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# FIELD MAINTENANCE PRINT SET

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UNIT VARIATIONS COVERED BY THIS PRINT SET
FP11-A

**FP11-A  
Field Maintenance  
Print Set**

**Digital Equipment  
Corporation**

PRINT SET ORDER NO.  
MPØØ189

REVISIONS	DATE	CHG. NO.	REV.	USED ON OPTION/MODEL	DRN.	DATE	TITLE:	digital	SIZE	CODE	NUMBER	REV.
	7-77	FP11-A-1	A			1134A						
	5-78	FP11-A-3	B									
				SHEET I OF 1								
					FIELD SERV.	DATE						
						12-27-76						

EN 01124-16 N675 (327)

**DRB 124**



FIND NO.	DRAWING NO.	DESCRIPTION	TYPE	FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
1	B-TC-FP11-A-4	FLOATING POINT OPTION (FIELD MAINT. PR. SET)	-				
	MP00189	FLOATING POINT OPTION (PR SET ORDER NO.)	-				
	D-UA-FP11-A-0	FLOATING POINT OPTION	M/E				
	A-PL-FP11-A-0	FLOATING POINT OPTION (PL)	M/E				
	D-BD-FP11-A-1	BLOCK DIAGRAM	E				
	D-FD-FP11-A-2	FLOW DIAGRAM					
	D-FD-FP11-A-5	FLOW DIAGRAM					
	A-PL-FP11-A-3	SHIPPING LIST	M/E				
2	B-DD-M8267-0	FLOATING POINT PROCESSOR	M/E				
	B-PL-M8267-0-8	ROM LISTING					
3	B-DD-H8221-0	BOARD INTERCONNECT 40 Pin	M/E				
4	B-DD-5412416-0	BOARD INTERCONNECT 20 Pin	M/E				
5	B-DD-W9042-0	EXTENDER BOARD ASSY.	M/E				

TYPE: E ELECTRICAL  
M MECHANICAL  
E/M ELECTRO/MECHANICAL

digital

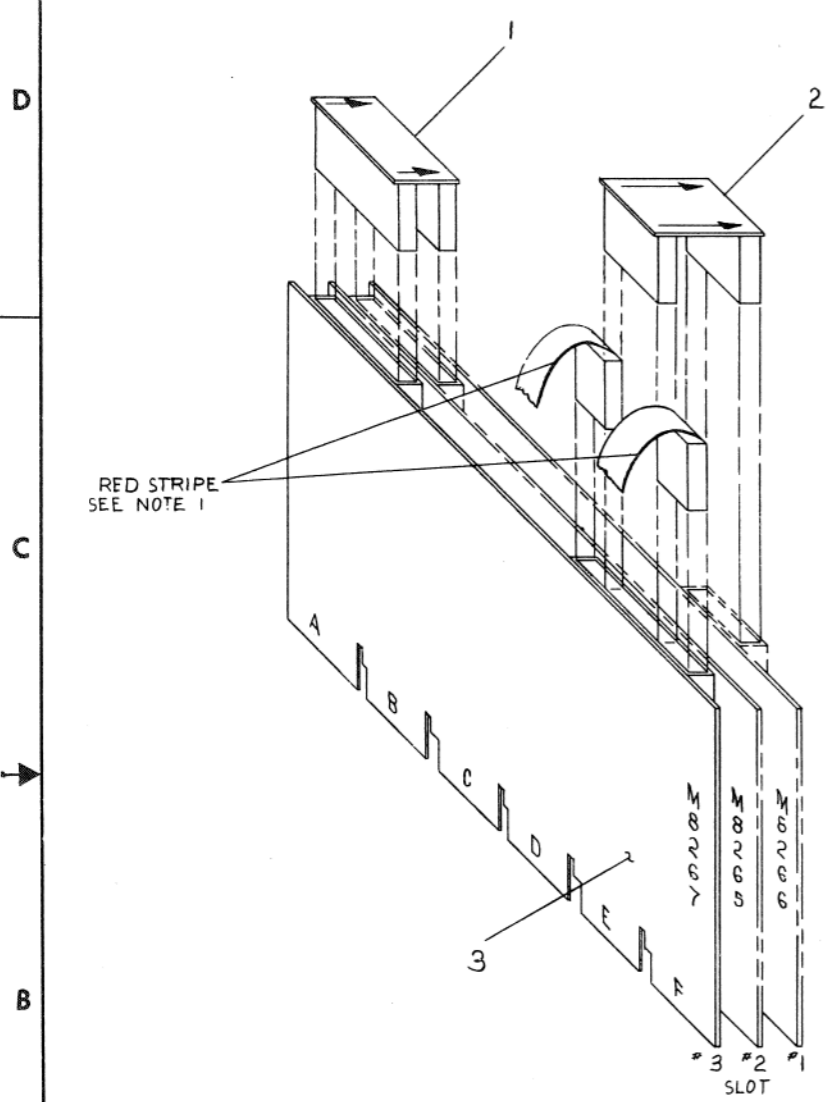
TITLE FLOATING POINT OPTION

SHEET2 OF 2    SIZE B    CODE DD    NUMBER FP11-A

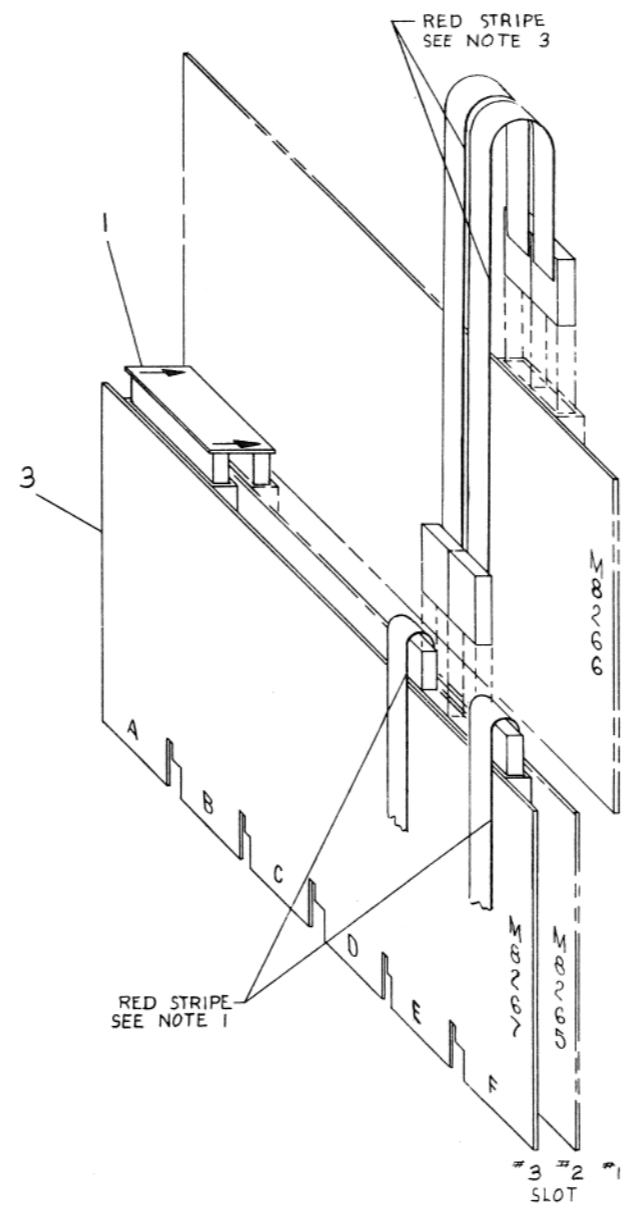
REV C

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- NOTES:
1. THESE CABLES #7011411-ID ARE PART OF KY11-LB OPTION AND MAY NOT BE PRESENT IN SOME CONFIGURATIONS.
  2. THE W9042 EXTENDER BD. ASSY. IS STORED IN THE BACKPLANE AND IS USED FOR SOME MAINTENANCE OPERATIONS.
  3. THESE CABLES ARE INSTALLED DURING MAINTENANCE ONLY, AND ARE CLIPPED TO THE W9042 FOR STORAGE. THESE CABLES #7011411-ID ARE PART OF W9042.
  4. MODULES M8265 & M8266 ARE PART OF KD11-EA & SHOWN FOR REF ONLY.



CONFIGURATION "A"



CONFIGURATION "B"

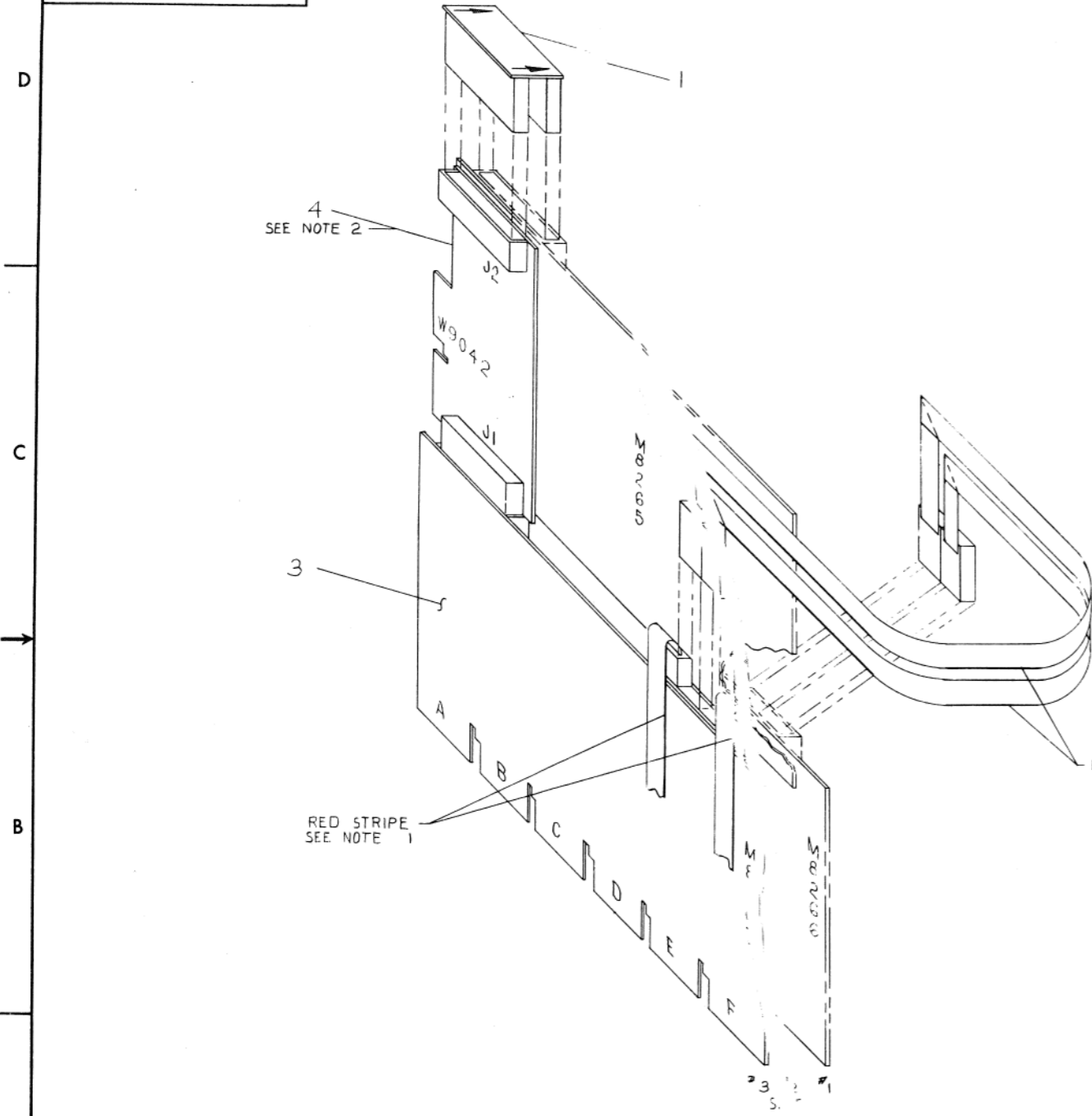
1	EXTENDER BD. ASSY.	D-UA-W9042-0-0	4
1	FLOATING POINT (FPII-A)	D-UA-M8267-0-0	3
1	BOARD, INTERCONN 20 PIN	D-UA-5412416-0-0	2
1	BOARD, INTERCONN 40 PIN	D-UA-H8821-0-0	1

REV.	
CHANGE NO.	
CHK	

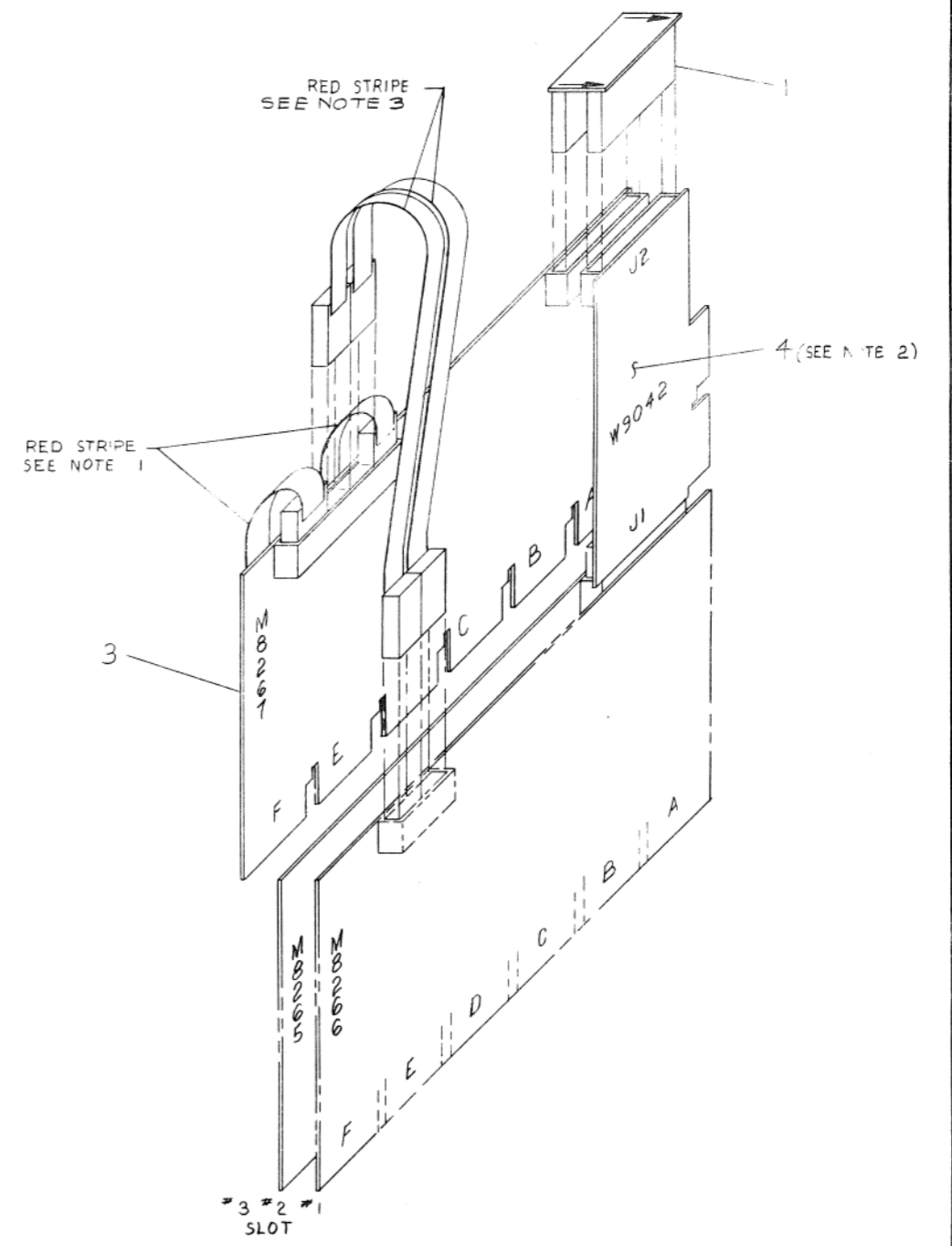
THIRD ANGLE PROJECTION		DRN. B.B. [Signature]	11 Oct 76	FIRST USED ON	1134	
REMOVE BURRS AND BREAK SHARP CORNERS		CHK'D [Signature]	29 Oct 76	TITLE		
DO NOT SCALE DWG		ENG. [Signature]	16 Nov 76	B-DD-FPII-A		
MATERIAL SEE PARTS LIST		PROJ. ENG. MITCHELL	20 Feb 76	SIZE CODE	D UA FPII-A-0	NUMBER
FINISH		PROD. [Signature]	11 Feb 76	SCALE	NONE	REV.
				SHEET	1 OF 2	DIST.

REV. NUMBER D UA FPII-A-0

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CONFIGURATION "C"

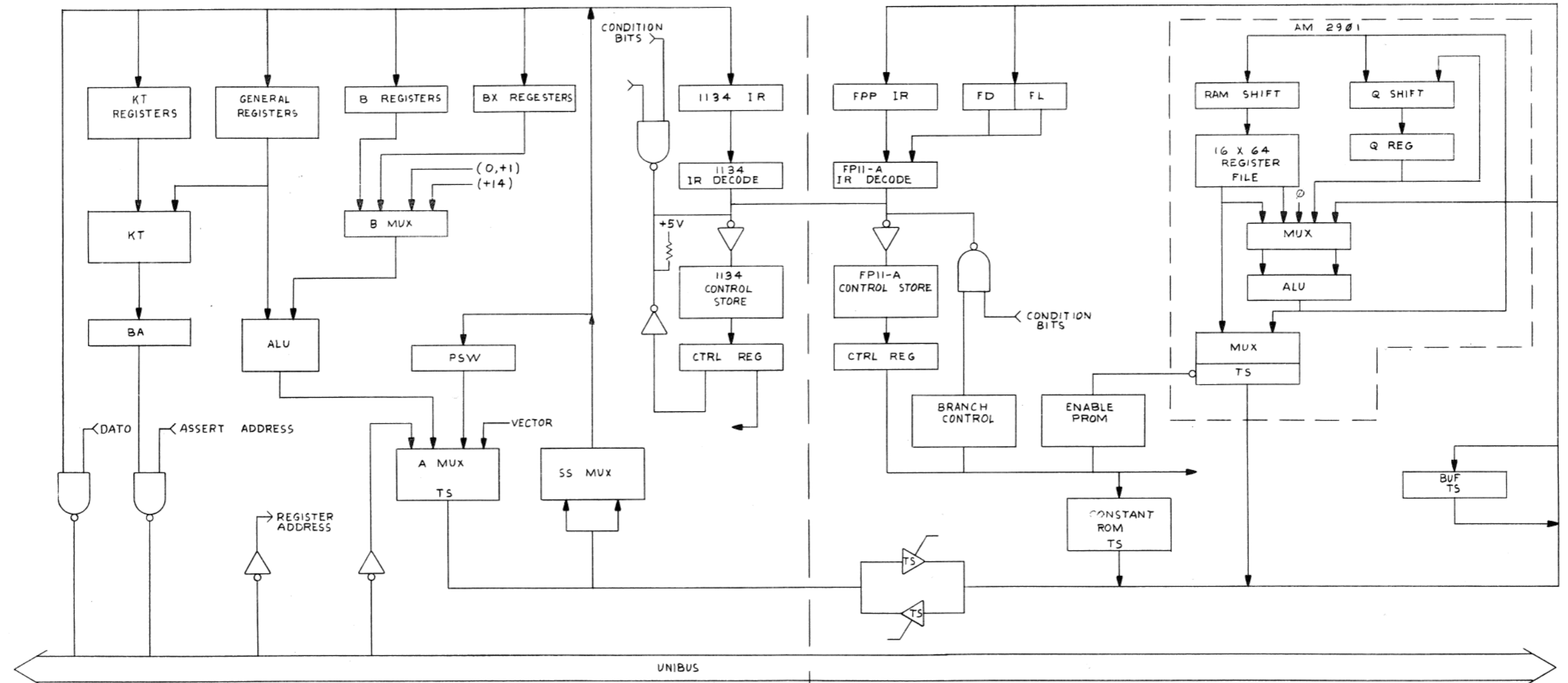


CONFIGURATION "D"

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
FLOATING POINT OPTION	DUA	FPII-A-0	
SCALE NONE	SHEET 2 OF 2	DIST.	

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1134A PROCESSOR

FPII-A FLOATING POINT OPTION

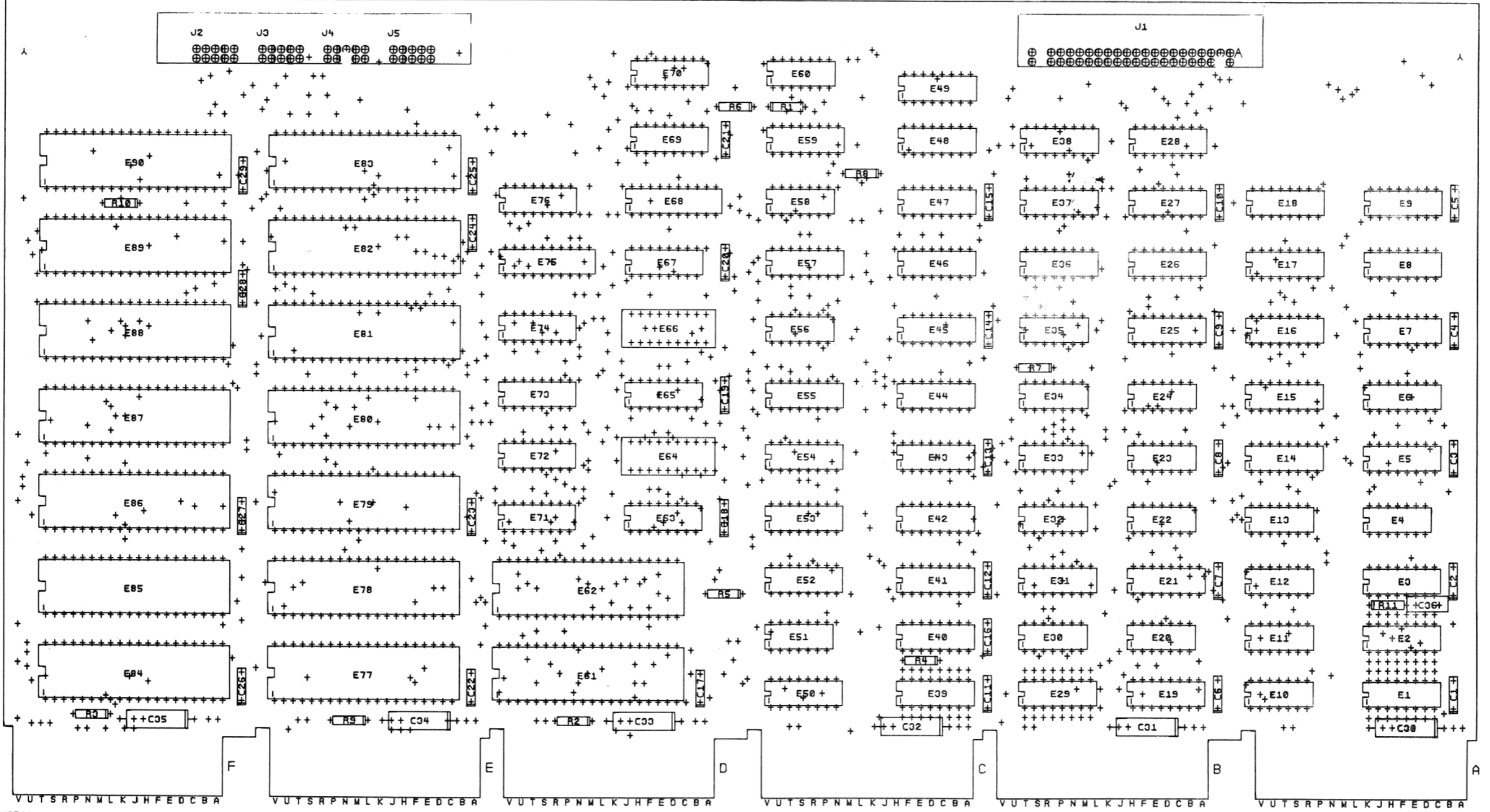
REVISIONS

REV.	CHANGE NO.

DRN. 8	CHK'D 4	ENG. 20	PROJ. ENG. 20	PROD. 20	FIRST USED ON	1134 Digital
TITLE					1134 FLOATING POINT PROCESSOR FPII-A	
NEXT HIGHER ASSY.			SIZE	CODE	NUMBER	REV.
B-DD-FPII-A			D	BD	FPII-A-1	
SHEET 1 OF 1			DIST.			

COMPONENT SIDE VIEW

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SONY ELECTRONIC CORPORATION



NOTES:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

CHG CHANGE NO REV



SIGNATURES	DATE	digital
DRN. D. Y. Y.	3.4.77	
CHK'D. J. S.	4.20.77	
ENG. M. S.	7.18.77	
PROJ. ENG. J. S.	7.18.77	
PROD. R. S.	10.21.77	
SCALE 2/1		TITLE 11/34 FLOATING
SHT. 1 OF 3	SIZE CODE D	NUMBER UA M8267-0-0
NEXT HIGHER ASSY. B-DD-M8267-0		REV C

D U A M8267-C-0

8

7

6

5

4

3

0-0-2928W VU D 2

1

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L1

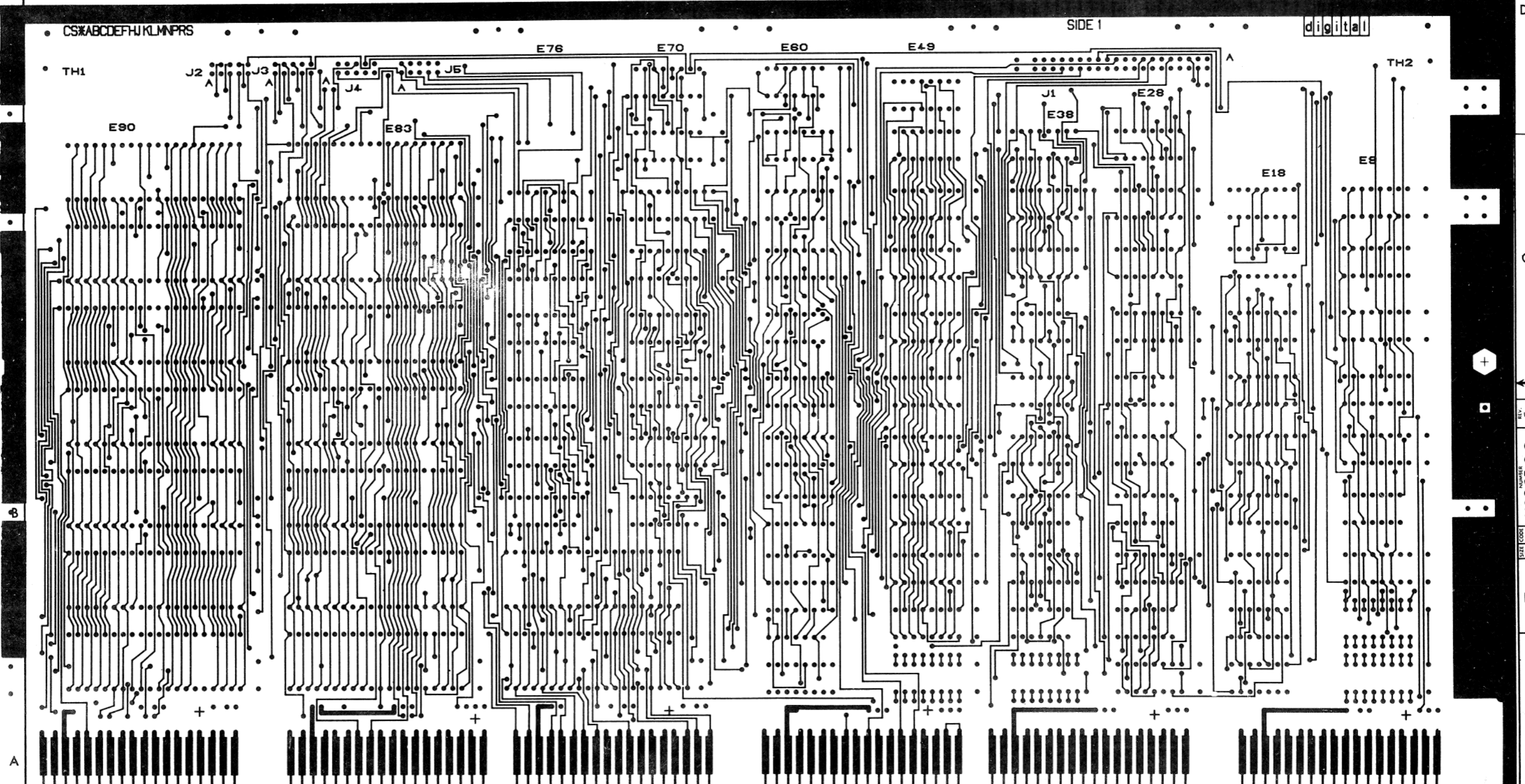


# LAYER 1

CS#ABCDEFGHIJKLMNPRS

SIDE 1

digital



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	11/34 FLOATING PT OPTION	SIZE CODE	D UA	NUMBER	M8267-0-0	REV.	C
SCALE	2/1	SHEET	2 OF 3	DIST.			

