSN2:2106          F/RSHFDSTSN  <-- VV
*****
*0 - RSHFDSTSN2 1 - RSHFDSTSN3 TARGETS - *
* 0 - *
*RTSHFDST2C *
*-----*
*P2,          D+FDST3,D(C)+ALU15,        *
*              RES+RESRIGHTGD,          *
*NEXT,        BUTR(BG),                  *
*              J/RTSHFDST2C             *
*              J/RTSHFDST2C             * -->   011 2063  2288  754
*              J/RTSHFDST2B             * -->   111 2067  2287  754
*****
.CASE 2 OF BRSHFDSTSN
2301 RSHFDSTSN3:2107          F/RSHFDSTSN  <--      2715  2299  758
*****
*1 - RTSHFDST2B BRANCH ON *
*SR<00> *
*-----*
*P2,          D+FDST3,D(C)+ALU15,        *
*              RES+RESRIGHT,            *
*NEXT,        BUT(CASE),                 *
*              J/RSHFDSTSN4             *
*              J/RSHFDSTSN4             * -->   1110 2736  2302  759
*              J/RSHFDSTSN5             * -->   1111 2737  2303  759
*****

```

```

2715
1010 00 11 00 00 00000001000
00000 000000 10111 001000 0110 0
001000110

```

```

2106
1111 10 00 10 01 00000001000
01000 010001 01100 00110011 0100 0
000110011

```

```

2107
1111 10 00 10 01 00000001000
01101 010001 00000 111011110 0100 0
111011110

```

# L15

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION			
								RIF	COUT	CLOCKS	
.CASE 2302	1 OF BRSHFDSTSN3	F/RSHFDSTSN3	<--	2107	2301	758					
	RSHFDSTSN4:2736										
	*****										
	*TARGETS - 0 - RSHFDSTSN4 1 - RSHFDSTSN5										
	*TARGETS - 0 -										
	*RSHFDSTSN7										
	-----										
	*P2, D+D RIGHT 1,SHIFT SR,										
	*P3, FDST3+D (B ADDR),										
	*NEXT, BUTR(BG),										
* J/RSHFDSTSN7											
		J/RSHFDSTSN7	-->	011	2503	2305	760				
		J/RSHFDSTSN6	-->	111	2507	2304	759				
*****											
.CASE 2303	2 OF BRSHFDSTSN3	F/RSHFDSTSN3	<--	2107	2301	758					
	RSHFDSTSN5:2737										
	*****										
	*1 - RSHFDSTSN6 D(C) = 1 TARGETS - 0 -										
	*RTSHFDST7B										
	-----										
	*P2, D+D RIGHT 1,D(C)+CIN,SHIFT SR,										
	*P3, FDST3+D (B ADDR),										
	*NEXT, BUTR(BG),										
	* J/RTSHFDST7B										
		J/RTSHFDST7B	-->	011	2433	2294	756				
		J/RTSHFDST7	-->	111	2437	2293	756				
*****											
.CASE 2304	2 OF BRSHFDSTSN4	F/RSHFDSTSN4	<--	2736	2302	759					
	RSHFDSTSN6:2507										
	*****										
	*1 - RTSHFDST7										
	*D(C)=0										
	-----										
	*P2, D+SR PLUS 0(D),D(C)+CIN,										
	*P3, FDST2+D (B ADDR),										
	*NEXT, BUTR(RESET RES),										
	* J/RTSHFDST8										
		J/RTSHFDST8	-->	2711	2295	756					

```

2736      000000001000
1111 00 11 01 10 011 000 0110 0
00000 001010 01100 101000011

2737      000000001000
1111 00 11 01 10 011 000 0110 0
00000 001010 01100 100011011

2507      000000001000
1001 10 11 00 00 011 000 0100 0
00001 001100 11010 111001001
    
```

# M15

PROGRAM FLOWS      11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377                      PAGE 760

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
.CASE 2305	1 OF BRSHFDSTSN4 RSHFDSTSN7:2503	F/RSHFDSTSN4	<--	2736	2302	759			
	***** * EXTERNAL SERVICE REQUEST IS PRESENT GO *TO *RESTART *-----* *P2,            D+FAC3(SAV), *P3,            FAC3(SF)+D (B ADDR), *NEXT, *                            J/RESTART2 *****								
			-->	2534	2245	742	2503	10000001000	
							1111 00 01 10 00 100 000 0100 0 00000 001010 1100C 110011100		



# N15

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG:ADDRESS	SOURCE FIELD	##FLTP##	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC	" SUBROUTINE RIGHT SHIFT	F/MFRAC11	<--	2224 1444 470					
		F/NROUND27	<--	2203 1932 624					
*****									
*	SUBROUTINE RTSHFSF	RETURN/MFRAC17	* -->	2231 1450 472					
		RETURN/NROUND13	* -->	2141 1919 620					
*****									

2306 PTS:FSF:2720  
 \*\*\*\*\*  
 \* :SUBROUTINE PERFORMS RIGHT SHIFT OF \*  
 \*FAC(SF) :IN SINGLE AND DOUBLE PRECISION \*  
 \*SINGLE SHIFT IS PERFORMED EACH TIME \*  
 \*SUBROUTINE IS ENTERED AND LOW END BIT \*  
 \*IS ALWAYS PUSHED INTO THE GUARD \*  
 \*REGISTER D(C) GETS 0 TARGETS - SINGLE - \*  
 \*RTSHFSF2 \*  
 \*-----\*

2720 1010 00 01 00 00 10000001000  
 00000 000000 1011 1010110.0 0110 0

\*P2, D+FAC2(SF), D(C)+CIN, \*  
 \* SR+FAC2(SF), \*  
 \*NEXT, BUTR(FD) \*  
 \* J/RTSHFSF2 \*  
 \* J/RTSHFSF2 \* --> 10 2532 2307 761  
 \* J/RTSHFSF3 \* --> 11 2533 2310 762  
 \*\*\*\*\*

CASE 1 OF BRTSHFSF  
 2307 RTSHFSF2:2532 F/RTSHFSF <-- VV

2532 1111 10 00 10 11 00 1111 0100 0  
 01000 010001 01100 0.100011

\*\*\*\*\*  
 #DOUBLE - RTSHFSF3 BRANCH ON BUS REQUEST \*  
 #TARGETS \*  
 \*-----\*  
 \*P2, D+FAC3(SF), D(C)+D(C), \*  
 \* RES+RESRIGHTGD, \*  
 \*NEXT, BUTR(BG) \*  
 \* J/RTSHFSF2C \*  
 \* J/RTSHFSF2C \* --> 011 2243 2309 762  
 \* J/RTSHFSF2B \* --> 111 2247 2308 762  
 \*\*\*\*\*

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BRTSHFSF2						
2308	RTSHFSF2B:2247	F/RTSHFSF2 F/RTSHFSFSN2	(-- (--	2532 2307 761 2166 2321 766			
	***** *0 - RTSHFSF2C 1 - RTSHFSF2B *-----*						2247 10000001000 1111 00 01 01 10 000 111 0110 0 00000 001010 11010 111010001
	*P2, D+D RIGHT 1,D(C)+D(C), * SHIFT SR, *P3, FAC3(SF)+D (B ADDR), *NEXT, BUTR(RESET RES), * J/RTSHFSF6		--)	2721 2313 763			
.CASE	1 OF BRTSHFSF2						
2309	RTSHFSF2C:2243	F/RTSHFSF2 F/RTSHFSFSN2	(-- (--	2532 2307 761 2166 2321 766			
	***** *P2, D+FAC3(SAV) *P3, FAC3(SF)+D (B ADDR), *NEXT, * J/RESTART2		--)	2634 2245 742			2243 10000001000 1111 00 01 10 00 100 000 0100 0 00000 001010 11000 110011100
.CASE	2 OF BRTSHFSF						
2310	RTSHFSF3:2533	F/RTSHFSF	(--	2720 2306 761			
	***** * BRANCH ON SR<00> TARGETS *- *-----*						2533 10000001000 1111 10 00 10 11 000 111 0100 0 01101 010001 00000 101011110
	*P2, D+FAC3(SF), D(C)+D(C), * RES+RESRIGHT, *NEXT, BUT(CASE), * J/RTSHFS4 * J/RTSHFS4 * J/RTSHFS5		--) --)	1110 2536 2311 763 1111 2537 2312 763			
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	CLOCKS
.CASE	1 OF BRTSHFSF3	OFST ADDR BOX PAGE	COORD CAPD	BUS	BUS SP	UBF	UPF		
2311	RTSHFSF4:2536	F/RTSHFSF3 F/RTSHFSFSN3	<-- <--	2533 2167	2310 2322	762 767			
	*****								
	#0 - RTSHFSF4 1 - RTSHFSF5 TARGETS - 0 -								
	*RTSHFSF7B								
	-----								
	*P2,	D+D RIGHT 1 PLUS 0,D(C)+CIN,	*						
	*	SHIFT SR,	*						
	*P3,	FAC3(SF)+D (B ADDR),	*						
	*NEXT,	BUTR(BG)	*						
	*	J/RTSHFSF7B	*						
	*	J/RTSHFSF7	* -->	011 2413	2315	764			
	*	J/RTSHFSF7	* -->	111 2417	2314	764			
	*****								
.CASE	2 OF BRTSHFSF3								
2312	RTSHFSF5:2537	F/RTSHFSF3 F/RTSHFSFSN3	<-- <--	2533 2167	2310 2322	762 767			
	*****								
	#1 - RTSHFSF7 D(C)=1 TARGETS - 0 -								
	*RTSHFSF7B								
	-----								
	*P2,	D+D RIGHT 1 D(C)+CIN,SHIFT SR,	*						
	*P3,	FAC3(SF)+D (B ADDR),	*						
	*NEXT,	BUTR(BG)	*						
	*	J/RTSHFSF7B	*						
	*	J/RTSHFSF7	* -->	011 2413	2315	764			
	*	J/RTSHFSF7	* -->	111 2417	2314	764			
	*****								
2313	RTSHFSF6:2721	F/RTSHFSF2B	<--	2247	2308	762			
	*****								
	#1 - RTSHFSF7								
	-----								
	*P2,	D+SR D(C)+D(C)	*						
	*P3,	FAC2(SF)+D (B ADDR),	*						
	*NEXT,	BUT(RETURN)	* -->	VV					
	*****								

2536  
1001 11 01 01 10 000 000 0110 0  
00000 001010 01100 100001011

2537  
1111 00 01 01 10 000 000 0110 0  
00000 001010 01100 100001011

2721  
1111 00 01 00 00 000 111 0100 0  
00000 001100 11111 000000000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BRTSHFSF4							
2314	RTSHFSF7:2417	F/RTSHFSF4 F/RTSHFSF5	<-- <--	2536 2537	2311 2312	763 763		
	***** * DOUBLE PRECISION ENTRY *POINT *-----* *P2, D+SR D(C)+D(C) *P3, FAC2(SF)+D (B ADDR), *NEXT, BUTR(RESET RES), * J/RTSHFSF8 *****							2417 1111 00 01 00 00 000 111 0100 0 00000 001100 11010 101110111
				2567	2316	764		
.CASE	1 OF BRTSHFSF4							
2315	RTSHFSF7B:2413	F/RTSHFSF4 F/RTSHFSF5	<-- <--	2536 2537	2311 2312	763 763		
	***** *P2, D+FAC3(SAV) *P3, FAC3(SF)+D (B ADDR), *NEXT, * J/RESTART2 *****							2413 1111 00 01 10 00 100 000 0100 0 00000 001010 11000 110011100
				2634	2245	742		
.CASE	3 OF BDFRACADD							
2316	RTSHFSF8:2567	F/DFRACADD F/DFRACADD3	<-- <--	2324 2432	1724 1726	560 561		
	***** *P2, SR+FAC0(SF), *NEXT, * J/RTSHFSF9 *****							2567 1010 01 01 00 00 000 000 0010 0 00000 000000 11000 111010100
2317	RTSHFSF9:2724	F/RTSHFSF8	<-- VV					
	***** *P2, D+FAC1(SF), D(C)+D(C), * RES+RESRIGHTGD, *NEXT, * J/RTSHFSF10 *****							2724 1111 10 00 11 11 000 111 0100 0 01000 010001 11000 111010101
				2725	2318	765		

# F16

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION			
					BUS	SP	UBF	RIF	COUT	CLCKS	
2318	RTSHFSF10:2725	F/RTSHFSF9	<--	2724 2317 764	2725						100000001000
	*P2,            D←D RIGHT 1,D(C)←D(C),		*		1111	00 01	01 10	000 111	0110	0	
	*                SHIFT SR,		*		00000	011010	11010	101111011			
	*P3,            FAC1(SF)←D (B ADDR),		*								
	*NEXT,          BUTR(RESET RES),		*								
	*                J/RTSHFSF11		* --> VV								
*****											
.CASE	4 OF BDFRACADD										
2319	RTSHFSF11:2573	F/DFRACADC F/DFRACADD3	<-- <--	2324 1724 560 2432 1726 561	2573						100000001000
	*P2,            D←SR,		*		1111	00 01	00 00	000 000	0100	0	
	*P3,            FAC0(SF)←D (B ADDR),		*		00000	011100	11111	000000000			
	*NEXT,          BUT(RETURN),		* --> VV								
	*                BUT(RETURN),		*								
*****											

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE			ADDR	ALU	BUSB	BUS	BUSA	EXTENSION			
			OFST	ADDR	BOX						PAGE	COORD	CARD	RIF
		F/ADDSHFSFD1 <--	4060	1601	520									
		F/NROUNDEND2 <--	4537	1621	527									
*****														
*	SUBROUTINE RTSHFSFSN	*												
		RETURN/ADDSHFSFD * -->	4307	1600	520									
		RETURN/NROUNDEND6 * -->	4557	1625	528									
*****														

H16

2320 RTSHFSFSN:2726  
 \*\*\*\*\*  
 \* ROUTINE PERFORMS RIGHT SHIFT SIGN \*  
 \*EXTEND OF FAC(SF) FOR DIFFERENCE \*  
 \*OPERATION IN ADD OF SUBTRACT FLOWS \*  
 \*INTERRUPT DUE TO SERVICE IS PROVIDED FOR \*  
 \*TARGETS - 0 - \*  
 \*RTSHFSFSN2 \*  
 \*-----\*

2726 1010 00 01 00 00 000 000 C110 C  
 00000 000000 10111 001110110

\*P2, D+FAC2(SF),SR+FAC2(SF), \*  
 \*NEXT, BUTR(FD) \*  
 \* J/RTSHFSFSN2 \*  
 \* J/RTSHFSFSN2 \* --> 10 2166 2321 766  
 \* J/RTSHFSFSN3 \* --> 11 2167 2322 767  
 \*\*\*\*\*

.CASE 1 OF BRTSHFSFSN  
 2321 RTSHFSFSN2:2166 F/RTSHFSFSN <-- VV  
 \*\*\*\*\*

2166 1111 10 00 10 11 000 100 0100 C  
 01000 010001 01100 010100011

\*1 - RTSHFSFSN3 TARGETS - 0 - \*  
 \*RTSHFSF2C \*  
 \*-----\*  
 \*P2, D+FAC3(SF),D(C)+ALU15, \*  
 \* RES+RESRIGHTGD, \*  
 \*NEXT, BUTR(BG) \*  
 \* J/RTSHFSF2C \*  
 \* J/RTSHFSF2C \* --> 011 2243 2309 762  
 \* J/RTSHFSF2B \* --> 111 2247 2308 762  
 \*\*\*\*\*



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION				MICROFICHE COORD CARD	ADDR	ALU BUS	9US8 SP	BLSA UBF	EXTENSION			CLOCKS
		OFST	ADDR	BOX	PAGE						RIF	CCU	JPF	
.CASE 2322	2 OF BRTSHFSFSN RTSHFSFSN3:2167			F/RTSHFSFSN	<--	2726	2320	766						
	*****													
	*1 - RTSHFSF28 BRANCH ON SR<00> TARGETS													
	*-----*													
	*P2, D+*FAC3(SF),D(C)+ALU15,													
	* RES+RESRIGHT,													
	*NEXT, BUT(CASE)													
	* J/RTSHFSF4													
				J/RTSHFSF4	-->	1110	2536	2311	763					
				J/RTSHFSF5	-->	1111	2537	2312	763					
	*****													

2167 10000001000  
1111 10 00 10 11 000 100 0100 0  
01101 010001 00000 101011110

# J16

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BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION OF ST ADDR BOX	PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.TOC * SUBROUTINE TO SET FLOATING CONDITION CODES **FLPT**									
	F/LOADZW4	<--	3222	1645	535				
	F/STCPW10	<--	4135	1813	587				
	F/STCPW15	<--	4147	1818	589				
	F/LDEXP19	<--	3733	1854	599				
	F/LDCPW17	<--	4550	1905	614				
	F/FINISH	<--	2542	1962	633				
*****									
*	SUBROUTINE SETFZFN		*						
	RETURN/BRA05	* -->	3	283	126				
	RETURN/STCPW31	* -->	4476	1834	593				
	RETURN/STCPW31	* -->	4476	1834	593				
	RETURN/FINISH4	* -->	3740	1965	634				
	RETURN/BRA05	* -->	-1	-1	-1	0	1	1	
	RETURN/FINISH2	* -->	3734	1963	633				
*****									

K16

```

2323 SETFZFN:2727
*****
*O - RTSHF4 1 - RTSHF5 :SUBROUTINE *
*USED TO SET THE Z AND N BITS OF ;FPS *
*REGISTER :MULTIPLE ENTRY POINTS: *
*EARLIEST IS SETFZFN WHICH SETS FPS<3:0> *
*AS : FC+0 ; FV+0 ; FZ+1 IF AC=0 *
*ELSE FZ+0 ; FN+1 IF AC<0 ELSE FN+0 *
*:LAST ENTRY IS DT0FCC2 WHICH WRITES TO *
*FPS<3:0> ;WHATEVER IS IN D *
* ; *
*-----*
*P2, D+FA3(SF) AND SEXPMASK, *
*NEXT, *
* J/SETFZFN2 *
*****

```

```

2727
1011 10 00 10 11 000 000 0100 0
00110 000000 11000 111011000

```

```

--> 2730 2324 769

```

# L16

PROGRAM FLOWS

11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

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BOX NO.	TAG:ADDRESS		SOURCE/DESTINATION			MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
			OFST	ADDR	BOX	PAGE		BUS	SP	RIF	COUT	CLOCKS
	F/TSTZW	<--	3455	1367	446							
	F/IA114E	<--	3251	689	251							
	F/IOT01	<--	64	348	148							
	F/ASR805	<--	522	180	92							
	F/ASR807	<--	112	182	93							
	F/CMP803	<--	732	102	64							
	F/UNDEF INED	<--	-1	-1	-1			2	1	1		
	F/DST25	<--	642	72	50							
	F/DST03	<--	513	41	36							
	F/SRC33	<--	663	25	26							
	F/UNDEF INED	<--	-1	-1	-1			2	1	1		
	F/STEXP4	<--	620	1755	570							
*****												
*	SUBROUTINE SETFZFN2	*										
	RETURN/A, RFD, AE, RF, RF1* --)		2703	2151	708							
	RETURN/UNDEF INED	* -->	-1	-1	-1			2	1	1		
	RETURN/IA115	* -->	3411	692	252							
	RETURN/UNDEF INED	* -->	-1	-1	-1			2	1	1		
	RETURN/BIT03	* -->	723	96	62							
	RETURN/MOV36	* -->	605	197	98							
	RETURN/DST19	* -->	526	57	44							
	RETURN/CLR801	* -->	570	135	76							
	RETURN/BIC02	* -->	624	87	58							
	RETURN/DST05	* -->	515	43	37							
	RETURN/SRC15	* -->	4022	17	21							
	RETURN/STEXPS	* -->	1622	1756	570							
*****												

M16

2324 SETFZFN2:2730  
\*\*\*\*\*  
\*SELECT, EMIT, \*  
\*NEXT, BUT(D(14-00) IS 0 # D15), \*  
\* J/FCCHEX0 \*  
\* J/FCCHEX0 \* -->  
\* J/FCCHEX1 \* -->  
\* J/FCCHEX2 \* -->  
\* J/FCCHEX3 \* -->  
\*\*\*\*\*

CASE 1 OF BSETFZFN2  
2325 FCCHEX0:2030 F/SETFZFN2 <-- VV  
\*\*\*\*\*  
\*P3, D+0, \*  
\*NEXT, \*  
\* J/DTOFCC2 \* -->  
\*\*\*\*\*

00	2030	2325	769
01	2031	2326	770
10	2032	2327	770
11	2033	2328	770

2730  
0000 00 00 00 01 000 000 0000 0  
11001 000000 01101 000011000

2030  
0011 00 00 00 00 000 000 0100 0  
00000 000000 11000 111011010

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB S7	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2326	2 OF BSETFZFN2 FCCHEX1:2031	F/SETFZFN2	<-- 2730 2324 769	2031			000000001000
	*P3, D+CNST8,			1010 10 00 00 00	000 000 0100 0		
	*NEXT,			01110 000000 11000 111011010			
	* J/DTOFCC2		--> 2732 2330 771				
.CASE 2327	3 OF BSETFZFN2 FCCHEX2:2032	F/SETFZFN2	<-- 2730 2324 769	2032			000000001000
	*P3, D+CNST4,			1010 10 00 00 00	000 000 0100 0		
	*NEXT,			01100 000000 11000 111011010			
	* J/DTOFCC2		--> 2732 2330 771				
.CASE 2328	4 OF BSETFZFN2 FCCHEX3:2033	F/SETFZFN2	<-- 2730 2324 769	2033			000000001000
	*P3, MD+14 (BC),			0000 10 00 00 00	001 100 0000 0		
	*NEXT,			00010 100000 11000 111011001			
	* J/DTOFCC1		--> VV				
2329	DTOFCC1:2731	F/FCCHEX3	<-- VV	2731			000000001000
	*P2, D+MD,			1010 11 10 00 00	000 000 0100 0		
	*NEXT,			00000 000000 11000 111011010			
	* J/DTOFCC2		--> 2732 2330 771				

C01

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA RIF UBF	EXTENSION COUT CLOCKS UPF
2330	DTOFCC2:2732	F/FCHEX0	<-- 2030 2325 769				
		F/FCHEX1	<-- 2031 2326 770				
		F/FCHEX2	<-- 2032 2327 770				
		F/DTOFCC1	<-- 2731 2329 770				
	*****			2732			011000001000
	*SELECT, FPSCC(DBUF),	*		0000	00 00	00 00	000 000 0000 0
	*P2, FPSCC+DATA,	*		0000	000000	11111	00000000
	*NEXT,	*					
	* BUT(RETURN)	* --> VV					
	*****						
.TOC =	EIS						
.TOC =	EIS INSRUCTION SET						
.CASE	3 OF BOTH01						
2331	EIS01:0042	F/OTH01	<-- 417 285 127				
	*****			42			000000001000
	*USES FACT THAT FLOATING POINT DECODE ROM	*		0001	00 11	00 10	111 010 0000 0
	*CONTAINS IR<10> IN BIT 3 OF ITS OUTPUT	*		0000	00000	11100	101101000
	*TARGET OF BUT(INSTR V) GO TO SUBROUTINE	*					
	*AND FETCH	*					
	*OPERAND	*					
	-----*						
	*NEXT, CALL FETCHINT,	*					
	* RETURN+EIS02	*					
	*****	* -->					
	*****						
			2550 2009 650				
			VV				
			1627 2332 771				
2332	EIS02:1627						
	*****			1627			000000001000
	* GET SHIFT COUNT MASK FOR ASH, ASHC DO	*		0000	10 00	00 00	111 111 0000 0
	*FIRST STEP DECODE. TARGETS - 0 -	*		00010	100000	00011	011110111
	*MULDIV	*					
	-----*						
	*P3, MD+77	*					
	*NEXT, BUTR(IR10),	*					
	* J/MULDIV	*					
	* J/MULDIV	* -->	10111 1367 2333 772				
	* J/ASH001	* -->	11111 1377 2402 798				
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2333	MULDIV:1367	F/EIS02	<--	1627 2332 771			
	*****						000000001000
	*1 - ASH001 FOR EIS MULTIPLY GET						1111 00 00 11 01 110 100 0100 0
	*MULTPLICAND SIGN IN D(C) BREAK OUT MUL						00000 000000 00100 110000111
	*AND DIV. TARGETS - 0 -						
	*MULT						
	-----						
	*P2, D+R(T2A) D(C)+ALU15,						
	*NEXT, BUTR(IR(09)),						
	* J/MULT						
		J/MULT	-->	0111 1607 2374 785			
		J/DIVC1	-->	1111 1617 2334 772			
	*****						

```

.TOC " INTEGER DIVISION "
; INTEGER DIVISION ROUTINE
; NON-RESTORING DIVIDE ALGORITHM IS USED
; HI WORD OF DIVIDEND IS IN R(SF)
; LO WORD OF DIVIDEND IS IN R(SF+1)
; DIVISOR IS PLACED IN R(T2) BY SUBROUTINE FETCHINT
; TO ALL READERS -
; BUT(ROR1) USED IN ALL EIS CODE AND IN MODF/D OF FLOATING
; POINT IS AN ACTIVE BUT USED SOLELY TO OR THE LO BIT
; OF THE SOURCE FIELD SCRATCH PAD ADDRESS WITH 1 AND DOES
; NOT PERFORM ANY BRANCHING WHATSOEVER.
; FOR REASONS OF TIMING, IT MUST BE INVOKED ONE MICROCYCLE
; AHEAD OF THE CYCLE IN WHICH R(SF+1) IS USED.

```

.CASE 2334	DIV01:1617	F/MULDIV	<-- VV				
	*****						000000001000
	*1 - DIV01 PUT ZERO IN R(T1) FOR USE IN						0011 00 00 00 00 110 000 0100 0
	*COMPLEMENTING						00000 010110 11000 110011000
	-----						
	*P2, D+0,						
	*P3, R(T1)+D (A ADDR),						
	*NEXT,						
	* J/DIV01B		-->	1630 2335 773			
	*****						





# F01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU	BUSB	BUSA	EXTENSION			
				BUS	BUS SP	UBF	RIF	COUT	CLOCKS		
2338	DIV04:1633	F/DIV03	<--	1632	2337	773					
	*****										
	* TARGETS										
	*- ----- *										
	*NEXT, BUT(D(14-00) IS 0 * D15),										
	* J/DIV05										
	* J/DIV05			-->	00	1540	2339	774			
	* J/DIV06			-->	01	1541	2340	774			
	* J/DIV07			-->	10	1542	2341	775			
	* J/DIV08			-->	11	1543	2342	775			
*****											
CASE 2339	1 OF BDIV04	F/DIV04	<-- VV								
	DIV05:1540										
	*****										
	*00 - DIV05 01 - DIV06 10 - DIV07 11 -										
	*DIV08 POSITIVE DIVISOR EXISTS BRANCH ON										
	*QUOTIENT SIGN TARGETS										
	*- ----- *										
	*P2, D+R(SF) (A), D(C)+D(C),										
	*P3, R(T2A)+D (B ADDR),										
	*NEXT, BUTR(D(C)),										
* J/DIV11											
* J/DIV11			-->	01	1561	2345	776				
* J/DIV12			-->	11	1563	2346	776				
*****											
CASE 2340	2 OF BDIV04	F/DIV04	<--	1633	2338	774					
	DIV06:1541										
	*****										
	*0 - DIV11 1 - DIV12 NEG DIVISOR EXISTS										
	*2'S COMPLEMENT THE										
	*DIVISOR										
	*- ----- *										
	*P2, D+R(T1A) MINUS R(T2B),										
	* D(C)+D(C)										
	*P3, R(T2B)+D (B ADDR),										
*NEXT, J/DIV08			-->	1543	2342	775					
*****											

# G01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS	
.CASE 2341	3 OF BDIV04							
	DIV07:1542	F/DIV04	<--	1633 2338 774				
	*****							1542 000000001000
	* D GETS OCTAL 3 FOR PSW(CC) DIVISION BY *							1100 11 11 11 00 110 000 0100 0
	* ZERO BEING ATTEMPTED SET V AND C IN *							00000 000000 11100 110100111
	* PSW *							
	-----							
	* P2, D+R(T1A) PLUS 2 PLUS 1, *							
	* NEXT, BUT(GO TO), PAGE+0, *							
	* J/DIV39 *							
			-->	647 2373 785				
.CASE 2342	4 OF BDIV04							
	DIV08:1543	F/DIV04	<--	1633 2338 774				
	*****							1543 000000001000
	* FETCH DIVIDEND HI TARGETS - 0 - *							1111 00 11 10 11 110 111 0100 0
	* DIV09 *							00000 011010 10011 101100101
	-----							
	* P2, D+R(SF) (A), D(C)+D(C), *							
	* P3, R(T2A)+D (B ADDR), *							
	* NEXT, BUTR(D(C)), *							
	* J/DIV09 *							
			-->	01 1545 2343 775				
			-->	11 1547 2344 776				
.CASE 2343	1 OF BDIV08							
	DIV09:1545	F/DIV08	<-- VV					
	*****							1545 000000001000
	* 1 - DIV10 2'S COMPLEMENT DIVIDEND *							1101 01 10 11 00 110 110 0110 0
	* L0 *							00000 000000 11000 110011100
	-----							
	* P2, D+R(T1A) MINUS R(T1B), *							
	* SR+R(T1A) MINUS R(T1B), *							
	* D(C)+COUT15, *							
	* NEXT, *							
			-->	1634 2347 777				

# H01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK
								RIF	COUT	
.CASE 2344	DIV10:1547	F/DIV08	<--	1543 2342 775						
	* CHECK									
	* OVERFLOW									
	* P2, D+R(SF) MINUS R(T2B),									
	* D(C)+COUT15,									
	* NEXT,									
	* J/DIV14		-->	1635 2348 777						
.CASE 2345	DIV11:1561	F/DIV05 F/DIV13	<-- <--	1540 2339 774 1634 2347 777						
	* OVERFLOW									
	* TEST									
	* P2, D+R(SF) MINUS R(T2B),									
	* D(C)+COUT15,									
	* NEXT,									
	* J/DIV14		-->	1635 2348 777						
.CASE 2346	DIV12:1563	F/DIV05 F/DIV13	<-- <--	1540 2339 774 1634 2347 777						
	* P2, D+R(T1A) MINUS R(T1B),									
	* SR+R(T1A) MINUS R(T1B),									
	* D(C)+COUT15,									
	* NEXT,									
	* J/DIV13		-->	1634 2347 777						



# J01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCK	
								RIF	COUT		
.CASE 2350	DIV16:1567	F/DIV14	<--	1635	2348	777					
	*****										
	* OVERFLOW OCCURRED RESTORE OPERAND GO *										
	*SET V *										
	*BIT *										
	*-----*										
	*P2,            D+R(T2A) *										
	*P3,            R(SF)+D (B ADDR), *										
	*NEXT, *										
	*                    J/DIV38                    * -->										
2351	DIV17:1640	F/DIV15	<--	1565	2349	777					
	*****										
	* DO FIRST *										
	*SUBTRACT *										
	*-----*										
	*P3,            D+D LEFT 1 MINUS R(T2B) *										
	*                    D(C)+COUT15,CLOCKSR (P3), *										
	*NEXT, *										
	*                    J/DIV18                    * --> VV										
	*****										
.CASE 2352	DIV18:1570	F/DIV17 F/DIV18	<-- <--	1640 1570	2351 2352	778 778					
	*****										
	* DIVISION INNER LOOP LOOP EXECUTED 15 *										
	*TIMES WITH REMAINDER LEFT IN D REGISTER *										
	*AND QUOTIENT GENERATED IN SR UPON *										
	*COMPLETION GO *										
	*TO *										
	*-----*										
	*P3,            D+D LEFT 1 DIV R(T2B) *										
	*                    D(C)+COUT15,CLOCKSR (P3), *										
*NEXT,            BUT(COUNT IS -1), *											
*                    J/DIV18                    * -->											
*                    J/DIV19                    * -->											
*****											

```

1567          000000001000
      1111 00 01 11 01 110 000 0100 0
      00000 001110 11000 110101110

1640          000000001000
      1101 01 11 01 00 110 110 1110 0
      00000 000000 11000 101111000

1570          000000001000
      1000 01 11 01 00 110 110 1110 0
      00000 000000 10101 101111000
    
```

# K01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE	2 OF BDIV18	OFST ADDR BOX PAGE	COORD CARD	BUS	SP	UBF	UPF	RIF COUT CLOCKS
2353	DIV19:1571	F/DIV17 F/DIV18	<-- <--	1640 1570	2351 2352	778 778		
	*****			1571				000000001000
	*DIV19 REALIGN			0000	00 00	00 00	000 000	0010 0
	*QUOTIENT			00000	000000	11000	110100001	
	-----*							
	*P2, SHIFT SR,							
	*NEXT,							
	* J/DIV20		--> VV					
2354	DIV20:1641	F/DIV19	<-- VV					
	*****			1641				000000001000
	* D(C) GETS QUOTIENT SIGN FOR OVERFLOW			1111	00 00	01 01	000 001	1100 0
	*TEST BRANCH ON LAST QUOTIENT			00000	000000	10011	101010001	
	*BIT							
	-----*							
	*P3, D+D (P3),D(C)+PS(C),							
	*NEXT, BUTR(D(C)),							
	* J/DIV21		-->	01 1521	2355	779		
	* J/DIV22		-->	11 1523	2356	780		
	*****							
.CASE	1 OF BDIV20							
2355	DIV21:1521	F/DIV20	<-- VV					
	*****			1521				000000001000
	*GENERATED TARGETS - 0 - DIV21 1 - DIV22			1001	01 11	01 01	110 111	1100 0
	*RESTORE REMAINDER LAST DIVISION STEP			00000	000000	11000	101010011	
	*DIDN'T							
	*GO							
	-----*							
	*P3, D+D PLUS R(T2B) (P3),							
	* D(C)+D(C),							
	*NEXT,							
	* J/DIV22		-->	1523	2356	780		
	*****							

# L01

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT UPF	CLOCKS
.CASE 2356	2 OF BDIV20 DIV22:1523	F/DIV20	<--	1641	2354	779			
	***** * TEMPORARY STORE OF *REMAINDER *****			1523				000000001000	
					0000	00 00	00 01	110 000	0000 0
					00000	010100	11010	110100100	
	*P3, R(T2B)+D (A ADDR), *NEXT, BUTR(RESET RES), * J/DIV23		--> VV						
2357	DIV23:1644	F/DIV22	<-- VV						
	***** * GET QUOTIENT SET COND CODES BRANCH ON *QUOTIENT SIGN 0 - *DIV24 *****			1644				000000001000	
					1111	00 01	00 00	000 111	0100 1
					00000	001110	10011	101010101	
	*P2, D+SR,D(C)+D(C), *P3, R(SF)+D (B ADDR), *DEFER, SET CC *NEXT, BUTR(D(C)), * J/DIV24		-->	01	1525	2358	780		
		J/DIV25	-->	11	1527	2359	781		
.CASE 2358	1 OF BDIV23 DIV24:1525	F/DIV23	<-- VV						
	***** *1 - DIV25 POSITIVE QUOTIENT BRANCH ON *GENERATED QUOTIENT *SIGN *****			1525				000000001000	
					1111	00 00	11 01	110 100	1100 0
					00000	000000	01101	101111010	
	*P3, D+R(T2A) (P3),D(C)+ALU15, *NEXT, BUTR(D15), * J/DIV32		-->	10	1572	2366	783		
		J/DIV37	-->	11	1573	2371	784		



MO1

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
2359	DIV25:1527	F/DIV23	<-- 1644 2357 780	1527			000000001000
	*TARGETS - 0 - DIV32 1 - DIV37 2'S			0000	00 01	00 00	000 000 0100 0
	*COMPLEMENT RESULTANT			00000	001110	11000	110100101
	*QUOTIENT						
	*P2, D+NOT SR,						
	*P3, R(SF)+D (B ADDR),						
	*NEXT, J/DIV26		--> VV				
2360	DIV26:1645	F/DIV25	<-- VV	1645			000000001000
	* FINISH 27S COMPLEMENT			1001	11 00	10 11	000 000 0100 1
	*D(C)=0			00000	000110	11010	110101000
	*P2, D+R(SF) PLUS 1, D(C)+CIN,						
	*P3, R(SF)+D (A ADDR),						
	*DEFER, SET CC,						
	*NEXT, BUTR(RESET RES),		--> VV				
	* J/DIV27						
2361	DIV27:1650	F/DIV26	<-- VV	1650			000000001000
	* FETCH ORIGINAL DIVIDEND			1111	00 00	11 01	110 100 1100 0
	*HI			00000	000000	01101	101011000
	*P3, D+R(T2A) (P3) D(C)+ALU15,						
	*NEXT, BUT(D(14-00) IS 0 # DIS),						
	* J/DIV28		-->	00 1530	2362	782	
	* J/DIV29		-->	01 1531	2363	782	
	* J/DIV30		-->	10 1532	2364	782	
	* J/DIV31		-->	11 1533	2365	783	

# NO1

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
CASE 2362	1 OF B0IV27 DIV28:1530	F/DIV27	<--	1650	2361	781		
	*****							1530 000000001000
	* OVERFLOW OCCURRED RESTORE R(SF) SET V							1111 00 01 11 01 110 000 0100 0
	*BIT IN *CC'S							00000 001110 11000 101110111
CASE 2363	2 OF B0IV27 DIV29:1531	F/DIV27	<--	1650	2361	781		
	*****							1531 000000001000
	* NEGATE THE *REMAINDER							1101 01 11 11 00 110 111 0100 0
	* P2, D+R(T2A) * P3, R(SF)+D (B ADDR), * NEXT, J/DIV16			-->	1567	2350	778	
CASE 2364	3 OF B0IV27 DIV30:1532	F/DIV27	<--	1650	2361	781		
	*****							1532 000000001000
	* NEGATE THE *REMAINDER							1101 01 11 11 00 110 111 0100 0
	* P2, D+R(T1A) MINUS R(T2B), * D(C)+D(C), * NEXT, J/DIV33			-->	1652	2367	783	
CASE 2364	3 OF B0IV27 DIV30:1532	F/DIV27	<--	1650	2361	781		
	*****							1532 000000001000
	* NEGATE THE *REMAINDER							1101 01 11 11 00 110 111 0100 0
	* P2, D+R(T1A) MINUS R(T2B), * D(C)+D(C), * NEXT, J/DIV33			-->	1652	2367	783	

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE 2365	4 OF BDIV27 DIV31:1533	F/DIV27 D+R(T1A) MINUS R(T2B), D(C)+D(C),	<-- 1650 2361 781	1533	1101 01 11	11 00 110 111	0100 0 000000001000 000000 000000 11000 110101010
	*NEXT, J/DIV33		--> 1652 2367 783				
.CASE 2366	1 OF BDIV24 DIV32:1572	F/DIV24 NEGATE REMAINDER D+R(T1A) MINUS R(T2B), D(C)+D(C),	<-- 1525 2358 780	1572	1101 01 11	11 00 110 111	0100 0 000000001000 000000 000000 11000 110101010
	*NEXT, J/DIV33		--> VV				
		F/DIV29	<-- 1531 2363 782				
		F/DIV30	<-- 1532 2364 782				
		F/DIV31	<-- 1533 2365 783				
2367	DIV33:1652	F/DIV32 BRANCH ON DIVIDEND SIGN 0 - DIV34 BUTR(D(C)), J/DIV34	<-- VV	1652	0000 00 00	00 00 000 000	0000 0 000000001000 000000 000000 10011 101011101
	*NEXT, J/DIV34		-->				
		J/DIV34	--> 01 1535 2368 784				
		J/DIV35	--> 11 1537 2363 784				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE 2368	1 OF BDIV33 DIV34:1535	F/DIV33	<--	1652	2367	783		
	***** *1 - DIV35 DIVIDEND ORIGINALLY *POSITIVE *-----* *P2, D+R(T2B), *NEXT, BUT(ROR1), * J/DIV36 *****			1535				000000001000 1010 01 11 00 00 110 000 0100 0 00000 000000 10010 110101100
.CASE 2369	2 OF BDIV33 DIV35:1537	F/DIV33	<--	1652	2367	783		
	***** *NEXT, BUT(ROR1), * J/DIV36 *****			1537				000000001000 0000 00 00 00 00 000 000 0000 0 00000 000000 10010 110101100
2370	DIV36:1654	F/DIV34 F/DIV35	<-- <-- VV	1535	2368	784		
	***** *P3, R(SF+1)+D (A ADDR), *NEXT, BUT(GO TO),PAGE+D, * J/BRA05 *****			1654				000000001000 0000 00 00 00 11 000 000 0000 0 00000 000110 11100 000000011
.CASE 2371	2 OF BDIV24 DIV37:1573	F/DIV24	<--	1525	2358	780		
	***** * OVERFLOW OCCURRED RESTORE R(SF) GO SET *OVERFLOW *BIT *-----* *P2, D+R(T2A), *P3, R(SF)+D (B ADDR), *NEXT, * J/DIV38 *****			1573				000000001000 1111 00 01 11 01 110 000 0100 0 00000 001110 11000 110101110
				1656	2372	795		

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS
								RIF	COUT	
2372	DIV38:1656	F/DIV16 F/DIV37	<-- <--	1567 1573	2350 2371	778 784				
	*****									
	*P2, D+2									
	*NEXT, BUT(GO TO), PAGE+D,									
	* J/DIV39		--> VV							
	*****									
2373	DIV39:0647	F/DIV07 F/DIV38	<-- <-- VV	1542	7	775				
	*****									
	*SELECT, PS(C)									
	*P3, PS(CC)+D,									
	*NEXT, BUTR(SERVICE),									
	* J/FET01									
	* J/FET03		-->	00 700	3	11				
	* J/SER01		-->	01 701	385	160				
	* J/FET01		-->	10 702	1	2				
	* J/SER02		-->	11 703	387	162				
	*****									
.TOC -	INTEGER MULTIPLICATION -									
.CASE	1 OF BMULDIV									
2374	MULT:1607	F/MULDIV	<--	1367	2333	772				
	*****									
	*INTEGER MULTIPLICATION ALGORITHM USED IS *									
	*ADD SHIFT WITH CORRECTION FACTORS *									
	*DEPENDENT ON SIGNS OF MULTIPLIER AND *									
	*MULTPLICAND ENTER WITH MULTIPLICAND *									
	*SIGN IN D(C) D GETS MIER D(C) = MAND *									
	*SIGN BRANCH ON MIER SIGN TARGETS *									
	*-									
	*-----*									
	*P2, D+R(SF) (A), D(C)+D(C),									
	* SR+R(SF) (A),									
	*NEXT, BUTR(D(C)),									
	* J/MULT2									
	* J/MULT2		-->	01 1071	2375	786				
	* J/MULT7		-->	11 1073	2380	787				
	*****									

1656 000000001000  
 1010 11 11 00 00 000 000 0100 0  
 00000 000000 11100 110100111

647 000000001000  
 1000 00 00 10 01 000 000 0000 0  
 11011 000000 10000 111000010

1607 000000001000  
 1111 00 00 10 11 000 111 0110 0  
 00000 000000 10011 000111001

E02

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF	
.CASE 2375	MULT2:1071 F/MULT ***** *0 - MULT2 1 - MULT7 MD GETS CONSTANT *FOR RES AND COUNTER TARGETS * *-----* *P3, MD+20361 (BC), *NEXT, BUTR(D15), * J/MULT3 * J/MULT5 *****	<--	1607 2374 785	1071	0010 10 00 00 11	110 001	00000001000 0000 0	0010 100000 01101 001010010
	*-----* * J/MULT3 * J/MULT5 *****	-->	10 1122 2376 786 11 1123 2378 787					
.CASE 2376	MULT3:1122 F/MULT2 ***** *0 - MULT3 1 - MULT5 GENERATE *PRODUCT *-----* *NEXT, CALL MLOOP2, * RETURN+MULT4 *****	<-- VV	1714 2395 794 VV 1666 2377 786	1122	0001 00 11 01 10	110 001	00000001000 0000 0	0000 000000 11100 111001100
2377	MULT4:1666 ***** * REALIGN PRODUCT STORE HI *WORD *-----* *P2, D+D RIGHT 1 SHIFT SR, *P3, R(SF)+D (B ADDR), *NEXT, J/MULT14 *****	-->	1706 2387 789	1666	1111 00 01 01 10	000 000	00000001000 0000 0	0000 001110 11000 111000110

F02

PROGRAM FLOWS

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT	CLOCKS
.CASE 2378	MULT5:1123 ***** * GENERATE * * PRODUCT * ----- * NEXT, CALL MLOOP2, * * RETURN+MULT6 * *****	<--	1071 2375 786	1123	0001 00 11 01 10	111 001	0000 0	000000001000	
			***** 1714 2395 794 ***** VV 1667 2379 787						
2379	MULT6:1667 ***** * REALIGN PRODUCT AND PERFORM CORRECTION * * OPERATION * ----- * P3, D+D RT 1 MINUS R(T2), * * CLOCKS R (P3), * * NEXT, * * J/MULT13 * *****			1667	1101 01 11 01 10	110 000	1110 0	000000001000	
			***** 1705 2386 789 *****						
.CASE 2380	MULT7:1073 ***** * GENERATE CORRECTION FACTOR FOR NEGATIVE * * OPERANDS * ----- * P3, D+(P3) R(SF) PLUS R(T2B), * * NEXT, BUTR(D15). * * J/MULT8 * * J/MULT8 * --> * J/MULT10 * --> *****	<--	1607 2374 785	1073	1001 01 11 10 11	110 000	1100 0	000000001000	
			***** 10 1022 2381 788 ***** 11 1023 2383 788 *****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	EXTENSION					
				ADDR	ALU	BUSB	BUSA	RIF	COUT
				BUS	SP	UBF	UPF		
2381	MULT8:1022	F/MULT7	1073 2380 787	1022					000000001000
*****				0001	00 11	10 00	000 001	0000 0	
*TARGETS - 0 - MULT8 1 - MULT10 ENTRY OF *				00000	000000	11100	111001010		
*NEG MAND POS *									
*MIER *									
-----*									
*NEXT, CALL MULTLOOP, *									
* RETURN+MULT9 *									
*****									
			1712 2393 792						
*****									
			VV						
			-1 -1 -1 0 1 1						
2382	MULT9:1700			1700					000000001000
*****				1101	00 01	01 10	000 000	1110 0	
* REALIGN PRODUCT AND PERFORM CORRECTION *				00000	000000	11000	111000101		
*OPERATION *									
-----*									
*P3, D+D RT 1 MINUS R(SF), *									
* CLOCKSR (P3), *									
*NEXT, *									
* J/MULT13 *									
*****									
			1705 2386 789						
.CASE	2 OF BMULT7	F/MULT7	1073 2380 787	1023					000000001000
2383	MULT10:1023			0000	00 00	00 00	110 000	0000 0	
* STORE CORRECTION FACTOR FOR *				00000	010110	11000	111000010		
*NEGATIVE *									
-----*									
*P3, R(T1)+D (A ADDR), *									
*NEXT, *									
* J/MULT11 *									
*****									
			1702						
2384	MULT11:1702	F/MULT10	1704 2385 789	1702					000000001000
*****				0001	00 11	10 00	100 001	0000 0	
*OPERANDS *				00000	000000	11100	111001010		
-----*									
*NEXT, CALL MULTLOOP, *									
* RETURN+MULT12 *									
*****									
			1712 2393 792						
*****									
			VV						
			1704 2385 789						



H02

PROGRAM FLOWS

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PAGE 789

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	EXTENSION BUSA RIF COUT CLOCKS
2385	MULT12:1704 ***** * REALIGN PRODUCT AND PERFORM CORRECTION * * OPERATION * ----- *P3, D+D RT 1 MINUS R(T1), * * CLOCKS SR (P3), * *NEXT, * * J/MULT13 * --> VV *****			1704			000000001000 1101 01 10 01 10 110 000 1110 0 00000 010000 11000 111000101
2386	MULT13:1705 ***** * STORE HI * * PRODUCT * ----- *P3, R(SF)+D (A ADDR), * *NEXT, * * J/MULT14 * --> VV *****	F/MULT6 <-- F/MULT9 <-- F/MULT12 <-- VV	1667 2379 787 1700 2382 788	1705			000000001000 0000 00 00 00 11 000 000 0000 0 00000 000110 11000 111000110
2387	MULT14:1706 ***** * TEMPORARY SAVE OF HI * * PRODUCT * ----- *P3, R(T1)+D (A ADDR), * *NEXT, BUT(ROR1), * * J/MULT15 * --> VV *****	F/MULT4 <-- F/MULT13 <-- VV	1666 2377 786	1706			000000001000 0000 00 00 00 00 110 000 0000 0 00000 010110 10010 11000111
2388	MULT15:1707 ***** * STORE LO * * WORD * ----- *P2, D+SR, D(C)+ALU15, * *P3, R(SF+1)+D (B ADDR), * *NEXT, BUTR(RESET RES), * * J/MULT16 * --> *****	F/MULT14 <-- VV		1707			000000001000 1111 00 01 00 00 000 100 0100 0 00000 001110 11010 111001000
			1710 2389 790				

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OF ST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
								RIF	COUT CLOCKS
2389	MULT16:1710	F/MULT15	<--	1707	2388	789	1710	00000000	1000
	* CHECK HI WORD FOR FOR SIGN						0100	11 01	11 00 110 000 0100 0
	*EXTENSION						00000	000000	11000 111001001
	*P2, D+R(T1) PLUS 0 PLUS D(C),								
	*NEXT, J/MULT17		--> VV						
2390	MULT17:1711	F/MULT16	<-- VV	1711				00000000	1000
	*OF LO WORD D(C)=1 SET CONDITION CODES						1111	00 00	01 01 000 000 0100 1
	*ASSUMING HI WORD CONTAINS ALL						00000	000000	01101 001010101
	*INFO								
	*P2, D+D, D(C)+CIN,								
	*DEFER, SET CC,								
	*NEXT, BUTR(D(14-00) IS 0),								
	* J/MULT18		-->	01	1125	2391	790		
	* J/MULT19		-->	11	1127	2392	791		
.CASE	1 OF BMULT17								
2391	MULT18:1125	F/MULT17 F/MULT19	<-- <--	1711 1127	2390 2392	790 791	1125	00000000	1000
	*TARGETS - 0 - MULT18 1 - MULT19 HI WORD						0000	00 00	00 00 000 000 0000 0
	*IS NOT A SIGN EXTENSION OF LO						00000	000000	11100 00000011
	*WORD								
	*NEXT, BUT(GO TO),PAGE+0,								
	* J/BRA05		-->	3	283	126			

# J02

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BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BMULT17						
2392	MULT19:1127	E/MULT17 F/MULT19	<== <==	1711 1127	2390 2392	790 791	
	*****						1127 000000001000
	*CONDITIONS CODES ARE SET APPROPRIATELY *						1001 11 01 00 00 000 000 0100 1
	*GO FETCH NEXT INSTRUCTION SET CONDITION *						00000 000000 11000 001010101
	*CODES FROM THE LO WORD D(C)=0 HI WORD IS *						
	*A SIGN *						
	*EXTENSION *						
	*-----*						
	*P2 D+SR PLUS 0.D(C)+CIN, *						
	*DEFER, SET CC, *						
	*NEXT, *						
	* J/MULT18 *		-->	1125	2391	790	
	*****						

# K02

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 792

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION		
			OFST	ADDR	BOX					PAGE	RIF	COUT
		F/MFRACF2	<--	2234	1452	473						
		F/MULT8	<--	1022	2381	788						
		F/MULT11	<--	1702	2384	788						
*****												
*	SUBROUTINE MULTLOOP		*									
		RETURN/MFRACF2B	* -->	1615	1453	473						
		RETURN/MULT9	* -->	-1	-1	-1	0	1	1			
		RETURN/MULT12	* -->	1704	2385	789						
*****												

L02

```

2393 MULTLOOP:1712
*****
*OF THE LO WORD :SUBROUTINE :GENERATES *
*32 BIT PRODUCT FROM TWO 16 BIT WORDS ; *
*IN SR AND R(T2) :PREREQUISITES- :MAND *
*MUST ALREADY BE IN R(T2) :OR R(TEMP5) *
*:MIER MUST ALREADY BE IN SR : :AT *
*CONCLUSION OF PROGRAM HI PRODUCT IN D *
*:LOW PRODUCT IS IN SR :RESIDUAL CONTROL *
*IS NOT RESET!!!!!! CONSTANT FOR *
*RESIDUAL CONTROL AND COUNTER RIGHT SHIFT *
*AND 16 *
*COUNT *
*-----*
*P3, MD+20361 (BC), *
*NEXT, *
* J/MLOOP2 * -->
*****

```

```

1712 000000001000
      0010 10 00 00 11 110 001 0000 0
      00010 100000 11000 111001100

```

1714 2395 794

M02

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377

PAGE 793

BOX NO.	TAG:ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD	ALU BUS	ADDR BUS	ALU BUS	BUSB SP	BUSA UBF	EXTENSION	
			OFST	ADDR	BOX							PAGE	RIF
		F/MFRACF5	<--	1621	1456	474							
		F/MFRACF12B	<--	2627	1464	476							
		F/MFRACF20	<--	2260	1472	478							
*****													
*	SUBROUTINE MULTLOOP3		*										
		RETURN/MFRACF6	* -->	-1	-1	-1	0	1	1				
		RETURN/MFRACF13	* -->	2246	1465	476							
		RETURN/MFRACF21	* -->	2262	1473	478							
*****													

N02

2394 MULTLOOP3:1713

```
*****  
* SECONDARY ENTRY POINT USED BY MULF *  
*D(C)=0 TARGETS *  
*  
*-----*  
*P2          D=D PLUS D,D(C)+CIN, *  
*NEXT,      BUTR(SR00), *  
*           J/MLOOP3 *  
*           J/MLOOP3 * --> 1110 1636 2396 794  
*           J/MLOO34 * --> 1111 1637 2397 795  
*****
```

1713 000000001000  
1001 11 01 01 01 000 000 0100 0  
00000 000000 00000 110011110

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	OFST	ADDR	BOX	PAGE	MICROFICHE COORD	CARD	ADDR	ALU BUS	BUSB SP	BUSA UBF	EXTENSION		CLOCKS	
													RIF	UPF		
		F/MULT3	<--	1122	2376	786										
		F/MULT5	<--	1123	2378	787										
*****																
*	SUBROUTINE MLOOP2		*													
		RETURN/MULT4	* -->	1666	2377	786										
		RETURN/MULT6	* -->	1667	2379	787										
*****																



```

2395 MLOOP2:1714
*****
*0 - MLOOP3 1 - MLOOP4 D(C)=0 BRANCH ON *
*LOW SR BIT ZERO *
*MLOOP3 *
-----*
*P2, D+0, D(C)+ALU00, RES+MD, *
* COUNTER+MD, *
*NEXT, BUT(SR00), *
* J/MLOOP3 *
* J/MLOOP4 *
*****

```

CASE 1 OF BMULTLOOP3

```

2396 MLOOP3:1636
*****
*ONE MLOOP4 WHERE MIER<00> = 0 BRANCH ON *
*SR01 BIT00V ZERO *
*MLOOPS *
-----*
*P2, D+D PLUS 0 (P3), D(C)+COUT15, *
* CLOCKS R (P3), *
*NEXT, BUTR(SR01 * (COUNT IS -1)), *
* J/MLOOPS *
* J/MLOOPS5 *
* J/MLOOPS6 *
* J/MLOOPS7 *
* J/MLOOPS8 *
*****

```

```

--> 1110 1636 2396 794
--> 1111 1637 2397 795
<-- F/MULTLOOP3 1713 2394 793
<-- VV
--> 010 1642 2398 795
--> 011 1643 2399 796
--> 110 1646 2400 796
--> 111 1647 2401 797

```