DES. FORM NO. DRD 117

8

7

6

5

4

3

2

1

REV. C  
DUA M8267-0-0



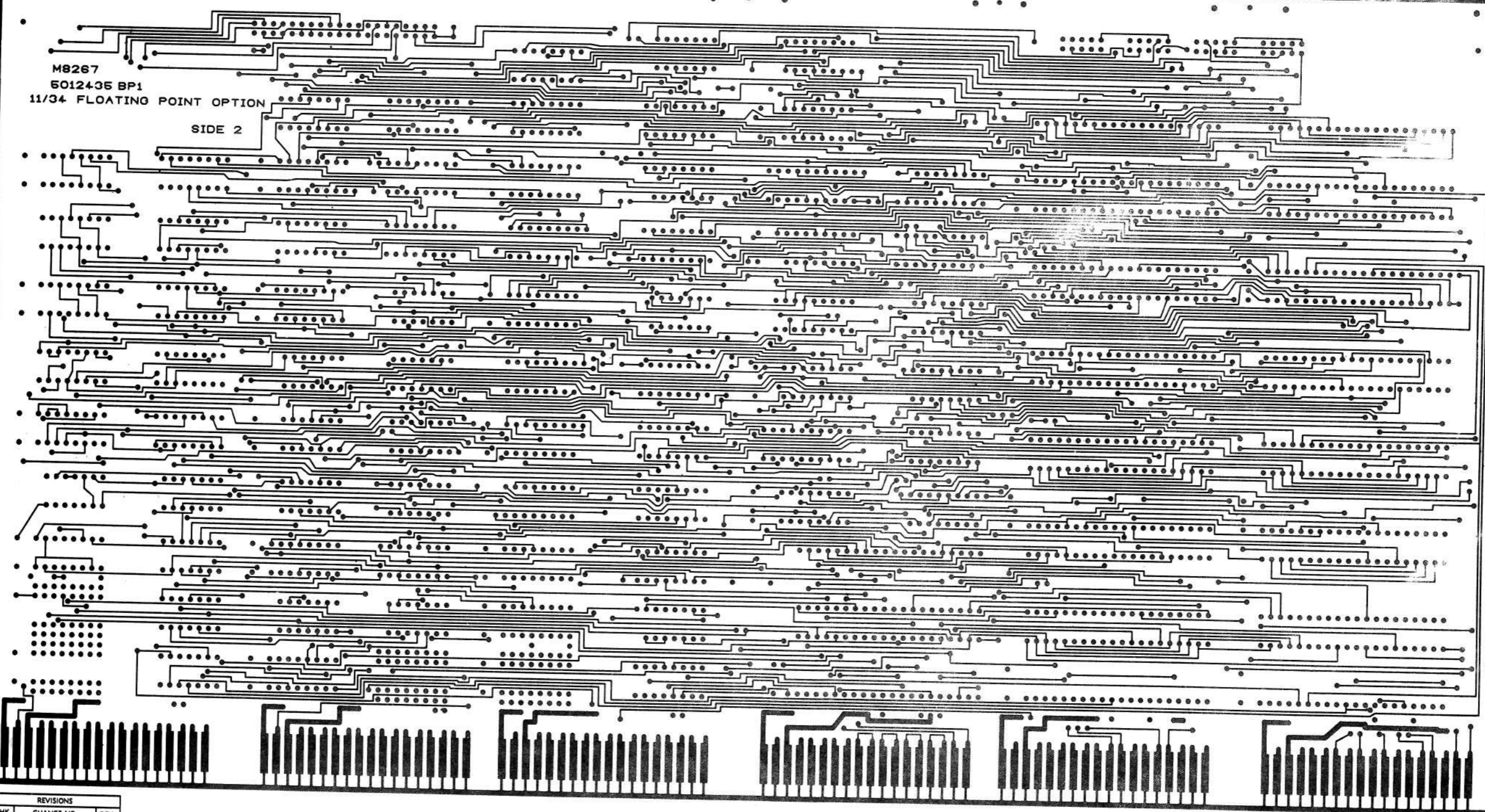
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0-0-2928W DUA M8267-0-0 2

H ■ A3YA J



M8267  
6012435 BP1  
11/34 FLOATING POINT OPTION  
SIDE 2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	11/34 FLOATING PT. OPTION	SIZE CODE	D UA	NUMBER	M8267-0-0	REV.	C
SCALE	2/1	SHEET	3 OF 3	DIST.			

D  
C  
B  
A  
REV. C  
DUA M8267-0-0

# DIGITAL EQUIPMENT CORPORATION PARTS LIST

MADE BY DATE	D. J. SIREEN 12 JULY 76	CHECKED DATE	F. SEIDMAN 18 AUG 76
ENG DATE	<i>m. Sullivan</i> 7/18/77	PROD DATE	R. B. KING 15 J4/77

QUANTITY / VARIATION

NOTES:

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	M8267-0-0	QUANTITY	VARIATION	REF DESIGNATION
1	D-MD-5012435-0-0	5012435	ETCHED BOARD	1			
2		1005306	CAPACITOR, 6.8 uf, 35V, 10% TANT	6			C30 thru C35
3		1012784	CAPACITOR, .047 uf 50V, CER	29			C1 thru C29
4		1213506-01	RT. ANGLE HEADER 40 POS.	1			J1
5		1213506-02	RT. ANGLE HEADER 52 POS.	1			J2 thru J5 (ONE CONNECTOR)
6							
7		1300271	RESISTOR, 220, 1/4W, 5%	1			R1
8		1300295	RESISTOR, 330, 1/4W, 5%	2			R7, R8
9		1300316	RESISTOR, 470, 1/4W, 5%	5			R2, R3, R9, R10, R4
10		1300229	RESISTOR, 100, 1/4W, 5%	1			R11
11		1301401	RESISTOR, 750, 1/4W, 5%	1			R6
12		1910533	I.C. DEC 74S03	4			E11, E20, E23 E32
13		1910535	I.C. DEC 74S05	1			E33
14		1910532	I.C. DEC 74S00	2			E22, E60
15		1910534	I.C. DEC 74S04	2			E35, E34
16		1910536	I.C. DEC 74S10	1			E30
17		1910539	I.C. DEC 74S20	1			E10
18		1910544	I.C. DEC 74S74	1			E13
19		1910547	I.C. DEC 74S153	2			E59, E69
20		1910548	I.C. DEC 74S157	1			E70
21		1910550	I.C. DEC 74S174	9			E27, E31, E28, E49, E52, E53, E57, E65, E67

E.C.O. NO.

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DRB 125		SHEET 1 OF 3		INSERTION PARTS LIST DATA BASE REV		

# DIGITAL EQUIPMENT CORPORATION PARTS LIST

MADE BY DATE	D. J. SIREEN 12 JULY 76	CHECKED DATE	F. SEIDMAN 18 AUG 76
ENG DATE	<i>M. Sullivan</i> 7/18/77	PROD DATE	R. B. KING 15 Jul 77
		SECTION	ISSUED SECTION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION
22		1910837	I.C. DEC 8093
23		1910957	I.C. DEC 74S175
24		1911527	I.C. DEC 8097
25		1912097	I.C. DEC 74S182
26		1912388	I.C. DEC 74S02
27		1912746	I.C. DEC 74S37
28		1911330	I.C. DEC 74173
29		1913245	I.C. DEC AM 2901
30		1911637	I.C. DEC 74132
31		1212385	40 PIN SOCKET
32		1000015	CAPACITOR, 82 pf, 5%
33		7417214	HANDLE, MODIFIED
34			I.C. SPARES
35		9000024-01	EYELET
36		23157A1	I.C. DEC PROM 32 x 8 T.S.
37		23153A1	I.C. DEC PROM 32 x 8 T.S.
38		23154A1	I.C. DEC PROM 32 x 8 T.S.
39		23155A1	I.C. DEC PROM 32 x 8 T.S.
40		23158A1	I.C. DEC PROM 32 x 8 T.S.
41		23156A1	I.C. DEC PROM 32 x 8 T.S.
42		23014F1	I.C. DEC PROM 1K x 4 O.C.

M8267-0-0

QUANTITY / VARIATION

NOTES:

REF DESIGNATION

E51 E56, E58  
E18, E26  
E5 thru E9, E16  
E50, E63, E71 thru E74  
E24  
E12  
E3, E14, E15, E25  
E61 E62, E77 thru E90  
E4  
E61, E62 E77 thru E90  
C36  
  
E1, E2, E29, E39  
  
E17  
E19  
E21  
E54  
E55  
E76  
E64

E.C.O. NC

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TITLE  
11/34 FLOATING  
POINT OPTION

ASSY NO.  
D-UA-M8267-0-0

SIZE  
**B** PL

NUMBER  
M8267-0-0

REV.  
**C**

DRB 125

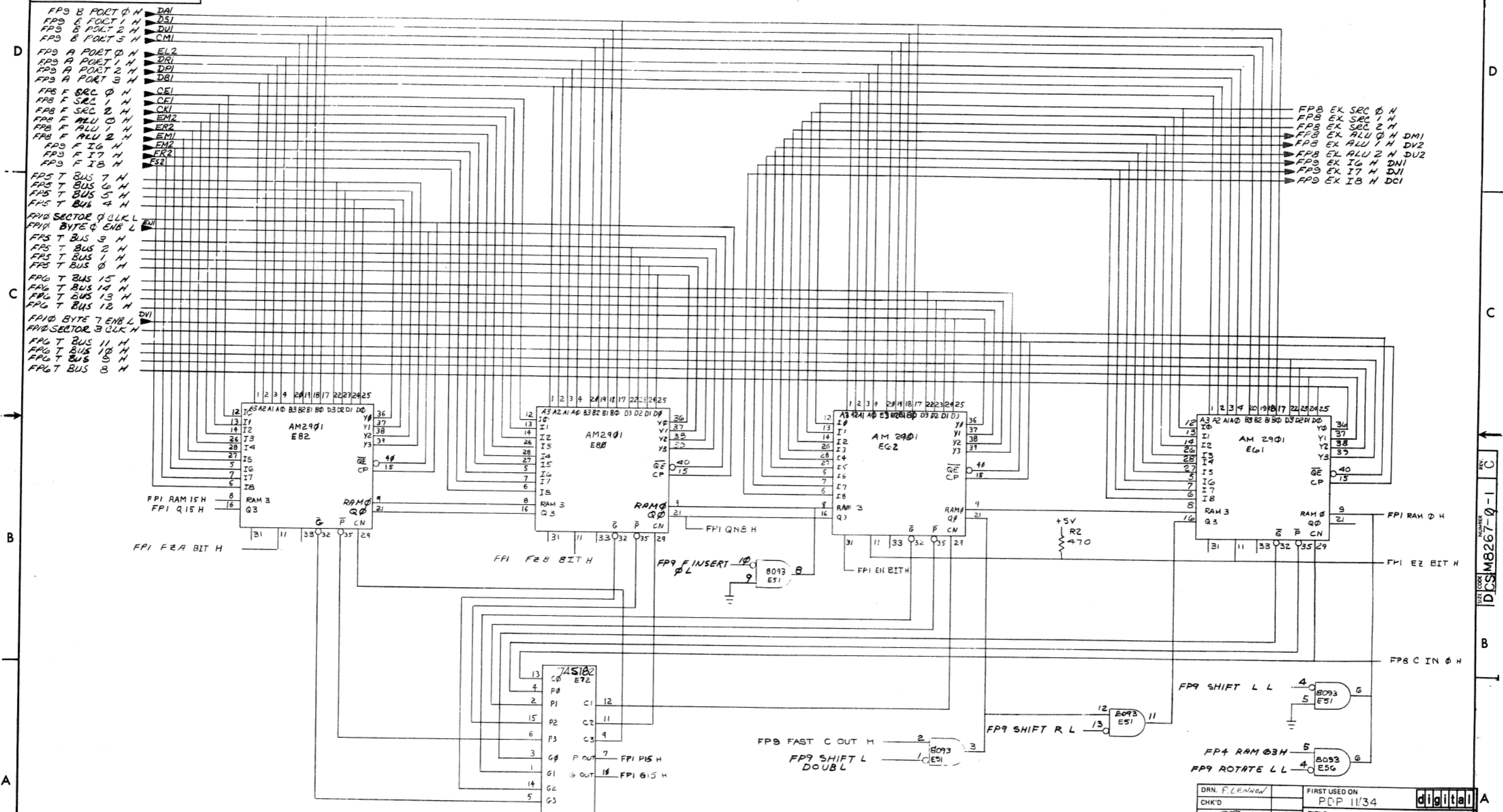
SHEET 2 OF 3

INSERTION PARTS LIST DATA BASE REV

DIGITAL EQUIPMENT CORPORATION PARTS LIST				QUANTITY / VARIATION										NOTES:		
MADE BY DATE		CHECKED DATE		SECTION												
D. J. SIREEN 12 JULY 76		F. SEIDMAN 18 AUG 76														
ENG DATE		PROD DATE		ISSUED SECTION												
M. Sullivan 7/18/77		R. R. KING 15 J 4 77														
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	M8267-Ø-Ø											REF DESIGNATION	
43		23Ø15F1	I.C. DEC PROM 1K x 4 O.C.	1											E66	
44		23435A9	I.C. DEC PROM 512 x 4 T.S.	1											E45	
45		23436A9	I.C. DEC PROM 512 x 4 T.S.	1											E44	
46		23437A9	I.C. DEC PROM 512 x 4 T.S.	1											E43	
47		23438A9	I.C. DEC PROM 512 x 4 T.S.	1											E38	
48		23439A9	I.C. DEC PROM 512 x 4 T.S.	1											E42	
49		2344ØA9	I.C. DEC PROM 512 x 4 T.S.	1											E41	
50		23441A9	I.C. DEC PROM 512 x 4 T.S.	1											E40	
51		23442A9	I.C. DEC PROM 512 x 4 T.S.	1											E37	
52		23443A9	I.C. DEC PROM 512 x 4 T.S.	1											E36	
53		23444A9	I.C. DEC PROM 512 x 4 T.S.	1											E48	
54		23445A9	I.C. DEC PROM 512 x 4 T.S.	1											E47	
55		23446A9	I.C. DEC PROM 512 x 4 T.S.	1											E46	
56		23Ø1ØB1	I.C. DEC PROM 256 x 8 T.S.	1											E75	
57		23Ø11B1	I.C. DEC PROM 256 x 8 T.S.	1											E68	
58		1300365	RESISTOR, 1K, 1/4W, 5%	1											R5	

E.C.O. NO.	"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"		TITLE	11/34 FLOATING POINT OPTION	ASSY NO.	D-UA-M8267-Ø-Ø	SIZE	CODE	NUMBER	REV.
	DRB 125				SHEET	3	OF	3	INSERTION PARTS LIST DATA BASE REV	C

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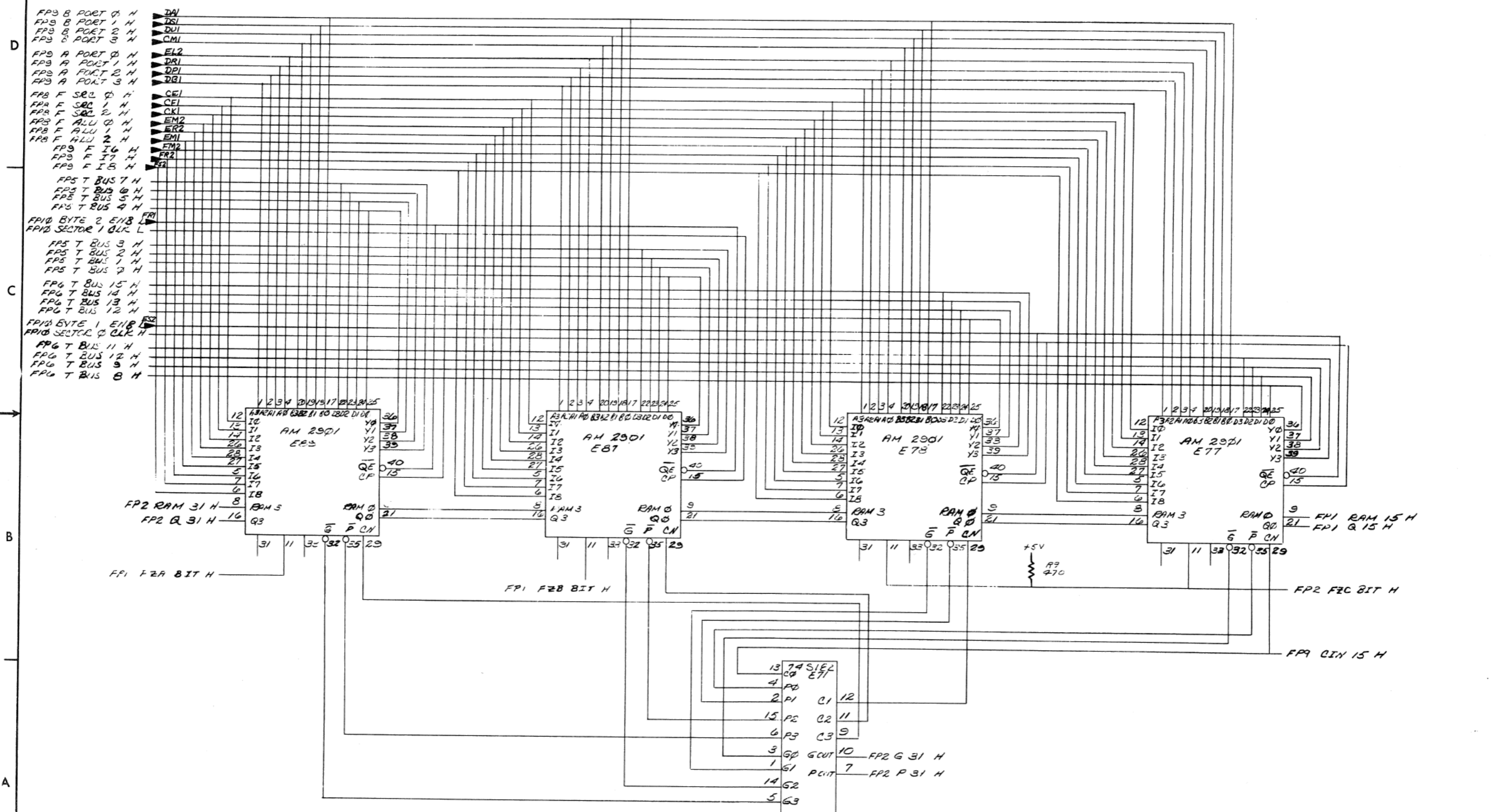
REVISIONS		
CHK	CHANGE NO.	REV.
GD	M8267-00001	A
B. Chausson	30 Jan 77	
B. PRATT	25 Jan 77	
B. PRATT	9 MAY 77	
M. SULLIVAN	5/26/77	

DRN. F. Lennow	FIRST USED ON	PDP 11/34
CHK'D	TITLE	FLOATING POINT PROCESSOR (FPI)
ENG. P. Pratt	DATE	11-2-76
PROJ. ENG. P. Pratt	DATE	11-2-76
PROD. P. Pratt	DATE	2/10/76
NEXT HIGHER ASSY.	SIZE	D
SCALE	CODE	CC
SHEET 1 OF 10	DIST.	M8267-0-1

(BYTES 7 AND 0)

REV. C  
DCS M8267-0-1

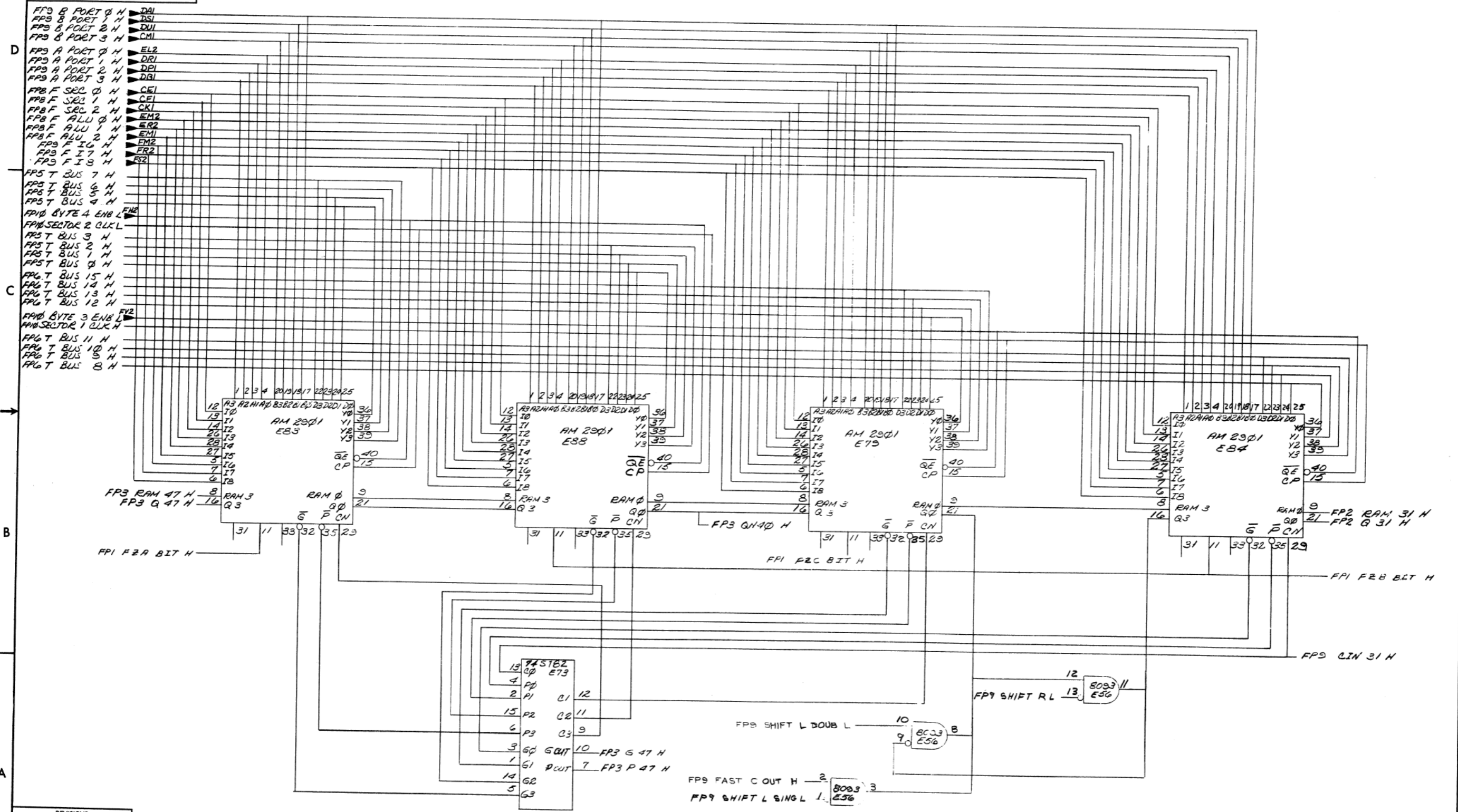
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REVISIONS		
CHK	CHANGE NO.	REV.

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DCS M8267-0-1 C



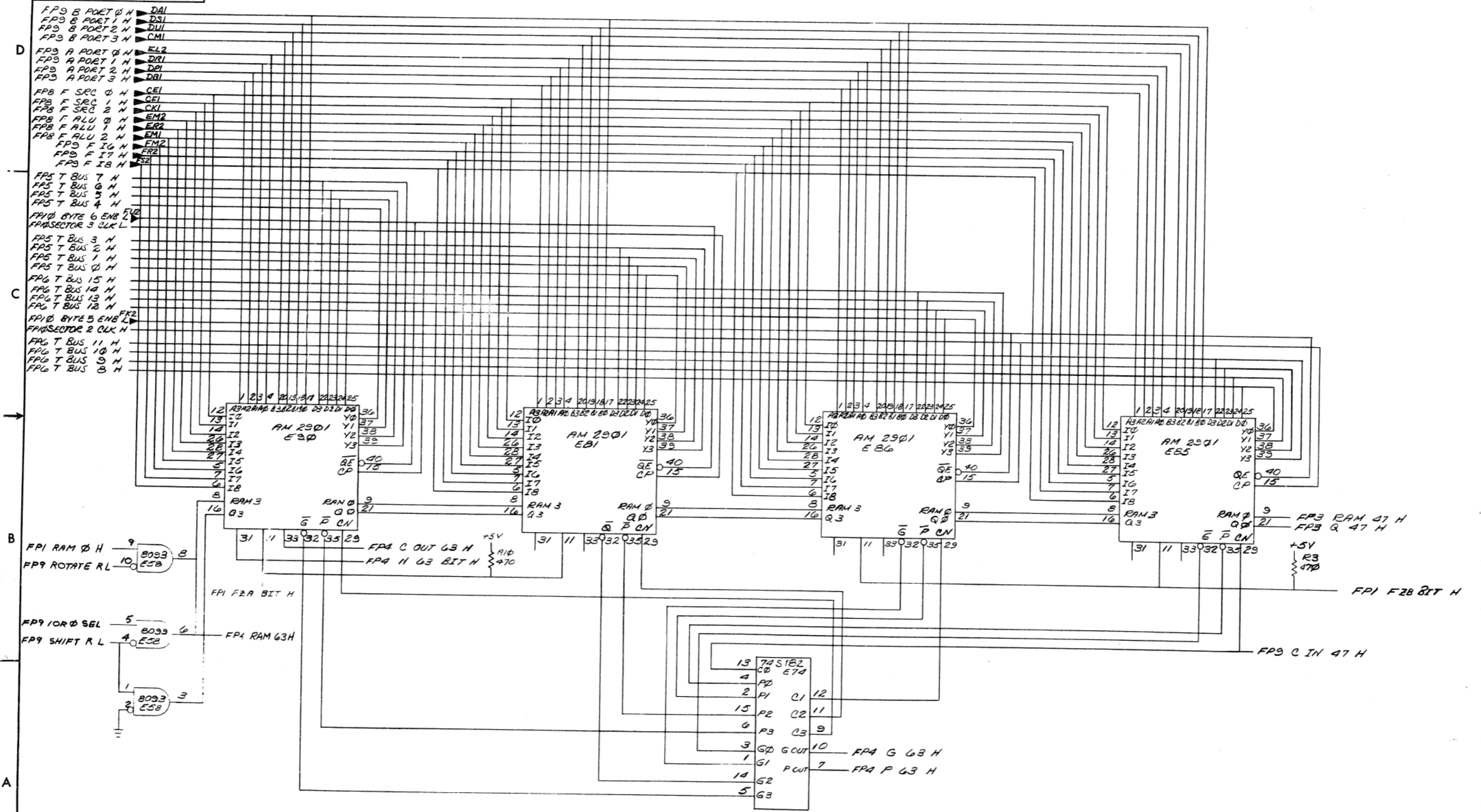
REVISIONS		
CHK	CHANGE NO.	REV.