```

1714 000000001000
0011 11 10 00 00 000 010 0100 0
00000 010101 00000 110011110

```

```

1636 000000001000
1001 11 01 01 01 000 110 1110 0
00000 000000 01011 110100010

```

BCX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
.CASE		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS	
2397	MLOOP4: 1637	F/MULTLOOP3 F/MLOOP2	<-- <--	1713 1714	2394 2395	793 794			
	*****							1637	000000001000
	*ONE MLOOP7 PERFORM FIRST MULT							1001	01 11 01 01 110 110 1110 0
	*OPERATION WHERE MIER<00> = 1 00							00000	000000 01011 110100010
	*MLOOPS								
	-----								
	*P3, D+D PLUS R(T2),D(C)+COUT15,								
	* CLOCKS R (P3)								
	*NEXT, BUTR(SR01 # (COUNT IS -1)),								
	* J/MLOOPS								
		J/MLOOPS	* -->	010 1642	2398	795			
		J/MLOOP6	* -->	011 1643	2399	796			
		J/MLOOP7	* -->	110 1646	2400	796			
		J/MLOOP8	* -->	111 1647	2401	797			
	*****								
.CASE	1 OF BML00P3	F/MLOCP3 F/MLOOP4 F/MLOOPS F/MLOOP7	<-- <-- <-- <--	1636 1637 1642 1646	2396 2397 2398 2400	794 795 795 796			
2398	MLOOPS: 1642	F/MLOCP3 F/MLOOP4 F/MLOOPS F/MLOOP7	<-- <-- <-- <--	1636 1637 1642 1646	2396 2397 2398 2400	794 795 795 796			
	*****							1642	000000001000
	*01 MLOOP6 10 MLOOP7 11 MLOOP8							1001	11 01 01 10 000 110 1110 0
	*MULTIPLICATION INNER LOOP SHIFT							00000	000000 01011 110100010
	*OPERATION								
	-----								
	*P3, D+D RIGHT 1 PLUS ZERO,								
	* D(C)+COUT15,CLOCKS R (P3),								
	*NEXT, BUT(SR01 # (COUNT IS -1)),								
	* J/MLOOPS								
		J/MLOOPS	* -->	010 1642	2398	795			
		J/MLOOP6	* -->	011 1643	2399	796			
		J/MLOOP7	* -->	110 1646	2400	796			
		J/MLOOP8	* -->	111 1647	2401	797			
	*****								

# E03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 796

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX	MICROFICHE PAGE	COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BML00P3							
		F/MLOOP3	<--	1636	2396	794		
		F/MLOOP4	<--	1637	2397	795		
		F/MLOOP5	<--	1642	2398	795		
2399	MLOOP6:1643	F/MLOOP7	<--	1646	2400	796		
	*****							1643 000000001000
	* INNER LOOP OPERATION WHERE SHIFT							1001 11 01 01 10 000 000 1110 0
	*D(C)=0 IS PERFORMED DUE TO MIER BIT =							00000 000000 11111 00000000
	*0							
	-----*							
	*P3, D+D RIGHT 1 PLUS ZERO,							
	* D(C)+CIN,CLOCKSR (P3),							
	*NEXT,							
	* BUT(RETURN)							--> VV
	*****							
.CASE	3 OF BML00P3							
		F/MLOOP3	<--	1636	2396	794		
		F/MLOOP4	<--	1637	2397	795		
		F/MLOOP5	<--	1642	2398	795		
2400	MLOOP7:1646	F/MLOOP7	<--	1646	2400	796		
	*****							1646 000000001000
	*POINT IS ENTERED WHEN COUNT OF 15 IS							1001 01 11 01 10 110 110 1110 0
	*SATISFIED RETURN TO CALLER FOR							00000 000000 01011 110100010
	*CORRECTION FACTOR AND LAST SHIFT							
	*OPERATION RES IS NOT RESET INNER LOOP							
	*OPERATION ADD SHIFT COUNT NOT							
	*SATISFIED							
	-----*							
	*P3, D+D RIGHT 1 PLUS R(T2),							
	* D(C)+COUT15,CLOCKSR (P3),							
	*NEXT, BUT(SR01 # {COUNT IS -1}),							
	* J/MLOOPS							
		J/MLOOPS	* -->	010	1642	2398	795	
		J/MLOOP6	* -->	011	1643	2399	796	
		J/MLOOP7	* -->	110	1646	2400	796	
		J/MLOOP8	* -->	111	1647	2401	797	
	*****							

# F03

PROGRAM FLOWS 11/60 MICROCODE ON 09-Mar-77 BY ADSYS 020377 PAGE 797

BOX NO.	TAG: ADDRESS		SOURCE/DESTINATION			MICROFICHE COORD CARD	ADDR ALU BUS	BUSR SP	BUSR UBF	EXTENSION	
			OFST	ADDR	BOX					PAGE	RIF
	.CASE	4 OF EML00P3									
		F/MLOOP3	<--	1636	2396	794					
		F/MLOOP4	<--	1637	2397	795					
		F/MLOOP5	<--	1642	2398	795					
2401	MLOOP8:1647	F/MLOOP7	<--	1646	2400	796					
		*****					1647			000000001000	
		* INNER LOOP ADD SHIFT IS COUNT IS	*				1001	01 11	01 10	110 110	1110 0
		*SATISFIED RETURN TO	*				00000	000000	11111	000000000	
		*CALLER	*								
		-----									
		*P3, D+D RIGHT 1 PLUS R(T2),	*								
		* J(C)+COUT15,CLOCKSR (P3),	*								
		*NEXT,	*								
		* BUT(RETURN)	*								
		*****									

--> VV

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
	ASH 072RSS, ASHC 073RSS						
	ASH RIGHT SHIFT						
	D(C)----->DDDDDDDDDDDDDDDD----->SRSRSRSRSRSRSR----->C						
	D(C)+ALU15 D=R(SF) D=RESULTANT	000 SR=0	SROO				
	ASHC RIGHT SHIFT						
	D(C)----->DDDDDDDDDDDDDDDD----->SRSRSRSRSRSRSR----->C						
	D(C)+ALU15 D=R(SF) D=RESULTANT	000 SR=R(SF OR 1)	SROO				
	R (EVEN)-----D=RESULTANT-----SR=RESULTANT						
	R (ODD)-----D=RESULTANT-----SR=RESULTANT						
	ASH LEFT SHIFT						
	FV(SET CC)+NOT UASEL01 AND [(D15 XOR BSIGN) OR PS(V)]						
	C<-----DDDDDDDDDDDDDDDD<-----SRSRSRSRSRSRSR<-----0						
	D(C)+ALU15 D=R(SF) D=RESULTANT	SR15 SR=0				GD=0	
	ASHC LEFT SHIFT						
	FV(SET CC)+NOT UASEL01 AND [(D15 XOR BSIGN) OR PS(V)]						
	C<-----DDDDDDDDDDDDDDDD<-----SRSRSRSRSRSRSR<-----0						
	D(C)+ALU15 D=R(SF) D=RESULTANT	SR15 SR=R(SF OR 1)				GD=0	
	R (EVEN)-----D=RESULTANT-----SR=RESULTANT						
	R (ODD)-----D=RESULTANT-----SR=RESULTANT						

```

CASE 2 OF BEIS02
2402 ASH001:1377 F/EIS02 <-- 1627 2332 771
*****
*FOR CORRECTION FACTOR AND LAST SHIFT *
*OPERATION RES IS NOT RESET LO PROD IN SR *
*RESIDUAL CONTROL IS NOT RESET!!!! BOTH *
*ASH AND ASHC ENTER AT ASH001 WITH MD = *
*77 RESET V BIT IF SET SET D(C)=0 *
*STORE 0 IN SPA, *
*R(T1A) *
*-----*
*P2, D+0(D),D(C)+ALU15, *
*P3, R(T1A)+D (B ADDR), *
*NEXT, *
* J/ASH002 * --> 1715 2403 799
*****

```

```

1377 000000001000
1010 10 10 00 00 110 100 0100 0
00001 011010 11000 111001101

```

H03

BOX NO.	TAG: ADDRESS	EXTENSION	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	RIF COUT	CLOCKS
2403	ASH002:1715 F/ASH001 ***** * CLEAN COUNT IN D, 6 BITS SR GETS DATA * * FROM FETCINT 6 BIT COUNT IN R(T2) ASSERT * * ASELO1 = 1 TO CLEAR V BIT IN * * PSW * *-----* * P2, D+SR AND MD(D), * * SR+SR AND MD(D), * * P3, R(T2)+D (B ADDR), ASELO1/1, * * DEFER, SET CC, * * NEXT, * * J/ASH003 * --> VV	1715 000000001000 1011 10 11 00 10 110 000 0110 1 00010 011110 11000 111001110	<-- 1377 2402 798						
2404	ASH003:1716 F/ASH002 ***** * ADD TO SR FOR D(C), COUNT SIGN MUST BE * * ASSERTED ACROSS 2 MICROSTATES TO CLEAR V * * BIT *** CHECK SHIFT VALUE = 0 TARGETS * * - * *-----* * P3, MD+4340, * * NEXT, BUTR(D(14-00) IS 0), * * J/ASH004 * --> 01 1015 2405 799 * J/ASHZ00 * --> 11 1017 2407 800 *****	1716 000000001000 0000 10 10 00 11 100 000 0000 0 00010 100000 01101 000001101	<-- VV						
CASE 2405	1 OF BASH003 ASH004:1015 F/ASH003 ***** * 0 - ASH004 1 - ASHZ00 MINUS COUNT FOR * * ASSUMED PLUS VALUE (-) COUNT FOR (+) * * VALUE IN * * R(T2B) * *-----* * P2, D+R(T1A) MINUS R(T2B), * * P3, R(T2B)+D (B ADDR), * * NEXT, * * J/ASH005 * --> 1717 2406 800 *****	1015 000000001000 1101 01 11 11 00 110 000 0100 0 00000 011100 11000 111001111	<-- VV						









BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BASH011						
2415	ASH014:1357	F/ASH011 F/ASH012	<-- <--	1725 2412 802 1221 2413 802			
	***** *(2) ASH017, RIGHT SHIFT ASHC MODE, SET *SR FROM R(SF OR *1) *-----* *NEXT, BUT(ROR1), * J/ASH015						1357 0000 00 00 00 00 000 000 0000 0 00000 000000 10010 111010110
			--> VV				
2416	ASH015:1726	F/ASH014	<-- VV				
	***** * SET SR FROM R(SF OR 1), 0 TO GD *RESLEFTGD OR RESRIGHT 0=POS=LEFT, *1=NEG=RIGHT TARGETS (0) ASH016, LEFT *SHIFT *-----* *P2, SR+R(SF+1) (A), RES+MD, *NEXT, BUTR(D(C)), * J/ASH016						1726 1111 11 10 10 11 000 000 0010 0 00000 010001 10011 001000001
		J/ASH016 J/ASH017	--> -->	01 1101 2417 803 11 1103 2418 804			
.CASE	1 OF BASH013						
2417	ASH016:1101	F/ASH013 F/ASH015	<-- <-- VV	1347 2414 802			
	***** *(2) ASH017, RIGHT SHIFT SR IS LOADED, *NOW LOAD D D(C) SET TO POLARITY OF R(SF) *START, R(T1B) SIGN=D SIGN ELIMINATE ONE *COUNT TARGETS (0) ASHLOO, COUNT > *ONE *-----* *P2, D+R(SF) (A), D(C)+ALU15, *P3, R(T1B)+D (B ADDR), *NEXT, BUT(COUNT IS -1), * J/ASHLOO						1101 1111 00 10 10 11 110 100 0100 0 00000 011100 10101 101001000
		J/ASHLOO J/ASHLO1	--> -->	0 1510 2423 806 1 1511 2424 807			

# M03

PROGRAM FLOWS    11/60 MICROCODE ON 09-Mar-77 BY    ADSYS 020377    PAGE 804

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BASH013						
2418	ASH017:1103	F/ASH013 F/ASH015	<-- <--	1347 2414 802 1726 2416 803			
	*****						
	* (1) ASHL01, COUNT OF ONE SR IS LOADED, *						1103 000000001000
	* NOW LOAD D'D(C) SET TO POLARITY OF *						1111 00 00 10 11 000 100 0100 0
	* R(SF) *						00000 000000 11000 101111100
	*-----*						
	* P2, D+R(SF) (A), D(C)+ALU15, *						
	* NEXT, *						
	* J/ASHR00 * --> VV						
	*****						
.CASE	1 OF BASHR00						
2419	ASHR00:1574	F/ASH017 F/ASHR00 F/ASHR02	<-- <-- <--	1103 2418 804 1574 2419 804 1576 2421 805			
	*****						
	*-----*						
	* ASH, ASHC RIGHT SHIFT, MAJOR LOOP D, SR *						1574 000000001000
	* RIGHT SHIFT 1 FORCE IN SIGN BITS AT D15 *						1111 00 00 01 10 000 100 1110 0
	* BUT(SR01#SR00#COUNT IS -1) TARGETS (0) *						00000 000000 01011 101111100
	* ASHR00, CONTINUE *						
	* SHIFT *						
	*-----*						
	* P3, D+D RIGHT 1 (P3), CLOCKS R (P3), *						
	* D(C)+ALU15, *						
	* NEXT, BUTR(SR00#COUNT IS -1), *						
	* J/ASHR00 * -->			100 1574 2419 804			
	* J/ASHR01 * -->			101 1575 2420 905			
	* J/ASHR02 * -->			110 1576 2421 805			
	* J/ASHR03 * -->			111 1577 2422 806			
	*****						

# N03

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
.CASE	2 OF BASHROO						
2420	ASHRO1: 1575	F/ASHO17 F/ASHROO F/ASHRO2	<-- <-- <--	1103 2418 804 1574 2419 804 1576 2421 805			1575 000000001000 1111 00 01 01 01 000 001 0100 0 00000 001110 00100 100000111
	***** *(1) ASHRO1, ASHC, CARRY=0 (2) ASHRO2, *CONTINUE SHIFT (3) ASHRO3, ASHC *CARRY=1 FOR D(C)+PS(C) SET D(C)=0 FOR *CARRY SAVE D IN R(SF) *BUT(IR(09-06)),,,,ASH OR ASHC TARGETS *(0) ASHEXOO. *ASH *-----* *P2, D+D,D(C)+PS(C) *P3, R(SF)+D (B ADDR), *NEXT, BUTR(IR(09)), * J/ASHEXOO * J/ASHEXOO * J/ASHEXO1 *****						
.CASE	3 OF BASHROO						
2421	ASHRO2: 1576	F/ASHO17 F/ASHROO F/ASHRO2	<-- <-- <--	1103 2418 804 1574 2419 804 1576 2421 805			1576 000000001000 1111 00 00 01 10 000 100 1110 0 00000 000000 01011 101111100
	***** *(10) ASHEXO1, ASHC, (OCTAL) D RIGHT *SHIFT 1 SR RIGHT SHIFT 1 FORCE IN SIGN *BITS AT DIS BUT(SRO1#SROO#COUNT .S -1) *TARGETS (0) ASHROO, CONTINUE *SHIFT *-----* *P3, D+D RIGHT 1 (P3),CLOCKSR (P3), * D(C)+ALUIS *NEXT, BUTR(SROO#COUNT IS -1), * J/ASHROO * J/ASHROO * J/ASHRO1 * J/ASHRO2 * J/ASHRO3 *****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION		
.CASE	4 OF BASHR00	OFST ADDR BOX PAGE	COORD CARD	BLS	SP	UBF	UPF	RIF COUT CLOCKS		
2422	ASHR03:1577	F/ASH017 F/ASHR00 F/ASHR02	<-- <-- <--	1103 1574 1576	2418 2419 2421	804 804 805				
	*****							1577	000000001000	
	*(1) ASHR01, SHIFT OVER, ASHC, CARRY=0							1111	00 01 01 01 000 000 0100 0	
	*(2) ASHR02, CONTINUE SHIFT (3) ASHR03,							00000	001110 00100 100000111	
	*SHIFT OVER, ASHC, CARRY=1 FOR									
	*D(C)+CIN SET D(C)=1 FOR CARRY SAVE D IN									
	*R(SF) BUT(IR(09-06)),,,,ASH OR ASHC									
	*TARGETS (0) ASHEX00,									
	*ASH									
	-----									
	*P2,	D+D, D(C)+CIN,								
	*P3,	R(SF)+D (B ADDR),								
	*NEXT,	BUTR(IR(09)),								
	*	J/ASHEX00	-->	0111	1407	2426	807			
	*	J/ASHEX01	-->	1111	1417	2427	808			
	*****									
.CASE	1 OF BASH016	F/ASH016 F/ASHL00	<-- <--	1101 1510	2417 2423	803 806				
2423	ASHL00:1510	*****							1510	000000001000
	*(10) ASHEX01, ASHC,,, (OCTAL)							1111	01 10 01 00 110 100 0110 1	
	=====							00000	010100 10101 101001000	
	*LEFT SHIFT, ASH, ASHC, D(C) FOR NEXT									
	*CARRY, SIGN OF SHIFTED D LEFT SHIFT SR									
	*R(T1B) TO BBUS, BEN/BSPHI									
	*BSEL/IMMED0, RIF/2 BEN/BSPHI									
	*BSEL/IMMED0, RIF/2 V+NOT UASEL01 AND									
	*[(DIS XOR BSIGN) OR PS(V)] TARGETS (0)									
	*ASHL00, CONTINUE									
	*SHIFT									
	-----									
	*P2,	D+D LEFT 1, D(C)+ALU15,								
	*	SHIFT SR, R(T1B)								
	*P3,	R(T1B)+D (A ADDR),								
	*DEFER,	SET CC,								
	*NEXT,	BUT(COUNT IS -1),								
	*	J/ASHL00	-->	0	1510	2423	806			
	*	J/ASHL01	-->	1	1511	2424	807			
	*****									

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS UPF
.CASE	2 OF BASH016						
2424	ASH1 01:1511	F/ASH016 F/ASHL00	<-- <--	1101 2417 807 1510 2423 806			
	*****						
	* (1) ASHL01, ONE LAST SHIFT LAST LEFT *						000000001000
	* SHIFT SAVE CARRY LEFT SHIFT SR R(T1B) TO *						1111 01 10 01 00 110 111 0110 1
	* BBUS ENABLE SET *						00000 000000 11000 111010111
	* OVERFLOW *						
	-----*						
	* P2, D+D LEFT 1, D(C)+D(C), SHIFT SR, *						
	* R(T1B), *						
	* DEFER, SET CC, *						
	* NEXT, *						
	* J/ASHL02 *		--> VV				
	*****						
2425	ASHL02:1727	F/ASHL01	<-- VV				
	*****						
	* SAVE D IN R(SF) MAINTAIN ASELO1 ACROSS *						000000001000
	* TWO *						0000 00 01 00 00 000 000 0000 0
	* STATES *						00000 001110 11000 100001111
	-----*						
	* P3, R(SF)+D (B ADDR), ASELO1/0, *						
	* NEXT, *						
	* J/ASHEX01 *		-->	1417 2427 808			
	*****						
.CASE	1 OF BASHR01						
2426	ASHEX00:1407	F/ASHR01 F/ASHR03	<-- <--	1575 2420 805 1577 2422 806			
	*****						
	-----*						
	* ASH. SR15 CONTAINS CARRY ASH, GET *						000000001000
	* CARRY *						1111 00 00 00 00 000 100 0100 0
	-----*						00000 000000 11000 100001111
	* P2, D+SR, D(C)+ALU15, *						
	* NEXT, *						
	* J/ASHEX01 *		-->	1417 2427 808			
	*****						

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION
.CASE		JFST ADDR BOX PAGE	COORD CARD		BUS	SP	UBF	RIF COUT CLOCKS
								UPF
2427	ASHEX01:1417	F/ASHR01 F/ASHR03	<-- <--	1575 2420 805 1577 2422 806				
	***** * SAVE MOST SIGNIF WORD IN R(T1) RETAIN * *D(C) SAVE FOR SIGN, CARRY * *BUT(IR(09-06)),,,,ASH OR ASHC TARGETS * *(0) ASHPREXIT, * *ASH * *-----* *P2, D+R(SF) (A) D(C)+D(C), * *P3, R(T1)+D (B ADDR), * *NEXT, BUTR(IR(09)), * * J/ASHPREXIT * * J/ASHPREXIT * --> 0111 1267 2434 810 * J/ASHEX02 * --> 1111 1277 2428 808 *****			1417				000000001000 1111 00 10 10 11 110 111 0100 0 00000 011110 00100 010110111
.CASE	2 OF BASHEX01							
2428	ASHEX02:1277	F/ASHEX01 F/ASHEX04 F/ASHEX05 F/ASHEX06 F/ASHEX07	<-- <-- <-- <-- <--	1417 2427 808 1150 2430 809 1151 2431 809 1152 2432 810 1153 2433 810				
	***** *(10) ASHEX02, ASHC, (OCTAL) ASHC, D * *STORED IN R(T1) PRESERVE D(C) CARRY NEXT * *MICRO SF=SF OR * *1 * *-----* *P2, D+SR D(C)+D(C), * *NEXT, BUT(ROR1), * * J/ASHEX03 * --> 1730 2429 809 *****			1277				000000001000 1111 00 00 00 00 000 111 0100 0 00000 000000 10010 111011000

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION	MICROFICHE	ADDR	ALU	BUSB	BUSA	EXTENSION	
		OFST ADDR BOX PAGE	COORD CARD	BUS	BUS SP	UBF	UPF	RIF COUT CLOCKS	
2429	ASHEX03:1730	F/ASHEX02	<--	1277	2428	808			
	*****							1730	000000001000
	* SR IN R(SF OR 1), OK IF R ODD CHECK IF								0000 00 00 00 11 000 000 0000 0
	*SR=0 TARGETS (0) ASHEX04, SR NOT								00000 000110 01101 001101000
	*0								
	-----								
	*P3, R(SF+1)+D (A ADDR),								
	*NEXT, BUT(D(14-00) IS 0 & D15),								
	* J/ASHEX04		-->	00	1150	2430	809		
	* J/ASHEX05		-->	01	1151	2431	809		
	* J/ASHEX06		-->	10	1152	2432	810		
	* J/ASHEX07		-->	11	1153	2433	810		
	*****								
CASE 2430	1 OF BASHEX03	F/ASHEX03	<-- VV						
	ASHEX04:1150							1150 000000001000	
	*****								
	*(1) ASHEX05, SR NOT 0 (2) ASHEX06, SR=0,								1110 11 00 11 00 110 111 0100 0
	*TEST IF D=0 (3) ASHEX07, SR NOT 0 SR								00000 010110 11000 010110111
	*NOT 0, PRESERVE SIGN OF D PRESERVE D(C)								
	*CARRY ASH PRE								
	*EXIT								
	-----								
	*P2, D+R(T1A) OR 1, D(C)+D(C),								
	*P3, R(T1)+D (A ADDR),		-->	1267	2434	810			
	* J/ASHPREXIT								
	*****								
CASE 2431	2 OF BASHEX03	F/ASHEX03	<--	1730	2429	809			
	ASHEX05:1151							1151 000000001000	
	*****								
	* SR NOT 0, PRESERVE SIGN OF D PRESERVE								1110 11 00 11 00 110 111 0100 0
	*D(C) CARRY ASH PRE								00000 010110 11000 010110111
	*EXIT								
	-----								
	*P2, D+R(T1A) OR 1, D(C)+D(C),								
	*P3, R(T1)+D (A ADDR),		-->	1267	2434	810			
	* J/ASHPREXIT								
	*****								



BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA R1F COUT UBF	EXTENSION R1F COUT CLOCKS UFF
.CASE 2432	3 OF BASHEX03	F/ASHEX03	<--	1730 2429 809			
	ASHEX06:1152						1152 000000001000
	* SR=0, TEST D FOR N, Z PRESERVE D(C)						1111 00 00 11 00 110 111 0100 0
	* CARRY ASH PRE						00000 010110 11000 010110111
	* EXIT						
	-----						
	* P2, D+R(T1A) D(C)+D(C),						
	* P3, R(T1)+D (A ADDR),						
	* J/ASHPREXIT	-->	1267 2434 810				
	*****						
.CASE 2433	4 OF BASHEX03	F/ASHEX03	<--	1730 2429 809			
	ASHEX07:1153						1153 000000001000
	* SR NOT 0, PRESERVE SIGN OF D PRESERVE						1110 11 00 11 00 110 111 0100 0
	* D(C) CARRY ASH PRE						00000 010110 11000 010110111
	* EXIT						
	-----						
	* P2, D+R(T1A) OR 1, D(C)+D(C),						
	* P3, R(T1)+D (A ADDR),						
	* J/ASHPREXIT	--> VV					
	*****						
.CASE 2434	1 OF BASHEX01	F/ASHEX01	<--	1417 2427 808			
		F/ASHEX04	<--	1150 2430 809			
		F/ASHEX05	<--	1151 2431 809			
		F/ASHEX06	<--	1152 2432 810			
		F/ASHEX07	<-- VV				
	ASHPREXIT:1267						1267 000000001000
	* SELECT NOT UASEL01, OBTAIN DIS=BSIGN						1010 01 10 00 00 110 111 0100 1
	* RETAIN CARRY RETAIN OVERFLOW (IF SET)						00000 011110 11010 111011010
	* V+NOT UASEL01 AND [(DIS XOR BSIGN) OR						
	* PS(V)]Y						
-----							
* P2, D+R(T1B) D(C)+D(C), ASELO1/0,							
* P3, R(T1)+D (B ADDR),							
* DEFER. SET CC,							
* NEXT, BUTR(RESET RES),							
* J/ASHEXIT	-->	1732 2435 811					
*****							

BOX NO.	TAG: ADDRESS	SOURCE/DESTINATION OFST ADDR BOX PAGE	MICROFICHE COORD CARD	ADDR ALU BUS	BUSB SP	BUSA UBF	EXTENSION RIF COUT CLOCKS
2435	ASHEXIT:1732	F/ASHPREXIT	<-- 1267 2434 6:0	1732			000000001000
	*****			1111 00 00	11 00	110 000	0010 0
	* A AEN/ASPHI,ASEL/IMMEDO RIF/2, NOT			00000 000000	11100	000000011	
	*UASELO1 (ASEL/O) RETAIN ASELO1/O ACROSS						
	*2 MICROSTATES GO TO						
	*FETO1						
	-----						
	*P2, SR+R(T1A),ASELO1/O,						
	*NEXT, BUT(GO TO),PAGE+0,						
	* J/BRAOS		--> 3 283 126				
	*****						
	BRANCHING-BUT USED WITH TAG NOT IDENTIFIED AS .CASE		-- BOX 487				
	BRANCHING-BUT USED WITH TAG NOT IDENTIFIED AS .CASE		-- BOX 1297				
	***** 2 ERRORS DETECTED *****						

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BOX NO. MICROWORD LBL ADDRESS

1387	ABSNZW	2656
1388	ABSNZW2	2126
1389	ABSNZW3	2130
1368	ABSZW	3456
1369	ABSZW2	3235
1370	ABSZW3	3237
1371	ABSZW4	3664
123	ADC01	555
159	ADC03	435
141	ADC01	575
175	ADC02	535
78	ADD01	446
89	ADD02	626
99	ADD03	726
110	ADD04	406
1611	ADD001	4523
1612	ADD002	4264
1613	ADD003	4266
1614	ADD004	4270
1581	ADD0FEZ	4416
1615	ADD0F01	4522
1616	ADD0F02	4271
1617	ADD0F03	4274
1618	ADD0F04	4327
1247	ADD0NZ	251
1566	ADD0NZW	351
1582	ADD0SDFEZ	4417
1580	ADD0SFEZ	4415
1603	ADD0SHDF	4265
1607	ADD0SHDFD	4413
1608	ADD0SHDFD1	4130
1604	ADD0SHDFDFF	4412
1605	ADD0SHDFDFF1	4100
1606	ADD0SHDFDFF2	4101
1596	ADD0SHFSF	4267
1600	ADD0SHFSFD	4307
1601	ADD0SHFSFD1	4060
1597	ADD0SHFSFF	4306

H04

1598	ADDSHFSFF1	4010
1599	ADDSHFSFF2	4011
1570	ADDW01	4232
1571	ADDW02	4234
1572	ADDW03	4414
1573	ADDW04	4235
1574	ADDW05	4240
1575	ADDW06	4241
1576	ADDW07	4244
1577	ADDW08	4245
1588	ADDW09	4053
1589	ADDW10	4052

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BOX NO.      MICROWORD LBL      ADDRESS

1590	ADDW11	4255
1594	ADDW12	4512
1595	ADDW12B	4260
1609	ADDW20	4131
1602	ADDW20A	4061
1610	ADDW21	4262
1246	ADDZ	250
1565	ADDZW	350
1390	ANWRTBAK	2261
1399	ANWRTBAK10	2123
1400	ANWRTBAK11	2146
1391	ANWRTBAK2	2263
1392	ANWRTBAK3	2131
1393	ANWRTBAK4	2121
1394	ANWRTBAK5	2102
1395	ANWRTBAK6	2103
1396	ANWRTBAK7	2134
1397	ANWRTBAK8	2135
1398	ANWRTBAK9	2144
2402	ASH001	1377
2403	ASH002	1715
2404	ASH003	1716
2405	ASH004	1015
2406	ASH005	1717
2409	ASH006	1722
2410	ASH007	1223
2411	ASH010	1724
2412	ASH011	1725
2413	ASH012	1221
2414	ASH013	1347
2415	ASH014	1357
2416	ASH015	1726
2417	ASH016	1101
2418	ASH017	1103
2426	ASHEX00	1407
2427	ASHEX01	1417
2428	ASHEX02	1277
2429	ASHEX03	1730
2430	ASHEX04	1150
2431	ASHEX05	1151
2432	ASHEX06	1152
2433	ASHEX07	1153
2423	ASHL00	1510
2424	ASHL01	1511
2425	ASHL02	1727
2419	ASHR00	1574
2420	ASHR01	1575
2421	ASHR02	1576
2422	ASHR03	1577
2407	ASHZ00	1017

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BOX NO.	MICROWORD LBL	ADDRESS
2408	ASHZ01	1720
134	ASL01	543
168	ASL03	423
152	ASLB01	563
187	ASLB02	523
130	ASR01	542
131	ASR02	75
132	ASR03	16
133	ASR04	17
164	ASR05	422
165	ASR06	420
166	ASR07	116
167	ASR08	117
148	ASRB01	562
149	ASRB02	104
150	ASRB03	36
151	ASRB04	37
180	ASRB05	522
181	ASRB06	115
182	ASRB07	112
183	ASRB08	120
184	ASRB09	113
185	ASRB10	121
186	ASRB11	520
914	BASINIT01	3557
915	BASINIT02	3524
916	BASINIT03	3525
76	BIC01	444
87	BIC02	624
97	BIC03	724
108	BIC04	404
82	BICB01	454
93	BICB02	634
104	BICB03	734
115	BICB04	414
1592	BIGEXDFGSF	4227
1591	BIGEXP0IF	4513
1593	BIGEXPEND	4225
77	BIS01	445
88	BIS02	625
98	BIS03	725
109	BIS04	405
83	BISB01	455
94	BISB02	635
105	BISB03	735
116	BISB04	415
75	BIT01	443
86	BIT02	623
96	BIT03	723
107	BIT04	403

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BOX NO.      MICROWORD LBL      ADDRESS

81	BITB01	453
92	BITB02	633
103	BITB03	733
114	BITB04	413
1110	BOOT	1143
452	BOOT01	1112
453	BOOT02	1114
454	BOOT03	1115
455	BOOT03A	1116
456	BOOT04	1653
457	BOOT05	1120
349	BPT01	63
279	BRA01	757
280	BRA02	2
282	BRA03	7
281	BRA04	6
283	BRA05	3
284	BRA06	210
253	BYTE01	32
254	BYTE02	33
912	CAINIT01	3217
913	CAINIT02	3211
831	CAREAD01	3661
832	CAREAD02	3415
829	CAWRT01	3660
830	CAWRT02	3414
910	CCRINIT	3157
2000	CDIS	4617
1326	CFCC	220
117	CLR01	550
153	CLR02	430
135	CLRB01	570
169	CLRB02	530
1366	CLRDZW	3227
1365	CLRFZW	3226
1375	CLRNZW	2654
1376	CLRNZW2	2114
1377	CLRNZW3	2115
1378	CLRNZW4	545
1379	CLRNZW5	2120
1364	CLRZW	3454
1261	CMP	257
74	CMP01	442
84	CMP02	622
85	CMP03	35
95	CMP04	722
106	CMP05	402
80	CMPB01	452
91	CMPB02	632
102	CMPB03	732

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BOX NO.      MICROWORD LBL      ADDRESS

113	CMPB04	412
1656	CMPW	357
1665	CMPW10	4350
1666	CMPW11	4352
1667	CMPW12	4354
1668	CMPW13	4356
1669	CMPW14	4360
1657	CMPW2	4334
1658	CMPW3	4335
1659	CMPW4	4340
1660	CMPW5	4342
1661	CMPW6	4344
1662	CMPW7	4056
1663	CMPW8	4057
1664	CMPW9	4345
1678	CMPWEQUAL	2416
1679	CMPWEQUAL2	2420
118	COM01	551
154	COM03	431
136	COMB01	571
170	COMB02	531
382	CON99	1040
383	CON99B	1000
384	CON99C	1004
438	CONDIAG01	3613
459	CONDIAG02	3021
460	CONDIAG03	3575
461	CONDIAG04	3577
462	CONDIAG05	3022
463	CONDIAG06	3023
464	CONDIAG07	3025
465	CONDIAG08	3026
466	CONDIAG09	3027
467	CONDIAG10	3503
468	CONDIAG11	3500
469	CONDIAG12	3501
470	CONDIAG13	3036
471	CONDIAG14	3042
472	CONDIAG15	4150
474	CONDIAG16	3502
473	CONDIAG16A	3043
1975	CONVTRAP	4543
545	CSPE01	1321
980	CSR01	1664
981	CSR04	1263
982	CSR05	1264
986	CSR06	1271
983	CSR06A	1265
984	CSR06B	1266
985	CSR06C	1270

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BOX NO.      MICROWORD LBL      ADDRESS

987	CSR06D	1272
988	CSR06E	1273
990	CSR07	1275
991	CSR08	1003
992	CSR09	1276
993	CSR10	1300
989	CSR12	1274
1255	CTANNZ	243
1256	CTANNZ2	336
1257	CTANNZ3	337
1258	CTANNZ4	2110
1373	CTANNZM	343
1374	CTANNZM2	2112
1254	CTANZ	242
1360	CTANZM	342
1361	CTANZM2	122
1362	CTANZM3	123
1363	CTANZM3B	3663
1976	CTRAP2	4551
2196	DATAPREP	2571
120	DECO1	553
156	DECO3	433
138	DECB01	573
172	DECB02	533
1083	DEP01	1131
1084	DEP02	1430
1085	DEP03	1052
1086	DEP04	1432
1087	DEP05	1434
1088	DEP06	1053
1091	DEP07	1437
1089	DEP07A	1435
1090	DEP07B	1436
1092	DEP08	1440
1701	DFRAC	3675
1710	DFRAC10	3233
1711	DFRAC11	3706
1712	DFRAC12	3707
1713	DFRAC13	3710
1714	DFRAC14	3712
1715	DFRAC15	3714
1716	DFRAC16	3432
1717	DFRAC17	3433
1718	DFRAC18	2427
1702	DFRAC2	3676
1703	DFRAC3	3700
1704	DFRAC4	3701
1705	DFRAC5	3702
1706	DFRAC6	3703
1707	DFRAC7	3704



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BOX NO.      MICROWORD LBL      ADDRESS

1708	DFRAC8	3705
1709	DFRAC9	3232
1724	DFRAC00	2324
1725	DFRAC002	2553
1726	DFRAC003	2432
1727	DFRAC004	2562
1728	DFRAC005	2434
1719	DFRACSUB	2325
1720	DFRACSUB2	2373
1721	DFRACSUB3	2430
1722	DFRACSUB4	2372
1723	DFRACSUB5	2431
1104	DIAG01	1141
1105	DIAG02	1454
1106	DIAG03	1456
1107	DIAG04	1512
1108	DIAG05	1513
1583	DIFDFGSF	4647
1579	DIFP	4333
1585	DIFSFGOF	4646
1054	DIS01	1161
1056	DIS02	1375
1057	DIS03	1376
1055	DIS04	1374
1058	DIS06	1400
1989	DIS08	4515
485	DISP01	1134
486	DISP02	1001
487	DISP03	1211
488	DISP04	1213
489	DISP05	1136
2334	DIV01	1617
2335	DIV01B	1630
2336	DIV02	1631
2337	DIV03	1632
2338	DIV04	1633
2339	DIV05	1540
2340	DIV06	1541
2341	DIV07	1542
2342	DIV08	1543
2343	DIV09	1545
2344	DIV10	1547
2345	DIV11	1561
2346	DIV12	1563
2347	DIV13	1634
2348	DIV14	1635
2349	DIV15	1565
2350	DIV16	1567
2351	DIV17	1640
2352	DIV18	1570

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BOX NO.      MICROWORD LBL      ADDRESS

2353	DIV19	1571
2354	DIV20	1641
2355	DIV21	1521
2356	DIV22	1523
2357	DIV23	1644
2358	DIV24	1525
2359	DIV25	1527
2360	DIV26	1645
2361	DIV27	1650
2362	DIV28	1530
2363	DIV29	1531
2364	DIV30	1532
2365	DIV31	1533
2366	DIV32	1572
2367	DIV33	1652
2368	DIV34	1535
2369	DIV35	1537
2370	DIV36	1654
2371	DIV37	1573
2372	DIV38	1656
2373	DIV39	647
1693	DIVFDW10	3671
1694	DIVFDW11	3672
1695	DIVFDW12	3673
1696	DIVFDW13	3674
1697	DIVFDW14	2326
1698	DIVFDW15	2327
1699	DIVFDW16	2425
1700	DIVFDW17	2426
1685	DIVFDW2	546
1686	DIVFDW3	547
1687	DIVFDW4	2422
1688	DIVFDW5	2424
1689	DIVFDW6	2354
1690	DIVFDW7	2355
1691	DIVFDW8	2356
1692	DIVFDW9	2357
1284	DIVNZ	263
1684	DIVNZW	363
1283	DIVZ	262
1683	DIVZW	362
2206	DPREP10	2610
2207	DPREP11	2611
2208	DPREP12	2612
2209	DPREP13	2614
2210	DPREP14	2615
2211	DPREP15	2616
2212	DPREP16	2620
2197	DPREP2	2572
2198	DPREP28	2574

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BOX NO.      MICROWORD LBL      ADDRESS

2199	DPREP3	2575
2200	DPREP4	2600
2201	DPREPS	2601
2202	DPREP6	2602
2203	DPREP7	2604
2204	DPREP8	2605
2205	DPREP9	2606
1041	DSR01	1163
1043	DSR02	1361
1042	DSR02A	1360
1044	DSR03	1352
39	DST01	511
40	DST02	512
41	DST03	513