(BYTES 3 AND 4)  
 TITLE FLOATING POINT PROCESSOR (FP3) DCS M8267-0-1 C  
 SCALE SHEET 3 OF 10 DIST.

DCS M8267-0-1 C

16 TILLY

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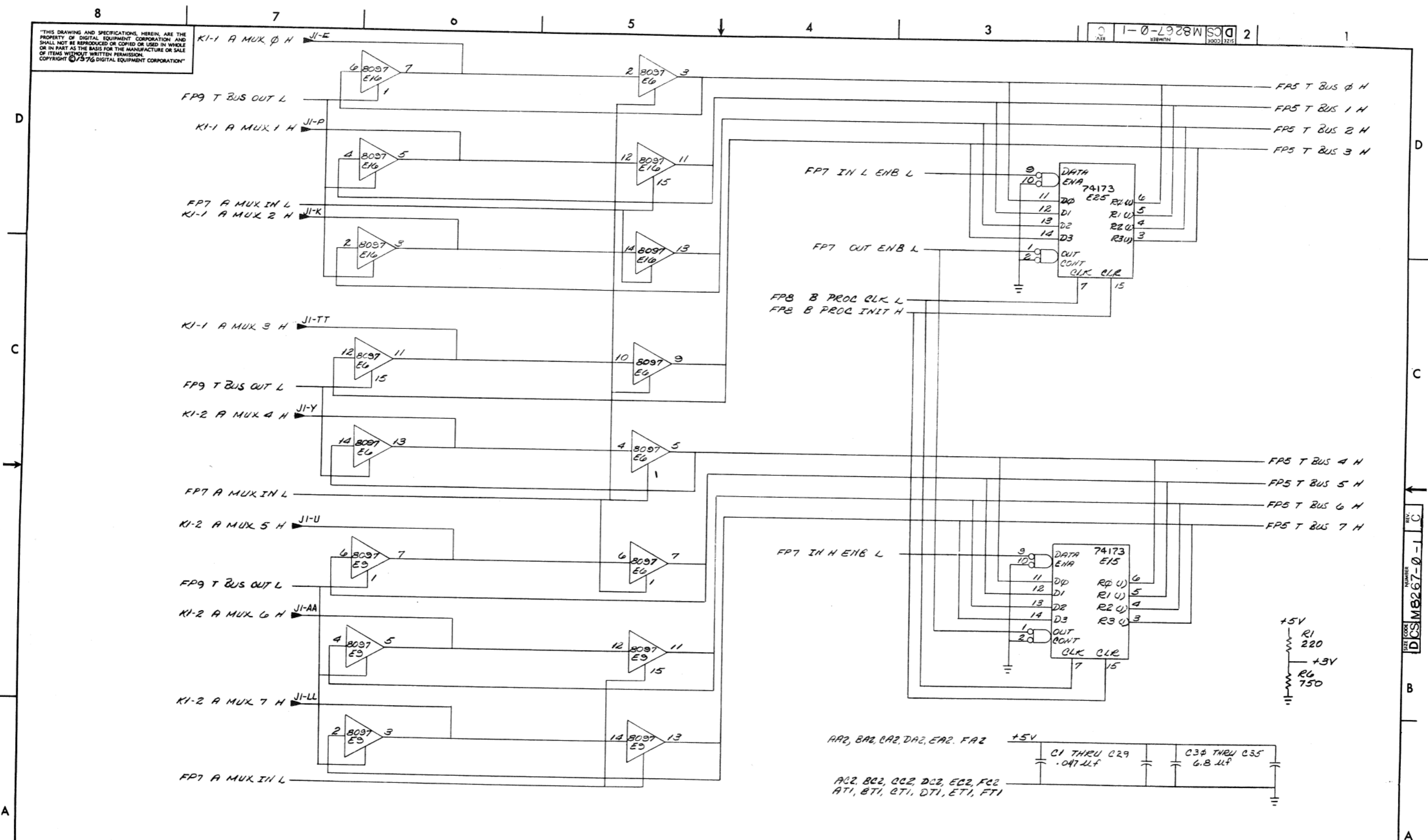


REVISIONS		
CHK	CHANGE NO.	DATE



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1-0-267-0-1 CS 2



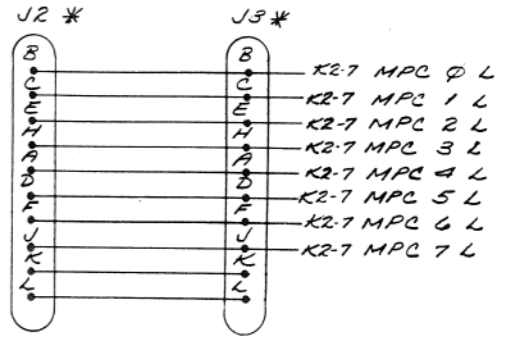
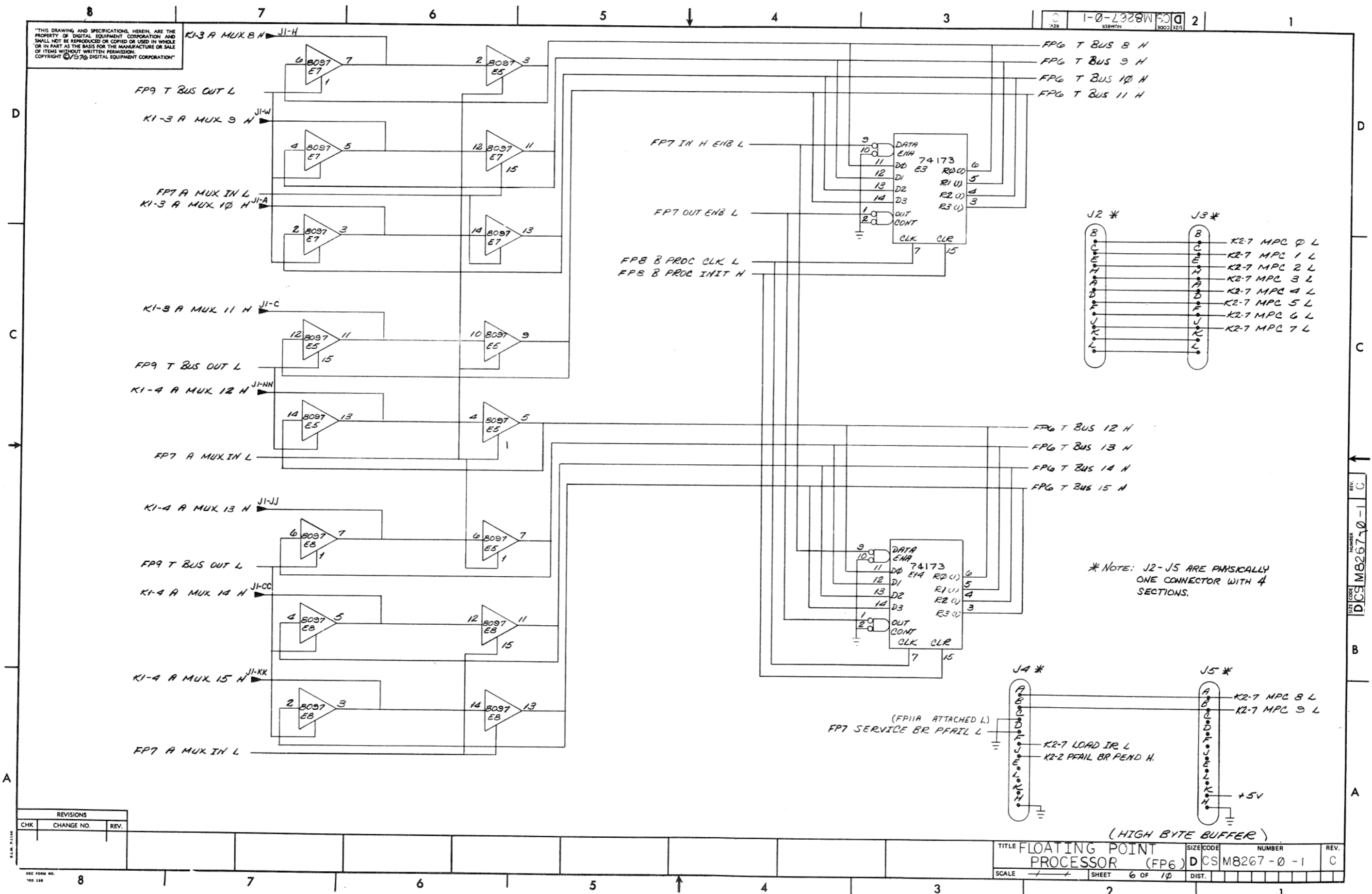
REVISIONS		
CHK	CHANGE NO.	REV.

8	7	6	5	4	3	2	1
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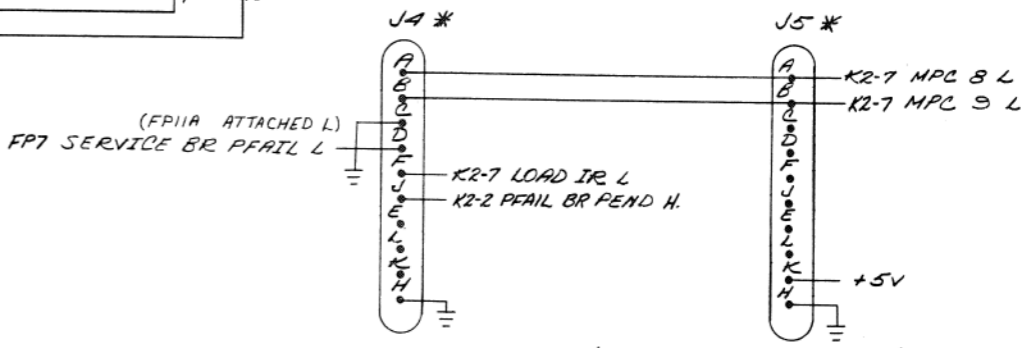
(LOW BYTE BUFFER)  
 TITLE FLOATING POINT PROCESSOR (FP5) SIZE CODE NUMBER REV.  
 DCS M8267-0-1 C  
 SCALE SHEET 5 OF 10 DIST.

REV. C  
 NUMBER DCS M8267-0-1  
 LOCK

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\* NOTE: J2-J5 ARE PHYSICALLY ONE CONNECTOR WITH 4 SECTIONS.



(HIGH BYTE BUFFER)

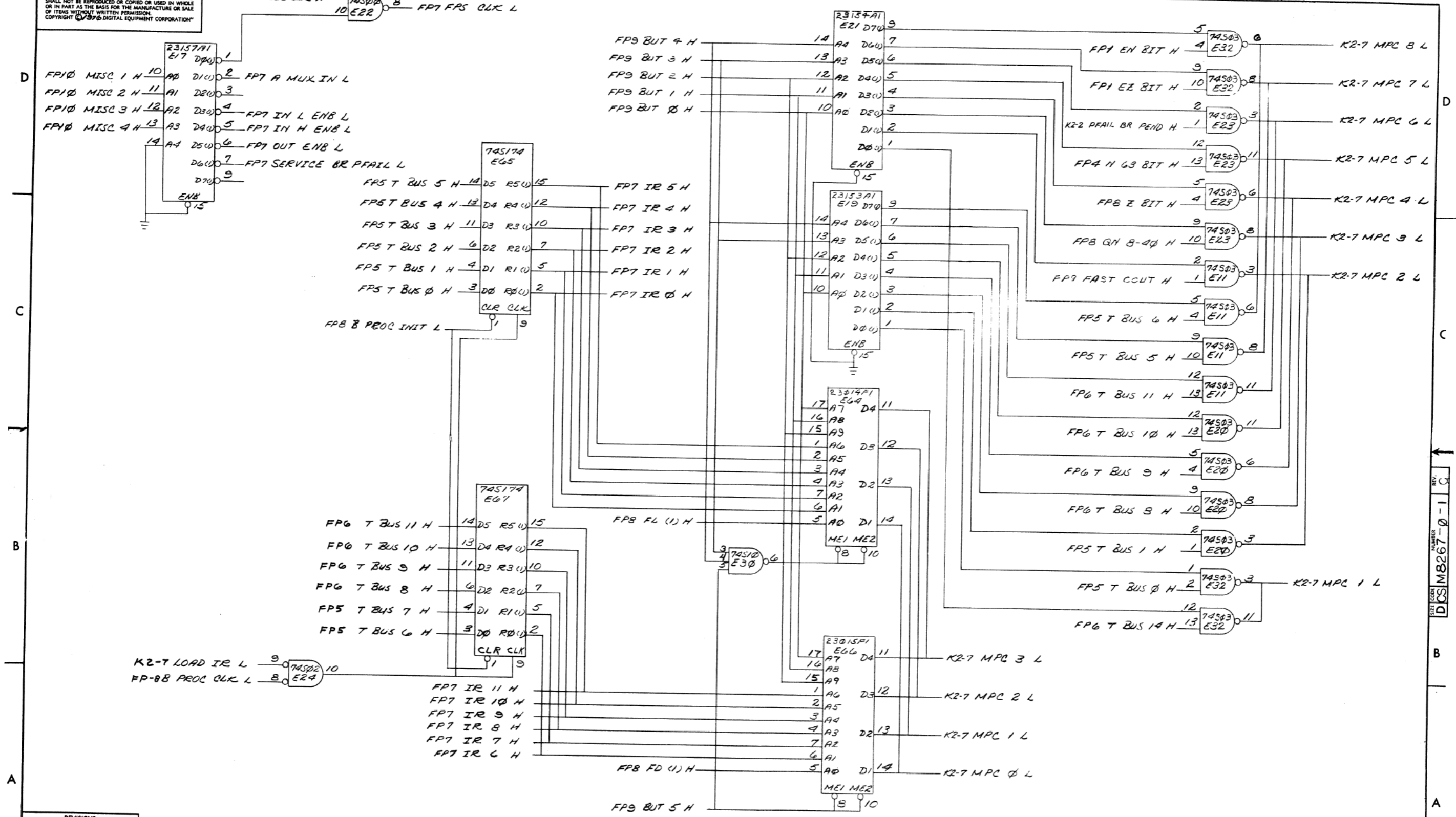
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FLOATING POINT PROCESSOR (FP6)	SIZE CODE	D CS	NUMBER	M8267-0-1	REV.	C
SCALE	1:1	SHEET	6 OF 10	DIST.			

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FPB B PROC CLK H   
 9 74500 10 E22

DOS M8267-0-1 C



REVISIONS		
CHK	CHANGE NO.	REV.

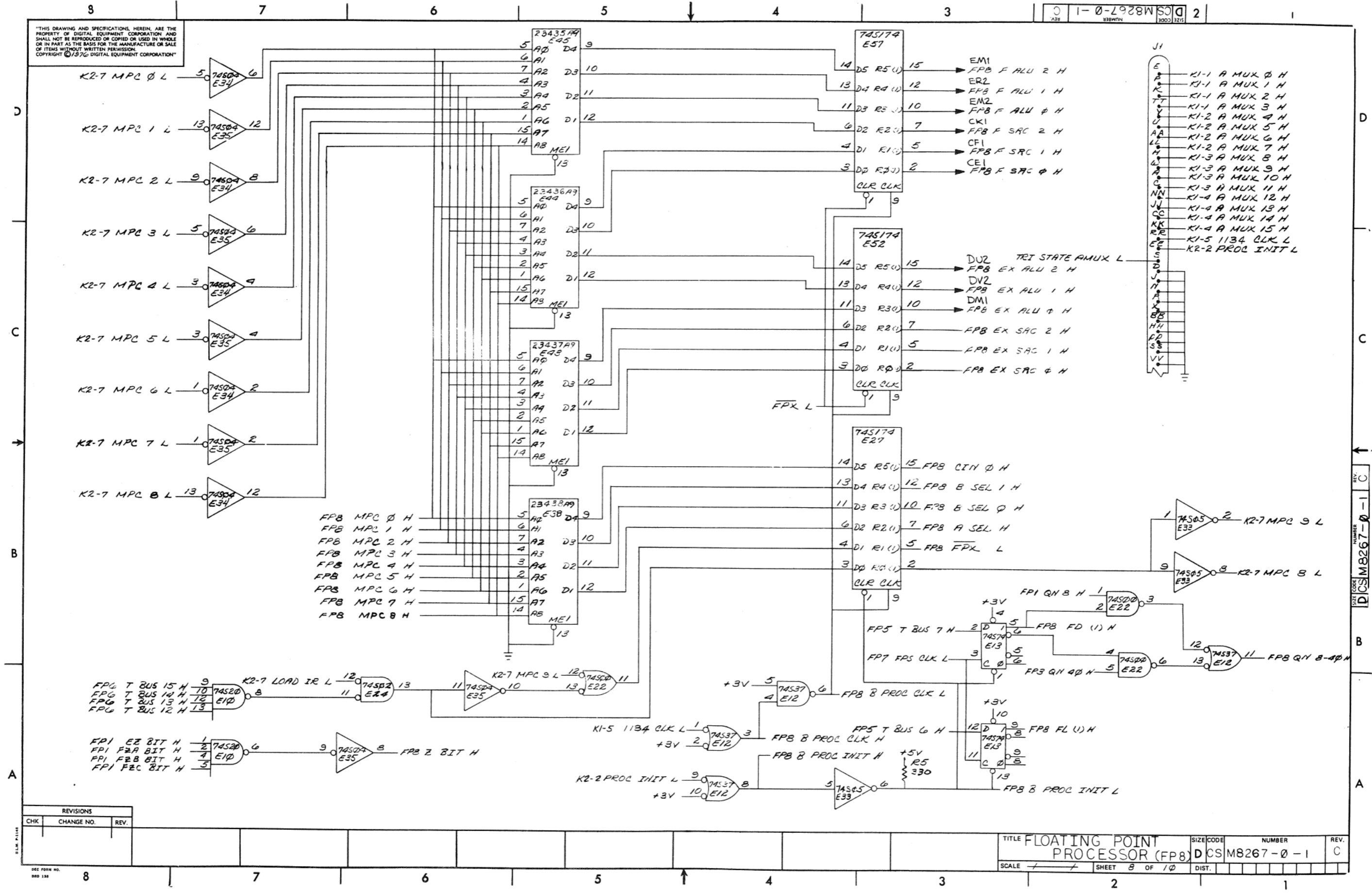
(IR REGISTER 5' DECODE, BRANCH LOGIC)

TITLE: FLOATING POINT PROCESSOR (FP7)      SIZE CODE:      NUMBER:      REV.:      C

SCALE:      SHEET: 7 OF 10      DIST.:

REV. C - 01 - DOS M8267-0-1

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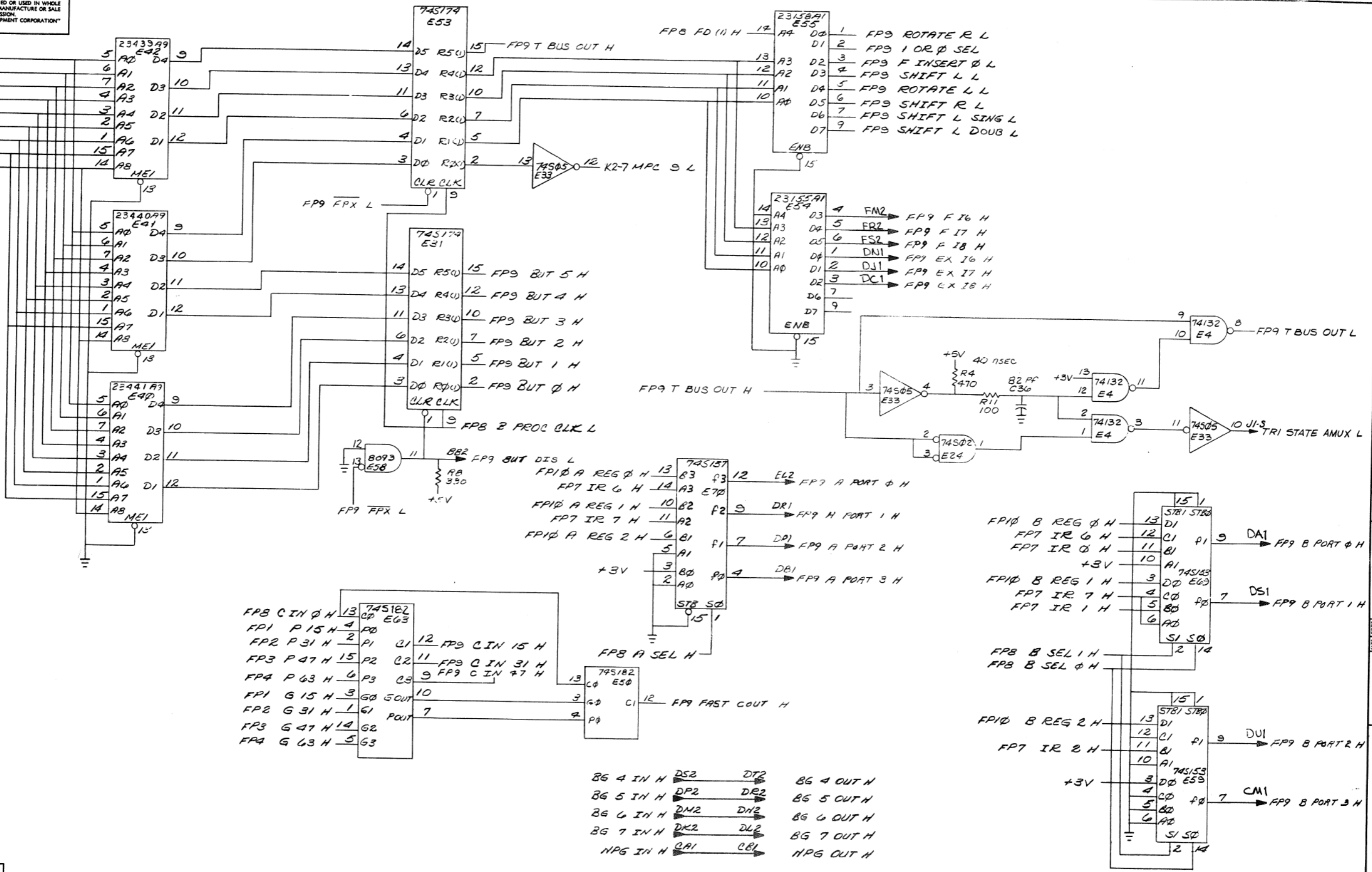
TITLE	FLOATING POINT PROCESSOR (FP8)	SIZE CODE	DCS M8267-0-1	NUMBER	8	REV.	C
SCALE	1:1	SHEET	8 OF 10	DIST.			

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. 080 130

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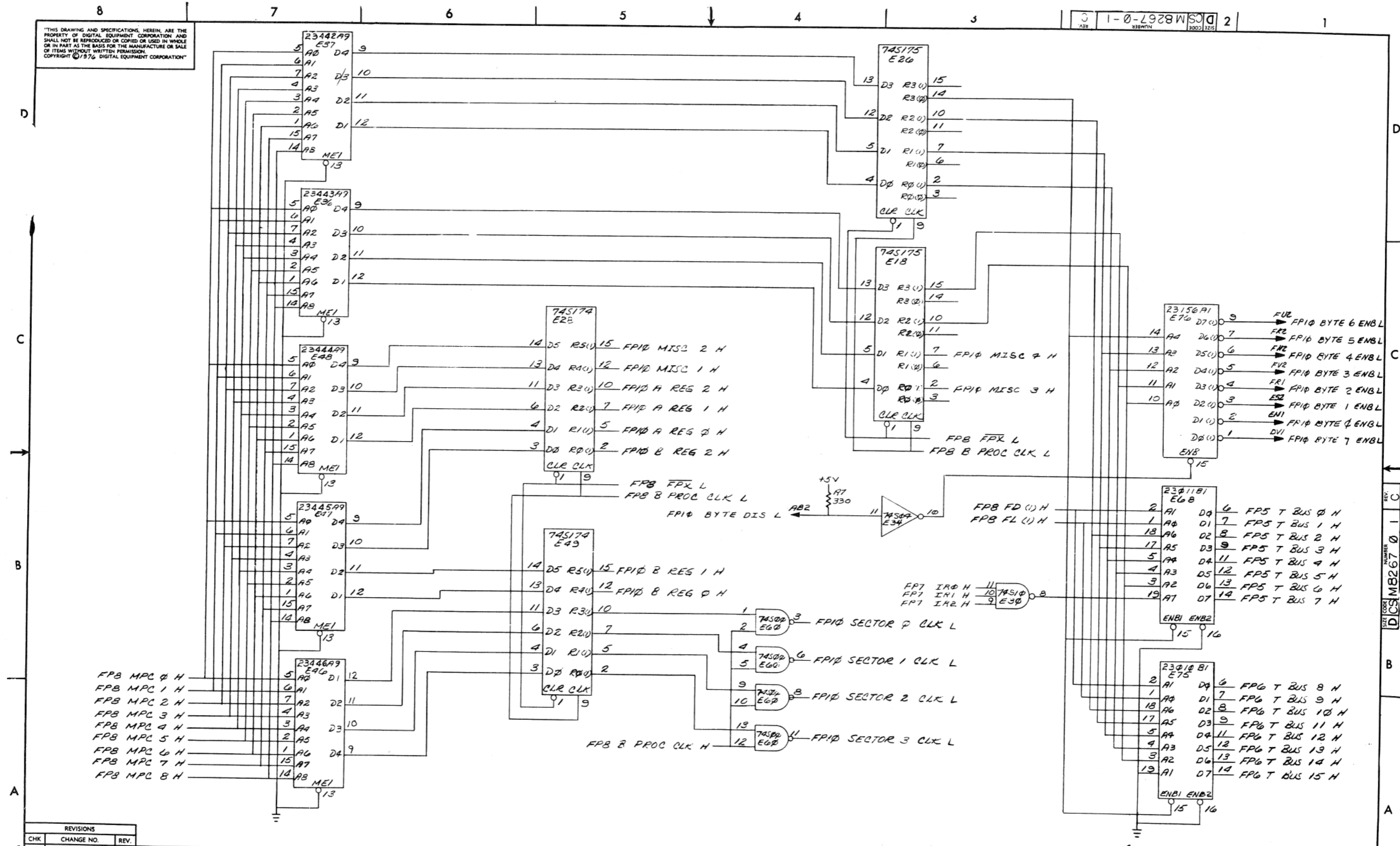
FPB MPC 0 H  
 FPB MPC 1 H  
 FPB MPC 2 H  
 FPB MPC 3 H  
 FPB MPC 4 H  
 FPB MPC 5 H  
 FPB MPC 6 H  
 FPB MPC 7 H  
 FPB MPC 8 H



REVISIONS		
CHK	CHANGE NO.	REV.

8	7	6	5	4	3	2	1		
TITLE: FLOATING POINT PROCESSOR (FP9)							SIZE CODE: DCS	NUMBER: M8267-0-1	REV.: C
SCALE: 1/16							SHEET: 9 OF 10	DIST.:	

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- FPI MPC 0 H
- FPI MPC 1 H
- FPI MPC 2 H
- FPI MPC 3 H
- FPI MPC 4 H
- FPI MPC 5 H
- FPI MPC 6 H
- FPI MPC 7 H
- FPI MPC 8 H

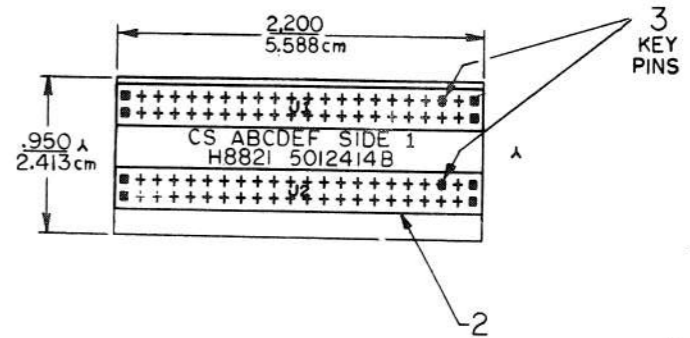
REVISIONS		
CHK	CHANGE NO.	REV.

(CONSTANTS, BYTE ENABLE, CLOCKS)

TITLE	FLOATING POINT PROCESSOR (FPI)	SIZE CODE	DCS	NUMBER	M8267-0-1	REV.	C
SCALE	+	SHEET	18	OF	10	DIST.	

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 DECEMBER 1976 DIGITAL EQUIPMENT CORPORATION

0-0-1288H D 2



NOTES:


CHK	CHANGE NO	REV

ETCH REV. B
P.C. DESIGN DATA BASE REV. B

SIGNATURES		DATE	digital
DRN. F MULLICAN		10/21/76	
CHK'D. F SEIDMAN		12-3-76	
ENG. R Barry		5 DEC 76	
PROJ. ENG. R Barry		5 DEC 76	
PROD. R Barry		6 Dec 76	
SCALE 2/1			TITLE 40 PIN INTERCONNECT BOARD
SHT. 1 OF 3			SIZE CODE NUMBER REV
NEXT HIGHER ASSY. B-DD-H8821-0			D UA H8821-0-0 A

1 MS# 60955

8

7

6

5

4

3

REV. 2 DUA H8821-0-0

1

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LETTER 1

D

D

C

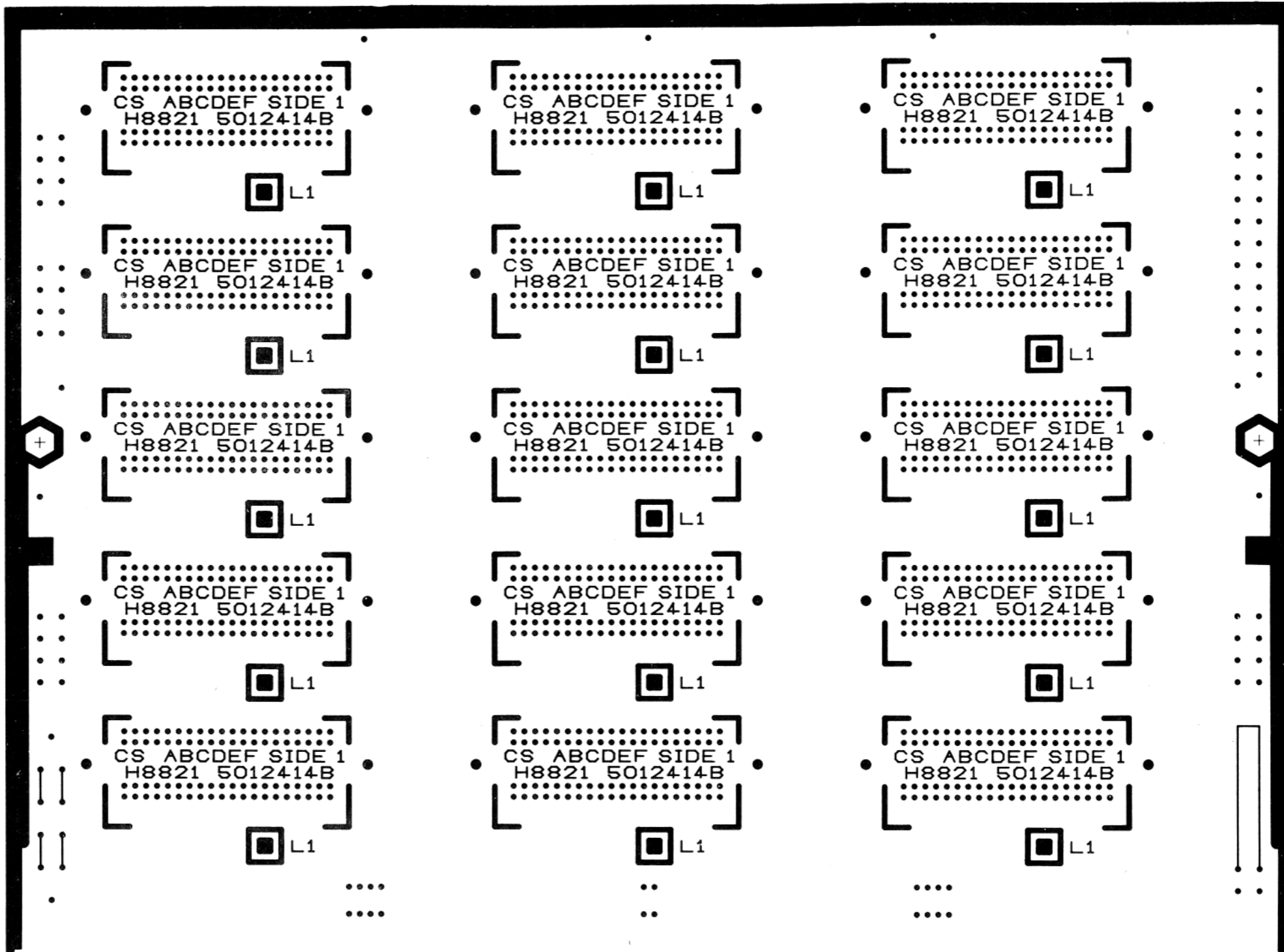
C

B

B

A

A



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE/CODE	NUMBER	REV.
40 PIN INTERCONNECT BOARD	D UA	H8821-0-0	A
SCALE 2/1	SHEET 2 OF 3	DIST.	

8

7

6

5

4

3

2

1

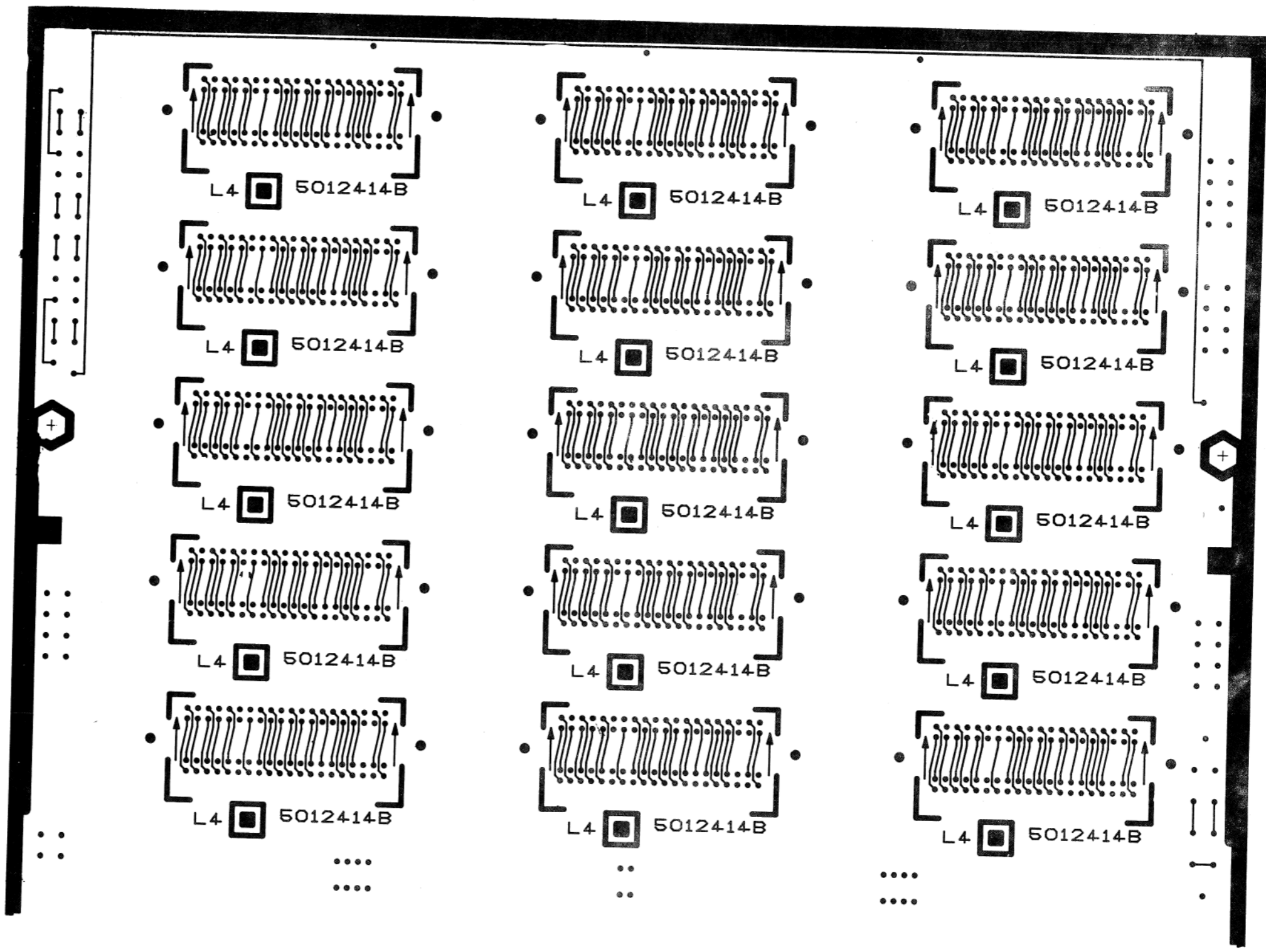
25  
T.B.



8 7 6 5 4 3 2 1

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▽ 0-0-288H DUA 2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
40 PIN INTERCONNECT BOARD	D UA	H8821-0-0	A
SCALE 2/1	SHEET 3 OF 3	DIST.	

REV. A  
H8821-0-0  
DUA

DIGITAL EQUIPMENT CORPORATION

PARTS LIST

QUANTITY / VARIATION

NOTES:

MADE BY F MULLIGAN CHECKED F. Seidman SECTION
DATE 8/13/76 DATE 8/19/76
ENG R. Barry 3DEC76 PROD RB King ISSUED SECTION
DATE DATE 6 DEC 76

H8821-0-0

Table with columns: ITEM NO., DRAWING NO., PART NO., DESCRIPTION. Row 1: 1, D-MD-5012414-0-0, 5012414, ETCH BOARD. Row 2: 2, 12-13508-01, CONNECTOR, 44 PIN REWORKED. Row 3: 3, 12-13508-03, KEY PINS.

Table with columns: REF DESIGNATION. Row 1: J1-J2. Below are multiple empty rows.

E.C.O. NO.

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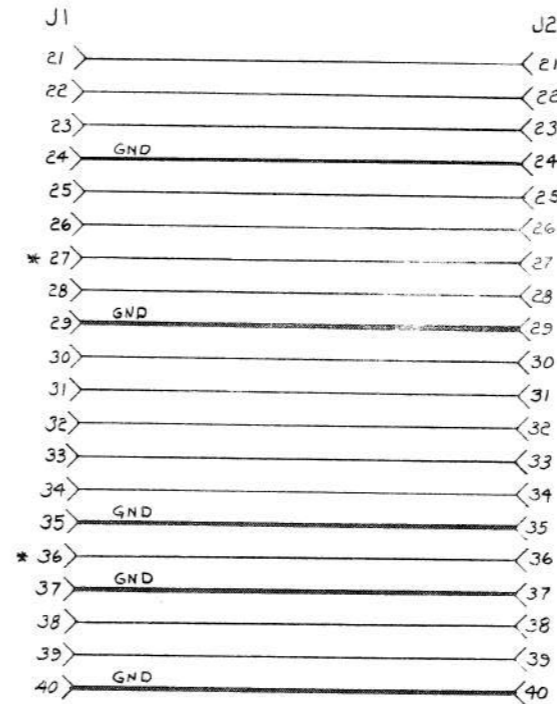
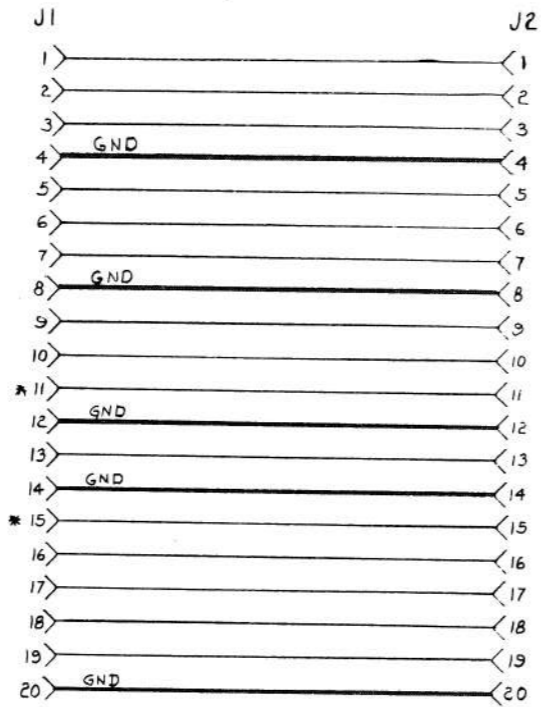
TITLE 40 PIN INTERCONNECT BOARD

ASSY NO. D-UA-H8821-0-0 SHEET 1 OF 1

SIZE CODE B PL NUMBER H8821-0-0 REV. A INSERTION PARTS LIST DATA BASE REV H

LN-01140A-16-R276(325) DRB 125

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NOTES:

1. \* DESIGNATES CONDUCTORS TO BE LOCATED ON LAYER 2
2. GND WILL BE ON LAYER 3 & REMAINING ETCH ON LAYER 4
3. LAYER 1 (SIDE 1) WILL BE FREE OF ALL CIRCUITRY

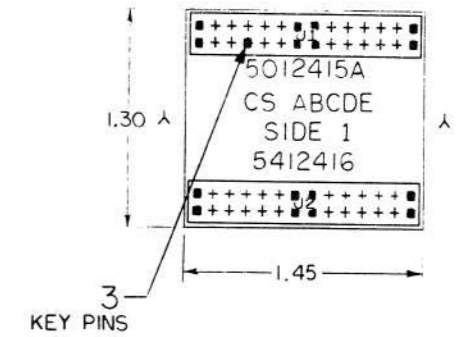
REV.	
CHANGE NO.	
CHK	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES		DRN. F. MULLIGAN	DATE 8/3/76	<b>digital</b> EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
TOLERANCES		CHK'D. L. Sedman	DATE 8/14/76	
DECIMALS	ANGLES	ENG. R. Barry	DATE 5 DEC 76	
.xxx = .005	±0° 30'	PROJ. ENG. R. Barry	DATE 3 DEC 76	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √		PROD. R. Barry	DATE 6 DEC 76	TITLE 40 PIN INTERCONNECT BOARD
MATERIAL	NEXT HIGHER ASSY.		SIZE CODE C CS	NUMBER H8821-0-1
FINISH	SCALE NA	SHEET 1 OF 1		REV. A

REV. A  
 NUMBER H8821-0-1  
 SIZE CODE C CS

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1 2 3 4 5 6 7 8  
 \* 0-0-5412416-0 UJA



NOTES:


CHK CHANGE NO REV	

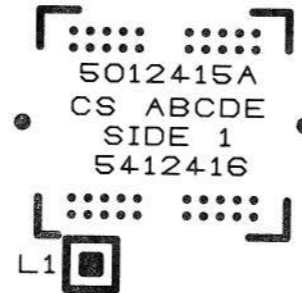
SIGNATURES	DATE	
DRN. F. MULLIN	8/2/76	digital
CHK'D. F. SEIDMAN	8/4/76	
ENG. <i>R. Barry</i>	8/26/76	TITLE MODULE
PROJ. ENG. <i>R. Barry</i>	8/26/76	INTERCONNECT BOARD
PROD. <i>R. Barry</i>	6/20/76	
SCALE 2/1		
SHT. 1 OF 3		
NEXT HIGHER ASSY. B-DD-5412416-0		

ETCH REV. A  
 P.C. DESIGN DATA BASE REV. A

1 MS#60956

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SIZE CODE NUMBER REV.  
D UA 5412416-0-0 \* 2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
MODULE INTERCONNECT BOARD	D UA	5412416-0-0	*
SCALE 2/1	SHEET 2 OF 3	DIST.	

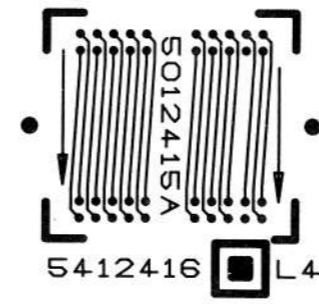
SIZE CODE NUMBER REV.  
D UA 5412416-0-0 \*

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8 7 6 5 4 3 2 1  
 \* 0-0-912416 5412416-0-0 D UA 2

D  
C  
B  
A

D  
C  
B  
A



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV.
MODULE INTERCONNECT BOARD	D UA	5412416-0-0	*
SCALE 2/1	SHEET 3 OF 3	DIST.	

8 7 6 5 4 3 2 1

# DIGITAL EQUIPMENT CORPORATION

## PARTS LIST

MADE BY DATE	P. MULLIGAN 8 AUG 76	CHECKED DATE	SECTION
ENG DATE	R. Barry 3 DEC 76	PROD DATE	ISSUED SECTION
		R. B. King 6 DEC 76	

### QUANTITY / VARIATION

5412416-0-0														
-------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES:

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REF DESIGNATION

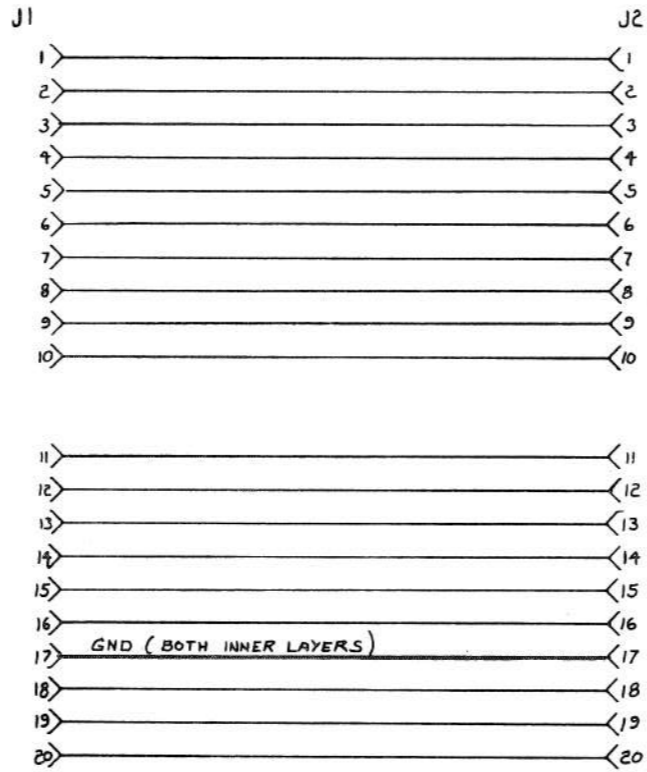
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION
1	D-MD-5012415-0-0	5012415	ETCH BOARD
2		12-13508-00	CONNECTOR. 28 PIN REWORKED
3		12-13508-03	KEY PINS

E.C.O. NO.

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--	------------------------------------	--	-------------------	-----------------------	----------

INSERTION PARTS LIST DATA BASE REV -//

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NOTE :  
1 - ALL ETCH ON SIDE 2 ONLY EXCEPT GND PLANES.

REV.	
CHANGE NO.	
CHK	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES		DRN. F. MULLIGAN	DATE 8/2/76	 <b>digital</b> EQUIPMENT CORPORATION <small>MAYNARD, MASSACHUSETTS</small>
TOLERANCES		CHK'D K. Seelman	DATE 8/17/76	
DECIMALS	ANGLES	ENG R. Barry	DATE 3 Dec 76	
.xxx = .005	±0° 30'	PROJ. ENG. R. Barry	DATE 3 Dec 76	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY √		PROJ. R. Barry	DATE 6 Dec 76	TITLE MODULE INTERCONNECT BOARD
MATERIAL	NEXT HIGHER ASSY.			
FINISH	SCALE	MA	SIZE CODE C CS	NUMBER 5412416-0-1
	SHEET	1	OF	1
			DIST.	

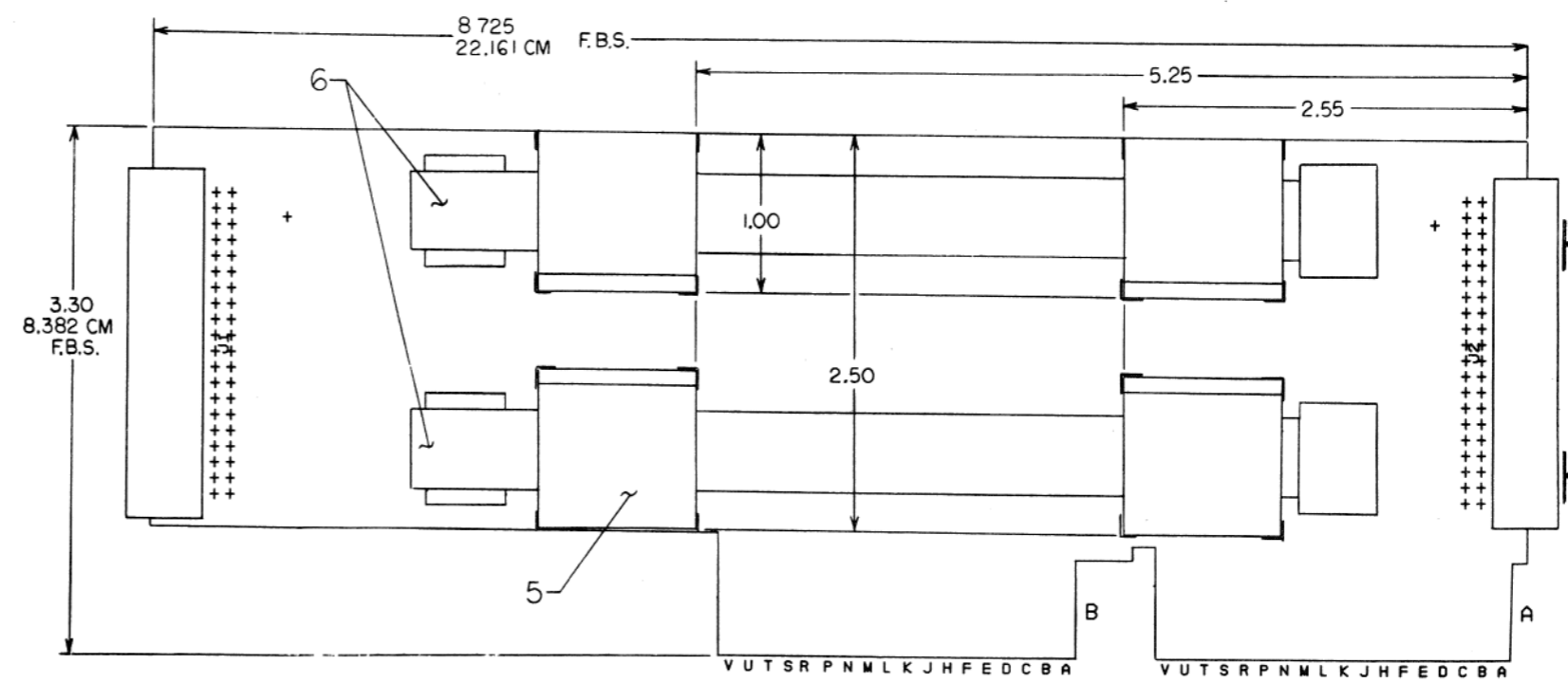
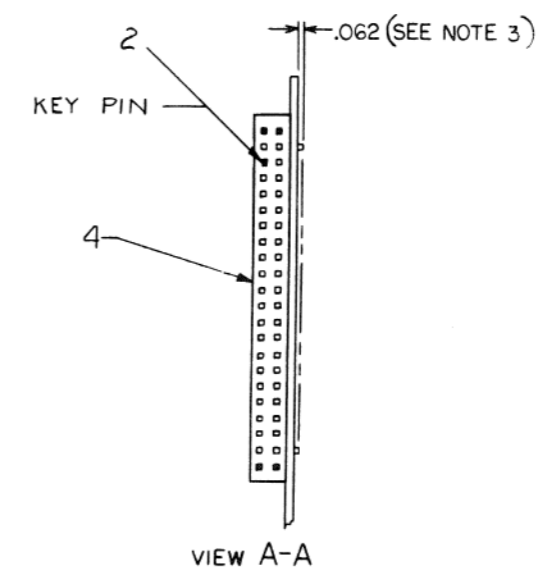
REV. \*  
 NUMBER 5412416-0-0  
 SIZE CODE C CS



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D | 0-0-2006M | 2 |

COMPONENT SIDE VIEW



SEE NOTE 4

- NOTES:
1. THIS MODULE CAN BE USED AS A JUMPER CONTINUITY CARD.
  2. ITEM 6 CABLES ARE USED FOR MAINTENANCE PURPOSES ON THE FPIIA OPTIONS. SEE E-UA-FPIIA-0-0.
  3. TRIM ITEM 4 LEADS AFTER MOUNTING.
  4. REMOVE PIN INDICATED. (TO REMOVE PIN, STRAIGHTEN BACK END AND PULL OUT FROM FRONT OF CONNECTOR.)
  5. USE CABLE CLAMPS ITEM 5 TO STORE CABLES ITEM 6 WHEN NOT IN USE.