42	DST04	514
43	DST05	515
44	DST06	516
45	DST07	517
53	DST08	11
54	DST09	14
46	DST11	741
47	DST12	742
48	DST13	743
49	DST14	744
50	DST15	745
51	DST16	746
52	DST17	747
57	DST19	526
58	DST20	527
55	DST21	524
56	DST22	525
71	DST23	34
66	DST24	31
72	DST25	642
73	DST26	643
67	DST27	762
68	DST28	763
59	DST29	15
60	DST30	20
61	DST35	22
62	DST36	24
63	DST38	645
64	DST39	25
65	DST40	30
69	DST41	400
70	DST42	410
2329	DTOFCC1	2731
2330	DTOFCC2	2732
2331	EIS01	42
2332	EIS02	1627

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO. MICROWORD LBL ADDRESS

351	EMT01	55
519	EOE01	1433
520	EOE02	1204
521	EOE03	1206
1113	E0S01	1462
1114	E0S02	1463
1115	E0S03	1464
1116	E0S03A	1465
1118	E0S04	1472
1119	E0S04A	1471
1120	E0S04B	1611
1121	E0S04C	1613
1122	E0S05	1473
1123	E0S06	1474
1124	E0S07	1006
1125	E0S07A	1007
1126	E0S08	1475
1127	E0S09	1500
1128	E0S10	1502
1129	E0S11	1504
1130	E0S12	1062
1131	E0S13	1063
1111	E0S1A	1460
1112	E0S1B	1461
1117	E0S3B	1470
558	ETRP01	1244
559	ETRP02	1245
560	ETRP03	1246
561	ETRP04	1247
562	ETRP05	1250
563	ETRP06	1252
1059	EXM01	1137
1060	EXM02	1401
1061	EXM03	1042
1062	EXM04	1402
1063	EXM05	1403
1065	EXM06	1043
1066	EXM07	1405
1064	EXM07A	1404
1067	EXM08	1406
1068	EXM09	1410
1069	EXM10	1411
2213	EXPTST	2621
2214	EXPTST2	2622
2215	EXPTST3	2624
2216	EXPTST4	2625
2217	EXPTST5	2541
2218	EXPTST6	2543
1192	F1STX1	41
2325	FCCHEX0	2030

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

2326	FCCHX1	203
2327	FCCHX2	2032
2328	FCCHX3	2033
2219	FD-TOGGLE	1623
2067	FDMOFLT	4351
2068	FDMOFLT2	4563
2069	FDMOFLT3	4655
2070	FDMOFLT4	4562
2011	FDMOINT	2050
2012	FDM1INT	2051
2013	FDM2INT	2052
2014	FDM3INT	2053
2015	FDM4INT	2054
2016	FDM5INT	2055
2146	FDM67FLT	4363
2147	FDM67FLT2	4652
2148	FDM67FLT3	4653
2017	FDM6INT	2056
2018	FDM7INT	2057
1634	FDST2SC	4311
1636	FDST2SCD1	4527
1637	FDST2SCD2	4315
1638	FDST2SCD3	4320
1635	FDST2SCF1	4314
1639	FDST2SCF2	4526
1640	FDST2SCF3	4321
2220	FDTGL2	1624
2221	FDTGL3	1625
2222	FDTGL4	1626
1	FETO1	702
1316	FETO1F	4722
1315	FETO1F2	4233
2	FETO2	1
3	FETO3	700
2033	FETCH	2171
2034	FETCH2	2564
2035	FETCH3	2565
2039	FETCHFLT	4614
2060	FETCHFLT2	4651
2009	FETCHINT	2550
2043	FETCHINTLG	4624
2097	FFLT1	4203
2106	FFLT10	4704
2107	FFLT11	4705
2108	FFLT12	4242
2109	FFLT13	4706
2110	FFLT14	4710
2111	FFLT15	4316
2112	FFLT16	4243
2113	FFLT17	4276

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

2114	FFLT18	4277
2098	FFLT2	4701
2099	FFLT3	4066
2100	FFLT4	4702
2101	FFLT5	4552
2102	FFLT6	4553
2103	FFLT7	4067
2104	FFLT8	4102
2105	FFLT9	4103
2040	FFLTDEFER	4616
2162	FFLTIM1	4463
2163	FFLTIM2	4272
2164	FFLTIM3	4273
2165	FFLTIM4	4737
2166	FFLTIM5	4302
2167	FFLTIM6	4303
2168	FFLTIM7	4740
2096	FFLTSYNC	4201
2144	FFLTSYNC2	4361
2161	FFLTSYNC3	4461
890	FGI01	3117
891	FGI02	3511
892	FGI03	3513
893	FGI04	3474
1962	FINISH	2542
1963	FINISH2	3734
1964	FINISH3	3735
1965	FINISH4	3740
1966	FINISH5	3551
1967	FINISH6	3553
1968	FINISH7	3555
2044	FINTLG2	4663
2045	FINTLG3	4667
2046	FINTLG4	4625
2047	FINTLG5	4620
1191	FIS01	43
564	FLG01	1254
565	FLG02	1255
566	FLG03	1256
567	FLG04	1257
569	FLGC01	1261
570	FLGC02	1262
568	FLGS01	1260
2006	FLTPTRAP	4025
2007	FLTPTRAP2	4612
2176	FPPABORT1	4211
2185	FPPABORT10	4741
2186	FPPABORT11	4742
2177	FPPABORT2	4213
2178	FPPABORT3	4215

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

2179	FPPABORT4	4371
2180	FPPABORT5	4373
2181	FPPABORT6	4375
2182	FPPABORT7	4471
2183	FPPABORT8	4473
2184	FPPABORT9	4475
1331	FPPMAINT1	224
1332	FPPMAINT2	225
1334	FPPMAINT3	227
2151	FS2DMOFLT	4170
2152	FS2DM1FLT	4171
2153	FS2DM2FLT	4172
2154	FS2DM3FLT	4173
2155	FS2DM4FLT	4174
2156	FS2DM4FLT2	4735
2157	FS2DM4FLT3	4736
2158	FS2DM5FLT	4175
2159	FS2DM6FLT	4176
2160	FS2DM7FLT	4177
2062	FSDMOFLT	4160
2063	FSDMOFLT2	4606
2064	FSDMOFLT3	4347
2065	FSDMOFLT4	4346
2066	FSDMOFLT5	4607
2075	FSDM1FLT	4161
2076	FSDM2FLT	4162
2077	FSDM3FLT	4163
2078	FSDM3FLT2	4661
2079	FSDM3FLT3	4662
2027	FSDM3INT	2554
2028	FSDM3INT2	2555
2080	FSDM4FLT	4164
2081	FSDM4FLT2	4664
2082	FSDM4FLT3	4246
2083	FSDM4FLT4	4247
2084	FSDM5FLT	4165
2085	FSDM5FLT2	4665
2086	FSDM5FLT3	4666
2087	FSDM5FLT4	4670
2029	FSDM5INT	2560
2088	FSDM6FLT	4166
2089	FSDM6FLT2	4671
2090	FSDM6FLT3	4336
2030	FSDM6INT	2561
2031	FSDM6INT2	2336
2091	FSDM7FLT	4167
2092	FSDM7FLT2	4337
2093	FSDM7FLT3	4674
2094	FSDM7FLT4	4675
2095	FSDM7FLT5	4700

## H05

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
2032	FSDM7INT	2337
345	HALT01	74
346	HALT02	132
347	HALT03	133
1235	HFORK	475
1236	HFORKNVALD	477
868	HFPINIT	3017
1301	HFPSPVC	1663
1302	HFPSPVC2	1610
1303	HFPSPVC3	4202
1304	HFPSPVC4	4204
1305	HFPSPVC5	4206
1306	HFPSPVC6	4210
1307	HFPSPVC7	4626
1308	HFPSTRAP	4627
1309	HFPSTRAP2	4231
1310	HFPSTRAP3	4212
1311	HFPSTRAP4	4214
1312	HFPSTRAP5	4216
1313	HFPSTRAP6	4220
1314	HFPSTRAP7	4222
1029	HLT01	1032
1030	HLT02	1344
1031	HLT03	1345
1032	HLT04	1346
1034	HLT05	1351
1033	HLT05A	1350
1996	HOTDIS	4447
1292	HOTDMOSYNC	165
1297	HOTSYNC	4565
1298	HOTSYNC2	4567
1299	HOTSYNC3	4575
1300	HOTSYNC4	4577
1293	HTDMOSYNC2	167
1294	HTDMOSYNC3	175
1295	HTDMOSYNC4	177
1296	HTDMOSYNC5	457
584	IA01	1055
585	IA05	2035
586	IA06	2145



## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

610	IA07	3120
611	IA08	3122
612	IA09	3123
613	IA10	3121
598	IA100	3055
599	IA101	3056
600	IA102	3057
601	IA103	3062
614	IA11	3130
681	IA110	3221
682	IA111	3225
683	IA112A	3231
685	IA113	3242
684	IA113B	3236
691	IA114	3263
686	IA114B	3244
687	IA114C	3246
688	IA114D	3250
689	IA114E	3251
690	IA114F	3262
692	IA115	3411
693	IA115A	3264
696	IA115C	3273
694	IA115D	3266
695	IA115E	3272
697	IA116	3413
615	IA12	3132
616	IA13	3133
617	IA14	3131
679	IA15	3100
618	IA16	3000
619	IA17	3002
620	IA18	3003
621	IA19	3001
622	IA20	3010
587	IA207	2346
588	IA207A	2040
589	IA207B	2351
590	IA207C	2353
591	IA208	2041
592	IA209	2044
640	IA21	3030
593	IA210	2045
594	IA211	2046
595	IA212	2047
597	IA213	2065
596	IA213A	2064
603	IA216	3065
604	IA217	3066
606	IA218	3072

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

605	IA218A	3067
607	IA219	3102
642	IA22	3031
608	IA220	2147
609	IA221	2347
641	IA22A	3032
643	IA24	3146
645	IA25	3152
644	IA25A	3147
646	IA26	3154
648	IA27	3156
647	IA27A	3155
649	IA28	3162
650	IA29	3165
651	IA30	3167
652	IA31	3245
653	IA32	3247
654	IA33	3033
655	IA34	3134
656	IA34A	3163
657	IA34C	3164
658	IA34D	3166
659	IA34E	3172
660	IA34F	3173
661	IA34G	3174
662	IA38	3135
663	IA38A	3176
664	IA38C	3531
665	IA38D	3533
666	IA38E	3201
667	IA38G	3202
668	IA39	3040
669	IA39B	3203
670	IA39C	3206
671	IA39D	3212
672	IA40	3041
673	IA41	3050
674	IA41B	3215
602	IA50A	3063
626	IA60	3070
627	IA60A	3103
628	IA60B	3106
632	IA60D	3476
630	IA60E	3477
629	IA60F	3107
631	IA60H	3112
633	IA65	3104
634	IA66A	3113
635	IA67	3126
636	IA68	3127

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

637	IA69	3521
638	IA70	3523
625	IA76	3015
639	IA78	3105
675	IA85	3051
676	IA86	3060
677	IA87	3061
678	IA87A	3216
680	IA89	3101
624	IA90	3014
623	IA99	3011
541	IIA10	1226
542	IIA11	1227
543	IIA12	1230
544	IIA13	1203
533	IIA01	1325
534	IIA02	1220
535	IIA03	1201
537	IIA04	1173
536	IIA05	1172
538	IIA06	1222
539	IIA07	1224
540	IIA08	1225
352	ILLO1	650
1321	ILLEGAL1	313
1322	ILLEGAL2	315
1323	ILLEGAL3	317
1344	ILLEIGHT	237
1341	ILLFIVE	234
1340	ILLFOUR	233
1343	ILLSEVEN	236
1342	ILLSIX	235
1335	ILLTHREE	230
1333	ILLTWO	226
119	INCO1	552
155	INCO3	432
137	INCB01	572
171	INCB02	532
834	INIT00	3420
835	INIT01	3412
836	INIT02	3421
837	INIT03	3422
838	INIT04	3016
839	INIT05	3423
840	INIT06	3076
841	INIT07	3424
842	INIT08	3116
843	INIT09	3425
844	INIT10	3136
845	INIT11	3035

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
846	INIT12	3153
847	INIT13	3426
848	INIT14	3427
849	INIT15	3175
850	INIT16	3213
852	INIT17	3527
851	INIT17A	3430
853	INIT18	3431
854	INIT19	3547
855	INIT20	3434
856	INIT21	3327
857	INIT22	3435
860	INIT23	3442
858	INIT23A	3440
859	INIT23B	3441
861	INIT24	3256
862	INIT25	3275
863	INIT26	3313
864	INIT27	3347
865	INIT28	3443
866	INIT29	3667
867	INIT30	3677
1078	INT01	1133
1079	INT02	1422
1080	INT03	1424
1081	INT04	1425
1082	INT05	1426
389	INTRO1	23
390	INTRO1A	323
391	INTRO2	324
392	INTRO3	325
393	INTRO4	125
348	IOTO1	64
402	JAM01	777
403	JAM01A	1020
404	JAM01B	1024
405	JAM02	1025
406	JAM02A	1036
407	JAM02C	1030
408	JAM02D	1031
409	JAM02E	1034
410	JAM03	1037
411	JAM04	3007
412	JAM05	1057
420	JAM06	1431
421	JAM07	1044
422	JAM08	1045
423	JAM09	1050
424	JAM10	1051
425	JAM11	1054

## M05

11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
416	JAM15	1205
417	JAM16	1207
418	JAM17	1035
419	JAM18	1041
415	JAM25	3013
414	JAM27	3012
413	JAM28	3611
1229	JAMDEF, T01	6006
918	JAMINIT	3277
528	JCPE01	1326
529	JCPE02	3047
532	JDEF01	1331
1226	JDEF02	1605
1227	JDEF03	1735
1228	JDEF04	1737
256	JMP02	651
257	JMP03	652
258	JMP04	170
259	JMP05	653
260	JMP06	654
261	JMP07	655
262	JMP08	171
263	JMP09	656
264	JMP10	174
265	JMP11	101
266	JMP12	103
267	JMP13	657
268	JMP14	176
269	JMP15	200
270	JMP16	201
271	JMP17	202
272	JMP18	105
273	JMP19	107
274	JMP20	503
275	JMP21	203
277	JMP22	206
278	JMP23	501
276	JMP24	204
255	JSR01	57
527	KT01	1324
1070	LAD01	1135
1071	LAD02	1412
1072	LAD03	1413
1073	LAD04	1414
1074	LAD05	1415
1075	LAD06	1416
1076	LAD07	1420
1077	LAD08	1421
2041	LDCFETCH	4620
1291	LDCP	277

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1889	LDCPW1	377
1898	LDCPW10	4107
1899	LDCPW11	4126
1900	LDCPW12	4535
1901	LDCPW13	4536
1902	LDCPW14	4540
1903	LDCPW15	2471
1904	LDCPW16	4127
1905	LDCPW17	4550
1890	LDCPW2	2466
1891	LDCPW3	2470
1892	LDCPW4	2316
1893	LDCPW5	2317
1894	LDCPW6	2545
1895	LDCPW7	2547
1896	LDCPW8	4534
1897	LDCPW9	4106
1277	LDCT2	1606
1278	LDCT3	1251
1279	LDCT4	424
1280	LDCT5	1253
1281	LDCT6	425
1282	LDCT7	426
1276	LDCTNZ	276
1857	LDCTNZW	376
1866	LDCTW10	4505
1867	LDCTW10B	4510
1868	LDCTW11	4451
1869	LDCTW12	4453
1870	LDCTW13	4455
1871	LDCTW14	4457
1872	LDCTW15	4511
1973	LDCTW16	4443
1874	LDCTW17	4514
1875	LDCTW18	4516
1876	LDCTW19	4520
1858	LDCTW2	630
1877	LDCTW20	4762
1878	LDCTW21	4521
1879	LDCTW22	4763
1880	LDCTW23	4524
1881	LDCTW24	4312
1882	LDCTW25	4313
1883	LDCTW26	4525
1884	LDCTW27	4341
1885	LDCTW28	4343
1886	LDCTW29	4530
1859	LDCTW3	640
1887	LDCTW30	4531
1888	LDCTW31	4532

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1860	LDCTW4	4500
1861	LDCTW5	4502
1862	LDCTW6	4712
1863	LDCTW7	4713
1864	LDCTW8	4441
1865	LDCTW9	4504
1275	LDCTZ	275
1856	LDCTZW	375
1646	LDDW	3223
1647	LDDW2	3666
1272	LDEXP	272
1845	LDEXP10	3726
1846	LDEXP11	3405
1847	LDEXP12	3407
1848	LDEXP13	3727
1849	LDEXP14	3332
1850	LDEXP15	3333
1851	LDEXP16	3731
1852	LDEXP17	3052
1853	LDEXP18	3732
1854	LDEXP19	3733
1838	LDEXP3	3715
1839	LDEXP4	3722
1840	LDEXP5	3723
1841	LDEXP6	3140
1842	LDEXP7	3141
1843	LDEXP8	3142
1844	LDEXP9	3143
1273	LDEXPDM6	273
1836	LDEXPDM6W	373
1855	LDEXPHOT	3053
1837	LDEXPNZW	374
1274	LDEXPX	274
1835	LDEXPZW	372
1346	LDFPS	505
1347	LDFPS2	472
1348	LDFPS3	473
1349	LDFPS4	163
1350	LDFPS5	500
1351	LDFPS6	162
1352	LDFPS7	502
1353	LDFPS8	504
1354	LDFPS9	510
1330	LOUBRK	223
2223	LEFTSHFSF	2626
2224	LFSHFSF10	2617
2224	LFSHFSF2	2322
2225	LFSHFSF2B	2603
2226	LFSHFSF3	2323
2227	LFSHFSF4	2630

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO. MICROWORD LBL ADDRESS

2228	LFSHFSF5	2631
2229	LFSHFSF6	2632
2230	LFSHFSF7	2613
2231	LFSHFSF8	2467
2232	LFSHFSF8B	2463
2233	LFSHFSF9	2607
1251	LOADNZS	254
1650	LOADNZH	354
1651	LOADNZH2	4076
1652	LOADNZH3	4077
1653	LOADNZH3B	4325
1654	LOADNZH4	4330
1655	LOADNZH5	4332
1249	LOADSIX	253
1250	LOADSIX2	4154
1648	LOADSIXH	353
1649	LOADSIXH2	4324
1248	LOADZ	252
1641	LOADZH	352
1642	LOADZH2	172
1643	LOADZH2B	173
1644	LOADZH3	3665
1645	LOADZH4	3222
926	LOG01	3534
927	LOG02	3535
928	LOG02A	3241
929	LOG02B	3243
929	LOG02C	3252
932	LOG02E	3540
948	LOG03	3565
933	LOG03A	3541
931	LOG03B	3536
934	LOG03F	3542
935	LOG03G	3543
936	LOG03H	3544
937	LOG03I	3545
938	LOG03J	3546
939	LOG03K	3550
940	LOG03L	3552
941	LOG03M	3554
942	LOG03N	3556
943	LOG03O	3560
944	LOG03P	3561
945	LOG03Q	3562
946	LOG03R	3563
947	LOG03S	3564
949	LOG04	3566
950	LOG15	3567
951	LOG16	3570
952	LOG17	3571



## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

953	LOG18	3572
960	LOG19	3605
954	LOG19A	3573
955	LOG19B	3574
956	LOG19C	3576
957	LOG19D	3600
958	LOG19E	3602
959	LOG19F	3604
961	LOG20	3606
962	LOG21	3607
963	LOG22	3610
964	LOG23	3612
965	LOG24A	3614
966	LOG24B	3616
967	LOG24C	3617
968	LOG24D	3620
969	LOG24E	3621
970	LOG24F	3622
971	LOG24G	3623
972	LOG25	3253
973	LOG25A	3624
974	LOG27	3625
975	LOG28	3626
976	LOG29	3630
977	LOG30	3401
978	LOG31	3403
979	LOG31A	3631
1045	LSR01	1165
1047	LSR02	1364
1046	LSR02A	1363
1048	LSR03	1365
1049	LSR04	1366
1050	LSR05	1370
1051	LSR06	1371
1052	LSR07	1372
1053	LSR08	1373
1987	MAINTTRAP	4547
333	MARK00	51
334	MARK01	303
335	MARK02	4104
336	MARK03	4105
337	MARK04	4110
698	MED01	333
699	MED02	3274
700	MED03	3276
701	MED04	3302
702	MED05	3303
703	MED06	3306
705	MED10	3312
704	MED10A	3307

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

706	MED11	3316
707	MED12A	3322
708	MED12B	3323
709	MED12C	3601
710	MED12D	3603
711	MED13	3324
712	MED14	3325
713	MED14A	3326
714	MED15	3336
715	MED16	3342
716	MED17	3207
717	MED18	3205
719	MED19	3637
718	MED19A	2066
720	MED20	3265
807	MED200	3720
808	MED201	3721
816	MED202	3355
817	MED203	3373
818	MED204	3376
809	MED205	3340
810	MED206	3366
811	MED207	3367
812	MED208	3725
813	MED209	3730
721	MED21	3267
729	MED22	3004
730	MED22A	3636
731	MED23	3200
732	MED23A	2070
733	MED24	3201
734	MED24A	3635
735	MED25	3020
736	MED25A	2071
737	MED26	3024
738	MED26A	3716
739	MED26B	3717
740	MED27	3210
741	MED27A	2074
742	MED28	3034
743	MED28A	3736
744	MED28B	3737
745	MED29	3214
746	MED29A	2076
747	MED30	3220
748	MED30A	3633
749	MED31	3044
750	MED31A	2100
751	MED32	3224
752	MED32A	3627

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

753	MED33	3230
754	MED33A	2101
755	MED34	3054
756	MED34A	3436
757	MED34B	3437
758	MED35	3234
759	MED35A	2104
760	MED36	3240
761	MED36A	3416
762	MED36B	3417
763	MED37	3064
764	MED37A	2105
765	MED38	3364
766	MED39	3365
767	MED40	3074
768	MED41	3075
769	MED42	3144
770	MED43	3145
771	MED44	3150
772	MED45	3151
773	MED46	3254
774	MED47	3255
775	MED48	3260
776	MED49	3261
777	MED50	3270
778	MED51	3271
779	MED52	3300
780	MED53	3301
781	MED54	3304
782	MED55	3305
783	MED56	3310
784	MED57	3311
785	MED58	3314
786	MED59	3315
787	MED60	3330
788	MED61	3331
789	MED62	3334
790	MED63	3335
791	MED64	3370
792	MED65	3371
793	MED66	3374
794	MED67	3375
795	MED68	3360
796	MED69	3361
797	MED70	3160
798	MED71	3161
799	MED71A	3356
800	MED71B	3362
801	MED71C	3363
802	MED72	3170

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

803	MED73	3171
805	MED74	3320
804	MED74A	3321
806	MED75	3341
814	MED76	3344
815	MED76A	3372
819	MED77	3351
820	MED78	3377
821	MED79	3354
822	MED79A	3400
823	MED79B	3402
824	MED79C	3404
825	MED80	3724
826	MED81	3406
827	MED82	3350
828	MED83	3410
833	MED84	3345
722	MED85	3343
723	MEDX1	3346
724	MEDX2	3352
725	MEDZ1	3005
726	MEDZ2	3353
727	MEDZ3	3506
728	MEDZ4	3507
571	MFAT00	53
573	MFAT02	2004
574	MFAT03	2005
575	MFAT04	2020
576	MFAT05	2022
577	MFAT09	2024
578	MFAT10	2521
580	MFAT11	2523
581	MFAT12	2026
582	MFAT14	2027
583	MFAT15	2034
579	MFAT17	2025
572	MFIX00	331
1433	MFRAC	2253
1443	MFRAC10	2220
1444	MFRAC11	2224
1445	MFRAC12	2225
1446	MFRAC13	2226
1447	MFRAC14	2221
1448	MFRAC15	2227
1449	MFRAC16	2230
1450	MFRAC17	2231
1435	MFRAC2	2204
1436	MFRAC3	2205
1437	MFRAC4	2206
1438	MFRAC5	2207

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO. MICROWORD LBL ADDRESS

1439	MFRAC6	2210
1440	MFRAC7	2212
1441	MFRAC8	2214
1442	MFRAC9	2215
1434	MFRAC0	2403
1451	MFRACF	2402
1461	MFRACF10	2244
1462	MFRACF11	2245
1463	MFRACF12	2623
1464	MFRACF12B	2627
1465	MFRACF13	2246
1466	MFRACF14	2250
1467	MFRACF15	2251
1468	MFRACF16	2252
1469	MFRACF17	2254
1470	MFRACF18	2255
1471	MFRACF19	2256
1452	MFRACF2	2234
1472	MFRACF20	2260
1473	MFRACF21	2262
1474	MFRACF18	2264
1475	MFRACF22	2265
1476	MFRACF23	2266
1477	MFRACF24	2267
1478	MFRACF25	2270
1453	MFRACF28	1615
1454	MFRACF3	1616
1455	MFRACF4	1620
1456	MFRACF5	1621
1457	MFRACF6	2235
1458	MFRACF7	2240
1459	MFRACF8	2241
1460	MFRACF9	2242
2395	MLOOP2	1714
2396	MLOOP3	1636
2397	MLOOP4	1637
2398	MLOOP5	1642
2399	MLOOP6	1643
2400	MLOOP7	1646
2401	MLOOP8	1647
895	MMDINIT	3037
1260	MOD	247
1489	MOD10W	2302
1490	MOD11W	2304
1491	MOD12W	2305
1492	MOD13W	2062
1493	MOD14W	2072
1494	MOD15W	2073
1495	MOD16W	2211
1496	MOD17W	2310

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1497	MOD1CLASS	2060
1506	MOD1CLASS10	2321
1507	MOD1CLASS11	2306
1508	MOD1CLASS12	2307
1509	MOD1CLASS13	2330
1510	MOD1CLASS14	2331
1511	MOD1CLASS15	2334
1512	MOD1CLASS16	2335
1513	MOD1CLASS17	2340
1514	MOD1CLASS18	2332
1515	MOD1CLASS19	2333
1498	MOD1CLASS2	2312
1499	MOD1CLASS3	2314
1500	MOD1CLASS4	2301
1501	MOD1CLASS5	2315
1502	MOD1CLASS6	2303
1503	MOD1CLASS7	2320
1504	MOD1CLASS8	2716
1505	MOD1CLASS9	2717
1516	MOD2CLASS	2021
1530	MOD3CLASS108	2477
1517	MOD3CLASS	2023
1529	MOD3CLASS10	2476
1531	MOD3CLASS11	2364
1532	MOD3CLASS12	2365
1533	MOD3CLASS13	2174
1534	MOD3CLASS14	2175
1535	MOD3CLASS15	2176
1536	MOD3CLASS16	2177
1537	MOD3CLASS17	2236
1538	MOD3CLASS18	2237
1539	MOD3CLASS19	2370
1518	MOD3CLASS2	2341
1540	MOD3CLASS20	2516
1541	MOD3CLASS21	2517
1542	MOD3CLASS22	2371

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1543	MOD3CLSS23	2576
1544	MOD3CLSS24	2577
1545	MOD3CLSS25	2374
1546	MOD3CLSS26	2636
1547	MOD3CLSS27	2637
1548	MOD3CLSS28	2363
1549	MOD3CLSS29	2375
1519	MOD3CLSS28	2342
1520	MOD3CLSS3	2343
1550	MOD3CLSS30	2400
1551	MOD3CLSS31	2401
1521	MOD3CLSS38	2344
1522	MOD3CLSS3C	2345
1523	MOD3CLSS3D	2350
1524	MOD3CLSS3E	2352
1525	MOD3CLSS4	2360
1526	MOD3CLSS6	2361
1527	MOD3CLSS8	2000
1528	MOD3CLSS9	2001
1552	MOD4CLSS	2213
1483	MOD4W	2125
1553	MOD5CLSS	2061
1554	MOD5CLSS2	2404
1555	MOD5CLSS3	2405
1556	MOD5CLSS4	2421
1557	MOD5CLSS5	2423
1558	MOD5CLSS5B	2410
1559	MOD5CLSS6	2136
1560	MOD5CLSS7	2411
1561	MOD5CLSS7B	2232
1562	MOD5CLSS7C	2233
1563	MOD5CLSS8	2412
1564	MOD5CLSS9	2137
1484	MOD5W	2274
1485	MOD6W	2127
1486	MOD7W	2275
1487	MOD8W	2276
1488	MOD9W	2300
2052	MODEALTER	4635
2053	MODEALTER2	4640
2056	MODEALTER3	4645
2057	MODEALTER4	4650
2058	MODEALTER5	4501
2054	MODEALTER2B	4641
2055	MODEALTER2C	4644
2059	MODEALTER6	4503
1479	MODW	347
1480	MODW3	2277
1481	MODW3B	2271
1482	MODW3C	2272

## K06

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

188	MOV01	441
200	MOV02	451
201	MOV03	130
204	MOV04	131
210	MOV05	621
221	MOV06	631
189	MOV07	601
211	MOV08	671
202	MOV09	611
222	MOV10	151
251	MOV11	26
190	MOV12	602
212	MOV13	672
203	MOV14	612
223	MOV15	152
191	MOV16	124
213	MOV17	134
224	MOV18	137
192	MOV19	603
214	MOV20	673
205	MOV21	613
225	MOV22	153
238	MOV23	566
236	MOV24	564
239	MOV25	567
237	MOV26	565
240	MOV27	161
243	MOV28	706
241	MOV29	704
244	MOV30	707
242	MOV31	705
193	MOV32	604
215	MOV33	674
206	MOV34	614
226	MOV35	154
197	MOV36	605
216	MOV37	675
207	MOV38	615
227	MOV39	155
232	MOV40	144
198	MOV41	606
217	MOV42	676
208	MOV43	616
228	MOV44	156
245	MOV45	164
233	MOV46	146
218	MOV47	135
234	MOV48	150
235	MOV49	160
248	MOV50	766



## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.    MICROWORD LBL    ADDRESS

246	MOV51	764
249	MOV52	767
247	MOV53	765
199	MOV54	607
219	MOV55	677
209	MOV56	617
230	MOV57	157
220	MOV58	136
229	MOV59	140
231	MOV60	141
252	MOV61	27
250	MOV62	166
194	MOV601	145
195	MOV602	147
196	MOV603	126
2235	MOVFDSTSF	4745
2239	MOVSFDDST	4747
531	MPE01	1330
2333	MULDIV	1367
1244	MULDZ	245
1405	MULDZW	345
1407	MULFDW	2273
1243	MULFZ	244
1404	MULFZW	344
1408	MULMODW	2152
1417	MULMODW10	2003
1418	MULMODW11	2006
1419	MULMODW12	2007
1420	MULMODW13	2116
1421	MULMODW14	2156
1422	MULMODW15	2160
1423	MULMODW16	2161
1424	MULMODW17	2257
1425	MULMODW18	2722
1426	MULMODW19	2164
1409	MULMODW2	2154
1427	MULMODW20	2165
1428	MULMODW21	2170
1429	MULMODW22	2172
1430	MULMODW23	2200
1431	MULMODW24	2723
1432	MULMODW25	2202
1410	MULMODW3	2075
1411	MULMODW4	2077
1412	MULMODW5	2117
1413	MULMODW6	2153
1414	MULMODW7	2157
1415	MULMODW8	2155
1416	MULMODW9	2002
2374	MULT	1607

# M06

11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

2383	MULT10	1023
2384	MULT11	1702
2385	MULT12	1704
2386	MULT13	1705
2387	MULT14	1706
2388	MULT15	1707
2389	MULT16	1710
2390	MULT17	1711
2391	MULT18	1125
2392	MULT19	1127
2375	MULT2	1071
2376	MULT3	1122
2377	MULT4	1666
2378	MULT5	1123
2379	MULT6	1667
2380	MULT7	1073
2381	MULT8	1022
2382	MULT9	1700
2393	MULTLOOP	1712
2394	MULTLOOP3	1713
1245	MULXNZ	246
1406	MULXM	346
2236	MVFDSTSF2	4423
2237	MVFDSTSF3	4746
2238	MVFDSTSF4	4422
2240	MVSFFDST2	4760