CHANGE NO	REV	DATE	BY	CHK'D
1	1	11/18/76	R. PUZZO	
2	1	11/18/76	R. PUZZO	
3	1	11/18/76	R. PUZZO	
4	1	11/18/76	R. PUZZO	
5	1	11/18/76	R. PUZZO	
6	1	11/18/76	R. PUZZO	
7	1	11/18/76	R. PUZZO	
8	1	11/18/76	R. PUZZO	
9	1	11/18/76	R. PUZZO	
10	1	11/18/76	R. PUZZO	

ETCH REV. D-PI	P.C. DESIGN DATA BASE REV. D-PI
----------------	---------------------------------

SIGNATURES	DATE	TITLE
DRN. F. MULLIGAN	11/18/76	digital
CHK'D. R. PUZZO	11/18/76	
ENG. R. Barry	11/18/76	
PROJ. ENG. R. Barry	11/18/76	
PROD. R. Barry	11/18/76	
SCALE 2/1		
SHT. 1 OF 3		
NEXT HIGHER ASSY. B-DD-W9042-0		

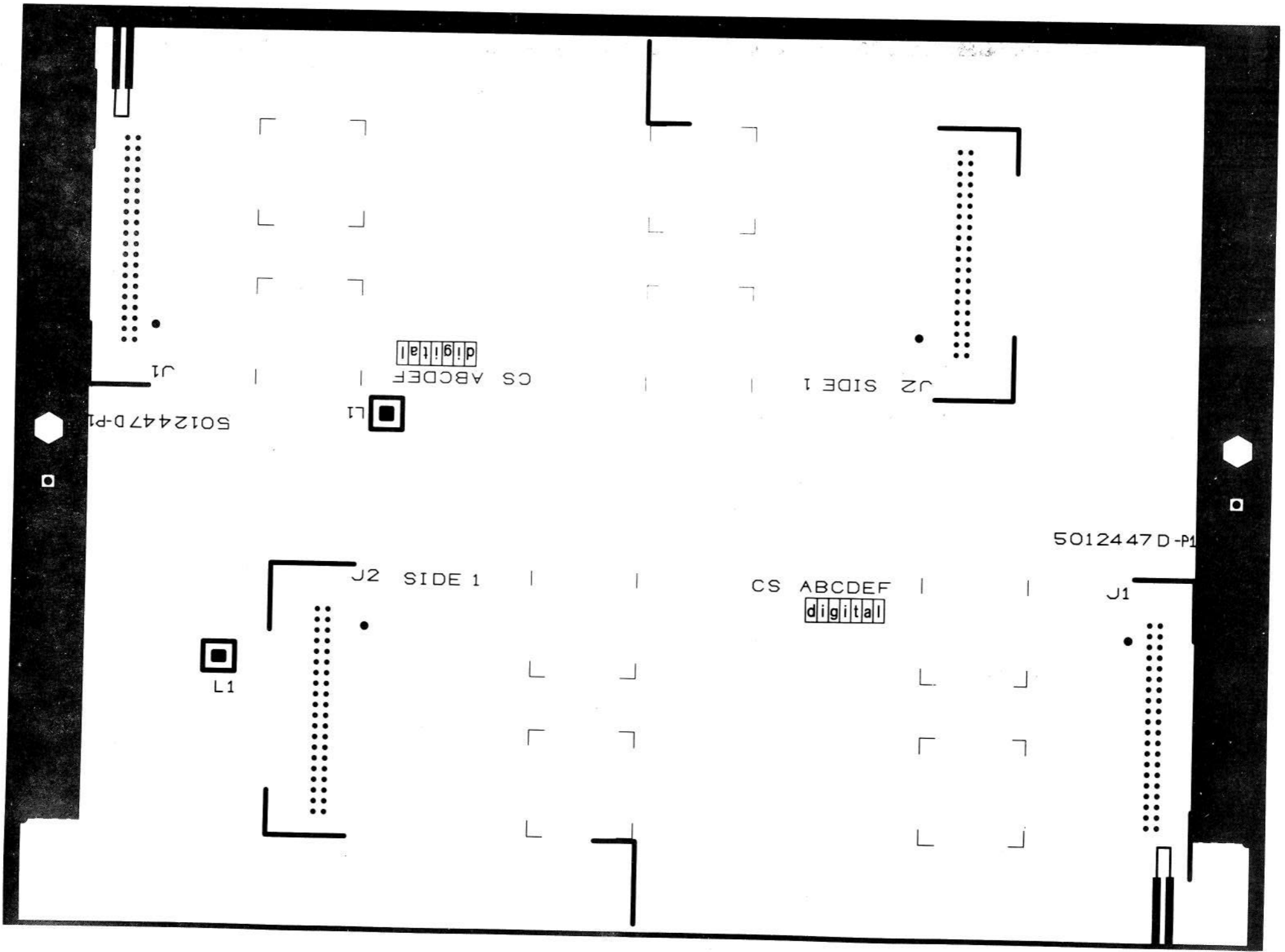
SIZE	CODE	NUMBER	REV
D	UA	W9042-0-0	D

1 MS# 300149

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1 2 DUA W9042-0-0 D

LAYER 1

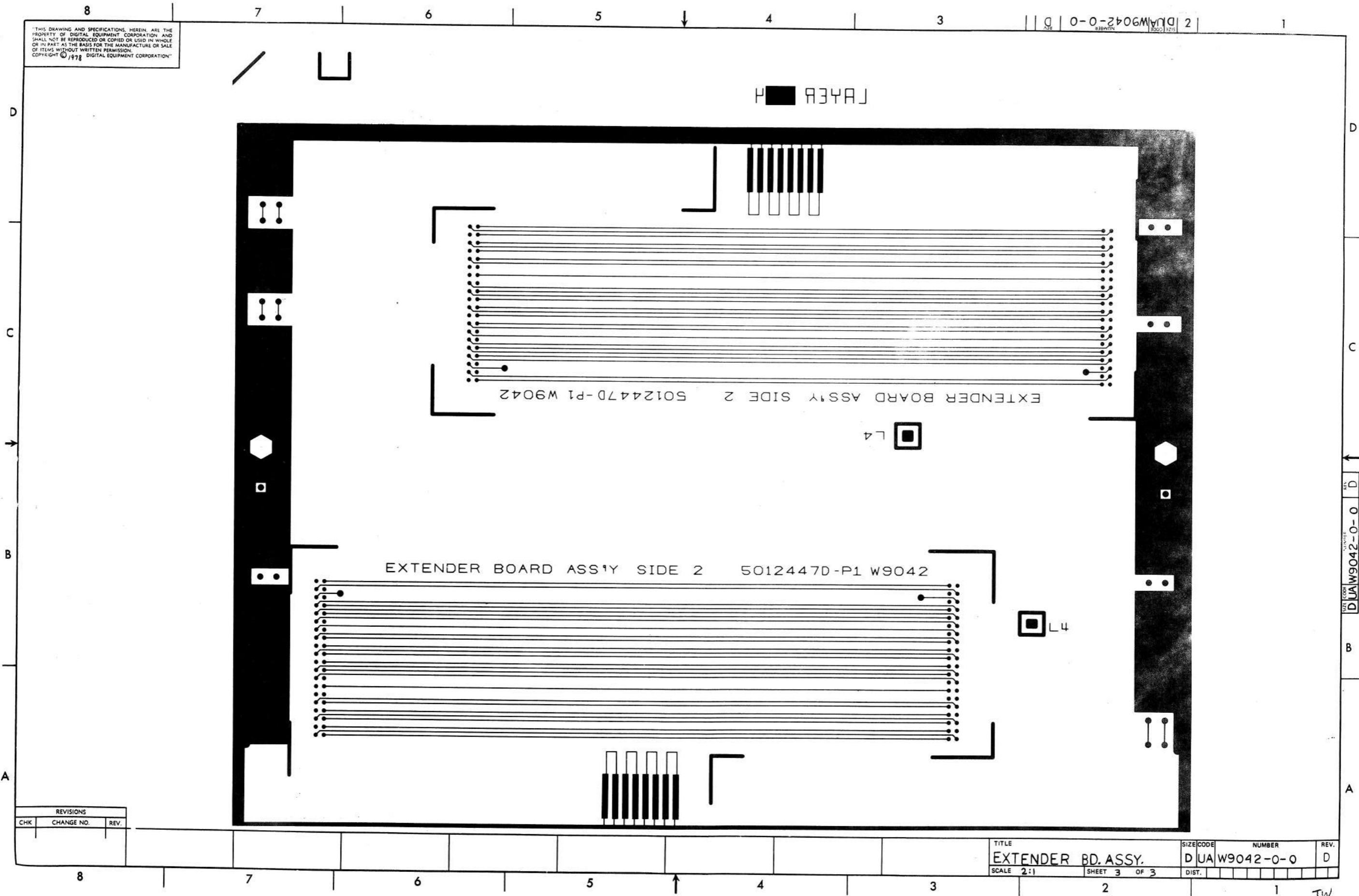


REVISIONS		
CHK	CHANGE NO	REV

TITLE: EXTENDER BD. ASSY. SIZE CODE: DUA NUMBER: W9042-0-0 REV: D  
 SCALE: 2:1 SHEET: 2 OF 3 DIST.:

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0 0 0-0-2406MWD 2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
EXTENDER BD. ASSY.	DUA	W9042-0-0	D
SCALE 2:1	SHEET 3	OF 3	DIST.

DUA W9042-0-0

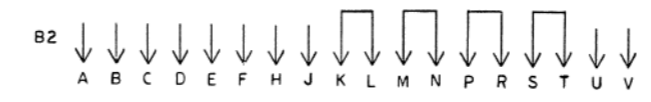
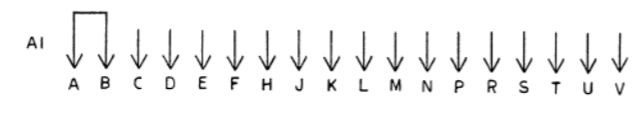
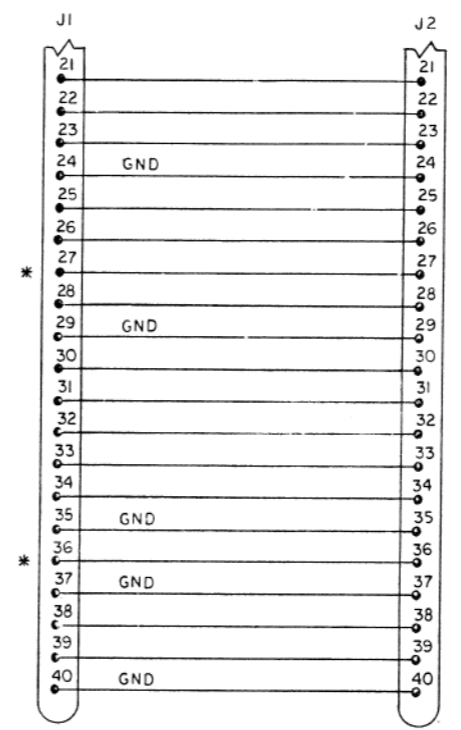
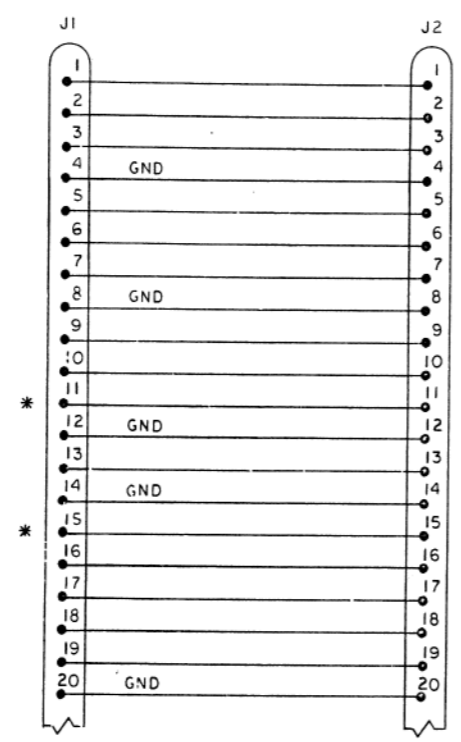
TW

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY	REFERENCE DESIGNATOR
1	1	D-MD-5012447-0-0	5012447-00	W9042	1	
2	2		1213508-03	CONN KEYING PLUG	1	
3	3		1213506-01	HEADER 40POS RT ANGLE W/3 SI	1	J2
4	4		1213947-00	SOCKET, 100 40POS RT ANGLE	1	J1
5	5		9009636-00	CLAMP, CABLE, FOR FLAT CABLE	4	
6	6		7011411-1D	3M CABLE FOR KY11-LB	2	

REVISION HISTORY		BASIC PART NO: W9042		DRN: F.MULLIGAN		DATE: 13-MAR-78		DIGITAL	
ENG	ECO NUMBER	REV	SECTION 1 OF 1	CHK'D:	F.MELANSON	DATE:	13-MAR-78	TITLE PARTS LIST	
---	INITIAL	B	SECTION.VARIATION INDEX	CHK'D:	F.MELANSON	DATE:	13-MAR-78	FP11A EXTENDER BOARD ASSY	
WH	00002	C	[1] 00	DES.ENG.:	R.BARRY	DATE:	13-MAR-78	DOCUMENT NUMBER	
RB	00003	D	[2]	RESP.ENG.:	R.BARRY	DATE:	13-MAR-78	SIZE	CODE
			[3]	MFG.ENG.:	R.KING	DATE:	13-MAR-78	NUMBER	REV
			[4]	ASSEMBLY NUMBER:				K	PL
			[5]	D-UA-W9042-0-0				W9042-0-DBP	D
			[6]					FILE NAME:	EDIT #
			[7]					W9042.PLS	1
			[8]						
			[9]						
			[10]						
			[11]						
			[12]						

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NOTE: 1. (\*) DESIGNATES ETCH CONNECTION ON LAYER 2

REV.	CHG.	NO.	DATE	BY
B				
C				

DRN. J. Vincent 8-25-76  
 ENG. J. Vincent 8-25-76  
 PROJ. ENG. J. Vincent 8-25-76  
 PROD. J. Vincent 8-25-76  
 NEXT HIGHER ASSY.  
 SCALE  
 SHEET 1 OF 1

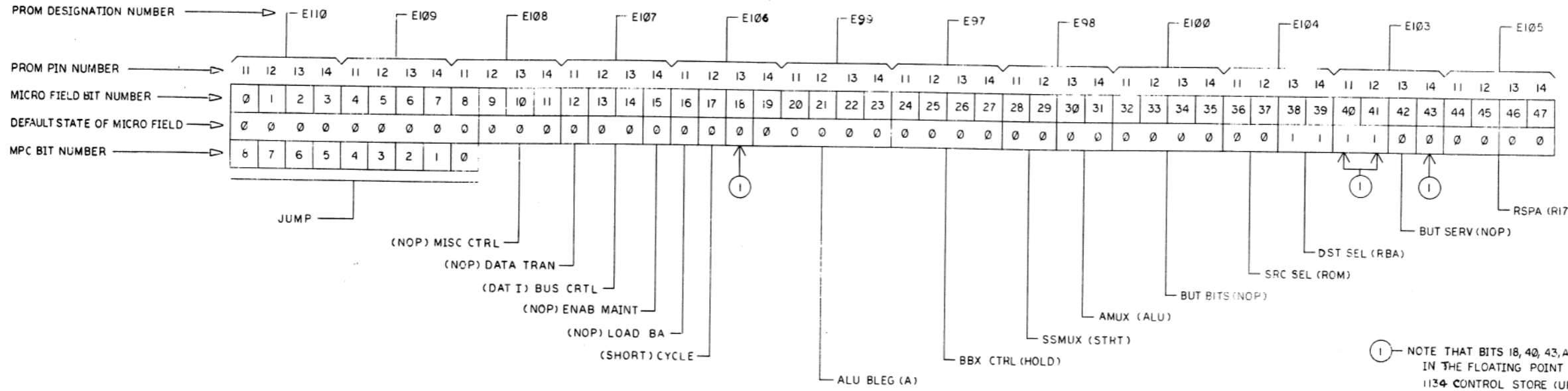
DRN. J. Vincent 8-25-76	FIRST USED ON	8-25-76
CHK'D J. Vincent 8-25-76	ENG. J. Vincent 8-25-76	PROJ. ENG. J. Vincent 8-25-76
PROD. J. Vincent 8-25-76	TITLE	EXTENDER BOARD ASSEMBLY
SCALE	SIZE CODE	D CS
SHEET 1 OF 1	NUMBER	W9042-0-1
	REV.	D

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST				QUANTITY/VARIATION											
MADE BY D. HEALY	CHECKED D. HEALY	SECTION 1													
DATE 10 NOV. 76	DATE 10 NOV. 76	ISSUED SECT. 1													
ENG <i>Jerry W. Martell</i>	PROD <i>X Standard</i>														
DATE 12-20-76	DATE 12-31-76														
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	FP11-A												
	MP00189	FP11-A FIELD MAINTENANCE PRINT SET	1												
	EK-FP11-A-TM-PRE	FP11-A FLOATING POINT MANUAL	1												
	ZJ232-RB	SOFTWARE LIBRARY KIT (PAPER TAPE)	1												
TITLE FP11-A SHIPPING LIST		ASSY NO. NONE	SIZE A	CODE PL	NUMBER FP11-A-3		REV.	ECO NO.							
SHEET 1 OF 1															

DEC FORM DEC 16-(325)-1031-N870  
DRA 110

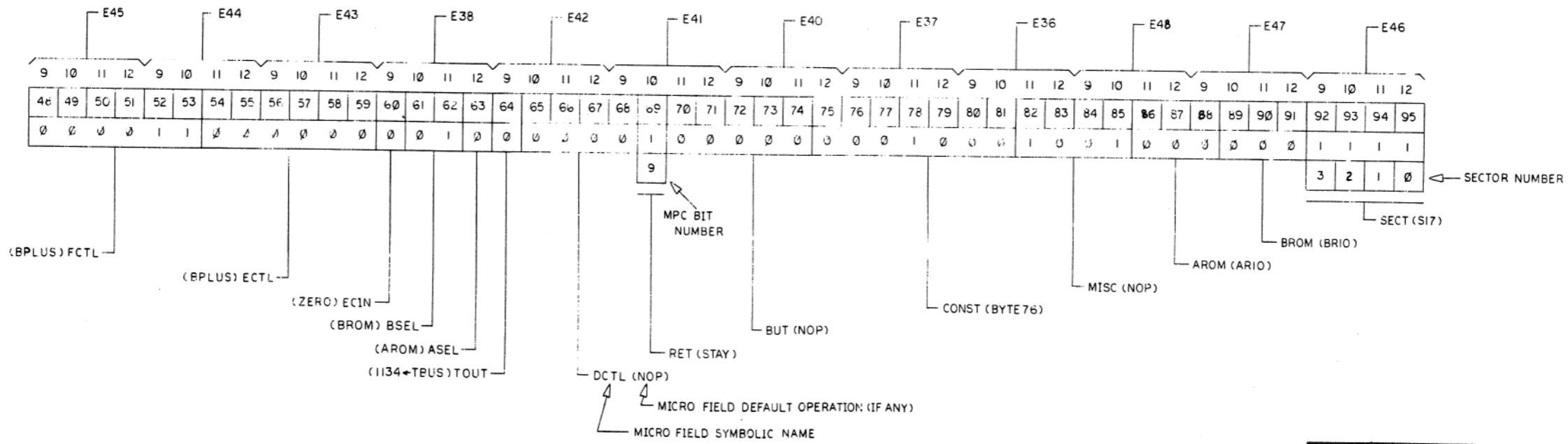
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FPII-A CONTROL WORD (WITHIN M8266)



NOTE THAT BITS 18, 40, 43, AND 44 ARE NOT USED IN THE FLOATING POINT SECTION OF THE 1134 CONTROL STORE (UPPER 512 LOCATIONS)

FPII-A CONTROL WORD (WITHIN M8267)



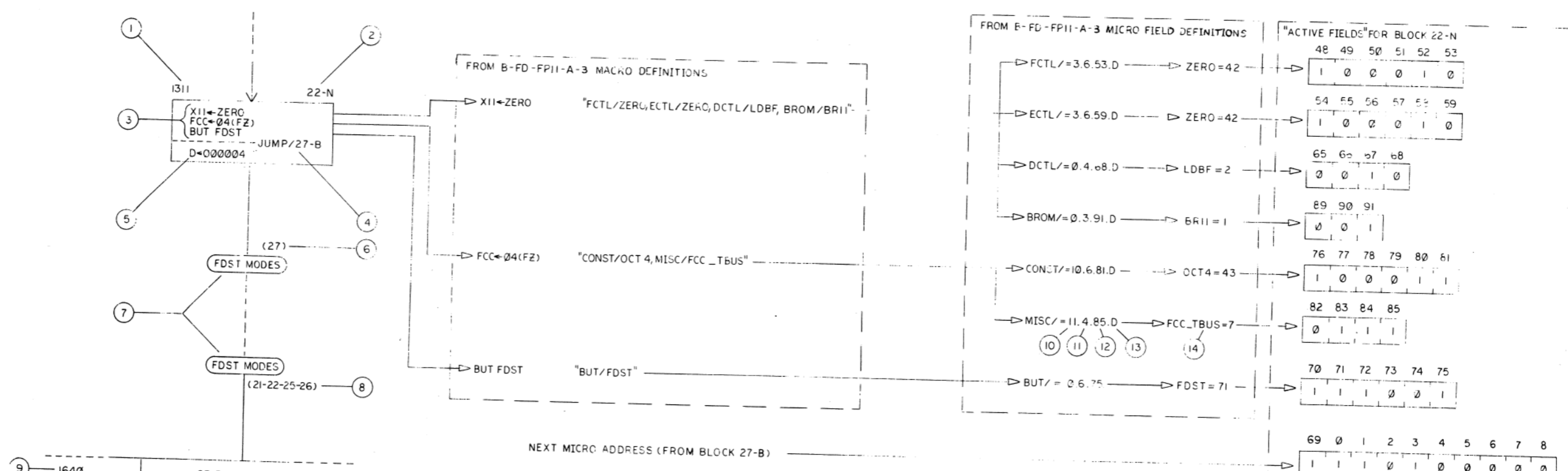
MICRO FIELD DEFAULT OPERATION (IF ANY)  
 MICRO FIELD SYMBOLIC NAME

REV.	
CHANGE NO.	
CHEK	

DRN. <i>[Signature]</i>	FIRST USED ON	digital
CHK'D <i>[Signature]</i>	FPII-A	
ENG. <i>[Signature]</i>	TITLE	FPII-A FLOW DIAGRAMS
PROJ. ENG. <i>[Signature]</i>		
PROD. <i>[Signature]</i>	NEXT HIGHER ASSY.	
B-DD-FPII-A	SIZE CODE	NUMBER
SCALE	D FD	FPII-A-2
SHEET 1 OF 40	DIST.	REV.

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### KEY TO MICRO FLOW SYMBOLOGY



#### NOTES

- 1 MICRO ADDRESS OF CURRENT WORD.
- 2 SYMBOLIC TAG OF CURRENT WORD CONSISTS OF PAGE NUMBER AND BLOCK LABEL (PAGE-BLOCK)
- 3 MICRO OPERATIONS WHICH TAKE PLACE DURING THIS STATE. THE FIELDS WHICH ARE INVOLVED IN CARRYING OUT THESE OPERATIONS CAN BE DETERMINED USING: FPII-A MACRO DEFINITIONS FPII-A MICRO FIELD DEFINITIONS
- 4 27-B IS THE SYMBOLIC TAG OF THE NEXT MICRO WORD (TARGET) ASSUMING NO BRANCHING (DESTINATION MODE 0). THIS CAN BE USED TO DETERMINE THE NEXT ADDRESS FIELD OF THE CURRENT MICRO WORD.
- 5 "D" STANDS FOR DISPLAY. IN THIS CASE, 00CC04 WILL APPEAR ON THE CONSOLE DISPLAY IF OPERATING IN MAINTENANCE MODE.
- 6 INDICATES PAGE IN FLOWS WHERE THIS ENTRY POINT CAN BE FOUND.
- 7 EXIT AND ENTRY LABELS ARE USED TO INDICATE LOGICAL FLOW FROM PAGE TO PAGE
- 8 INDICATES PAGES IN FLOWS FROM WHICH ENTRY POINT IS CALLED.
- 9 THIS ADDRESS IS THE TARGET OF THE JUMP FIELD OF BLOCK 22-N
- 10 DEFAULT VALUE OF THIS FIELD
- 11 NUMBER OF BITS IN THIS FIELD
- 12 LOCATION OF RIGHT MOST BIT OF THIS FIELD WITHIN MICRO WORD
- 13 INDICATES THAT THE DEFAULT IS TAKEN IF NOTHING ELSE IS SPECIFIED
- 14 OCTAL VALUE OF MICRO FIELD LITERAL

REVISIONS		
CHK	CHANGE NO.	REV.



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FPII-A TYPICAL REGISTER USAGE

17	FPS		FCCR	
16				
15	ZERO		EFSRC	
14	ZERO		EAC	
13	FSRC		S	E
12	AC		S	E
11	FSRC (BECOMES SIGN)		S	E
10	AC5		S	E
9	AC4		S	E
8	AC3		S	E
7	AC2		S	E
6	AC1		S	E
5	AC0		S	E

SECTOR3	SECTOR 2		SECTOR 1		SECTOR 0		SECTOR 3
BYTE 6	BYTE 5	BYTE 4	BYTE 3	BYTE 2	BYTE 1	BYTE 0	BYTE 7
F-REG							E-REG
X-REG							

FPII-A TS BUS ASSIGNMENT

TS0		Y8
TS1		Y9
TS5	FT	Y61
TS6		Y62
TS8	FIC	
TS9	FIV	
TS10	FIU	
TS11	FIUV	
TS14	FID	

FPII-A MPC BUTOFF BITS

MPC	I134	FPX TS BUT	FPX CONDITIONS	FPX BUT OP1	FPX BUT OP2
0	IR09	—	—	OP10	OP20
1	ZBIT	TS0	TS14	OP11	OP21
2	C05	TS1	XOUT	OP12	OP22
3	SPI5	TS8	QB-Q40	OP13	OP23
4	BX00	TS9	XZBT	—	—
5	BX01	TS10	XNBT	—	—
6	NBIT	TS11	BUSRQ	—	—
7	COU	TS5	EZBT	—	—
8		TS6	ENBT	—	—

FLOATING POINT STATUS REGISTER

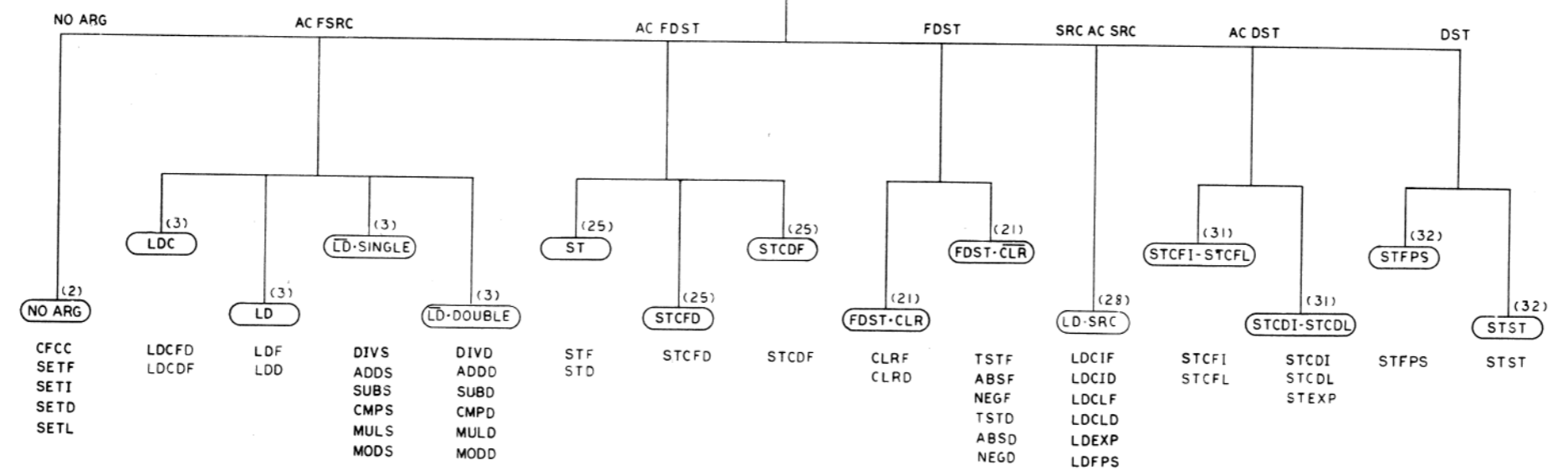
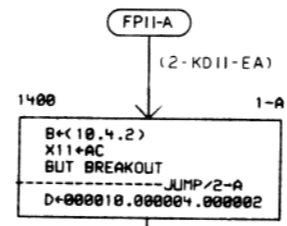
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
FER	FID	X	X	FIUV	FIU	FIV	FIC	FD	FL	FT	X	FN	FZ	FV	FC

REVISIONS		
CHK	CHANGE NO.	REV.

REV. 2 DFD FPII-A-2

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SIZE CODE D FD FPII-A-2 2

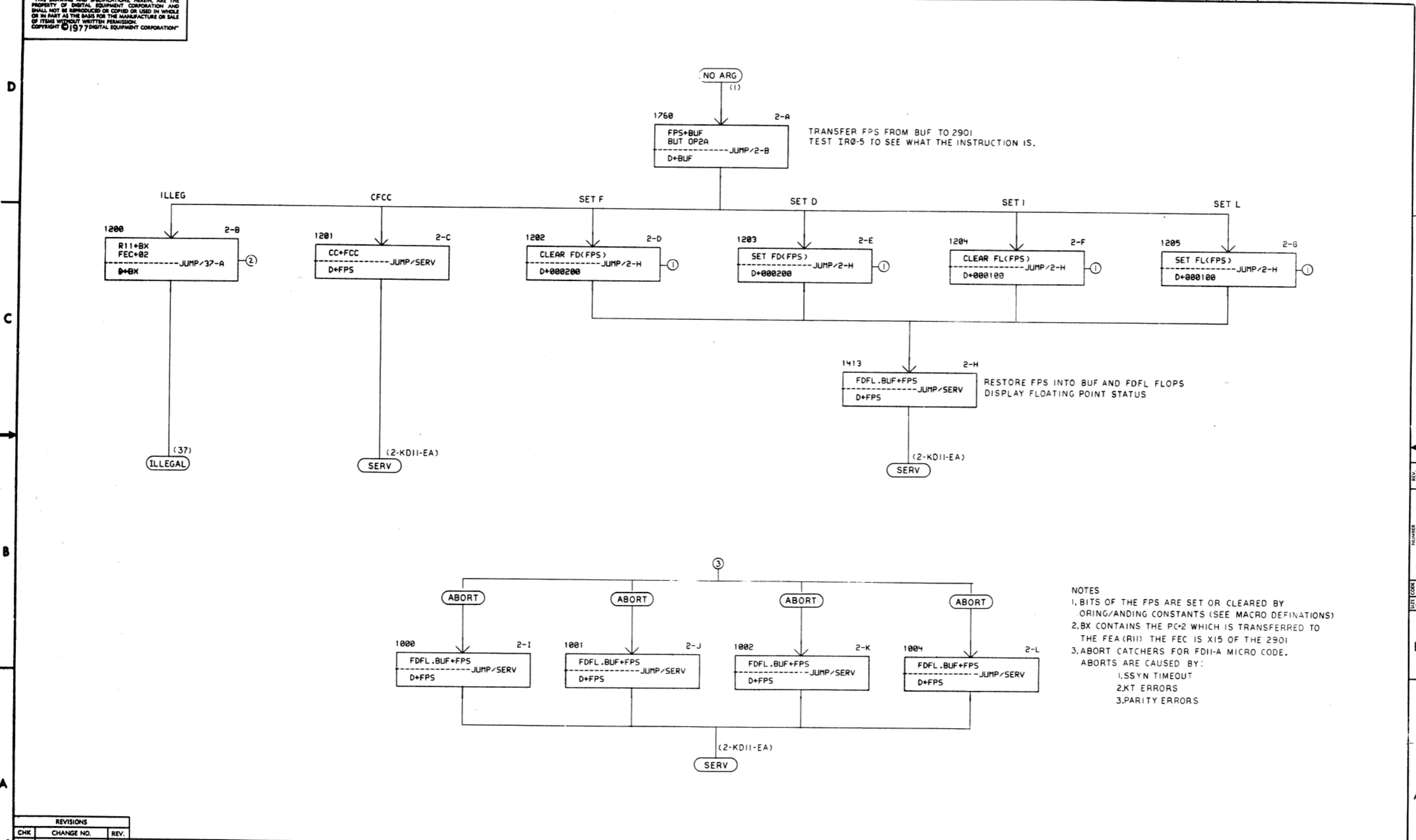


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FPII-A FLOWS (1) SIZE CODE D FD NUMBER FPII-A-2 REV. 1  
 SCALE + + SHEET 4 OF 40 DIST.

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SIZE CODE NUMBER REV. 2 DFD FDI1-A-2



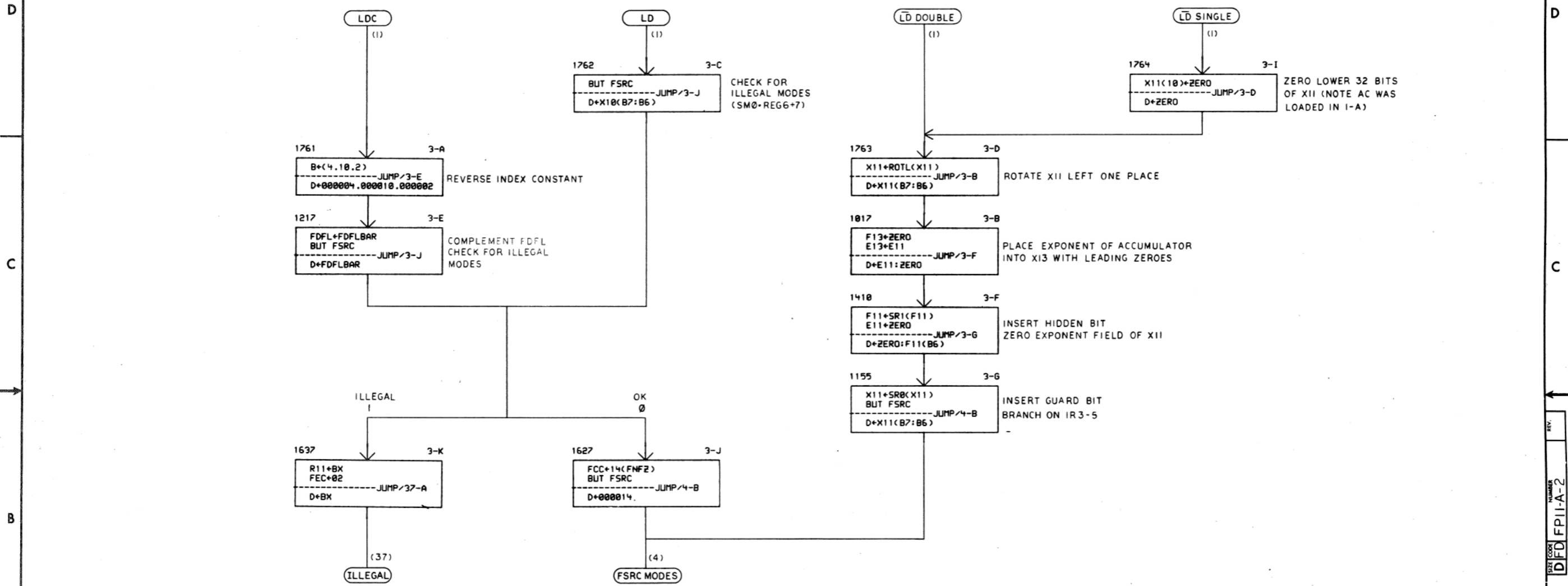
NOTES  
 1. BITS OF THE FPS ARE SET OR CLEARED BY ORING/ANDING CONSTANTS (SEE MACRO DEFINITIONS)  
 2. BX CONTAINS THE PC+2 WHICH IS TRANSFERRED TO THE FEA (R11) THE FEC IS X15 OF THE 2901  
 3. ABORT CATCHERS FOR FDI1-A MICRO CODE.  
 ABORTS ARE CAUSED BY:  
 1. SSYN TIMEOUT  
 2. KT ERRORS  
 3. PARITY ERRORS

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (2)	SIZE CODE	D FD	NUMBER	FPII-A-2	REV.	
SCALE		SHEET	5 OF 40	DIST.			

SIZE CODE NUMBER REV. DFD FDI1-A-2

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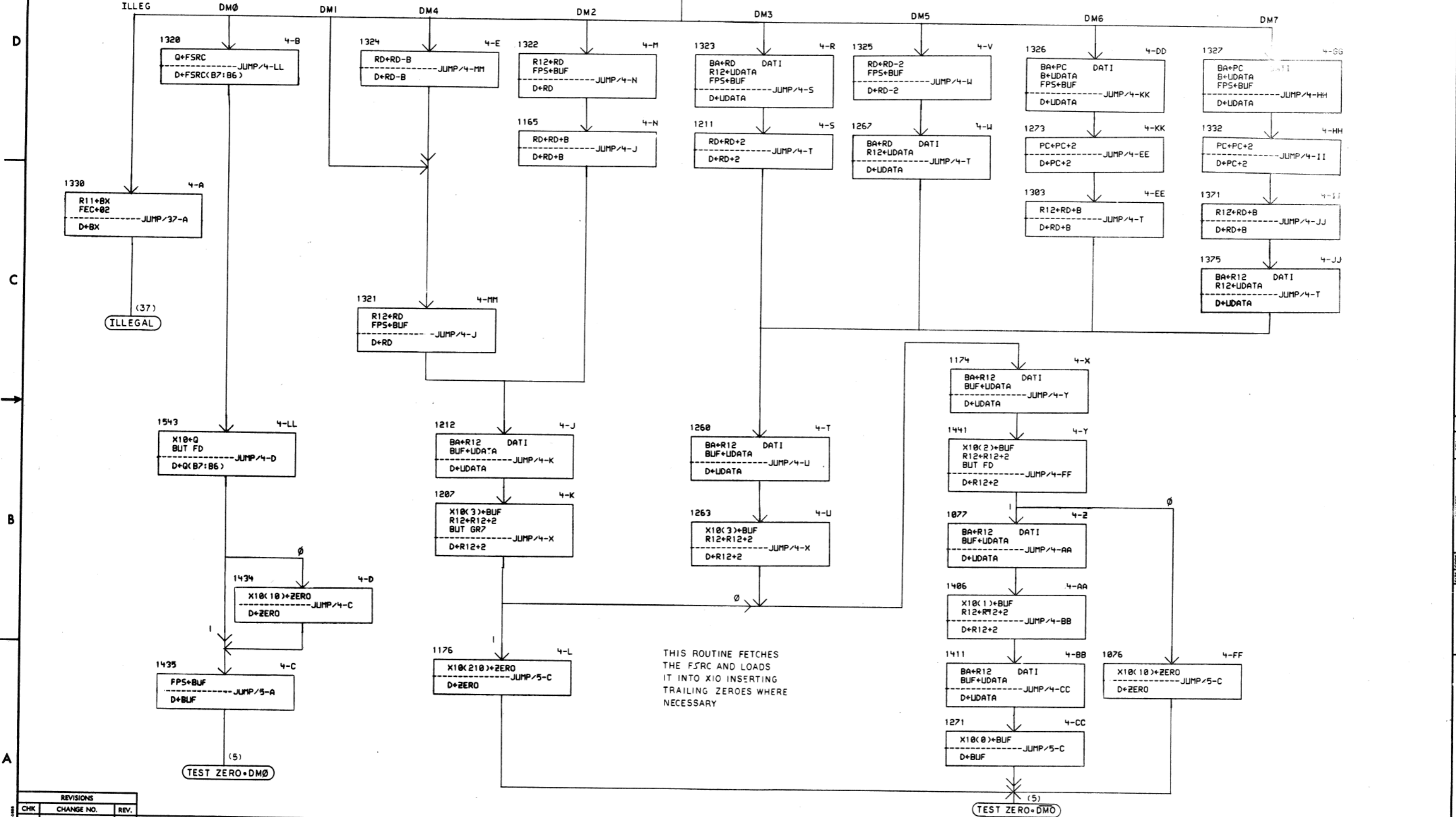


REVISIONS		
CHK	CHANGE NO.	REV.

8	7	6	5	4	3	2	1	
TITLE FPII-A FLOWS (3)						SIZE CODE DFD	NUMBER FPII-A-2	REV.
SCALE						SHEET 6 OF 40	DIST.	

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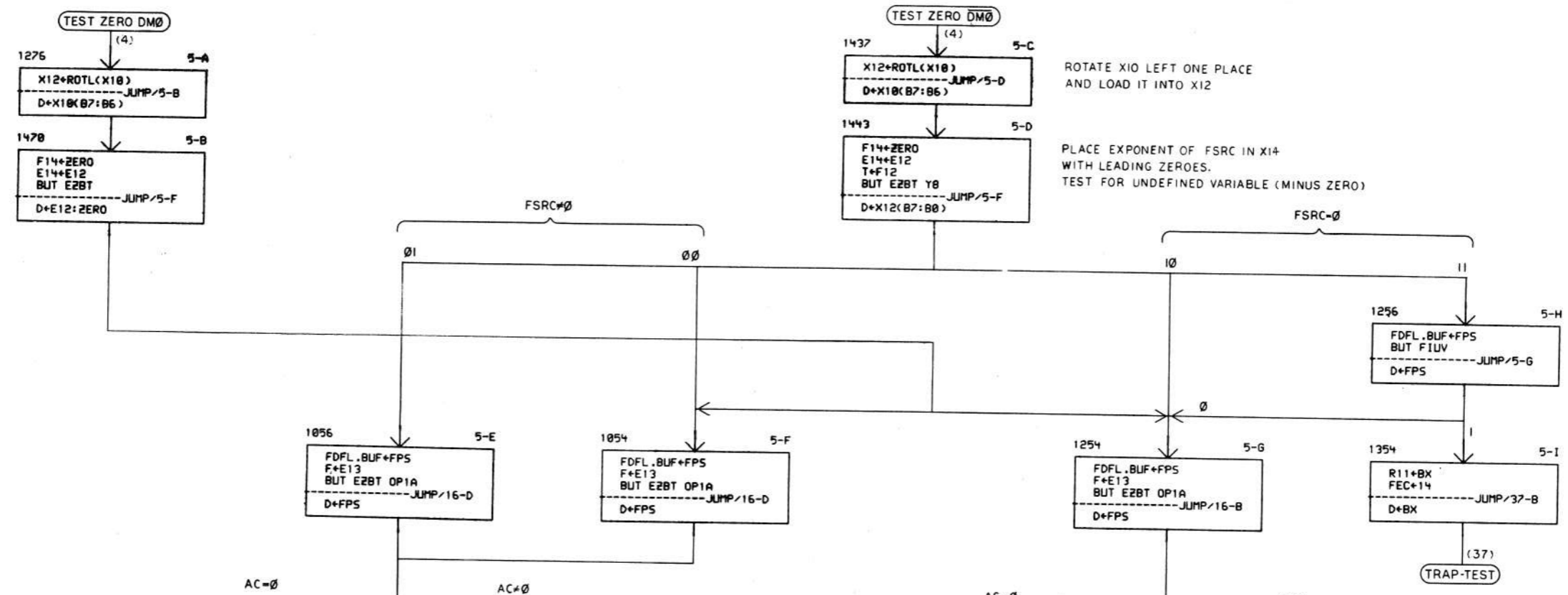
FSRC MODES (3)



THIS ROUTINE FETCHES THE FSRC AND LOADS IT INTO X10 INSERTING TRAILING ZEROS WHERE NECESSARY

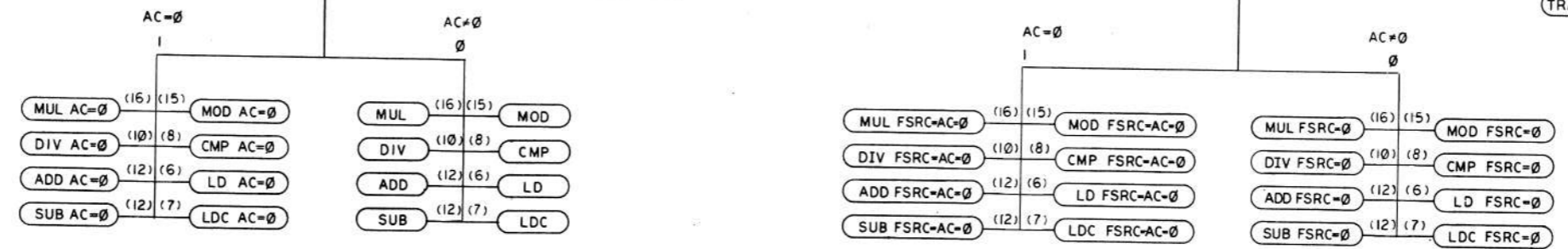
REVISIONS		
CHK	CHANGE NO.	REV.

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ROTATE X10 LEFT ONE PLACE AND LOAD IT INTO X12

PLACE EXPONENT OF FSRC IN X14 WITH LEADING ZEROES. TEST FOR UNDEFINED VARIABLE (MINUS ZERO)

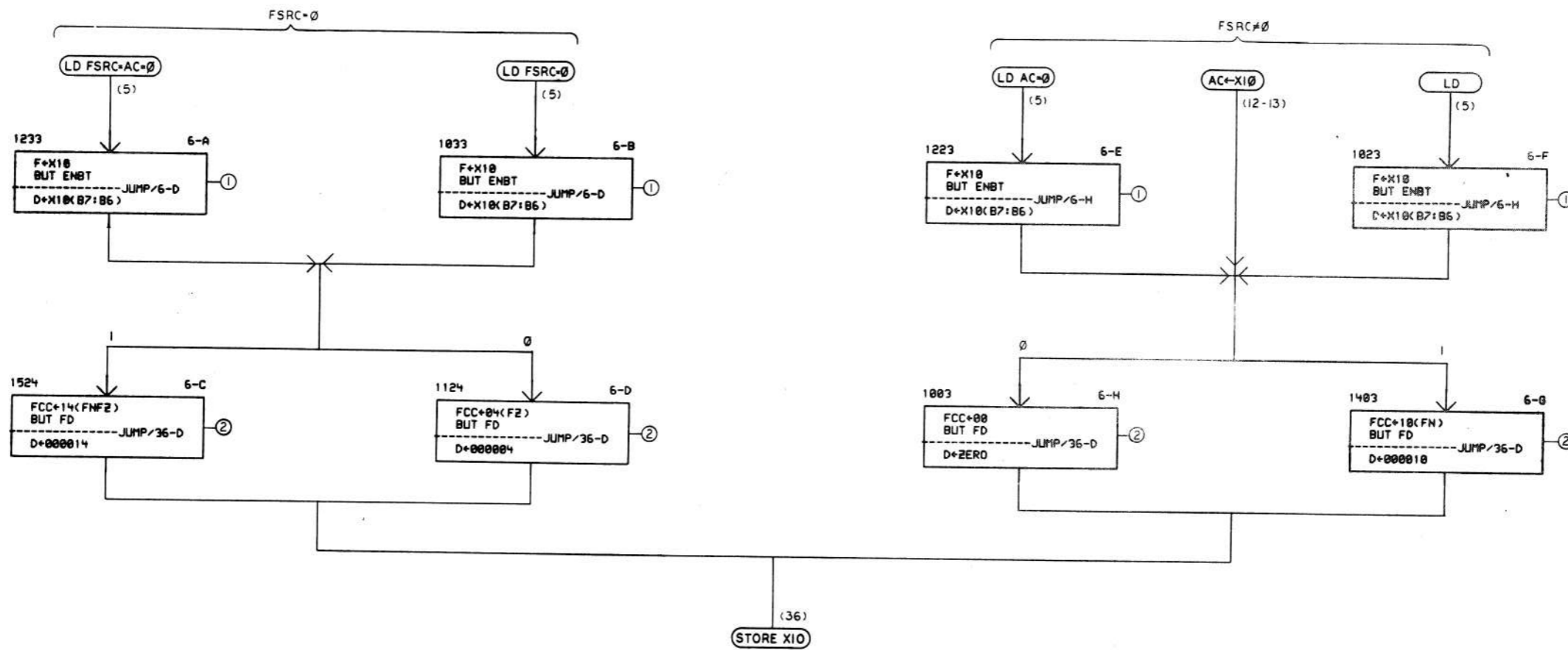


REVISIONS		
CHK	CHANGE NO.	REV.

REV. NUMBER DFD FPII-A-2

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REV. 2 DFD FPII-A-2

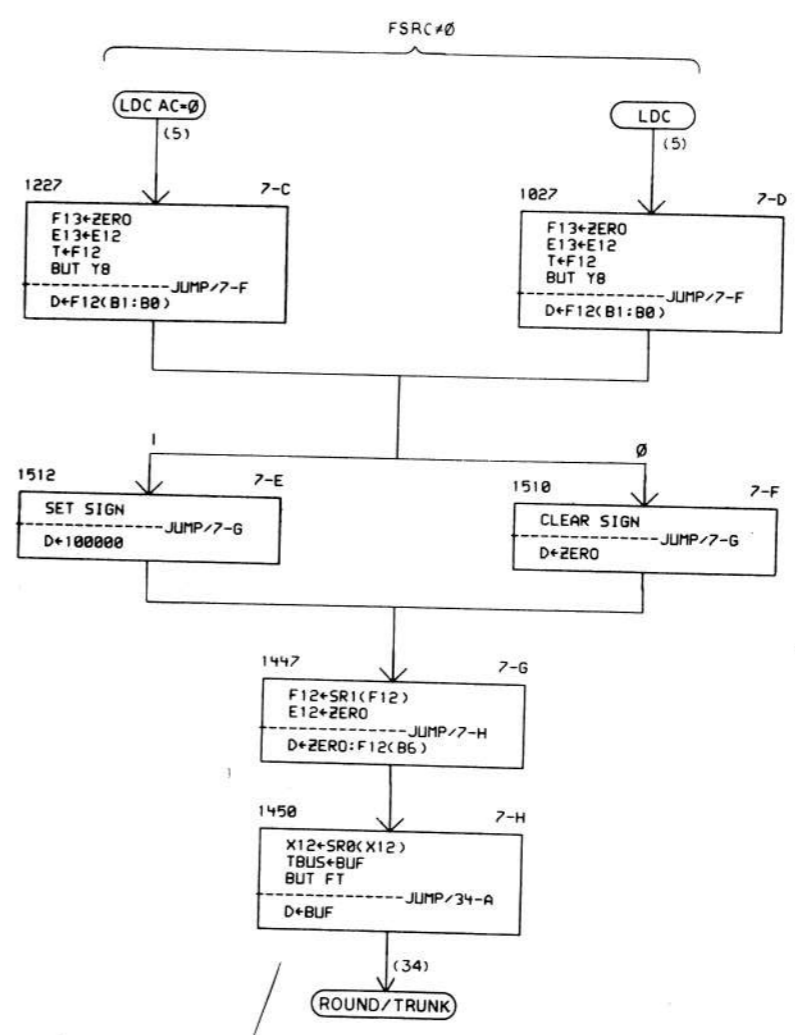
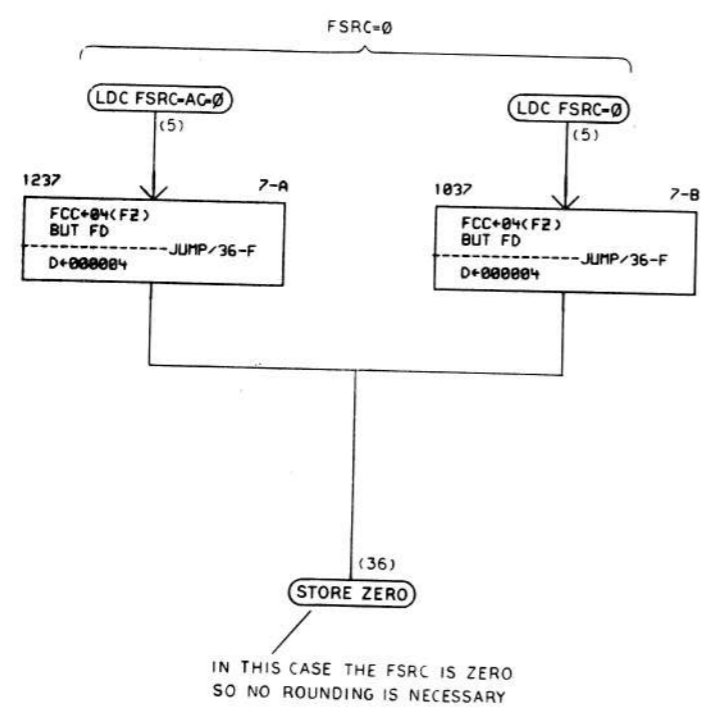


NOTES  
 1. TEST SIGN OF FSRC (X10:BIT 7)  
 2. SET FLOATING CONDITION CODES (FCC) USING THE APPROPRIATE CONSTANT. NOTE THAT THE FCC IS CONTAINED IN THE LOWER FOUR BITS OF THE BUFFER (BUF).

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII-A FLOWS (6)  
 SIZE CODE: DFD  
 NUMBER: FPII-A-2  
 SCALE: SHEET 9 OF 40  
 DIST.:

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THIS ROUTINE SETS UP THE FSRC SO THAT THE ROUND/TRUNK ROUTINE CAN BE USED TO COMPLETE THE OPERATION

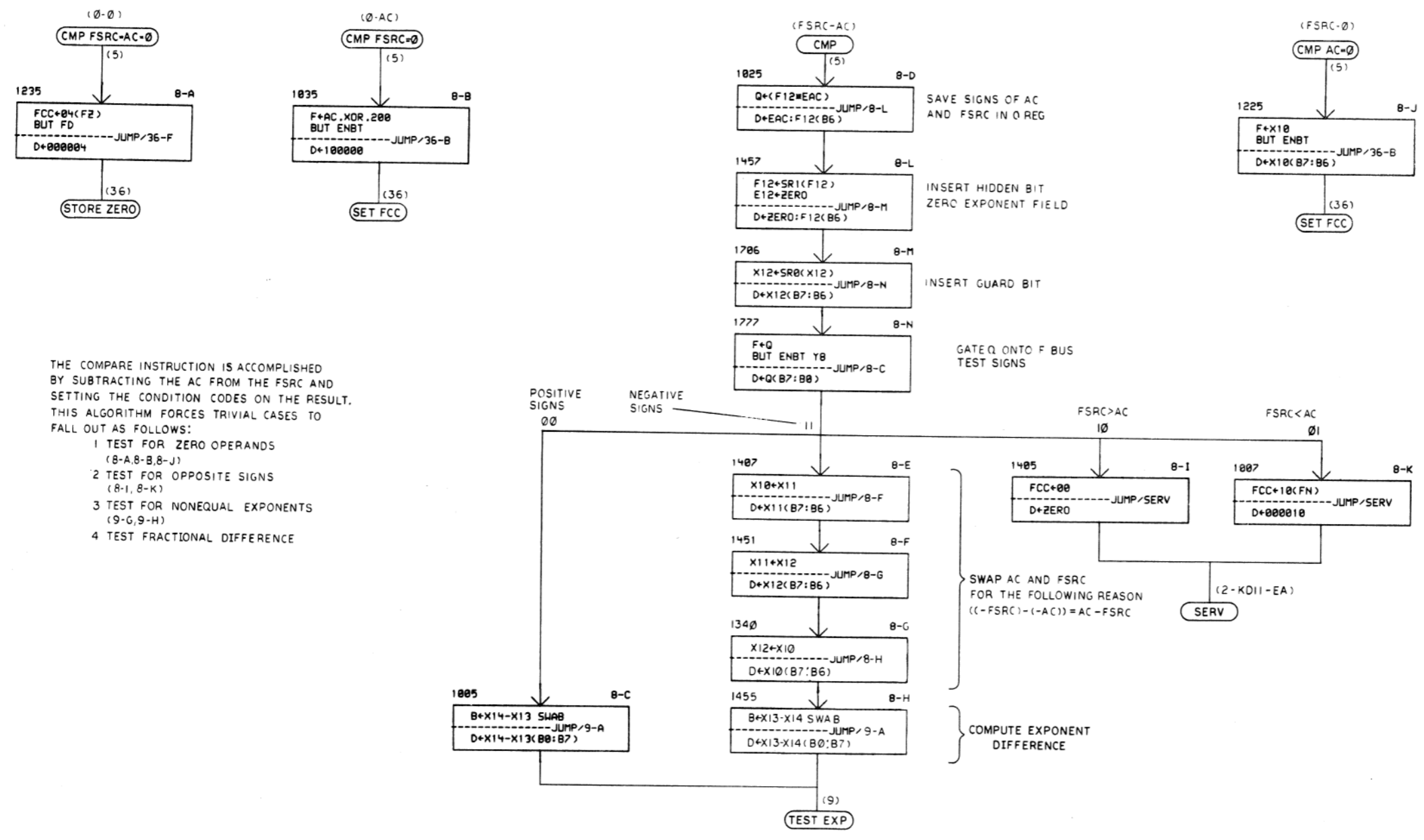
REVISIONS		
CHK	CHANGE NO.	REV.