2241	MVSFFDST3	4073
2242	MVSFFDST4	4761
2243	MVSFFDST5	4072
121	NEG01	554
122	NEG02	54
157	NEG03	434
158	NEG04	106
139	NEGB01	574
140	NEGB02	77
173	NEGB03	534
174	NEGB04	111
1401	NEGNZM	2657
1402	NEGNZM2	2150
1403	NEGNZM3	2151
1372	NEGZM	3457
1014	NMRC01	1235
1015	NMRC02	1312
1016	NMRC02A	1313
1017	NMRC03	1314
1018	NMRC04	1315
1019	NMRC05	1316
1021	NMRC06	1332
1020	NMRC06A	1317
1022	NMRC07A	1333

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1023	MMRC07B	1334
1024	MMRC08	1335
1025	MMRC09	1340
1026	MMRC10	1341
1027	MMRC11	1342
1028	MMRC12	1343
475	NOSWP01	3615
476	NOSWP02	3045
477	NOSWP03	3653
478	NOSWP04	3657
479	NOSWP05	3046
2189	NOTNZERO1	4250
2190	NOTNZERO2	4251
2191	NOTNZERO3	4252
2008	NOTRAP	4027
1906	NROUND	2362
1916	NROUND10	2447
1917	NROUND11	2502
1918	NROUND12	2504
1919	NROUND13	2141
1920	NROUND14	2142
1921	NROUND15	2143
1922	NROUND16	2505
1923	NROUND17	2376
1924	NROUND18	2377
1925	NROUND19	2222
1907	NROUND2	2132
1926	NROUND20	2223
1927	NROUND21	2506
1928	NROUND22	2510
1929	NROUND23	2511
1930	NROUND24	2512
1931	NROUND26	2201
1932	NROUND27	2203
1933	NROUND28	2513
1934	NROUND29	2111
1908	NROUND3	2133
1935	NROUND30	2113
1936	NROUND31	2514
1937	NROUND32	2216
1938	NROUND33	2455
1939	NROUND34	2457
1940	NROUND35	2406
1941	NROUND36	2043
1942	NROUND37	2515
1943	NROUND38	2042
1944	NROUND39	2520
1909	NROUND4	2474
1945	NROUND40	2522
1946	NROUND41	2407

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1947	NROUND42	2440
1948	NROUND43	2441
1949	NROUND44	2442
1950	NROUND45	2524
1951	NROUND46	2311
1952	NROUND47	2313
1953	NROUND48	2525
1954	NROUND49	2530
1910	NROUND48	2475
1911	NROUND5	2500
1955	NROUND50	2531
1956	NROUND51	2534
1957	NROUND52	2217
1958	NROUND53	2552
1959	NROUND54	2553
1960	NROUND55	2535
1961	NROUND56	2540
1912	NROUND6	2501
1913	NROUND7	2140
1914	NROUND8	2162
1915	NROUND9	2163
1619	NROUNDEND	4326
1620	NROUNDEND1	4533
1621	NROUNDEND2	4537
1622	NROUNDEND3	4554
1623	NROUNDEND4	4555
1624	NROUNDEND5	4556
1625	NROUNDEND6	4557
355	NTRP00	310
356	NTRP01	312
2192	NZERO	4253
2193	NZERO2	4355
2194	NZERO3	4357
2195	NZERO4	4744
1985	NZEROTRAP	4546
1986	NZTRAP2	4574
518	OAD1	1322
1224	ODOPCDIS01	6004
1977	OFLOTRAP	4560
1971	OPCODERR	4541
1972	OPERR2	4602
1973	OPERRHOT	4603
285	OTH01	417
498	PFO1	1662
499	PFO4	1160
426	PST01	1056
427	PST01A	1060
428	PST02	1061
429	PST03	1064
430	PST04	1065

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

431	PST05	1070
432	PST06	1476
437	PST07	1477
433	PST08	1072
434	PST09	1074
435	PST10	1075
436	PST11	1501
441	PST12	1503
442	PST13	1076
443	PST14	1077
444	PST15	1100
446	PST16	1104
445	PST16A	1102
448	PST17	1106
447	PST17A	1105
449	PST18	1107
450	PST19	1110
451	PST19A	1111
438	PST21	1651
439	PST23	1655
440	PST24	1657
911	PSWINIT	3177
480	PWRSUB01	1121
483	PWRSUB02	1130
481	PWRSUB02A	1124
482	PWRSUB02B	1126
484	PWRSUB03	1132
921	PWRTST	3357
922	PWRTST01	3530
923	PWRTST02	3641
924	PWRTST04	3532
925	PWRTST05	3643
1729	QUOLEFT1	2473
1737	QUOLEFT10	2445
1738	QUOLEFT11	2446
1739	QUOLEFT12	2454
1730	QUOLEFT2	2435
1731	QUOLEFT3	2436
1732	QUOLEFT4	2443
1733	QUOLEFT7	2472
1734	QUOLEFT8	2444
1735	QUOLEFT9	2707
1736	QUOLEFT99	2703
896	REGINIT01	3537
897	REGINIT02	3475
898	REGINIT03	3504
899	REGINIT04	3505
900	REGINIT05	3510
901	REGINIT06	3512
902	REGINIT07	3514

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
903	REGINIT08	3515
904	REGINIT09	3516
905	REGINIT10	3517
906	REGINIT11	3071
907	REGINIT12	3520
308	REGINIT14A	3522
909	REGINIT15	3073
341	RES01	67
342	RES02	307
343	RES03	306
344	RES04	3006
2244	RESTART	2633
2254	RESTART10	2651
2255	RESTART11	4764
2256	RESTART12	4765
2257	RESTART13	4766
2258	RESTART14	4767
2259	RESTART15	641
2260	RESTART16	2452
2261	RESTART17	2453
2262	RESTART17B	2677
2263	RESTART17C	2036
2264	RESTART17D	2652
2265	RESTART17E	2653
2266	RESTART17F	2660
2267	RESTART17G	2661
2245	RESTART2	2634
2246	RESTART3	2635
2247	RESTART4	2644
2248	RESTART5	2450
2249	RESTART5B	2451
2250	RESTART6	2667
2251	RESTART7	2037
2252	RESTART8	2645
2253	RESTART9	2650
2277	RESTARTCSP10	2676
2278	RESTARTCSP11	2700
2279	RESTARTCSP12	2701
2280	RESTARTCSP13	2702
2281	RESTARTCSP14	2704
2282	RESTARTCSP15	2705
2283	RESTARTCSP16	644
2284	RESTARTCSP17	646
2269	RESTARTCSP2	2663
2270	RESTARTCSP3	2664
2271	RESTARTCSP4	2665
2272	RESTARTCSP5	2666
2273	RESTARTCSP6	2670
2274	RESTARTCSP7	2672
2275	RESTARTCSP8	2674

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

2276	RESTCSP9	2675
2268	RESTORECSP	2662
1740	RMORLEFT1	2367
1749	RMORLEFT10	2465
1741	RMORLEFT2	2456
1742	RMORLEFT3	2460
1743	RMORLEFT4	2461
1744	RMORLEFT5	2366
1745	RMORLEFT6	2462
1746	RMORLEFT7	2464
1747	RMORLEFT8	2646
1748	RMORLEFT9	2647
129	ROL01	541
163	ROL03	421
147	ROLB01	561
179	ROLB02	321
128	ROR01	540
146	RORB01	560
2299	RSHF DSTN	2715
2300	RSHF DSTN2	2106
2301	RSHF DSTN3	2107
2302	RSHF DSTN4	2736
2303	RSHF DSTN5	2737
2304	RSHF DSTN6	2507
2305	RSHF DSTN7	2503
1193	RSVD01	40
1194	RSVD02	60
1195	RSVD03	334
1196	RSVD04	330
1197	RSVD05	332
315	RTI01	62
316	RTI02	4044
317	RTI03	4045
318	RTI04	4054
319	RTI05	4055
320	RTI06	4064
321	RTI07	4322
322	RTI08	4323
323	RTI09	4065
324	RTI10	301
308	RTS01	66
309	RTS02	4034
310	RTS03	4035
311	RTS04	300
2285	RTSHF DST	2706
2297	RTSHF DST10	2713
2298	RTSHF DST11	2714
2286	RTSHF DST2	2526
2287	RTSHF DST28	2067
2288	RTSHF DST2C	2063

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
2289	RTSHFDST3	2527
2290	RTSHFDST4	2556
2291	RTSHFDST5	2557
2292	RTSHFDST6	2710
2293	RTSHFDST7	2437
2294	RTSHFDST7B	2433
2295	RTSHFDST8	2711
2296	RTSHFDST9	2712
2306	RTSHFSF	2720
2318	RTSHFSF10	2725
2319	RTSHFSF11	2573
2307	RTSHFSF2	2532
2308	RTSHFSF2B	2247
2309	RTSHFSF2C	2243
2310	RTSHFSF3	2533
2311	RTSHFSF4	2536
2312	RTSHFSF5	2537
2313	RTSHFSF6	2721
2314	RTSHFSF7	2417
2315	RTSHFSF7B	2413
2316	RTSHFSF8	2567
2317	RTSHFSF9	2724
2320	RTSHFSFSN	2726
2321	RTSHFSFSN2	2166
2322	RTSHFSFSN3	2167
312	RTT01	76
313	RTT02	4040
314	RTT03	4042
522	RZ01	1323
523	RZ08	1210
524	RZ09	1212
525	RZ11	4152
526	RZ12	327
124	SBC01	556
125	SBC02	65
126	SBC03	72
160	SBC05	436
131	SBC07	110
142	SBCB01	576
143	SBCB02	100
144	SBCB03	102
176	SBCB05	536
177	SBCB06	114
1132	SBRA01	1505
1133	SBRA02	1506
1134	SBRA03	1507
1135	SBRA04	1514
1136	SBRA05	1515
1137	SBRA06	1516
1138	SBRA07	1517



## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1139	SBRA08	1520
1140	SBRA09	1522
1141	SBRA10	1524
1142	SBRA11	1526
1143	SBRA12	1534
1144	SBRA13	1536
1145	SBRA14	1544
1146	SBRA15	1546
1147	SBRA16	1550
1148	SBRA17	1551
1149	SBRC01	1552
1150	SBRC02	1553
1151	SBRC03	1554
1152	SBRC01	1555
1153	SBRC02	1556
1154	SBRC03	1557
1155	SBRC04	1214
1156	SBRC05	1215
1157	SBRC06	1216
1158	SBRC07	1217
1159	SBRC08	1021
1160	SBRD01	1560
1161	SBRD02	1562
1162	SBRD03	1564
1163	SBRE01	1566
1164	SBRE02	1600
1165	SBRE03	1601
302	SCC00	70
303	SCC01	4024
304	SCC02	4026
305	SCC03	4030
306	SCC04	4221
307	SCC05	4223
500	SCPE01	1661
501	SCPE02	1162
502	SCPE03	1164
503	SCPE04	1701
507	SCPE05	1703
504	SCPE06	1352
505	SCPE07	1353
506	SCPE09	1336
509	SCPE10	1337
508	SCPE11	1166
510	SCPE12	1170
511	SCPE13	1171
512	SCPE14	1174
513	SCPE15	1175
514	SCPE16	1200
994	SOC001	1002
998	SOC002	1304

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

999	S0CD03	1310
1000	S0CD04	1311
1001	S0CD05	1231
1002	S0CD06	1156
1003	S0CD07	1157
1004	S0CD08	1066
1005	S0CD09	1067
1006	S0CD10	1233
1008	S0CD11	1113
1009	S0CD12	1012
1010	S0CD13	1013
1011	S0CD14	1117
995	S0CD15	1301
1012	S0CD16	1167
1013	S0CD17	1237
996	S0CD18	1302
997	S0CD19	1303
1007	S0CD20	1305
515	SDEF01	1665
516	SDEF02	1202
517	SDEF03	1731
385	SER01	701
387	SER02	703
386	SER02A	321
1317	SER02F	4723
388	SER03	322
394	SER04	21
395	SER05	326
396	SER06	1005
397	SER07	1010
398	SER08	1011
399	SER09	1014
400	SER10	1044
401	SER11	1016
1237	SETCLASS	240
1238	SETCLASS2	205
1239	SETCLASS3	207
1240	SETCLASS4	215
1241	SETCLASS5	217
1242	SETCLASS6	335
1320	SETCLASSW	340
1336	SETD	231
1337	SETDW2	470
1327	SETF	221
1325	SETFD02	460
1324	SETFDW	311
2323	SETFZFN	2727
2324	SETFZFN2	2730
1328	SETI	222
1329	SETI2	461

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1338	SETL	232
1339	SETL2	471
1626	SF2SCOMP	4275
1629	SF2SCOMP01	4507
1630	SF2SCOMP02	4304
1631	SF2SCOMP03	4305
1627	SF2SCOMPF	4300
1628	SF2SCOMPF1	4301
1632	SF2SCOMPF2	4506
1633	SF2SCOMPF3	4310
1035	SIN01	1033
1036	SIN02	1354
1037	SIN03	1355
1038	SIN05	1356
1039	SIN06	1423
1040	SIN08	1427
894	SLRINIT	3137
325	SOB01	50
326	SOB02	302
327	SOB03	4070
328	SOB04	4071
329	SOB05	4074
330	SOB06	4263
332	SOB07	4261
331	SOB08	4075
4	SRC01	711
5	SRC02	712
6	SRC03	713
7	SRC04	714
8	SRC05	715
9	SRC06	716
10	SRC07	717
13	SRC09	4014
14	SRC10	4
11	SRC11	4004
15	SRC12	4016
16	SRC13	4020
12	SRC14	4005
17	SRC15	4022
18	SRC16	5
21	SRC17	466
19	SRC18	462
22	SRC19	467
20	SRC20	463
23	SRC21	661
36	SRC22	10
30	SRC23	627
37	SRC24	752
38	SRC29	753
32	SRC30	772

J07

11/60 MICROCODE CROSS REFERENCE #1 - 1160.RCM

BOX NO.      MICROWORD LBL      ADDRESS

33	SRC31	773
24	SRC32	662
25	SRC33	663
26	SRC34	664
27	SRC35	665
28	SRC36	666
29	SRC37	667
31	SRC38	637
34	SRC39	12
35	SRC40	13
530	SST01	:327
1680	ST1W	360
1681	ST2W	361
1682	ST5W	3670
2001	STATUPDT1	4517
2002	STATUPDT2	4601
2003	STATUPDT3	4604
2004	STATUPDT4	4605
2005	STATUPDT5	4610
1259	STATUS	241
1345	STATUSW	341
1093	STC01	1145
1094	STC02	1147
1095	STC04	1441
1096	STC05	1442
1097	STC06	1443
1098	STC07	1444
1099	STC08	1177
1100	STC09	1176
1101	STC12	1446
1102	STC13	1450
1103	STC14	1452
2042	STCFLT	4621
1270	STCPNZ	271
1271	STCPNZ2	4156
1806	STCPNZW	371
1813	STCPW10	4135
1814	STCPW11	4133
1815	STCPW12	4452

K07

11/60 MICROCODE CROSS REFERENCE #1 - 11 D.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1816	STCPW13	4137
1817	STCPW14	4146
1818	STCPW15	4147
1819	STCPW16	4454
1820	STCPW17	4456
1821	STCPW18	4460
1822	STCPW19	4141
1804	STCPW2	142
1823	STCPW20	4143
1824	STCPW21	4462
1825	STCPW22	4151
1826	STCPW23	4153
1827	STCPW24	4464
1828	STCPW25	4466
1829	STCPW26	4470
1830	STCPW27	4472
1831	STCPW28	4155
1832	STCPW29	4157
1805	STCPW3	143
1833	STCPW30	4474
1834	STCPW31	4476
1807	STCPW4	4444
1808	STCPW5	4445
1809	STCPW6	4121
1810	STCPW7	4123
1811	STCPW8	4450
1812	STCPW9	4132
1269	STCPZ	270
1803	STCPZW	370
1285	STCT	267
1286	STCT2	440
1287	STCT3	450
1288	STCT4	4200
1289	STCT5	4732
1290	STCT6	4733
1757	STCTW	367
1766	STCTW10	4003
1767	STCTW11	4400
1768	STCTW12	4401
1769	STCTW13	4006
1770	STCTW14	4007
1771	STCTW15	4404
1772	STCTW16	4405
1773	STCTW17	4021
1774	STCTW18	4023
1775	STCTW19	4410
1758	STCTW2	4362
1776	STCTW20	4411
1777	STCTW21	4420
1778	STCTW22	4421

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
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1779	STCTW23	4424
1780	STCTW24	4000
1781	STCTW25	4425
1782	STCTW26	4050
1783	STCTW27	4051
1784	STCTW28	4001
1785	STCTW29	4426
1789	STCTW3	4334
1786	STCTW30	4041
1787	STCTW31	4043
1788	STCTW32	4062
1789	STCTW33	4063
1790	STCTW34	4430
1791	STCTW35	4432
1792	STCTW36	4434
1793	STCTW37	4015
1794	STCTW38	4435
1795	STCTW39	4036
1760	STCTW4	4366
1796	STCTW40	4037
1797	STCTW41	4017
1798	STCTW42	4436
1799	STCTW43	4440
1800	STCTW44	4046
1801	STCTW45	4047
1802	STCTW46	4442
1761	STCTW5	4370
1762	STCTW6	4372
1763	STCTW7	4374
1764	STCTW8	4376
1765	STCTW9	4002
2071	STDMOFLT	4353
2072	STDMOFLT2	4113
2073	STDMOFLT3	4660
2074	STDMOFLT4	4112
2019	STDMOINT	2010
2020	STDM1INT	2011
2021	STDM2INT	2012
2022	STDM3INT	2013
2023	STDM4INT	2014
2024	STDM5INT	2015
2149	STDM67FLT	4367
2150	STDM67FLT2	4377
2025	STDM6INT	2016
2026	STDM7INT	2017
1753	STEXP2	600
1754	STEXP3	610
1755	STEXP4	620
1756	STEXP5	1622
1267	STEXPHOT	401

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1268	STEXPHOT2	411
1262	STFD	260
1263	STFD2	261
2125	STFLT10	4716
2126	STFLT11	4717
2127	STFLT12	4720
2128	STFLT13	4256
2129	STFLT14	4257
2116	STFLT2	4207
2117	STFLT2A	4217
2118	STFLT3	4012
2119	STFLT4	4711
2120	STFLT5	4572
2121	STFLT6	4236
2122	STFLT7	4237
2123	STFLT8	4714
2124	STFLT9	4715
1355	STFPS	506
1356	STFPS2	544
2170	STIMM1	4467
2171	STIMM2	4477
2172	STIMM3	4672
2173	STIMM4	4673
2174	STIMM5	4676
2175	STIMM6	4677
2049	STINTLG2	4703
2050	STINTLG3	4634
2051	STINTLG4	4707
2036	STORE	2173
2037	STORE2	2566
2038	STORE3	2570
2061	STOREFLT	4654
2130	STOREHOT	4013
2131	STOREHOT2	4656
2132	STOREHOT2B	4657
2133	STOREHOT2C	4721
2134	STOREHOT2D	4724
2135	STOREHOT2E	4725
2136	STOREHOT2F	4727
2137	STOREHOT3	4573
2138	STOREHOT4	4622
2139	STOREHOT5	4623
2140	STOREHOT6	4726
2141	STOREHOT7	4730
2142	STOREHOT8	4731
2143	STOREHOT9	4734
2010	STOREINT	2551
2048	STOREINTLG	4632
1264	STOREXF	264
1265	STOREXPD	265

11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1751	STOREXPW	365
1750	STOREXPW	364
1266	STOREXPX	266
1752	STOREXPXW	366
1357	STST	507
1358	STST2	1612
1359	STST3	1614
2115	STSYNC	4205
2145	STSYNC2	4365
2169	STSYNC3	4465
79	SUB01	456
90	SUB02	636
100	SUB03	736
101	SUB04	45
111	SUB05	416
112	SUB06	52
1253	SUBNZ	256
1568	SUBNZW	356
1569	SUBW01	4230
1252	SUBZ	255
1567	SUBZW	355
1584	SUMDFGSF	4033
1578	SUMP	4331
1586	SUMSFGDF	4032
1587	SUMSFGDF1	4254
1230	SVCDEF	1733
1231	SVCDEF02	1026
1232	SVCDEF03	1027
1233	SVCDEF LT01	6007
1234	SVCDEF LT02	6005
919	SVSINIT	3526
288	SWB20	212
286	SWB01	71
287	SWB02	211
289	SWB03	73
290	SWB04	720
291	SWB05	213
292	SWB06	214
296	SXT01	44
297	SXT02	216
298	SXT03	464
299	SXT04	465
300	SXT05	740
301	SXT06	427
490	TBIT01	1047
491	TBIT02	1140
492	TBIT03	1142
493	TBIT04	1144
494	TBIT05	1146
1969	TPREAMBLE	2544



## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROCODE LABEL	ADDRESS
350	TRAP01	56
1988	TRAPEND	4576
917	TRKINIT	3257
357	TRP00	127
358	TRP01	314
359	TRP02	316
361	TRP03	4114
360	TRP03A	4111
362	TRP04	4115
364	TRP05	4117
363	TRP05A	4116
365	TRP06	4120
366	TRP07	4631
367	TRP08	4122
368	TRP09	4124
370	TRP10	4134
369	TRP10A	4125
371	TRP12	4136
372	TRP13	4140
373	TRP14	4142
375	TRP15	4144
374	TRP15A	4031
376	TRP16	4427
377	TRP17	4437
378	TRP18	320
1970	TRPE2	2546
127	TST01	557
162	TST02	437
145	TSTB01	577
178	TSTB02	537
2187	TSTNZERO	4317
2188	TSTNZERO2	4743
1380	TSTNZW	2655
1381	TSTNZW2	2122
1382	TSTNZW3	2124
1383	TSTNZW4	4224
1384	TSTNZW5	4226
1385	TSTNZW6	4636
1386	TSTNZW7	4637
1367	TSTZW	3455
546	UB01	1320
547	UB02	1232
548	UB03	1234
549	UB04	1236
550	UB05	1240
551	UB06	1241
552	UB07	1242
553	UB08	1451
557	UB09	1453
554	UB11	1243

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

555	UB12	1721
556	UB13	1723
920	UBINIT	3317
1991	UDIS	4613
1983	UFLOTRAP	4545
1183	USERDISP01	6002
1984	UTRAP2	4571
1997	UVDIS	4615
1998	UVDIS2	4642
1999	UVDIS3	4643
1990	VDIS	4611
1978	VTRAP2	4561
1979	VTRAP3	4564
1980	VTRAP4	4566
1981	VTRAP5	4544
1982	VTRAP6	4570
338	WAIT01	61
339	WAIT02	4402
340	WAIT03	4403
1992	WARMDIS	4446
1993	WARMDIS2	4600
1994	WARMDIS3	4406
1995	WARMDIS4	4407
379	WCS01	4633
380	WCS02	4145
381	WCS05	4431
1109	WCS0IAG01	6010
1199	WCSINIT01	3337
1200	WCSINIT02	3632
1201	WCSINIT03	3634
1202	WCSINIT04	3640
1203	WCSINIT05	3711
1204	WCSINIT06	3642
1205	WCSINIT07	3644
1206	WCSINIT08	3713
1223	WCS00OPC01	4433
1209	WCSRDADR	3110
1210	WCSRDAT01	3124
1211	WCSRDAT02	3646
1212	WCSRDAT05	3647
1213	WCSRDAT06	3650
1214	WCSRDAT07	3651
1220	WCSRDST01	3114
1221	WCSRDST02	3656
1222	WCSRDST03	3662
1198	WCSRSVD01	6003
1207	WCSWRADR01	3111
1208	WCSWRADR02	3645
1215	WCSWRDAT01	3125
1216	WCSWRDAT02	3652

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1217	WCSWRDAT03	3654
1218	WCSWRDAT04	3655
1219	WCSWRST01	3115
1318	WFORK	474
1319	WFORKNVALD	476
871	WHI02	3445
869	WHI02A	3077
870	WHI02B	3444
874	WHI03	3450
872	WHI03A	3446
873	WHI03B	3447
875	WHI04	3452
876	WHI05	3460
877	WHI06	3470
878	WHI07	3472
879	WHI08	3471
880	WHI09	3473
881	WHI10	3461
882	WHI11	3462
885	WHI12	3465
883	WHI12A	3463
884	WHI12B	3464
886	WHI13	3466
887	WHI14	3451
888	WHI15	3453
889	WHI16	3467
1670	WORDCMP	2414
1671	WORDCMP2	2640
1672	WORDCMP3	2641
1673	WORDCMP4	2642
1674	WORDCMP5	2643
1675	WORDCMP6	2415
1676	WORDCMP7	2671
1677	WORDCMP8	2673
1225	XCSUB01	6000
1166	XFC01	447
1167	XFC02	1602
1168	XFC03	1447
1169	XFC04	1670
1171	XFC05	1671
1173	XFC06	1672
1175	XFC07	1673
1177	XFC08	1674
1179	XFC09	1675
1181	XFC10	1676
1182	XFC11	1677
1184	XFC12	1445
1185	XFC13	1603
1186	XFC14	1604
1187	XFC15	1455

## 11/60 MICROCODE CROSS REFERENCE #1 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1188	XFC16	1457
1189	XFC17	1467
1190	XFC18	1466
1170	XFCOTH01	6001
1172	XFCOTH10	6011
1174	XFCOTH20	6012
1176	XFCOTH30	6013
1178	XFCOTH40	6014
1180	XFCOTH50	6015
293	XOR01	46
294	XOR02	47
295	XOR03	407
353	YTRP00	304
354	YTRP01	305
495	YZ01	1660
496	YZ02	1154
497	YZ03	1155
1974	ZERODIV	4542

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

2	FET02	1
36	SRC22	10
143	SBCB02	100
383	CON99B	1000
486	DISP02	1001
994	SDCD01	1002
991	CSR08	1003
384	CON99C	1004
396	SER06	1005
1124	EOS07	1006
1125	EOS07A	1007
265	JMP11	101
397	SER07	1010
398	SER08	1011
1009	SDCD12	1012
1010	SDCD13	1013
399	SER09	1014
2405	ASH004	1015
401	SER11	1016
2407	ASHZ00	1017
144	SBCB03	102
403	JAM01A	1020
1159	SBR008	1021
2381	MULT8	1022
2383	MULT10	1023
404	JAM01B	1024
405	JAM02	1025
1231	SVCDEF02	1026
1232	SVCDEF03	1027
266	JMP12	103
407	JAM02C	1030
408	JAM02D	1031
1029	HLT01	1032
1035	SIN01	1033
409	JAM02E	1034
418	JAM17	1035
406	JAM02A	1036
410	JAM03	1037
149	ASRB02	104
382	CON99	1040
419	JAM18	1041
1061	EXM03	1042
1065	EXM06	1043
421	JAM07	1044
422	JAM08	1045
400	SER10	1046
490	TBIT01	1047
272	JMP18	105
423	JAM09	1050
424	JAM10	1051

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1085	DEP03	1052
1088	DEP06	1053
425	JAM11	1054
584	IA01	1055
426	PST01	1056
412	JAM05	1057
158	NEG04	106
427	PST01A	1060
428	PST02	1061
1130	EOS12	1062
1131	EOS13	1063
429	PST03	1064
430	PST04	1065
1004	SOC00R	1066
1005	SOC009	1067
273	JMP19	107
431	PST05	1070
2375	MULT2	1071
433	PST08	1072
2380	MULT7	1073
434	PST09	1074
435	PST10	1075
442	PST13	1076
443	PS14	1077
53	DST08	11
161	SBC07	110
444	PST15	1100
2417	ASH016	1101
445	PST16A	1102
2418	ASH017	1103
446	PST16	1104
447	PST17A	1105
448	PST17	1106
449	PST18	1107
174	NEG804	111
450	PST19	1110
451	PST19A	1111
452	BOOT01	1112
1008	SOC011	1113
453	BOOT02	1114
454	BOOT03	1115
455	BOOT03A	1116
1011	SOC014	1117
182	ASR807	112
457	BOOT05	1120
480	PWRSUB01	1121
2376	MULT3	1122
2378	MULT5	1123
481	PWRSUB02A	1124
2391	MULT18	1125

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

482	PWRSUB028	1126
2392	MULT19	1127
184	ASR809	113
483	PWRSUB02	1130
1083	DEP01	1131
484	PWRSUB03	1132
1078	INT01	1133
485	DISP01	1134
1070	LAD01	1135
489	DISP05	1136
1059	EXM01	1137
177	SBCB06	114
491	TBIT02	1140
1104	DIAG01	1141
2	TBIT03	1142
1110	BOOT	1143
493	TBIT04	1144
1093	STC01	1145
494	TBIT05	1146
1094	STC02	1147
181	ASR806	115
2430	ASHEX04	1150
2431	ASHEX05	1151
2432	ASHEX06	1152
2433	ASHEX07	1153
496	YZ02	1154
497	YZ03	1155
1002	SDCD06	1156
1003	SDCD07	1157
166	ASR07	116
499	PFO4	1160
1054	DIS01	1161
501	SCPE02	1162
1041	DSR01	1163
502	SCPE03	1164
1045	LSR01	1165
508	SCPE11	1166
1012	SDCD16	1167
167	ASR08	117
510	SCPE12	1170
511	SCPE13	1171
536	I1AA05	1172
537	I1AA04	1173
512	SCPE14	1174
513	SCPE15	1175
1100	STC09	1176
1099	STC08	1177
34	SRC39	12
183	ASR808	120
514	SCPE16	1200

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
535	IIAA03	1201
516	SDEF02	1202
544	IIA13	1203
520	EOE02	1204
416	JAM15	1205
521	EOE03	1206
417	JAM16	1207
185	ASRB10	121
523	RZ08	1210
487	DISP03	1211
524	RZ09	1212
488	DISP04	1213
1155	SBRC04	1214
1156	SBRC05	1215
1157	SBRC06	1216
1158	SBRC07	1217
1361	CTANZW2	122
534	IIAA02	1220
2413	ASH012	1221
538	IIAA06	1222
2410	ASH007	1223
539	IIAA07	1224
540	IIAA08	1225
541	IIA10	1226
542	IIA11	1227
1362	CTANZW3	123
543	IIA12	1230
1001	SDCD05	1231
547	UB02	1232
1006	SDCD10	1233
548	UB03	1234
1014	NMRC01	1235
549	UB04	1236
1013	SDCD17	1237
191	MOV16	124
550	UB05	1240
551	UB06	1241
552	UB07	1242
554	UB11	1243
558	ETRP01	1244
559	ETRP02	1245
560	ETRP03	1246
561	ETRP04	1247
393	INTRO4	125
562	ETRP05	1250
1278	LDCT3	1251
563	ETRP06	1252
1280	LDCT5	1253
564	FLG01	1254
565	FLG02	1255



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BOX NO. MICROWORD LBL ADDRESS

566	FLG03	1256
567	FLG04	1257
196	MOVFO3	126
568	FLGS01	1260
569	FLGC01	1261
570	FLGC02	1262
981	CSR04	1263
982	CSR05	1264
983	CSR06A	1265
984	CSR06B	1266
357	TRP00	127
985	CSR06C	1270
986	CSR06	1271
987	CSR06D	1272
988	CSR06E	1273
989	CSR12	1274
990	CSR07	1275
992	CSR09	1276
2428	ASHEX02	1277
35	SRC40	13
201	MOV03	130
993	CSR10	1300
995	S0CD15	1301
996	S0CD18	1302
997	S0CD19	1303
999	S0CD02	1304
1007	S0CD20	1305
204	MOV04	131
999	S0CD03	1310
1000	S0CD04	1311
1015	NMRC02	1312
1016	NMRC02A	1313
1017	NMRC03	1314
1018	NMRC04	1315
1019	NMRC05	1316
1020	NMRC06A	1317
346	HALT02	132
546	UB01	1320
545	CSPE01	1321
518	OA01	1322
522	RZ01	1323
527	KT01	1324
533	I1AA01	1325
528	JCPE01	1326
530	SST01	1327
347	HALT03	133
531	MPE01	1330
532	JOEF01	1331
1021	NMRC06	1332
1022	NMRC07A	1333

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BOX NO.      MICROWORD LBL      ADDRESS

1023	NMRC07B	1334
1024	NMRC08	1335
506	SCPE09	1336
509	SCPE10	1337
213	MOV17	134
1025	NMRC09	1340
1026	NMRC10	1341
1027	NMRC11	1342
1028	NMRC12	1343
1030	HLT02	1344
1031	HLT03	1345
1032	HLT04	1346
2414	ASH013	1347
218	MOV47	135
1033	HLT05A	1350
1034	HLT05	1351
504	SCPE06	1352
505	SCPE07	1353
1036	SIN02	1354
1037	SIN03	1355
1038	SIN05	1356
2415	ASH014	1357
220	MOV58	136
1042	DSR02A	1360
1043	DSR02	1361
1044	DSR03	1362
1046	LSR02A	1363
1047	LSR02	1364
1048	LSR03	1365
1049	LSR04	1366
2333	MULDIV	1367
224	MOV18	137
1050	LSR05	1370
1051	LSR06	1371
1052	LSR07	1372
1053	LSR08	1373
1055	DIS04	1374
1056	DIS02	1375
1057	DIS03	1376
2402	ASH001	1377
54	DST09	14
229	MOV59	140
1058	DIS06	1400
1060	EXM02	1401
1062	EXM04	1402
1063	EXM05	1403
1064	EXM07A	1404
1066	EXM07	1405
1067	EXM08	1406
2426	ASHEX00	1407

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BOX NO.      MICROWORD LBL      ADDRESS

231	MOV60	141
1068	EXM09	1410
1069	EXM10	1411
1071	LAD02	1412
1072	LAD03	1413
1073	LAD04	1414
1074	LAD05	1415
1075	LAD06	1416
2427	ASHEX01	1417
1804	STCPW2	142
1076	LAD07	1420
1077	LAD08	1421
1079	INT02	1422
1039	SIN06	1423
1080	INT03	1424
1081	INT04	1425
1082	INT05	1426
1040	SIN08	1427
1805	STCPW3	143
1084	DEP02	1430
420	JAM06	1431
1086	DEP04	1432
519	EOE01	1433
1087	DEP05	1434
1089	DEP07A	1435
1090	DEP07B	1436
1091	DEP07	1437
232	MOV40	144
1092	DEP08	1440
1095	STC04	1441
1096	STC05	1442
1097	STC06	1443
1098	STC07	1444
1184	XFC12	1445
1101	STC12	1446
1168	XFC03	1447
194	MOVF01	145
1102	STC13	1450
553	UB08	1451
1103	STC14	1452
557	UB09	1453
1105	DIAG02	1454
1187	XFC15	1455
1106	DIAG03	1456
1188	XFC16	1457
233	MOV46	146
1111	EOS1A	1460
1112	EOS1B	1461
1113	EOS01	1462
1114	EOS02	1463

## M08

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BOX NO.      MICROWORD LBL      ADDRESS

1115	E0S03	1464
1116	E0S03A	1465
1190	XFC18	1466
1189	XFC17	1467
195	MOV02	147
1117	E0S38	1470
1119	E0S04A	1471
1118	E0S04	1472
1122	E0S05	1473
1123	E0S06	1474
1126	E0S08	1475
432	PST06	1476
437	PST07	1477
59	DST29	15
234	MOV48	150
1127	E0S09	1500
436	PST11	1501
1128	E0S10	1502
441	PST12	1503
1129	E0S11	1504
1132	SBRA01	1505
1133	SBRA02	1506
1134	SBRA03	1507
222	MOV10	151
2423	ASHL00	1510
2424	ASHL01	1511
1107	DIAG04	1512
1108	DIAG05	1513
1135	SBRA04	1514
1136	SBRA05	1515
1137	SBRA06	1516
1138	SBRA07	1517
223	MOV15	152
1139	SBRA08	1520
2355	DIV21	1521
1140	SBRA09	1522
2356	DIV22	1523
1141	SBRA10	1524
2358	DIV24	1525
1142	SBRA11	1526
2359	DIV25	1527
225	MOV22	153
2362	DIV28	1530
2363	DIV29	1531
2364	DIV30	1532
2365	DIV31	1533
1143	SBRA12	1534
2368	DIV34	1535
1144	SBRA13	1536
2369	DIV35	1537

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BOX NO.      MICROWORD LBL      ADDRESS

226	MOV35	154
2339	DIV05	1540
2340	DIV06	1541
2341	DIV07	1542
2342	DIV08	1543
1145	SBR014	1544
2343	DIV09	1545
1146	SBR015	1546
2344	DIV10	1547
227	MOV39	155
1147	SBR016	1550
1146	SBR017	1551
1149	SBR001	1552
1150	SBR002	1553
1151	SBR003	1554
1152	SBRC01	1555
1153	SBRC02	1556
1154	SBRC03	1557
228	MOV44	156
1160	SBR001	1560
2345	DIV11	1561
1161	SBR002	1562
2346	DIV12	1563
1162	SBR003	1564
2349	DIV15	1565
1163	SBRE01	1566
2350	DIV16	1567
230	MOV57	157
2352	DIV18	1570
2353	DIV19	1571
2366	DIV32	1572
2371	DIV37	1573
2419	ASHR00	1574
2420	ASHR01	1575
2421	ASHR02	1576
2422	ASHR03	1577
132	ASR03	16
235	MOV49	160
1164	SBRE02	1600
1165	SBRE03	1601
1167	XFC02	1602
1185	XFC13	1603
1186	XFC14	1604
1226	JDEF02	1605
1277	LDCT2	1606
2374	MULT	1607
240	MOV27	161
1302	HPPSVC2	1610
1120	E0S04B	1611
1358	STST2	1612

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BOX NO.      MICROWORD LBL      ADDRESS

1121	E0S04C	1613
1359	STST3	1614
1453	MFRACF28	1615
1454	MFRACF3	1616
2334	DIV01	1617
1351	LDFPS6	162
1455	MFRACF4	1620
1456	MFRACF5	1621
1756	STEXPS	1622
2219	FD-TOGGLE	1623
2220	FDTGL2	1624
2221	FDTGL3	1625
2222	FDTGL4	1626
2332	EIS02	1627
1349	LDFPS4	163
2335	DIV018	1630
2336	DIV02	1631
2337	DIV03	1632
2338	DIV04	1633
2347	DIV13	1634
2348	DIV14	1635
2396	MLOOP3	1636
2397	MLOOP4	1637
245	MOV45	164
2351	DIV17	1640
2354	DIV20	1641
2398	MLOOP5	1642
2399	MLOOP6	1643
2357	DIV23	1644
2360	DIV26	1645
2400	MLOOP7	1646
2401	MLOOP8	1647
1292	HOTDMDSYNC	165
2361	DIV27	1650
438	PST21	1651
2367	DIV33	1652
456	BOOT04	1653
2370	DIV36	1654
439	PST23	1655
2372	DIV38	1656
440	PST24	1657
250	MOV62	166
495	YZ01	1660
500	SCPE01	1661
498	PF01	1662
1301	MFPSPVC	1663
980	CSR01	1664
515	SDEF01	1665
2377	MULT4	1666
2379	MULT6	1667

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BOX NO.      MICROWORD LBL      ADDRESS

1293	HTDMOSYNC2	167
1169	XFC04	1670
1171	XFC05	1671
1173	XFC06	1672
1175	XFC07	1673
1177	XFC08	1674
1179	XFC09	1675
1181	XFC10	1676
1182	XFC11	1677
133	ASR04	17
258	JMP04	170
2382	MULT9	1700
503	SCPE04	1701
2384	MULT11	1702
507	SCPE05	1703
2385	MULT12	1704
2386	MULT13	1705
2387	MULT14	1706
2388	MULT15	1707
262	JMP08	171
2389	MULT16	1710
2390	MULT17	1711
2393	MULTLOOP	1712
2394	MULTLOOP3	1713
2395	MLOOP2	1714
2403	ASH002	1715
2404	ASH003	1716
2406	ASH005	1717
1642	LOADZW2	172
2408	ASHZ01	1720
555	UB12	1721
2409	ASH006	1722
556	UB13	1723
2411	ASH010	1724
2412	ASH011	1725
2416	ASH015	1726
2425	ASHL02	1727
1643	LOADZW2B	173
2429	ASHEX03	1730
517	SDEF03	1731
1230	SVCDEF	1733
1227	JDEF03	1735
1228	JDEF04	1737
264	JMP10	174
1294	HTDMOSYNC3	175
268	JMP14	176
1295	HTDMOSYNC4	177
280	BRA02	2
60	DST30	20
269	JMP15	200

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BOX NO.	MICROWORD LBL	ADDRESS
1527	MOD3CLASS8	2000
1528	MOC3CLASS9	2001
1416	MULMODW9	2002
1417	MULMODW10	2003
573	MFAT02	2004
574	MFAT03	2005
1418	MULMODW11	2006
1419	MULMODW12	2007
270	JMP16	201
2019	STDM0INT	2010
2020	STDM1INT	2011
2021	STDM2INT	2012
2022	STDM3INT	2013
2023	STDM4INT	2014
2024	STDM5INT	2015
2025	STDM6INT	2016
2026	STDM7INT	2017
271	JMP17	202
575	MFAT04	2020
1516	MOD2CLASS	2021
576	MFAT05	2022
1517	MOD3CLASS	2023
577	MFAT09	2024
579	MFAT17	2025
581	MFAT12	2026
582	MFAT14	2027
275	JMP21	203
2325	FCCHEX0	2030
2326	FCCHEX1	2031
2327	FCCHEX2	2032
2328	FCCHEX3	2033
583	MFAT15	2034
585	IA05	2035
2263	RESTART17C	2036
2251	RESTART7	2037
276	JMP24	204
588	IA207A	2040
591	IA208	2041
1943	NROUND38	2042
1941	NROUND36	2043
592	IA209	2044
593	IA210	2045
594	IA211	2046
595	IA212	2047
1238	SETCLASS2	205
2011	FDM0INT	2050
2012	FDM1INT	2051
2013	FDM2INT	2052
2014	FDM3INT	2053
2015	FDM4INT	2054



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POX NO.	MICROWORD LBL	ADDRESS
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2016	FDM5INT	2055
2017	FDM6INT	2056
2018	FDM7INT	2057
277	JMP22	206
1497	MOD13S	2060
1553	MOD5C:SS	2061
1492	MOD13M	2062
2288	RTSHFDST2C	2063
596	IA213A	2064
597	IA213	2065
718	MED19A	2066
2287	RTSHFDST2B	2067
1239	SETCLASS3	207
732	MED23A	2070
736	MED25A	2071
1493	MOD14M	2072
1494	MOD15M	2073
741	MED27A	2074
1410	MULMODW3	2075
746	MED29A	2076
1411	MULMODW4	2077
394	SER04	21
284	BR06	210
750	MED31A	2100
754	MED33A	2101
1394	ANWRTBAK5	2102
1395	ANWRTBAK6	2103
759	MED35A	2104
764	MED37A	2105
2300	RSHFDSTSN2	2106
2301	RSHFDSTSN3	2107
287	SWB02	211
1238	CTANNZ4	2110
1934	NROUND29	2111
1374	CTANNZM2	2112
1935	NROUND30	2113
1376	CLRNZW2	2114
1377	CLRNZW3	2115
1420	MULMODW13	2116
1412	MULMODW5	2117
288	SWAB20	212
1379	CLRNZW5	2120
1393	ANWRTBAK4	2121
1381	TSTNZW2	2122
1399	ANWRTBAK10	2123
1382	TSTNZW3	2124
1483	MOD4M	2125
1388	ABSNZW2	2126
1485	MOD6M	2127
291	SWB05	213

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BOX NO.	MICROWORD LBL	ADDRESS
1389	ABSNZH3	2130
1392	ANWRTBAK3	2131
1907	NROUND2	2132
1908	NROUND3	2133
1396	ANWRTBAK7	2134
1397	ANWRTBAK8	2135
1559	MODSCLSS6	2136
1564	MODSCLSS9	2137
292	SWB06	214
1913	NROUND7	2140
1919	NROUND13	2141
1920	NROUND14	2142
1921	NROUND15	2143
1398	ANWRTBAK9	2144
586	IA06	2145
1400	ANWRTBAK11	2146
608	IA220	2147
1240	SETCLASS4	215
1402	NEGNZH2	2150
1403	NEGNZH3	2151
1408	MULMODW	2152
1413	MULMODW6	2153
1409	MULMODW2	2154
1415	MULMODW8	2155
1421	MULMODW14	2156
1414	MULMODW7	2157
297	SXT02	216
1422	MULMODW15	2160
1423	MULMODW16	2161
1914	NROUND8	2162
1915	NROUND9	2163
1426	MULMODW19	2164
1427	MULMODW20	2165
2321	RTSHFSFSN2	2166
2322	RTSHFSFSN3	2167
1241	SETCLASS5	217
1428	MULMODW21	2170

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BOX NO.      MICROWORD LBL      ADDRESS

2033	FETCH	2171
1429	MULMODW22	2172
2036	STORE	2173
1533	MOD3CLSS13	2174
1534	MOD3CLSS14	2175
1535	MOD3CLSS15	2176
1536	MOD3CLSS16	2177
61	DST35	22
1326	CFCC	220
1430	MULMODW23	2200
1931	NROUND26	2201
1432	MULMODW25	2202
1932	NROUND27	2203
1435	MFRAC2	2204
1436	MFRAC3	2205
1437	MFRAC4	2206
1438	MFRAC5	2207
1327	SETF	221
1439	MFRAC6	2210
1495	MOD16W	2211
1440	MFRAC7	2212
1552	MOD4CLSS	2213
1441	MFRAC8	2214
1442	MFRAC9	2215
1937	NROUND32	2216
1957	NROUND52	2217
1328	SETI	222
1443	MFRAC10	2220
1447	MFRAC14	2221
1925	NROUND19	2222
1926	NROUND20	2223
1444	MFRAC11	2224
1445	MFRAC12	2225
1446	MFRAC13	2226
1448	MFRAC15	2227
1330	LDJBRK	223
1449	MFRAC16	2230
1450	MFRAC17	2231
1561	MOD5CLSS7B	2232
1562	MOD5CLSS7C	2233
1452	MFRACF2	2234
1457	MFRACF6	2235
1537	MOD3CLSS17	2236
1538	MOD3CLSS18	2237
1331	FPPMAINT1	224
1458	MFRACF7	2240
1459	MFRACF8	2241
1460	MFRACF9	2242
2309	RTSHFSF2C	2243
1461	MFRACF10	2244

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BOX NO.      MICROWORD LBL      ADDRESS

1462	MFRACF11	2245
1465	MFRACF13	2246
2308	RTSHFSF28	2247
1332	FPPMAINT2	225
1466	MFRACF14	2250
1467	MFRACF15	2251
1468	MFRACF16	2252
1433	MFRAC	2253
1469	MFRACF17	2254
1470	MFRACF18	2255
1471	MFRACF19	2256
1424	MULMODW17	2257
1333	ILL TWO	226
1472	MFRACF20	2260
1390	ANWRTBAK	2261
1473	MFRACF21	2262
1391	ANWRTBAK2	2263
1474	MFRACF21B	2264
1475	MFRACF22	2265
1476	MFRACF23	2266
1477	MFRACF24	2267
1334	FPPMAINT3	227
1478	MFRACF25	2270
1481	MODW3B	2271
1482	MODW3C	2272
1407	MULFDW	2273
1484	MOD5W	2274
1486	MOD7W	2275
1487	MOD8W	2276
1480	MODW3	2277
389	INTRO1	23
1335	ILL THREE	230
1488	MOD9W	2300
1500	MOD1CLSS4	2301
1489	MOD10W	2302
1502	MOD1CLSS6	2303
1490	MOD11W	2304
1491	MOD12W	2305
1507	MOD1CLSS11	2306
1508	MOD1CLSS12	2307
1336	SETD	231
1496	MOD17W	2310
1951	NROUND46	2311
1496	MOD1CLSS2	2312
1952	NROUND47	2313
1499	MOD1CLSS3	2314
1501	MOD1CLSS5	2315
1892	LDCPW4	2316
1893	LDCPW5	2317
1338	SETL	232

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BOX NO.	MICROWORD LBL	ADDRESS
1503	MOD1CLSS7	2320
1506	MOD1CLSS10	2321
2224	LFSHFSF2	2322
2226	LFSHFSF3	2323
1724	DFRACADD	2324
1719	DFRACSUB	2325
1697	DIVFDW14	2326
1698	DIVFDW15	2327
1340	ILLFOUR	233
1509	MOD1CLSS13	2330
1510	MOD1CLSS14	2331
1514	MOD1CLSS18	2332
1515	MOD1CLSS19	2333
1511	MOD1CLSS15	2334
1512	MOD1CLSS16	2335
2031	FSDM6INT2	2336
2032	FSDM7INT	2337
1341	ILLFIVE	234
1513	MOD1CLSS17	2340
1518	MOD3CLSS2	2341
1519	MOD3CLSS2B	2342
1520	MOD3CLSS3	2343
1521	MOD3CLSS3B	2344
1522	MOD3CLSS3C	2345
587	IA207	2346
609	IA221	2347
1342	ILLSIX	235
1523	MOD3CLSS3D	2350
589	IA207B	2351
1524	MOD3CLSS3E	2352
590	IA207C	2353
1689	DIVFDW6	2354
1690	DIVFDW7	2355
1691	DIVFDW8	2356
1692	DIVFDW9	2357
1343	ILLSEVEN	236
1525	MOD3CLSS4	2360
1526	MOD3CLSS6	2361
1906	NROUND	2362
1548	MOD3CLSS28	2363
1531	MOD3CLSS11	2364
1532	MOD3CLSS12	2365
1744	RMDLEFT5	2366
1740	RMDLEFT1	2367
1344	ILLEIGHT	237
1539	MOD3CLSS19	2370
1542	MOD3CLSS22	2371
1722	DFRACSUB4	2372
1720	DFRACSUB2	2373
1545	MOD3CLSS25	2374

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BOX NO.      MICROWORD LBL      ADDRESS

1549	MOD3CLSS29	2375
1923	NROUND17	2376
1924	NROUND18	2377
62	DST36	24
1237	SETCLASS	240
1550	MOD3CLSS30	2400
1551	MOD3CLSS31	2401
1451	MFRACF	2402
1434	MFRACD	2403
1554	MOD5CLSS2	2404
1555	MOD5CLSS3	2405
1940	NROUND35	2406
1945	NROUND41	2407
1259	STATUS	241
1558	MOD5CLSS58	2410
1560	MOD5CLSS7	2411
1563	MOD5CLSS9	2412
2315	RTSHFSF78	2413
1670	WORDCMP	2414
1675	WORDCMP6	2415
1678	CMPEQUAL	2416
2314	RTSHFSF7	2417
1254	CTANZ	242
1679	CMPEQUAL2	2420
1556	MOD5CLSS4	2421
1687	DIVFDW4	2422
1557	MOD5CLSS5	2423
1688	DIVFDW5	2424
1699	DIVFDW16	2425
1700	DIVFDW17	2426
1718	DFRAC18	2427
1255	CTANZ	243
1721	DFRACSUB3	2430
1723	DFRACSUB5	2431
1726	DFRACADD3	2432
2294	RTSHFDST78	2433
1728	DFRACADD5	2434
1730	QUOLEFT2	2435
1731	QUOLEFT3	2436
2253	RTSHFDST7	2437
1243	MULFZ	244
1947	NROUND42	2440
1948	NROUND43	2441
1949	NROUND44	2442
1732	QUOLEFT4	2443
1734	QUOLEFT8	2444
1737	QUOLEFT10	2445
1738	QUOLEFT11	2446
1916	NROUND10	2447
1244	MULDZ	245

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
2248	RESTART5	2450
2249	RESTART58	2451
2260	RESTART16	2452
2261	RESTART17	2453
1739	QUOLEFT12	2454
1938	NROUND33	2455
1741	RMDRLEFT2	2456
1939	NROUND34	2457
1245	MULXNZ	246
1742	RMDRLEFT3	2460
1743	RMDRLEFT4	2461
1745	RMDRLEFT6	2462
2232	LFSHFSF88	2463
1746	FMDRLEFT7	2464
1749	FMDRLEFT10	2465
1890	LDCPW2	2466
2231	LFSHFSF8	2467
1260	MOD	247
1891	LDCPW3	2470
1903	LDCPW15	2471
1733	QUOLEFT7	2472
1729	QUOLEFT1	2473
1909	NROUND4	2474
1910	NROUND48	2475
1529	MOD3CLSS10	2476
1530	MOD3CLS108	2477
64	DST39	25
1246	ADDZ	250
1911	NROUND5	2500
1912	NROUND6	2501
1917	NROUND11	2502
2305	RSHFDSTSN7	2503
1918	NROUND12	2504
1922	NROUND16	2505
1927	NROUND21	2506
2304	RSHFDSTSN6	2507
1247	ADDNZ	251
1928	NROUND22	2510
1929	NROUND23	2511
1930	NROUND24	2512
1933	NROUND28	2513
1936	NROUND31	2514
1942	NROUND37	2515
1540	MOD3CLSS20	2516
1541	MOD3CLSS21	2517
1248	LOADZ	252
1944	NROUND39	2520
578	MFAT10	2521
1945	NROUND40	2522
580	MFAT11	2523

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1950	NROUND45	2524
1953	NROUND48	2525
2286	RTSHFDST2	2526
2289	RTSHFDST3	2527
1249	LOADSIX	253
1954	NROUND49	2530
1955	NROUND50	2531
2307	RTSHFSF2	2532
2310	RTSHFSF3	2533
1956	NROUND51	2534
1960	NROUND55	2535
2311	RTSHFSF4	2536
2312	RTSHFSF5	2537
1251	LOADNZS	254
1961	NROUND56	2540
2217	EXPTST5	2541
1962	FINISH	2542
2218	EXPTST6	2543
1969	TPREAMBLE	2544
1894	LDCPW6	2545
1970	TRPE?	2546
1895	LDCPW7	2547
1252	SUBZ	255
2009	FETCHINT	2550
2010	STOREINT	2551
1958	NROUND53	2552
1959	NROUND54	2553
2027	FSDM3INT	2554
2028	FSDM3INT2	2555
2290	RTSHFDST4	2556
2291	RTSHFDST5	2557
1253	SUBZ	256
2029	FSDM5INT	2560
2030	FSDM6INT	2561
1727	DFRACADD4	2562
1725	DFRACADD2	2563
2034	FETCH2	2564
2035	FETCH3	2565
2037	STORE2	2566
2316	RTSHFSF8	2567
1261	CMP	257
2038	STORE3	2570
2196	DATAPREP	2571
2197	DPREP2	2572
2319	RTSHFSF11	2573
2198	DPREP28	2574
2199	DPREP3	2575
1543	MOD3CLSS23	2576
1544	MOD3CLSS24	2577
251	MOV11	26



## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1262	STFD	260
2200	DPREP4	2600
2201	DPREP5	2601
2202	DPREP6	2602
2225	LFSHFSF28	2603
2203	DPREP7	2604
2204	DPREP8	2605
2205	DPREP9	2606
2233	LFSHFSF9	2607
1263	STFD2	261
2206	DPREP10	2610
2207	DPREP11	2611
2208	DPREP12	2612
2230	LFSHFSF7	2613
2209	DPREP13	2614
2210	DPREP14	2615
2211	DPREP15	2616
2234	LFSHFSF10	2617
1283	DIVZ	262
2212	DPREP16	2620
2213	EXPTST	2621
2214	EXPTST2	2622
1463	MFRACF12	2623
2215	EXPTST3	2624
2216	EXPTST4	2625
2223	LEFTSHFSF	2626
1464	MFRACF128	2627
1284	DIVNZ	263
2227	LFSHFSF4	2630
2228	LFSHFSF5	2631
2229	LFSHFSF6	2632
2244	RESTART	2633
2245	RESTART2	2634
2246	RESTART3	2635
1546	MOD3CLSS26	2636
1547	MOD3CLSS27	2637
1264	STOREXP	264
1671	WORDCMP2	2640
1672	WORDCMP3	2641
1673	WORDCMP4	2642
1674	WORDCMP5	2643
2247	RESTART4	2644
2252	RESTART8	2645
1747	RMDLEFT8	2646
1748	RMDLEFT9	2647
1265	STOREXP0	265
2253	RESTART9	2650
2254	RESTART10	2651
2264	RESTART17D	2652
2265	RESTART17E	2653

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BOX NO.      MICROWORD LBL      ADDRESS

1375	CLRNZW	2654
1380	TSTNZW	2655
1387	ABSNZW	2656
1401	NEGNZW	2657
1266	STOREPX	266
2266	RESTART17F	2660
2267	RESTART17G	2661
2268	RESTORECSP	2662
2269	RESTCSP2	2663
2270	RESTCSP3	2664
2271	RESTCSP4	2665
2272	RESTCSP5	2666
2250	RESTART6	2667
1285	STCT	267
2273	RESTCSP6	2670
1676	WORDCMP7	2671
2274	RESTCSP7	2672
1677	WORDCMP8	2673
2275	RESTCSP8	2674
2276	RESTCSP9	2675
2277	RESTCSP10	2676
2262	RESTART17B	2677
252	MOV61	27
1269	STCPZ	270
2278	RESTCSP11	2700
2279	RESTCSP12	2701
2280	RESTCSP13	2702
1736	QUOLEFT98	2703
2281	RESTCSP14	2704
2282	RESTCSP15	2705
2285	RTSHFDST	2706
1735	QUOLEFT9	2707
1270	STCPNZ	271
2292	RTSHFDST6	2710
2295	RTSHFDST8	2711
2296	RTSHFDST9	2712
2297	RTSHFDST10	2713
2298	RTSHFDST11	2714
2299	RSHFDSTSN	2715
1504	MOD1CLSS8	2716
1505	MOD1CLSS9	2717
1272	LDEXP	272
2306	RTSHFSF	2720
2313	RTSHFSF6	2721
1425	MULMODW18	2722
1431	MULMODW24	2723
2317	RTSHFSF9	2724
2318	RTSHFSF10	2725
2320	RTSHFSFSN	2726
2323	SETFZFN	2727

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1273	LDEXPCM6	273
2324	SETFZFN2	2730
2329	DTOFCC1	2731
2330	DTOFCC2	2732
2302	RSHFDSTSM4	2736
2303	RSHFDSTSM5	2737
1274	LDEXPX	274
1275	LDCTZ	275
1276	LDCTNZ	276
1291	LDCP	277
283	BRAOS	3
65	DST40	30
311	RTS04	300
618	IA16	3000
621	IA19	3001
619	IA17	3002
620	IA18	3003
729	MED22	3004
725	MED21	3005
344	RES04	3006
411	JAM04	3007
324	RTI10	301
622	IA20	3010
623	IA99	3011
414	JAM27	3012
415	JAM25	3013
624	IA90	3014
625	IA76	3015
838	INIT04	3016
868	HFPINIT	3017
326	S0802	302
735	MED25	3020
459	CONDIAG02	3021
462	CONDIAG05	3022
463	CONDIAG06	3023
737	MED26	3024
464	CONDIAG07	3025
465	CONDIAG08	3026
466	CONDIAG09	3027
334	MARK01	303
640	IA21	3030
642	IA22	3031
641	IA22A	3032
654	IA33	3033
742	MED28	3034
845	INIT11	3035
470	CONDIAG13	3036
895	MMROINIT	3037
353	YTRP00	304
668	IA39	3040

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
672	IA40	3041
471	CONDIAG14	3042
473	CONDIAG16A	3043
749	MED31	3044
476	NOSWP02	3045
479	NOSWP05	3046
529	JCPE02	3047
354	YTRP01	305
673	IA41	3050
675	IA85	3051
1852	LDEXP17	3052
1855	LDEXPHCT	3053
755	MED34	3054
598	IA100	3055
599	IA101	3056
600	IA102	3057
343	RES03	306
676	IA86	3060
677	IA87	3061
601	IA103	3062
602	IA50A	3063
763	MED37	3064
603	IA216	3065
604	IA217	3066
605	IA218A	3067
342	RES02	307
626	IA60	3070
906	REGINIT11	3071
606	IA218	3072
909	REGINIT15	3073
767	MED40	3074
768	MED41	3075
840	INIT06	3076
869	WHI02A	3077
66	DST24	31
355	NTRP00	310
679	IA15	3100
680	IA89	3101
607	IA219	3102
627	IA60A	3103
633	IA65	3104
639	IA78	3105
628	IA60B	3106
629	IA60F	3107
1324	SETFDW	311
1209	WCSRDAOR	3110
1207	WCSRDAOR01	3111
631	IA60H	3112
634	IA66A	3113
1220	WCSRST01	3114

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1219	WCSWRST01	3115
842	INIT08	3116
890	FGI01	3117
356	NTRP01	312
610	IA07	3120
613	IA10	3121
611	IA08	3122
612	IA09	3123
1210	WCSRDOAT01	3124
1215	WCSWRDAT01	3125
635	IA67	3126
636	IA68	3127
1321	ILLEGAL1	313
614	IA11	3130
617	IA14	3131
615	IA12	3132
616	IA13	3133
655	IA34	3134
662	IA38	3135
844	INIT10	3136
894	SLRINIT	3137
358	TRP01	314
1841	LDEXP6	3140
1842	LDEXP7	3141
1843	LDEXP8	3142
1844	LDEXP9	3143
769	MED42	3144
770	MED43	3145
643	IA24	3146
644	IA25A	3147
1322	ILLEGAL2	315
771	MED44	3150
772	MED45	3151
645	IA25	3152
846	INIT12	3153
646	IA26	3154
647	IA27A	3155
648	IA27	3156
910	CCRINIT	3157
359	TRP02	316
797	MED70	3160
798	MED71	3161
649	IA28	3162
656	IA34A	3163
657	IA34C	3164
650	IA29	3165
658	IA34D	3166
651	IA30	3167
1323	ILLEGAL3	317
802	MED72	3170

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BOX NO.      MICROWORD LBL      ADDRESS

803	MED73	3171
659	IA34E	3172
660	IA34F	3173
661	IA34G	3174
849	INIT15	3175
663	IA38A	3176
911	PSWINIT	3177
253	BYTE01	32
378	TRP18	320
731	MED23	3200
666	IA38E	3201
667	IA38G	3202
669	IA39B	3203
733	MED24	3204
717	MED18	3205
670	IA39C	3206
716	MED17	3207
386	SER02A	321
740	MED27	3210
913	CAINIT02	3211
671	IA39D	3212
850	INIT16	3213
745	MED29	3214
674	IA41B	3215
678	IA87A	3216
912	CAINIT01	3217
388	SER03	???
747	MED30	3220
681	IA110	3221
1645	LOADZW4	3222
1646	LDDW	3223
751	MED32	3224
682	IA111	3225
1365	CLRFZW	3226
1366	CLRDZW	3227
390	INTRO1A	323
753	MED33	3230
693	IA112A	3231
1709	DFRAC9	3232
1710	DFRAC10	3233
758	MED35	3234
1369	ABSZW2	3235
684	IA113B	3236
1370	ABSZW3	3237
391	INTRO2	324
760	MED36	3240
928	LOG02A	3241
685	IA113	3242
930	LOG02B	3243
686	IA114B	3244

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

652	IA31	3245
687	IA114C	3246
653	IA32	3247
392	INTR03	325
688	IA114D	3250
689	IA114E	3251
929	LOG02C	3252
972	LOG25	3253
773	MED46	3254
774	MED47	3255
861	INIT24	3256
917	TRKINIT	3257
395	SER05	326
775	MED48	3260
776	MED49	3261
690	IA114F	3262
691	IA114	3263
693	IA115A	3264
720	MED20	3265
694	IA115D	3266
721	MED21	3267
526	RZ12	327
777	MED50	3270
778	MED51	3271
695	IA115E	3272
696	IA115C	3273
699	MED02	3274
862	INIT25	3275
700	MED03	3276