49



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REV. 2  
SIZE CODE DFD  
NUMBER FPII-A-2



THE COMPARE INSTRUCTION IS ACCOMPLISHED BY SUBTRACTING THE AC FROM THE FSRC AND SETTING THE CONDITION CODES ON THE RESULT. THIS ALGORITHM FORCES TRIVIAL CASES TO FALL OUT AS FOLLOWS:

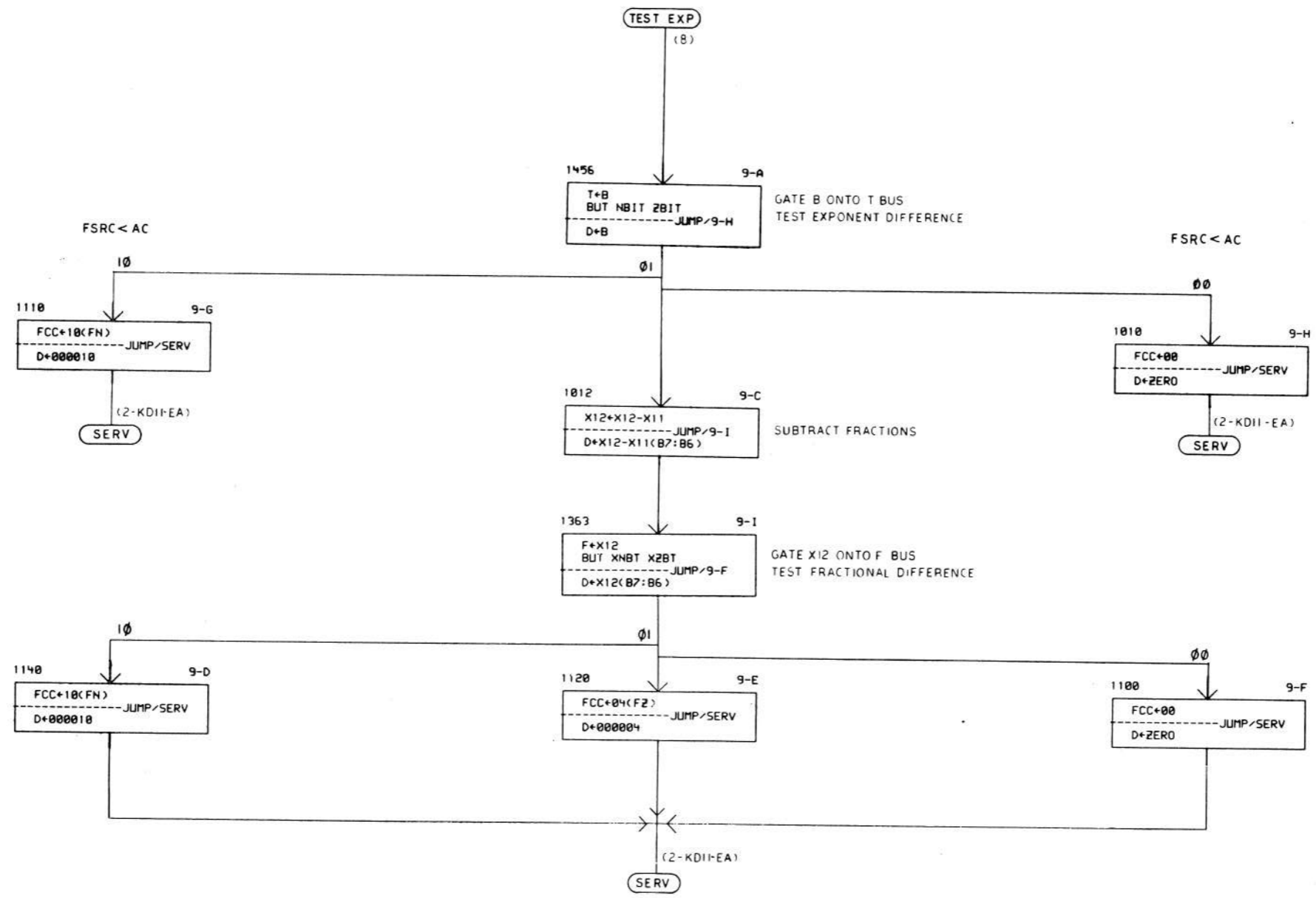
- 1 TEST FOR ZERO OPERANDS (8-A,8-B,8-J)
- 2 TEST FOR OPPOSITE SIGNS (8-I,8-K)
- 3 TEST FOR NONEQUAL EXPONENTS (9-G,9-H)
- 4 TEST FRACTIONAL DIFFERENCE

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (8)	SIZE CODE	DFD	NUMBER	FPII-A-2	REV.	
SCALE		SHEET	11	OF	40	DIST.	

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REV. 2  
 NUMBER FPII-A-2  
 SIZE CODE DFD

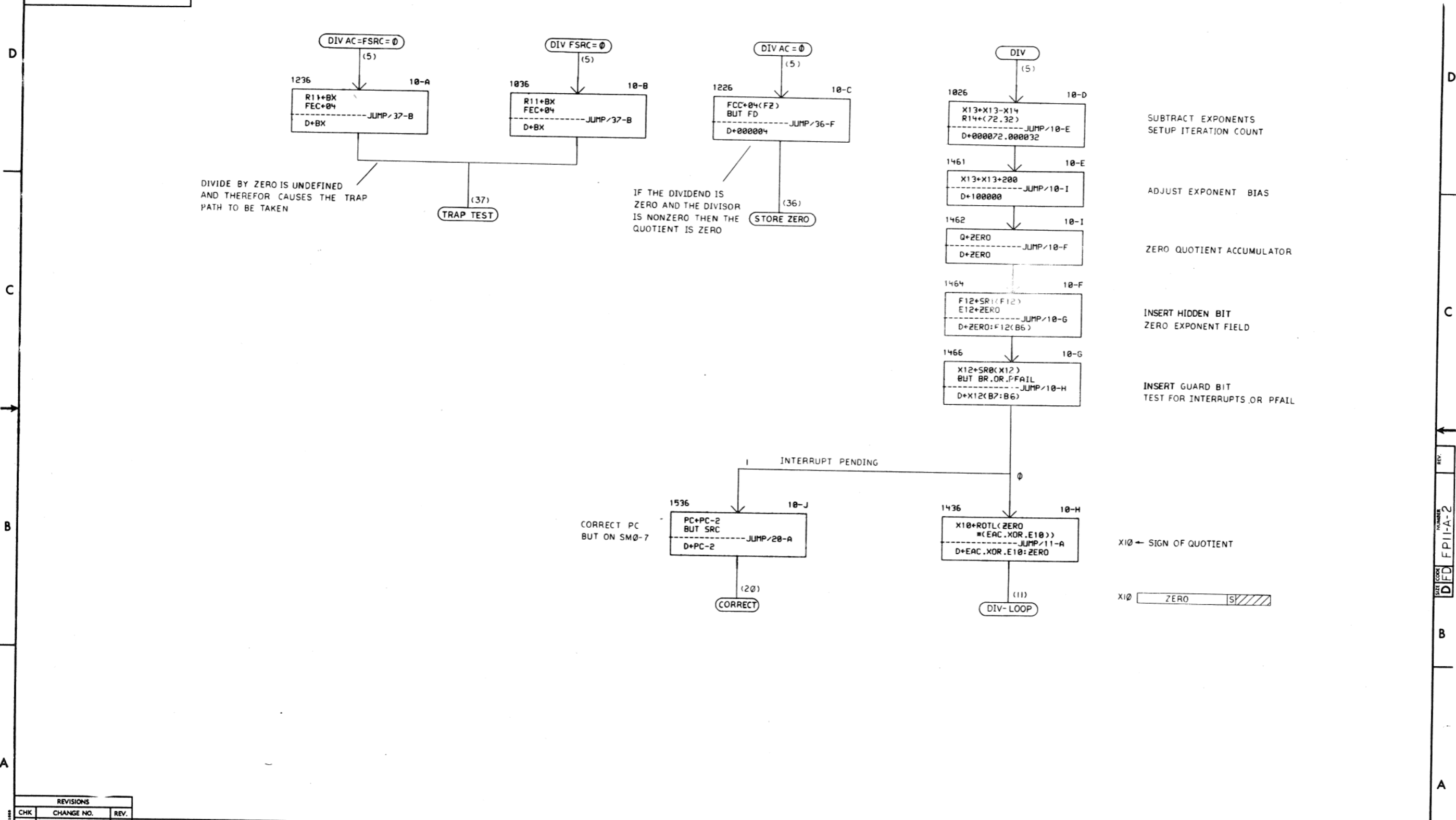


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII-A FLOWS (9)  
 SCALE: + +  
 SHEET: 12 OF 40  
 SIZE CODE: DFD  
 NUMBER: FPII-A-2  
 DIST.:

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SIZE CODE D FD FPII-A-2 2



DIVIDE BY ZERO IS UNDEFINED AND THEREFOR CAUSES THE TRAP PATH TO BE TAKEN

IF THE DIVIDEND IS ZERO AND THE DIVISOR IS NONZERO THEN THE QUOTIENT IS ZERO

SUBTRACT EXPONENTS  
SETUP ITERATION COUNT

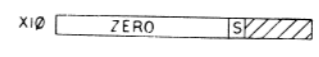
ADJUST EXPONENT BIAS

ZERO QUOTIENT ACCUMULATOR

INSERT HIDDEN BIT  
ZERO EXPONENT FIELD

INSERT GUARD BIT  
TEST FOR INTERRUPTS OR PFAIL

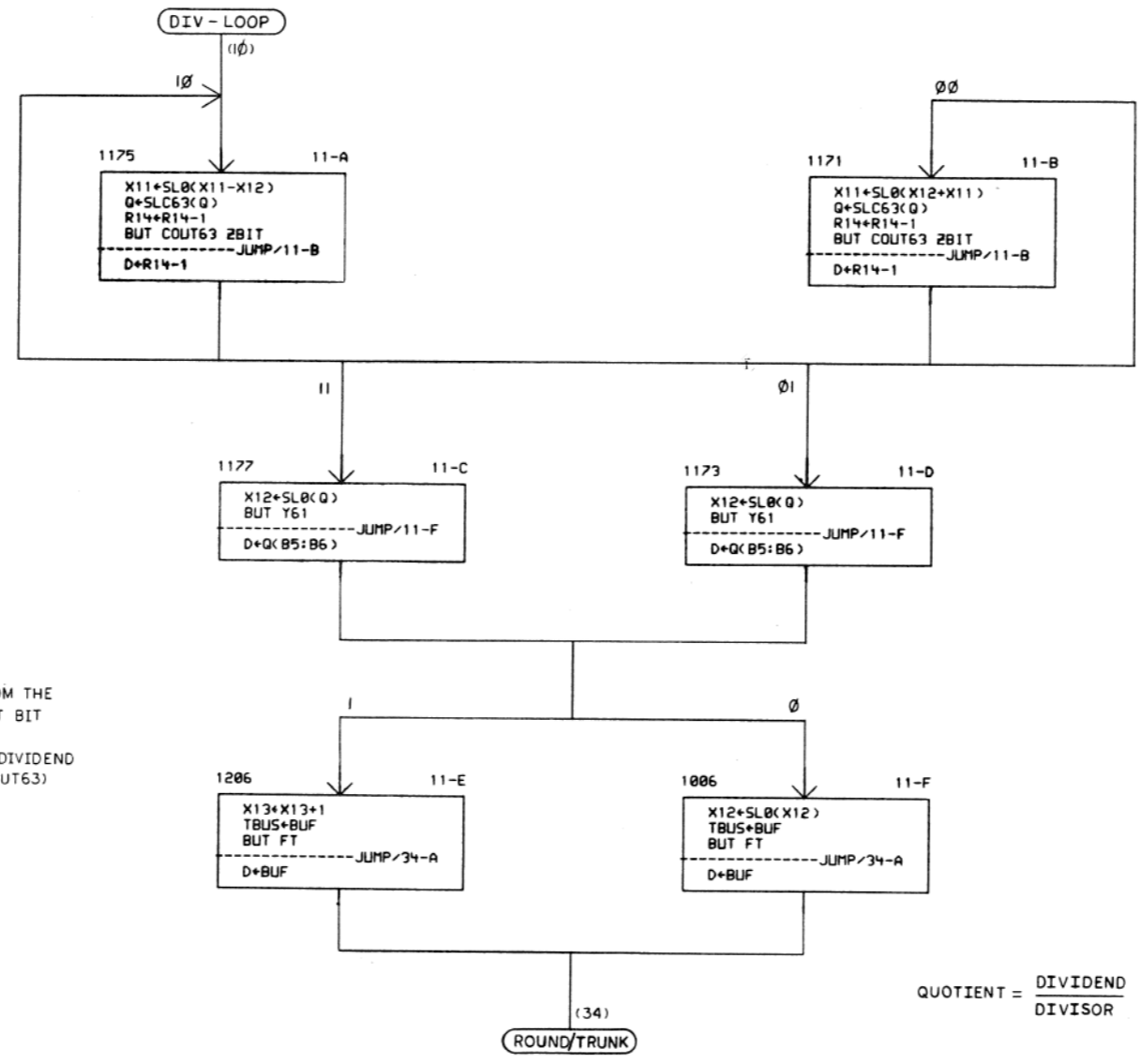
X10 ← SIGN OF QUOTIENT



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (10)	SIZE CODE	D FD	NUMBER	FPII-A-2	REV.	
SCALE	+	SHEET	13 OF 40	DIST.			

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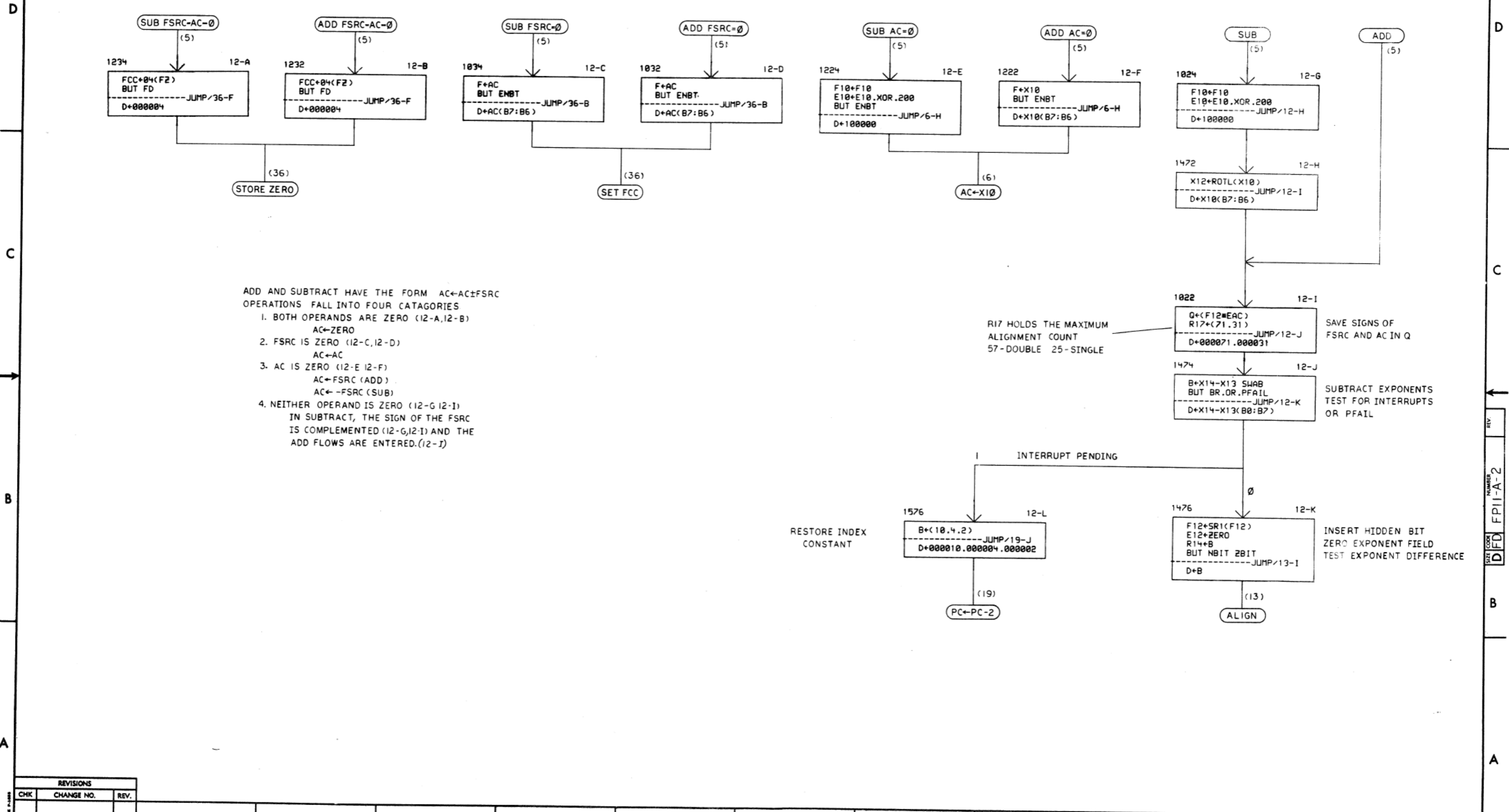


THIS IS A NONRESTORING DIVISION ALGORITHM IN WHICH:  
 1. THE DIVISOR IS SUBTRACTED FROM THE DIVIDEND IF THE LAST QUOTIENT BIT (COUT63) WAS ONE.  
 2. THE DIVISOR IS ADDED TO THE DIVIDEND IF THE LAST QUOTIENT BIT (COUT63) WAS ZERO.

$$\text{QUOTIENT} = \frac{\text{DIVIDEND}}{\text{DIVISOR}} = \frac{AC}{FSRC} = \frac{X11}{X12}$$

REVISIONS		
CHK	CHANGE NO.	REV.

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ADD AND SUBTRACT HAVE THE FORM AC←AC±FSRC  
OPERATIONS FALL INTO FOUR CATEGORIES

- BOTH OPERANDS ARE ZERO (12-A,12-B)  
AC←ZERO
- FSRC IS ZERO (12-C,12-D)  
AC←AC
- AC IS ZERO (12-E,12-F)  
AC←FSRC (ADD)  
AC←-FSRC (SUB)
- NEITHER OPERAND IS ZERO (12-G,12-I)  
IN SUBTRACT, THE SIGN OF THE FSRC IS COMPLEMENTED (12-G,12-I) AND THE ADD FLOWS ARE ENTERED.(12-J)

R17 HOLDS THE MAXIMUM ALIGNMENT COUNT  
57-DOUBLE 25-SINGLE

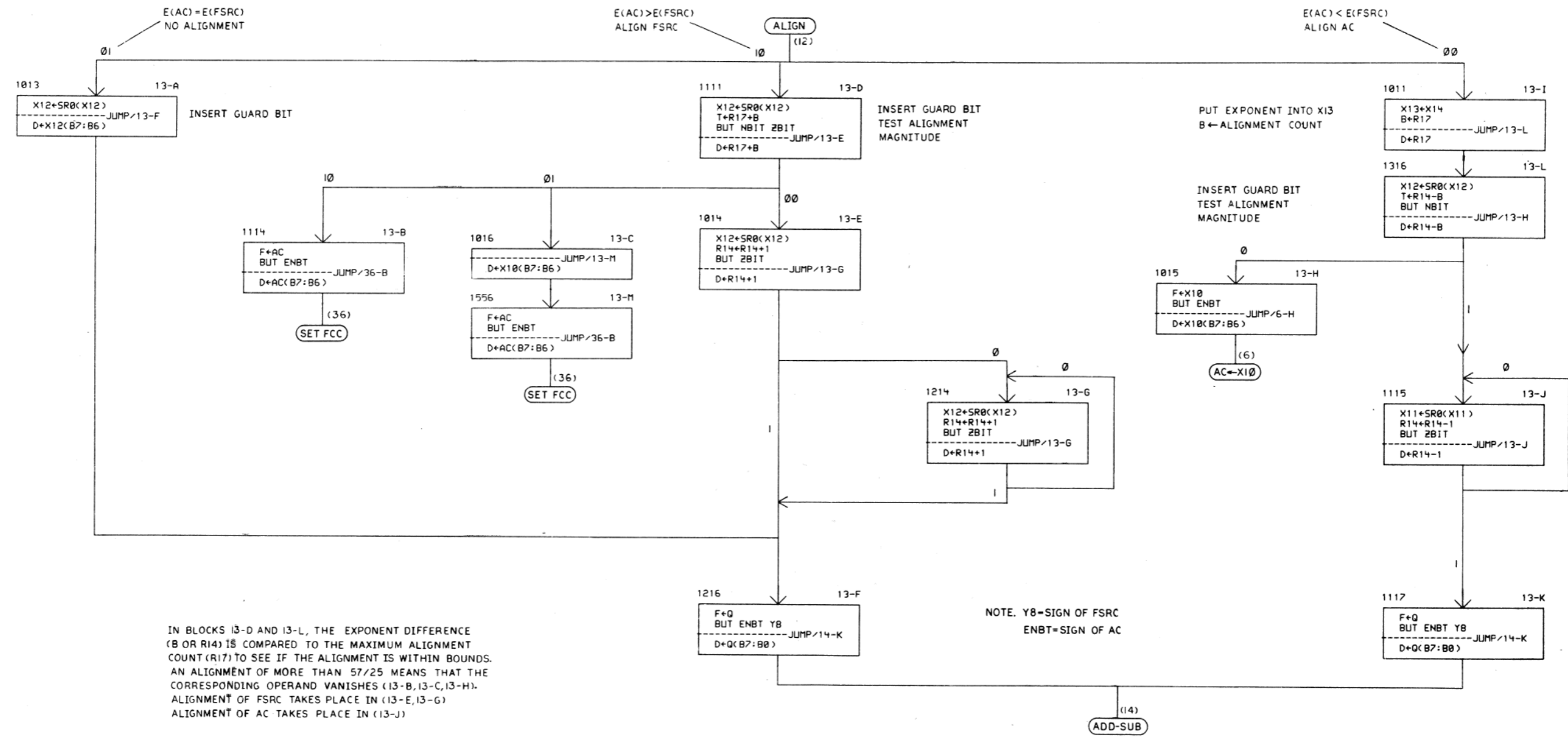
SAVE SIGNS OF FSRC AND AC IN Q

SUBTRACT EXPONENTS TEST FOR INTERRUPTS OR PFAIL

INSERT HIDDEN BIT ZERO EXPONENT FIELD TEST EXPONENT DIFFERENCE

REVISIONS		
CHK	CHANGE NO.	REV.

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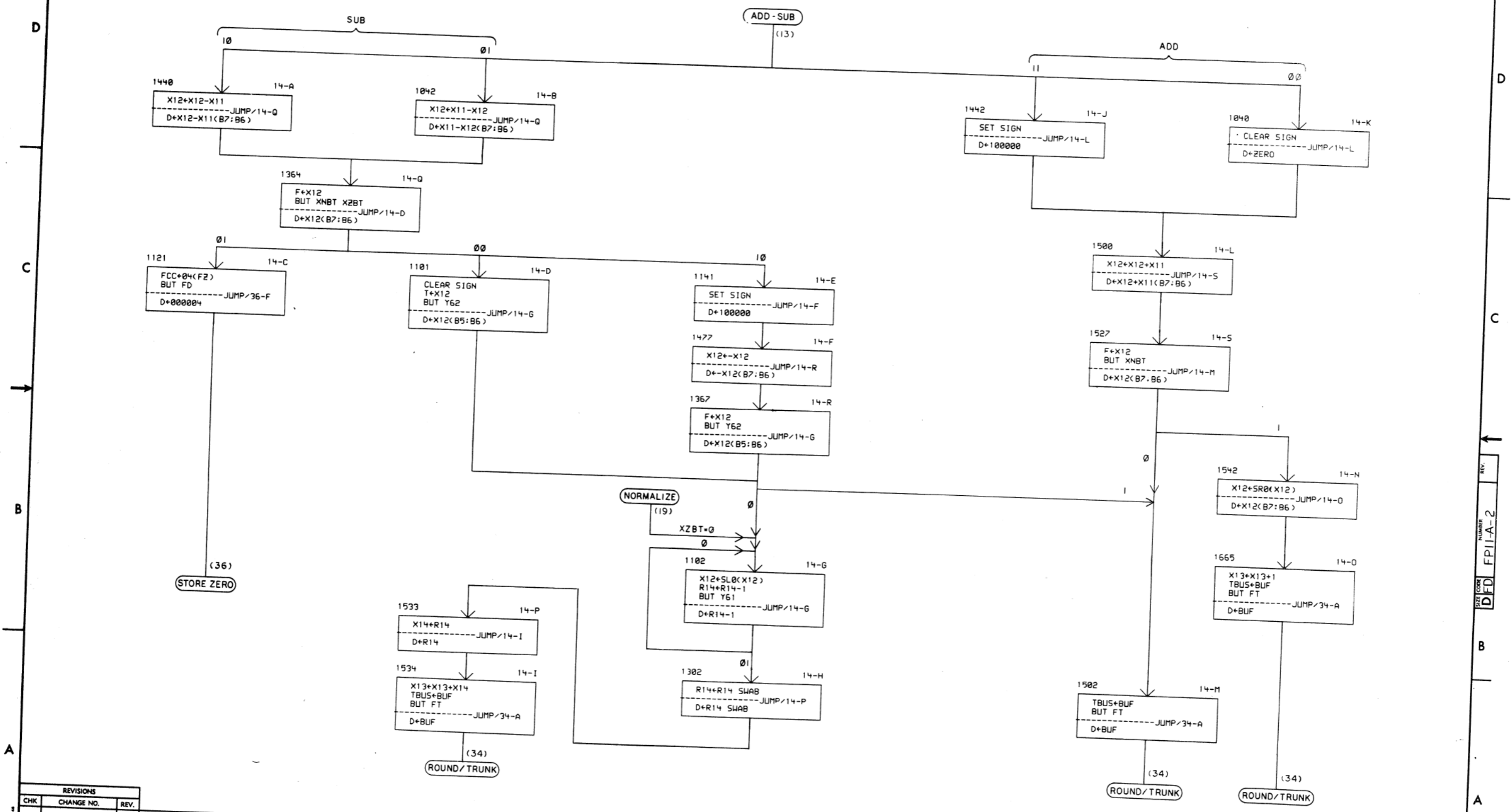


REVISIONS		
CHK	CHANGE NO.	REV.