918	JAMINIT	3277
254	BYTE02	33
1196	RSVD04	330
779	MED52	3300
780	MED53	3301
701	MED04	3302
702	MED05	3303
781	MED54	3304
782	MED55	3305
703	MED06	3306
704	MED10A	3307
572	MFIX00	331
783	MED56	3310
784	MED57	3311
705	MED10	3312
863	INIT26	3313
785	MED58	3314
786	MED59	3315
706	MED11	3316
920	UBINIT	3317
1197	RSVD05	332

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## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.    MICROWORD LBL    ADDRESS

805	MED74	3320
804	MED74A	3321
707	MED12A	3322
708	MED12B	3323
711	MED13	3324
712	MED14	3325
713	MED14A	3326
856	INIT21	3327
698	MED01	333
787	MED60	3330
788	MED61	3331
1849	LDEXP14	3332
1850	LDEXP15	3333
789	MED62	3334
790	MED63	3335
714	MED15	3336
1199	WCSINIT01	3337
1195	RSVD03	334
809	MED205	3340
806	MED75	3341
715	MED16	3342
722	MED85	3343
814	MED76	3344
833	MED84	3345
723	MEDX1	3346
864	INIT27	3347
1242	SETCLASS6	335
817	MED82	3350
819	MED77	3351
724	MEDX2	3352
726	MEDZ2	3353
821	MED79	3354
816	MED202	3355
799	MED71A	3356
921	PWRTST	3357
1256	CTANNZ2	336



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## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

795	MED68	3360
796	MED69	3361
800	MED718	3362
801	MED71C	3363
765	MED38	3364
766	MED39	3365
810	MED206	3366
811	MED207	3367
1257	CTANNZ3	337
791	MED64	3370
792	MED65	3371
815	MED76A	3372
817	MED203	3373
793	MED66	3374
794	MED67	3375
818	MED204	3376
820	MED78	3377
71	DST23	34
1320	SETCLASSW	340
822	MED79A	3400
977	LOG30	3401
823	MED798	3402
978	LC331	3403
824	MED79C	3404
1846	LDEXP11	3405
826	MED81	3406
1847	LDEXP12	3407
1345	STATUSW	341
828	MED83	3410
692	IA115	3411
835	INIT01	3412
697	IA116	3413
830	CAWRT02	3414
832	CAREAD02	3415
761	MED36A	3416
762	MED368	3417
1360	CTANZW	342
834	INIT00	3420
836	INIT02	3421
837	INIT03	3422
839	INIT05	3423
841	INIT07	3424
843	INIT09	3425
847	INIT13	3426
848	INIT14	3427
1373	CTANNZW	343
851	INIT17A	3430
853	INIT18	3431
1716	DFRAC16	3432
1717	DFRAC17	3433

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

855	INIT20	3434
857	INIT22	3435
756	MED34A	3436
757	MED34B	3437
1404	MULFZW	344
858	INIT23A	3440
859	INIT23B	3441
860	INIT23	3442
865	INIT28	3443
870	WHI02B	3444
871	WHI02	3445
872	WHI03A	3446
873	WHI03B	3447
1405	MULDZW	345
874	WHI03	3450
887	WHI14	3451
875	WHI04	3452
888	WHI15	3453
1364	CLRZW	3454
1367	TSTZW	3455
1368	ABSZW	3456
1372	NEGZW	3457
1406	MULXW	346
876	WHI05	3460
881	WHI10	3461
882	WHI11	3462
883	WHI12A	3463
884	WHI12B	3464
885	WHI12	3465
886	WHI13	3466
889	WHI16	3467
1475	MODW	347
877	WHI06	3470
879	WHI08	3471
878	WHI07	3472
880	WHI09	3473
893	FGI04	3474
897	REGINIT02	3475
632	IA600	3476
630	IA60E	3477
85	CMPO3	35
1565	ADDZW	350
468	CONDIAG:1	3500
469	CONDIAG12	3501
474	CONDIAG16	3502
467	CONDIAG10	3503
898	REGINIT03	3504
899	REGINIT04	3505
727	MEDZ3	3506
728	MEDZ4	3507

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1566	ADDNZW	351
900	REGINIT05	3510
891	FGI02	3511
901	REGINIT06	3512
892	FGI03	3513
902	REGINIT07	3514
903	REGINIT08	3515
904	REGINIT09	3516
905	REGINIT10	3517
1641	LOADZW	352
907	REGINIT12	3520
637	IA69	3521
908	REGINIT14A	3522
638	IA70	3523
915	BASINIT02	3524
916	BASINIT03	3525
919	SVSINIT	3526
852	INIT17	3527
1648	LOADSIXW	353
922	PWRTST01	3530
664	IA38C	3531
924	PWRTST04	3532
665	IA38D	3533
926	LOG01	3534
927	LOG02	3535
931	LOG03D	3536
896	REGINIT01	3537
1650	LOADNZW	354
932	LOG02E	3540
933	LOG03A	3541
934	LOG03F	3542
935	LOG03G	3543
936	LOG03H	3544
937	LOG03I	3545
938	LOG03J	3546
854	INIT19	3547
1567	SUBZW	355
939	LOG03K	3550
1966	FINISH5	3551
940	LOG03L	3552
1967	FINISH6	3553
941	LOG03M	3554
1968	FINISH7	3555
942	LOG03N	3556
914	BASINIT01	3557
1568	SUBNZW	356
943	LOG03O	3560
944	LOG03P	3561
945	LOG03Q	3562
946	LOG03R	3563

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BOX NO.      MICROWORD LBL      ADDRESS

947	LOG03S	3564
948	LOG03	3565
949	LOG04	3566
950	LOG15	3567
1656	CMPW	357
951	LOG16	3570
952	LOG17	3571
953	LOG18	3572
954	LOG19A	3573
955	LOG19B	3574
460	CONDIAG03	3575
956	LOG19C	3576
461	CONDIAG04	3577
150	ASR803	36
1680	ST1W	360
957	LOG19D	3600
709	MED12C	3601
358	LOG19E	3602
710	MED12D	3603
959	LOG19F	3604
960	LOG19	3605
961	LOG20	3606
962	LOG21	3607
1681	ST2W	361
963	LOG22	3610
413	JAM2B	3611
964	LOG23	3612
458	CONDIAG01	3613
965	LOG24A	3614
475	NOSWP01	3615
966	LOG24B	3616
967	LOG24C	3617
1683	DIVZW	362
968	LOG24D	3620
969	LOG24E	3621
970	LOG24F	3622
971	LOG24G	3623
973	LOG25A	3624
974	LOG27	3625
975	LOG28	3626
752	MED32A	3627
1684	DIVNZW	363
976	LOG29	3630
979	LOG31A	3631
1200	WCSINIT02	3632
748	MED30A	3633
1201	WCSINIT03	3634
734	MED24A	3635
730	MED22A	3636
719	MED19	3637

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1750	STOREXPW	364
1202	WCSINIT04	3640
923	PWRTST03	3641
1204	WCSINIT06	3642
925	PWRTST05	3643
1205	WCSINIT07	3644
1208	WCSMRADR02	3645
1211	WCSRDDAT02	3646
1212	WCSRDDAT05	3647
1751	STOREXP0W	365
1213	WCSRDDAT06	3650
1214	WCSRDDAT07	3651
1216	WCSMRDAT02	3652
477	NOSMP03	3653
1217	WCSMRDAT03	3654
1218	WCSMRDAT04	3655
1221	WCSRDST02	3656
478	NOSMP04	3657
1752	STOREXPXW	366
829	CAWRT01	3660
831	CAREAD01	3661
1222	WCSRDST03	3662
1363	CTANZW38	3663
1371	ABSZW4	3664
1644	LOADZW3	3665
1647	LDDW2	3666
866	INIT29	3667
1757	STCTW	367
1682	ST5W	3670
1693	DIVFDW10	3671
1694	DIVFDW11	3672
1695	DIVFDW12	3673
1696	DIVFDW13	3674
1701	DFRAC	3675
1702	DFRAC2	3676
867	INIT30	3677
151	ASR804	37
1803	STCPZW	370
1703	DFRAC3	3700
1704	DFRAC4	3701
1705	DFRAC5	3702
1706	DFRAC6	3703
1707	DFRAC7	3704
1708	DFRAC8	3705
1711	DFRAC11	3706
1712	DFRAC12	3707
1806	STCPNZW	371
1713	DFRAC13	3710
1203	WCSINIT05	3711
1714	DFRAC14	3712

## M10

11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1206	WCSINIT08	3713
1715	DFRAC15	3714
1838	LDEXP3	3715
738	MED26A	3716
739	MED26B	3717
1835	LDEXP2W	372
807	MED200	3720
808	MED201	3721
1839	LDEXP4	3722
1840	LDEXP5	3723
825	MED80	3724
812	MED208	3725
1845	LDEXP10	3726
1848	LDEXP13	3727
1836	LDEXP06W	373
813	MED209	3730
1851	LDEXP16	3731
1853	LDEXP18	3732
1854	LDEXP19	3733
1963	FINIS	3734
1964	FINIS.	3735
743	MED28A	3736
744	MED28B	3737
1837	LDEXPNZW	374
1965	FINISH4	3740
1856	LDCTZW	375
1857	LDCTNZW	376
1889	LDCPW1	377
14	SRC10	4
1193	RSYD01	40
69	DST41	400
1780	STCTW24	4000
1784	STCTW28	4001
1765	STCTW9	4002
1766	STCTW10	4003
11	SRC11	4004
12	SRC14	4005
1769	STCTW13	4006
1770	STCTW14	4007
1267	STEXPHOT	401
1598	ADDSHFSFF1	4010
1599	ADDSHFSFF2	4011
2118	STFLT3	4012
2130	STOREHOT	4013
13	SRC09	4014
1793	STCTW37	4015
15	SRC12	4016
1797	STCTW41	4017
106	CMPOS	402
16	SRC13	4020

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1773	STCTW17	4021
17	SRC15	4022
1774	STCTW18	4023
303	SCC01	4024
2006	FLTPTRAP	4025
304	SCC02	4026
2008	NOTRAP	4027
107	BIT04	403
305	SCC03	4030
374	TRP15A	4031
1586	SUMSFGOF	4032
1584	SUMDFGSF	4033
309	RTS02	4034
310	RTS03	4035
1795	STCTW39	4036
1796	STCTW40	4037
108	BIC04	404
313	RTI02	4040
1786	STCTW30	4041
314	RTI03	4042
1787	STCTW31	4043
316	RTI02	4044
317	RTI03	4045
1800	STCTW44	4046
1801	STCTW45	4047
109	BIS04	405
1782	STCTW26	4050
1783	STCTW27	4051
1589	ADDW10	4052
1588	ADDW09	4053
318	RTI04	4054
319	RTI05	4055
1662	CMPW7	4056
1663	CMPW8	4057
110	ADD04	406
1601	ADD5HFSFD1	4060
1602	ADDW20A	4061
1788	STCTW32	4062
1789	STCTW33	4063
320	RTI06	4064
323	RTI09	4065
2099	FFLT3	4066
2103	FFLT7	4067
295	XOR03	407
327	S0803	4070
328	S0804	4071
2243	MVSFFDST5	4072
2241	MVSFFDST3	4073
329	S0805	4074
331	S0808	4075

## 1160 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1651	LOADNZW2	4076
1652	LOADNZW3	4077
1192	FASTX1	41
70	DST42	410
1605	ADDSHFDF1	4100
1606	ADDSHFDF2	4101
2104	FFLT8	4102
2105	FFLT9	4103
335	MARK02	4104
336	MARK03	4105
1897	LDCPW9	4106
1898	LDCPW10	4107
1268	STEXPH02	411
337	MARK04	4110
360	TRP03A	4111
2074	STDMOFLT4	4112
2072	STDMOFLT2	4113
361	TRP03	4114
362	TRP04	4115
363	TRP05A	4116
364	TRP05	4117
113	CMPB04	412
365	TRP06	4120
1809	STCPW6	4121
367	TRP08	4122
1810	STCPW7	4123
368	TRP09	4124
369	TRP10A	4125
1899	LDCPW11	4126
1904	LDCPW16	4127
114	BITB04	413
1608	ADDSHFDFD1	4130
1609	ADDW20	4131
1812	STCPW9	4132
1814	STCPW11	4133
370	TRP10	4134
1813	STCPW10	4135
371	TRP12	4136
1816	STCPW13	4137
115	BICB04	414
372	TRP13	4140
1822	STCPW19	4141
373	TRP14	4142
1823	STCPW20	4143
375	TRP15	4144
380	WCS02	4145
1817	STCPW14	4146
1818	STCPW15	4147
116	BISB04	415
472	CONDIAG15	4150



## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1825	STCPW22	4151
525	RZ11	4152
1826	STCPW23	4153
1250	LOADSIX2	4154
1831	STCPW28	4155
1271	STCPN22	4156
1832	STCPW29	4157
111	SUBOS	416
2062	FSDM0FLT	4160
2075	FSDM1FLT	4161
2076	FSDM2FLT	4162
2077	FSDM3FLT	4163
2080	FSDM4FLT	4164
2084	FSDM5FLT	4165
2088	FSDM6FLT	4166
2091	FSDM7FLT	4167
285	OTH01	417
2151	FS2DM0FLT	4170
2152	FS2DM1FLT	4171
2153	FS2DM2FLT	4172
2154	FS2DM3FLT	4173
2155	FS2DM4FLT	4174
2158	FS2DM5FLT	4175
2159	FS2DM6FLT	4176
2160	FS2DM7FLT	4177
2331	EIS01	42
165	ASR06	420
1288	STCT4	4200
2096	FFLTSYNC	4201
1303	HFPPSVC3	4202
2097	FFLT1	4203
1304	HFPPSVC4	4204
2115	STSYNC	4205
1305	HFPPSVC5	4206
2116	STFLT2	4207
163	ROL03	421
1306	HFPPSVC6	4210
2176	FPPABORT1	4211
1310	HFPPTRAP3	4212
2177	FPPABORT2	4213
1311	HFPPTRAP4	4214
2178	FPPABORT3	4215
1312	HFPPTRAP5	4216
2117	STFLT2A	4217
164	ASR05	422
1313	HFPPTRAP6	4220
306	SCC04	4221
1314	HFPPTRAP7	4222
307	SCC05	4223
1383	TSTNZW4	4224

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1593	BIGEXPEND	4225
1384	TSTNZMS	4226
1592	BIGEXDFGSF	4227
168	ASL03	423
1569	SUBM01	4230
1309	FFLT14-2	4231
1570	ADDW01	4232
1315	FETO1F2	4233
1571	ADDW02	4234
1573	ADDW04	4235
2121	STFLT6	4236
2122	STFLT7	4237
1279	LDCT4	424
1574	ADDW05	4240
1575	ADDW06	4241
2108	FFLT12	4242
2112	FFLT16	4243
1576	ADDW07	4244
1577	ADDW08	4245
2082	FSDM4FLT3	4246
2083	FSDM4FLT4	4247
1281	LDCT6	425
2189	NOTNZERO1	4250
2190	NOTNZERO2	4251
2191	NOTNZERO3	4252
2192	NZERO	4253
1587	SUMSFGDF1	4254
1590	ADDW11	4255
2128	STFLT13	4256
2129	STFLT14	4257
1282	LDCT7	428
1595	ADDW128	4260
332	S0807	4261
1610	ADDW21	4262
330	S0806	4263
1612	ADD002	4264
1603	ADD0SHFDF	4265
1613	ADD003	4266
1596	ADD0SHFSF	4267
301	SXT06	427
1614	ADD004	4270
1616	ADD002	4271
2163	FFLT1MM2	4272
2164	FFLT1MM3	4273
1617	ADD003	4274
1626	SF2SCOMP	4275
2113	FFLT17	4276
2114	FFLT18	4277
1191	FIS01	43
153	CLR02	430

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1627	SF2SCMPF	4300
1628	SF2SCMPF1	4301
2166	FFLTMM5	4302
2167	FFLTMM6	4303
1630	SF2SCMPD2	4304
1631	SF2SCMPD3	4305
1597	ADDSHF SFF	4306
1600	ADDSHF SFD	4307
154	COMD3	431
1633	SF2SCMPF3	4310
1634	FDST2SC	4311
1881	LDCTW24	4312
1882	LDCTW25	4313
1635	FDST2SCF1	4314
1637	FDST2SCD2	4315
2111	FFLT15	4316
2187	TSTNZERO	4317
155	INC03	432
1638	FDST2SCD3	4320
1640	FDST2SCF3	4321
321	RTI07	4322
322	RTI08	4323
1649	LOADSIXW2	4324
1653	LOADNZW38	4325
1619	NROUNDEND	4326
1618	ADDFD4	4327
156	DECO3	433
1654	LOADNZW4	4330
1578	SUMP	4331
1655	LOADNZW5	4332
1579	DIFP	4333
1657	CMPW2	4334
1658	CMPW3	4335
2090	FSDM6FLT3	4336
2092	FSDM7FLT2	4337
157	NEG03	434
1659	CMPW4	4340
1884	LDCTW27	4341
1660	CMPW5	4342
1885	LDCTW28	4343
1661	CMPW6	4344
1664	CMPW9	4345
2065	FSDMOFLT4	4346
2064	FSDMOFLT3	4347
159	ADC03	435
1665	CMPW10	4350
2067	FDMOFLT	4351
1666	CMPW11	4352
2071	STDMOFLT	4353
1667	CMPW12	4354

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160 ROM

BOX NO.	MICROWORD LBL	ADDRESS
2193	NZER02	4355
1668	CMPW13	4356
2194	NZER03	4357
160	SBC05	436
1669	CMPW14	4360
2144	FFLTSYNC2	4361
1758	STCTW2	4362
2146	FDM67FLT	4363
1759	STCTW3	4364
2145	STSYNC2	4365
1760	STCTW4	4366
2149	STDM67FLT	4367
162	TST02	437
1761	STCTW5	4370
2179	FPPABORT4	4371
1762	STCTW6	4372
2180	FPPABORT5	4373
1763	STCTW7	4374
2181	FPPABORT6	4375
1764	STCTW8	4376
2150	STDM67FLT2	4377
296	SXT01	44
1286	STCT2	440
1767	STCTW11	4400
1768	STCTW12	4401
339	WAIT02	4402
340	WAIT03	4403
1771	STCTW15	4404
1772	STCTW16	4405
1994	WARMDIS3	4406
1995	WARMDIS4	4407
188	MOV01	441
1775	STCTW19	4410
1776	STCTW20	4411
1604	ADDSHFDF	4412
1607	ADDSHFDFD	4413
1572	ADDW03	4414
1580	ADDSFEZ	4415
1581	ADDOFEZ	4416
1582	ADDSDFEZ	4417
74	CMP01	442
1777	STCTW21	4420
1778	STCTW22	4421
2238	MVFDSTSF4	4422
2236	MVFDSTSF2	4423
1779	STCTW23	4424
1781	STCTW25	4425
1785	STCTW29	4426
376	TRP16	4427
75	BIT01	443

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1790	STCTW34	4430
381	MCS05	4431
1791	STCTW35	4432
1223	MCS00DPC01	4433
1792	STCTW36	4434
1794	STCTW38	4435
1798	STCTW42	4436
377	TRP17	4437
76	BIC01	444
1799	STCTW43	4440
1864	LDCTW8	4441
1802	STCTW46	4442
1873	LDCTW16	4443
1807	STCPW4	4444
1808	STCPW5	4445
1992	WARMDIS	4446
1996	HOTDIS	4447
77	BIS01	445
1811	STCPW8	4450
1868	LDCTW11	4451
1815	STCPW12	4452
1869	LDCTW12	4453
1819	STCPW16	4454
1870	LDCTW13	4455
1820	STCPW17	4456
1871	LDCTW14	4457
78	ADD01	446
1821	STCPW18	4460
2161	FFLTSYNC3	4461
1824	STCPW21	4462
2162	FFLTMM	4463
1827	STCPW24	4464
2169	STSYNC3	4465
1828	STCPW25	4466
2170	STMM1	4467
1166	XFC01	447
1829	STCPW26	4470
2182	FPPABORT7	4471
1830	STCPW27	4472
2183	FPPABORT8	4473
1833	STCPW30	4474
2184	FPPABORT9	4475
1834	STCPW31	4476
2171	STMM2	4477
101	SUB04	45
1287	STCT3	450
1860	LDCTW4	4500
2058	MODELTERS	4501
1861	LDCTW5	4502
2059	MODELATER6	4503

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BOX NO.      MICROWORD LBL      ADDRESS

1865	LDCTW9	4504
1866	LDCTW10	4505
1632	SF2SCMPF2	4506
1629	SF2SCMPD1	4507
200	MOVQ2	451
1867	LDCTW10B	4510
1872	LDCTW15	4511
1594	ADDW12	4512
1591	BIGEXPDI	4513
1874	LDCTW17	4514
1989	DISAB	4515
1875	LDCTW18	4516
2001	STATUPDT1	4517
80	CMPB01	452
1876	LDCTW19	4520
1878	LDCTW21	4521
1615	ADDF01	4522
1611	ADDD01	4523
1880	LDCTW23	4524
1883	LDCTW26	4525
1639	FDST2SCF2	4526
1636	FDST2SCD1	4527
81	BITB01	453
1886	LDCTW29	4530
1887	LDCTW30	4531
1888	LDCTW31	4532
1620	NROUNDEND1	4533
1896	LDCPW8	4534
1900	LDCPW12	4535
1901	LDCPW13	4536
1621	NROUNDEND2	4537
82	BICB01	454
1902	LDCPW14	4540
1971	OPCODERR	4541
1974	ZERODIV	4542
1975	CONVTRAP	4543

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

1981	VTRAP5	4544
1983	UFLOTRAP	4545
1985	NZEROTRAP	4546
1987	MAINTTRAP	4547
83	BISB01	455
1905	LDCPW17	4550
1976	CTRAP2	4551
2101	FFLT5	4552
2102	FFLT6	4553
1622	NROUNDEND3	4554
1623	NROUNDEND4	4555
1624	NROUNDEND5	4556
1625	NROUNDEND6	4557
79	SUB01	456
1977	OFLOTRAP	4560
1978	VTRAP2	4561
2070	FDMOFLT4	4562
2068	FDMOFLT2	4563
1979	VTRAP3	4564
1297	HOTSYNC	4565
1980	VTRAP4	4566
1298	HOTSYNC2	4567
1296	HTDMOSYNCS	457
1982	VTRAP6	4570
1984	UTRAP2	4571
2120	STFLT5	4572
2137	STOREHOT3	4573
1986	NZTRAP2	4574
1299	HOTSYNC3	4575
1988	TRAPEND	4576
1300	HOTSYNC4	4577
293	XOR01	46
1325	SETFD02	460
1993	WARMDIS2	4600
2002	STATUPDT2	4601
1972	OPERR2	4602
1973	OPERRHOT	4603
2003	STATUPDT3	4604
2004	STATUPDT4	4605
2063	FSDMOFLT2	4606
2066	FSDMOFLT5	4607
1329	SETI2	461
2005	STATUPDT5	4610
1990	VDIS	4611
2007	FLTPTRAP2	4612
1991	UDIS	4613
2039	FETCHFLT	4614
1997	UVDIS	4615
2040	FFLTDEFER	4616
2000	CDIS	4617

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BOX NO.      MICROWORD LBL      ADDRESS

19	SRC18	462
2041	LDCFETH	4620
2042	STCFLT	4621
2138	STOREHOT4	4622
2139	STOREHOT5	4623
2043	FETCHINTLG	4624
2046	FINTLG4	4625
1307	HFPVSVC7	4626
1308	HFPTRAP	4627
20	SRC20	463
2047	FINTLG5	4630
366	TRP07	4631
2048	STOREINTLG	4632
379	WCS01	4633
2050	STINTLG3	4634
2052	MODEALTER	4635
1385	TSTNZW6	4636
1386	TSTNZW7	4637
298	SXT03	464
2053	MODEALTER2	4640
2054	MODEALTER2B	4641
1998	UVDIS2	4642
1999	UVDIS3	4643
2055	MODEALTER2C	4644
2056	MODEALTER3	4645
1585	DIFSFGDF	4646
1583	DIFDFGSF	4647
299	SXT04	465
2057	MODEALTER4	4650
2060	FETCHFLT2	4651
2147	FDM67FLT2	4652
2148	FDM67FLT3	4653
2061	STOREFLT	4654
2069	FDMOFLT3	4655
2131	STOREHOT2	4656
2132	STOREHOT2C	4657
21	SRC17	466
2073	STDMOFLT3	4660
2078	FSDM3FLT2	4661
2079	FSDM3FLT3	4662
2044	FINTLG2	4663
2081	FSDM4FLT2	4664
2085	FSDM5FLT2	4665
2086	FSDM5FLT3	4666
2045	FINTLG3	4667
22	SRC19	467
2087	FSDM5FLT4	4670
2089	FSDM6FLT2	4671
2172	STIMM3	4672
2173	STIMM4	4673



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BOX NO.	MICROWORD LBL	ADDRESS
2093	FSDM7FLT3	4674
2094	FSDM7FLT4	4675
2174	STIMM5	4676
2175	STIMM6	4677
294	XOR02	47
1337	SETDW2	470
2095	FSDM7FLT5	4700
2098	FFLT2	4701
2100	FFLT4	4702
2049	STINTLG2	4703
2106	FFLT10	4704
2107	FFLT11	4705
2109	FFLT13	4706
2051	STINTLG4	4707
1339	SETL2	471
2110	FFLT14	4710
2119	STFLT4	4711
1862	LDCTW6	4712
1863	LDCTW7	4713
2123	STFLT8	4714
2124	STFLT9	4715
2125	STFLT10	4716
2126	STFLT11	4717
1347	LDFPS2	472
2127	STFLT12	4720
2133	STOREHOT2C	4721
1316	FETO1F	4722
1317	SERO2F	4723
2134	STOREHOT2D	4724
2135	STOREHOT2E	4725
2140	STOREHOT6	4726
2136	STOREHOT2F	4727
1348	LDFPS3	473
2141	STOREHOT7	4730
2142	STOREHOT8	4731
1289	STCT5	4732
1290	STCT6	4733
2143	STOREHOT9	4734
2156	FS2DM4FLT2	4735
2157	FS2DM4FLT3	4736
2165	FFLTIMM4	4737
1318	WFORK	474
2168	FFLTIMM7	4740
2185	FPPABORT10	4741
2186	FPPABORT11	4742
2188	TSTNZERO2	4743
2195	NZERO4	4744
2235	MOVFDSTSF	4745
2237	MVFDSTSF3	4746
2239	MOVSFDDST	4747

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
1235	HFORK	475
1319	WFORKNVALD	476
2240	MVSFFDST2	4760
2242	MVSFFDST4	4761
1877	LDCTW20	4762
1879	LDCTW22	4763
2255	RESTART11	4764
2256	RESTART12	4765
2257	RESTART13	4766
2258	RESTART14	4767
1236	HFORKNVALD	477
16	SRC16	5
325	SOB01	50
1350	LDFPS5	500
278	JMP23	501
1352	LDFPS7	502
274	JMP20	503
1353	LDFPS8	504
1346	LD+PS	505
1355	STFPS	506
1357	STST	507
333	MARK00	51
1354	LDFPS9	510
39	DST01	511
40	DST02	512
41	DST03	513
42	DST04	514
43	DST05	515
44	DST06	516
45	DST07	517
112	SUB06	52
186	ASRB11	520
179	RGLB02	521
180	ASRB05	522
187	ASLB02	523
55	DST21	524
56	DST22	525
57	DST19	526
58	DST20	527
571	MFAT00	53
169	CLRB02	530
170	COMB02	531
171	INCB02	532
172	DECB02	533
173	NEGB03	534
175	ADCB02	535
176	SBCB05	536
178	TSTB02	537
122	NEG02	54
128	ROR01	540

## M11

11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO. MICROWORD LBL ADDRESS

129	ROLD1	541
130	ASRD1	542
134	ASLD1	543
1356	STFPS2	544
1378	CLRNZM4	545
1615	DIVFDW2	546
1685	DIVFDW3	547
351	EMT01	55
117	CLR01	550
118	COM01	551
119	INC01	552
120	DEC01	553
121	NEG01	554
123	ADC01	555
124	SBC01	556
127	TST01	557
350	TRAP01	56
146	RORB01	560
147	ROLB01	561
148	ASRB01	562
152	ASLB01	563
236	MOV24	564
237	MOV26	565
238	MOV23	566
239	MOV25	567
255	JSR01	57
135	CLRB01	570
136	COMB01	571
137	INCB01	572
138	DECB01	573
139	NEGB01	574
141	ADCB01	575
142	SBCB01	576
145	TSTB01	577
281	BRA04	6
1194	RSVD02	60
1753	STEXP2	600
1225	XCSUB01	6000
1170	XFCOTH01	6001
1183	USEROISP01	6002
1198	WCSRSVD01	6003
1224	ODDPCDIS01	6004
1234	SVCDEFLT02	6005
1229	JAMDEFLT01	6006
1233	SVCDEFLT01	6007
189	MOV07	601
1109	WCSDIAG01	6010
1172	XFCOTH10	6011
1174	XFCOTH20	6012
1176	XFCOTH30	6013

# N11

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO	MICROWORD LBL	ADDRESS
1178	XFCOTH40	6014
1180	XFCOTH50	6015
190	MOV12	602
192	MOV19	603
193	MOV32	604
197	MOV36	605
198	MOV41	606
199	MOV54	607
338	WAIT01	61
1754	STEXP3	610
202	MOV09	611
203	MOV14	612
205	MOV21	613
206	MOV34	614
207	MOV38	615
208	MOV43	616
209	MOV56	617
315	RTI01	62
1755	STEXP4	620
210	MOV05	621
84	CMP02	622
86	BIT02	623
87	BIC02	624
88	BIS02	625
89	ADD02	626
30	SRC23	627
349	BPT01	63
1858	LDCTW2	630
221	MOV06	631
91	CMP802	632
92	BIT802	633
93	BIC802	634
94	BIS802	635
90	SUB02	636
31	SRC38	637
348	IOT01	64
1859	LDCTW3	640
2259	RESTART15	641
72	DST25	642
73	DST26	643
2283	RETCSP16	644
63	DST38	645
2284	RETCSP!7	646
2373	DIV39	647
125	SBC02	65
352	ILLO1	650
256	JMP02	651
257	JMP03	652
259	JMP05	653
260	JMP06	654

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.	MICROWORD LBL	ADDRESS
261	JMP07	655
263	JMP09	656
267	JMP13	657
308	RTS01	66
23	SRC21	661
24	SRC32	662
25	SRC33	663
26	SRC34	664
27	SRC35	665
28	SRC36	666
29	SRC37	667
341	RES01	67
211	MOV08	671
212	MOV13	672
214	MOV20	673
215	MOV33	674
216	MOV37	675
217	MOV42	676
219	MOV55	677
282	BRA03	7
302	SCC00	70
3	FET03	700
385	SER01	701
1	FET01	702
387	SER02	703
241	MOV29	704
242	MOV31	705
243	MOV28	706
244	MOV30	707
286	SWB01	71
4	SRC01	711
5	SRC02	712
6	SRC03	713
7	SRC04	714
8	SRC05	715
9	SRC06	716
10	SRC07	717
126	SBC03	72
290	SWB04	720
95	CMP04	722
96	BIT03	723
97	BIC03	724
98	BIS03	725
99	ADD03	726
289	SWB03	73
102	CMPB03	732
103	BITB03	733
104	BICB03	734
105	BISB03	735
100	SUB03	736

## 11/60 MICROCODE CROSS REFERENCE #2 - 1160.ROM

BOX NO.      MICROWORD LBL      ADDRESS

345	HALT01	74
300	SXT05	740
46	DST11	741
47	DST12	742
48	DST13	743
49	DST14	744
50	DST15	745
51	DST16	746
52	DST17	747
131	ASR02	75
37	SRC24	752
38	SRC29	753
279	BR001	757
312	RTT01	76
67	DST27	762
68	DST28	763
246	MOV51	764
247	MOV53	765
248	MOV50	766
249	MOV52	767
140	NEG802	77
32	SRC30	772
33	SRC31	773
402	JAM01	777

012