55

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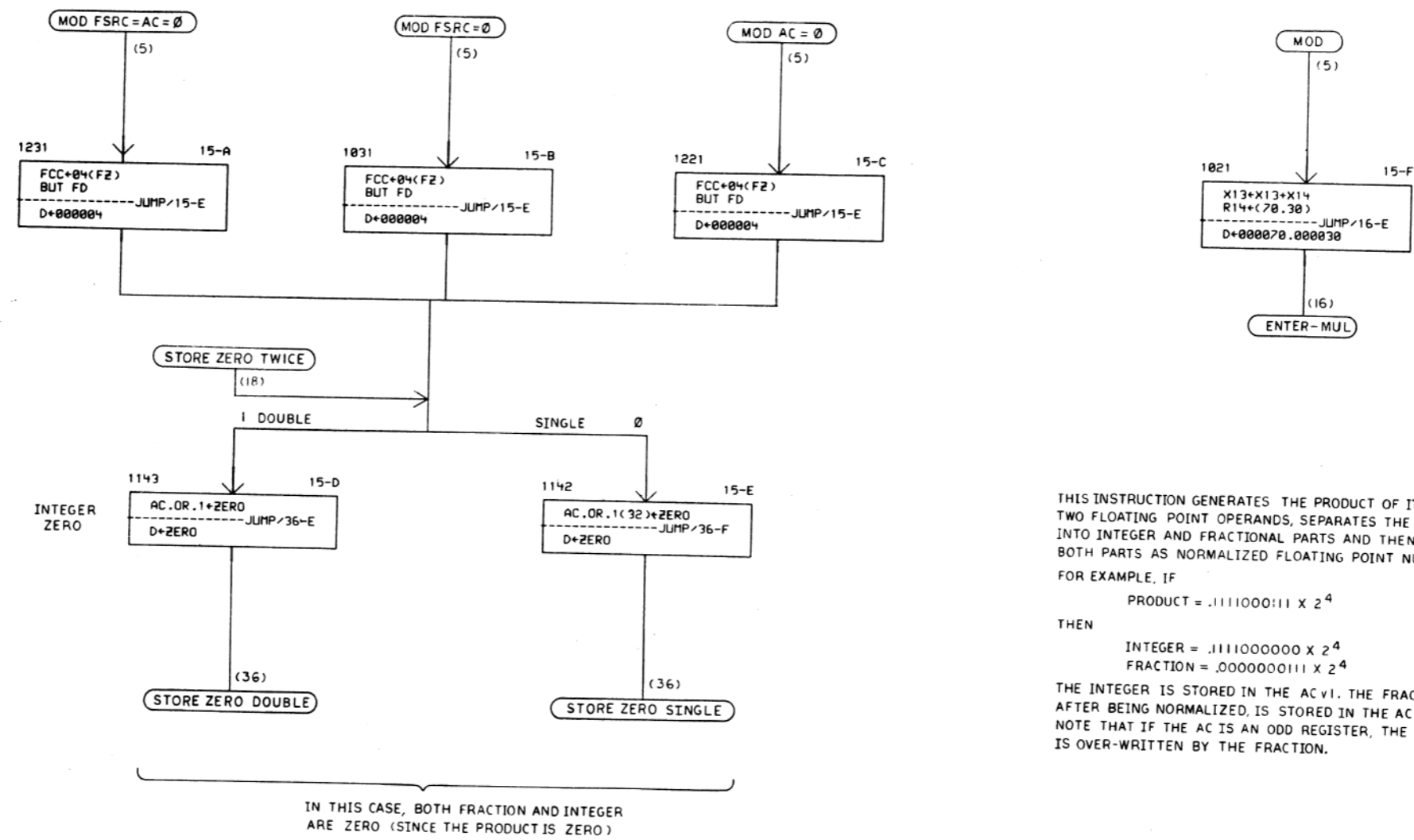
REV. 2  
 SIZE CODE DFD  
 NUMBER FPII-A-2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII-A FLOWS (14)  
 SCALE:  $\frac{1}{4}$   
 SHEET: 17 OF 40  
 SIZE CODE: DFD  
 NUMBER: FPII-A-2  
 REV.:

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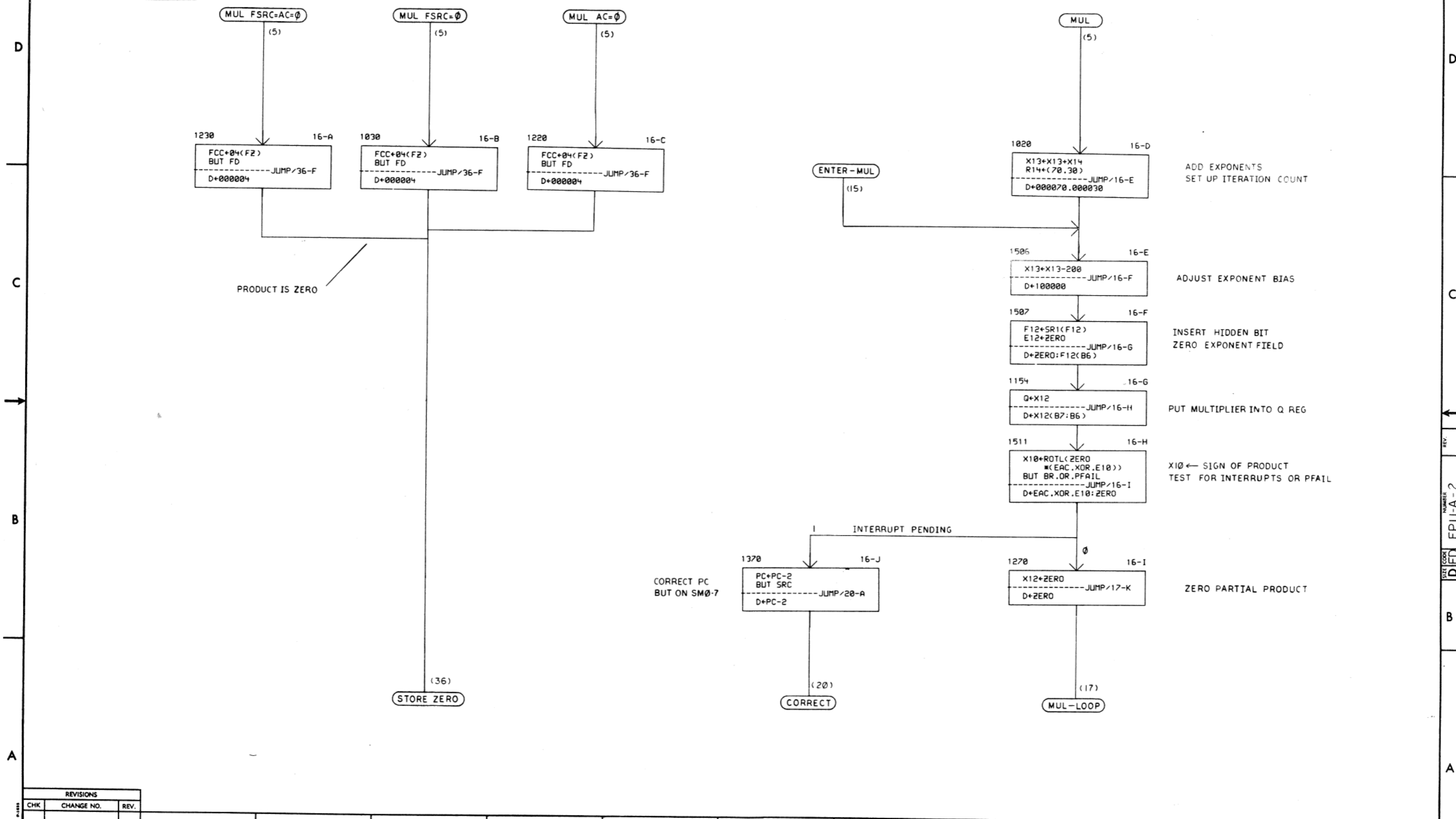


THIS INSTRUCTION GENERATES THE PRODUCT OF ITS TWO FLOATING POINT OPERANDS, SEPARATES THE PRODUCT INTO INTEGER AND FRACTIONAL PARTS AND THEN STORES BOTH PARTS AS NORMALIZED FLOATING POINT NUMBERS. FOR EXAMPLE, IF  
 PRODUCT = .1111000111 x 2<sup>4</sup>  
 THEN  
 INTEGER = .1111000000 x 2<sup>4</sup>  
 FRACTION = .0000001111 x 2<sup>4</sup>  
 THE INTEGER IS STORED IN THE AC VI. THE FRACTION, AFTER BEING NORMALIZED, IS STORED IN THE AC. NOTE THAT IF THE AC IS AN ODD REGISTER, THE INTEGER IS OVER-WRITTEN BY THE FRACTION.

REVISIONS		
CHK	CHANGE NO.	REV.



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ADD EXPONENTS  
SET UP ITERATION COUNT

ADJUST EXPONENT BIAS

INSERT HIDDEN BIT  
ZERO EXPONENT FIELD

PUT MULTIPLIER INTO Q REG

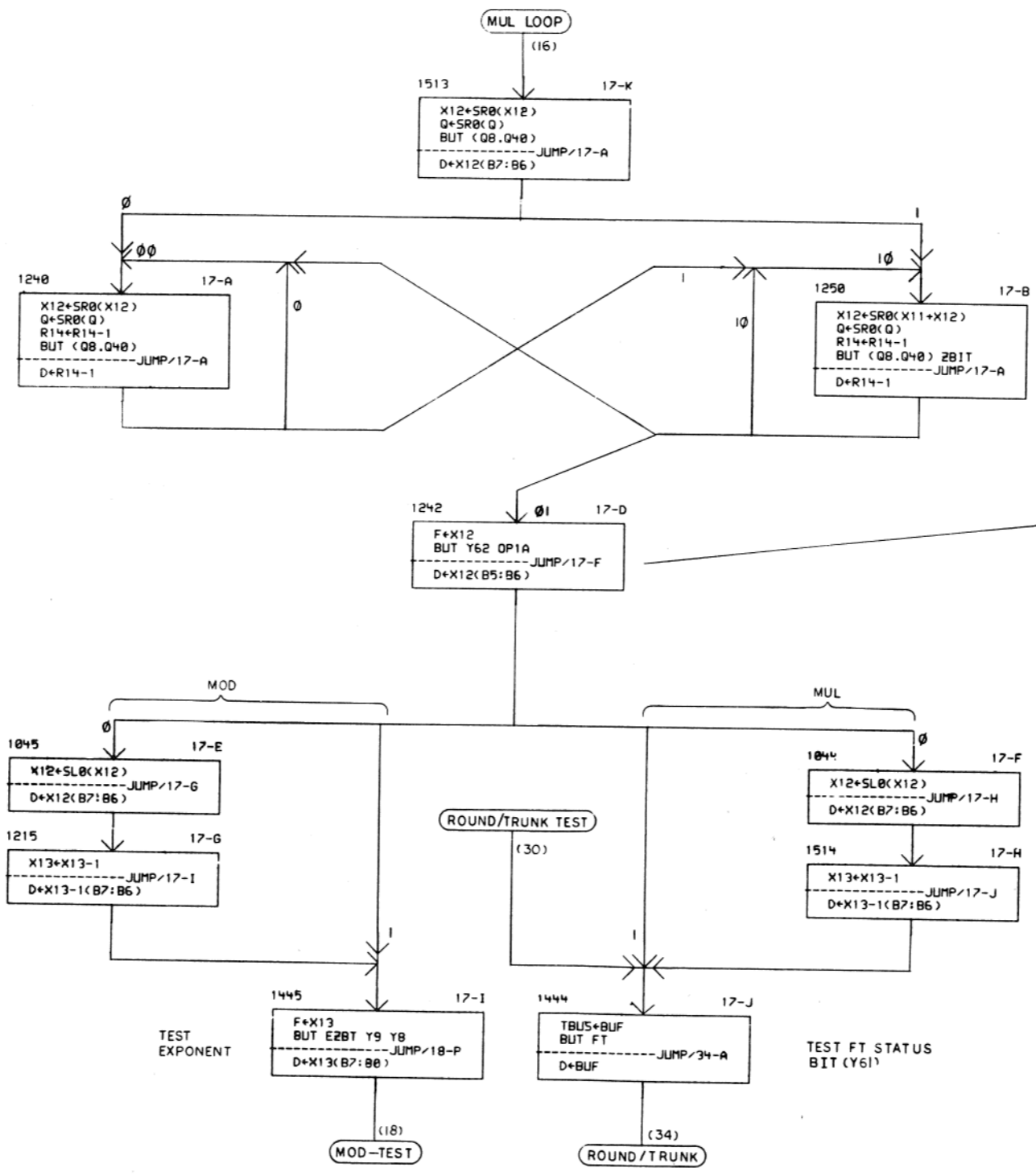
X10 ← SIGN OF PRODUCT  
TEST FOR INTERRUPTS OR PFAIL

ZERO PARTIAL PRODUCT

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (16)	SIZE CODE	DFD	NUMBER	FPII-A-2	REV.	
SCALE		SHEET	19 OF 40	DIST.			

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ALL SHIFTING IS DONE WHEN WE DROP OUT OF THIS LOOP LEFT GARD BIT IS ZERO

TEST MSB OF PRODUCT TO SEE IF PRE-NORMILIZATION IS NECESSARY. ALSO BREAK OUT MUL AND MOD INTO SEPARATE FLOWS.

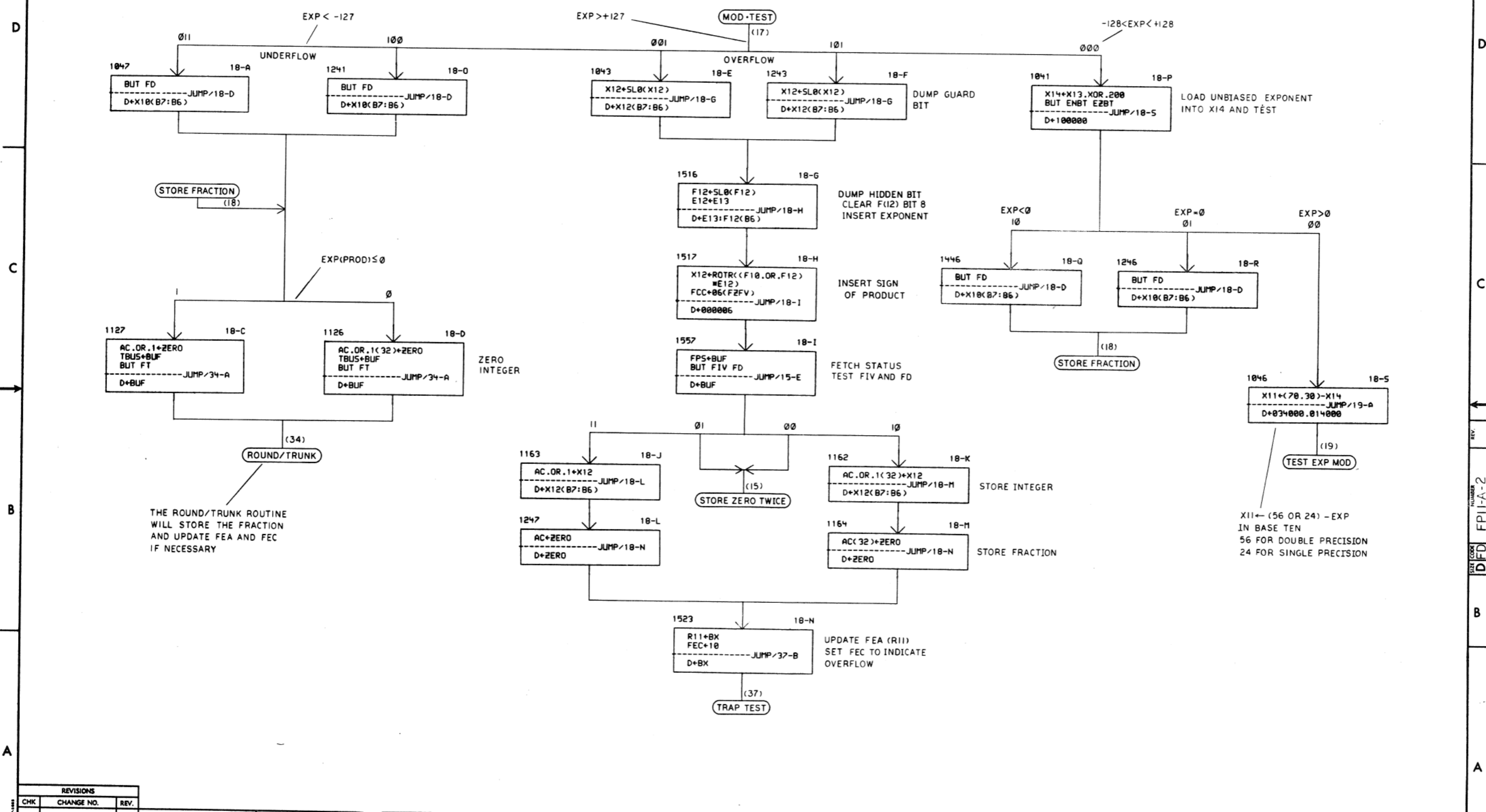
SHIFT PRODUCT LEFT ONE PLACE

DECREMENT EXPONENT

REVISIONS		
CHK	CHANGE NO.	REV.

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FD FPII-A-2 2



THE ROUND/TRUNK ROUTINE WILL STORE THE FRACTION AND UPDATE FEA AND FEC IF NECESSARY

X11 ← (56 OR 24) - EXP IN BASE TEN  
56 FOR DOUBLE PRECISION  
24 FOR SINGLE PRECISION

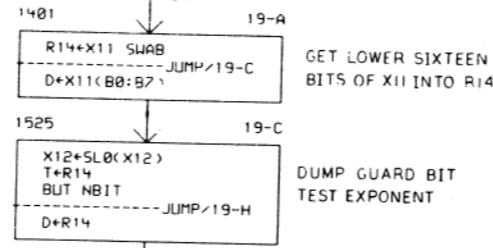
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII-A FLOWS (18)  
SIZE CODE: DFD  
NUMBER: FPII-A-2  
SHEET: 21 OF 40

REV. NUMBER FPII-A-2

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TEST EXP MOD (18)



GET LOWER SIXTEEN BITS OF X11 INTO R14

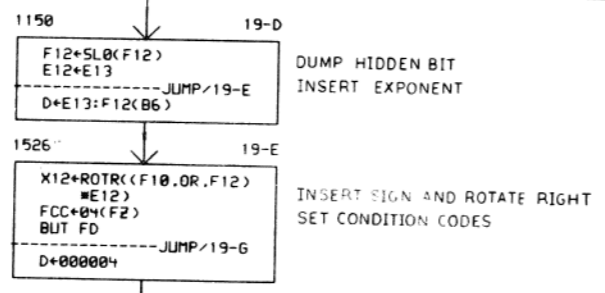
DUMP GUARD BIT TEST EXPONENT

HERE WE FINALLY GET TO A NON-TRIVIAL CASE. A MASK IS GENERATED IN X11 WHICH WILL ALLOW THE INTEGER AND FRACTION TO BE SEPARATED.

INDICATES THAT FRACTION IS ZERO

EXP > (24/56)

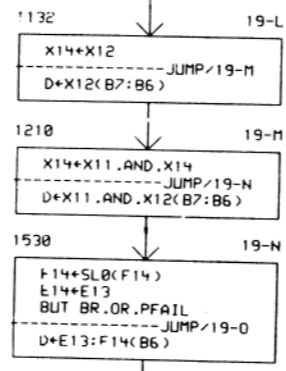
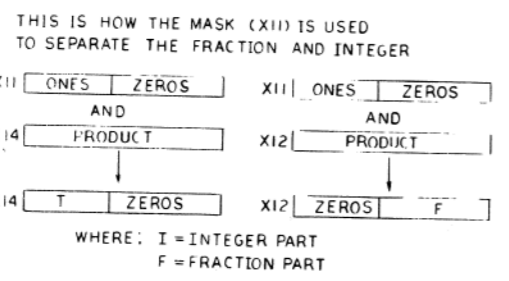
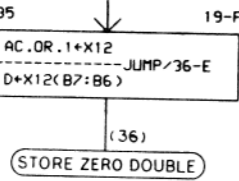
1 ≤ EXP ≤ (24/56)



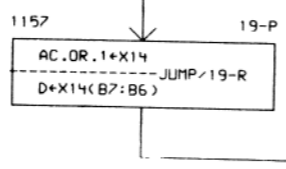
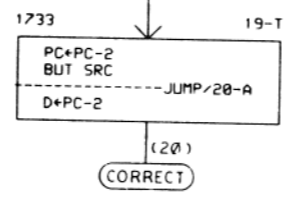
DUMP HIDDEN BIT INSERT EXPONENT

INSERT SIGN AND ROTATE RIGHT SET CONDITION CODES

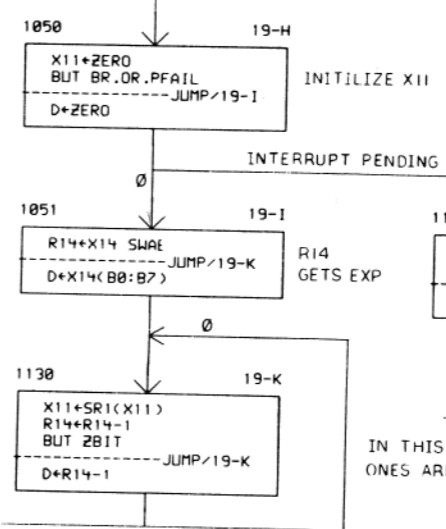
STORE INTEGER



INTERRUPT PENDING



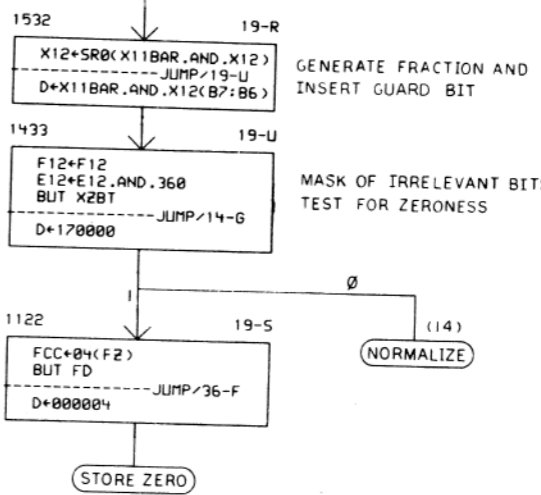
STORE INTEGER



INITILIZE X11

R14 GETS EXP

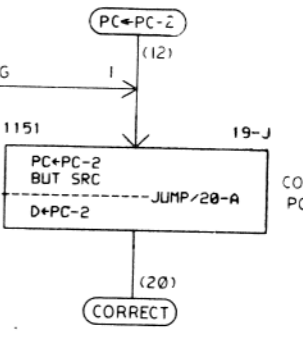
IN THIS LOOP 2 EXP ONES ARE PUSHED INTO X11



GENERATE FRACTION AND INSERT GUARD BIT

MASK OF IRRELEVANT BITS TEST FOR ZERONESS

STORE ZERO



CORRECT PC

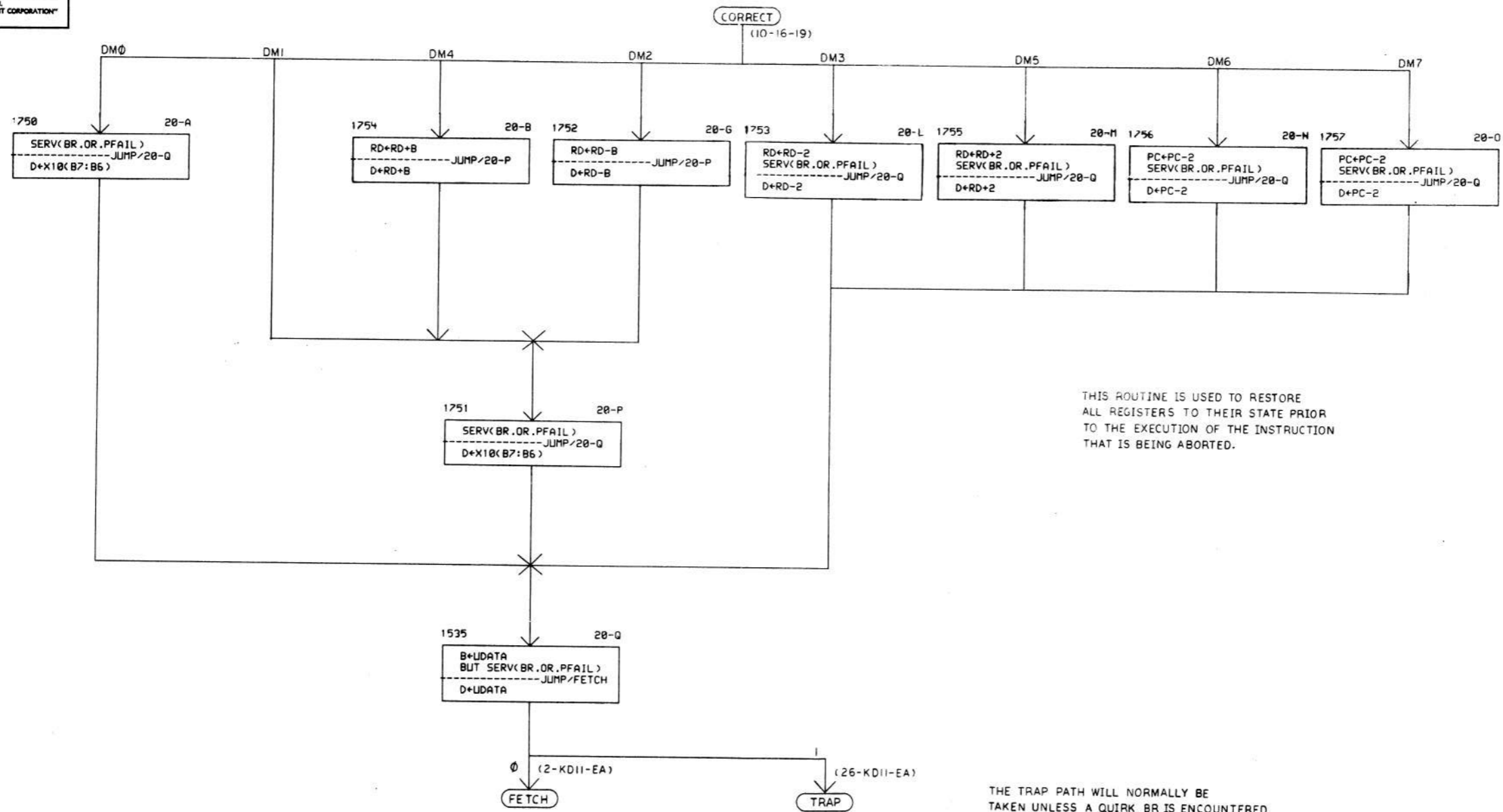
CORRECT

NORMALIZE

REVISIONS		
CHK	CHANGE NO.	REV.

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REV. 2 DFD FPII-A-2



THIS ROUTINE IS USED TO RESTORE ALL REGISTERS TO THEIR STATE PRIOR TO THE EXECUTION OF THE INSTRUCTION THAT IS BEING ABORTED.

THE TRAP PATH WILL NORMALLY BE TAKEN UNLESS A QUIRK BR IS ENCOUNTERED (A BR THAT IS ASSERTED AND THEN NEGATED BEFORE THE PROCESSOR ISSUES A B6)

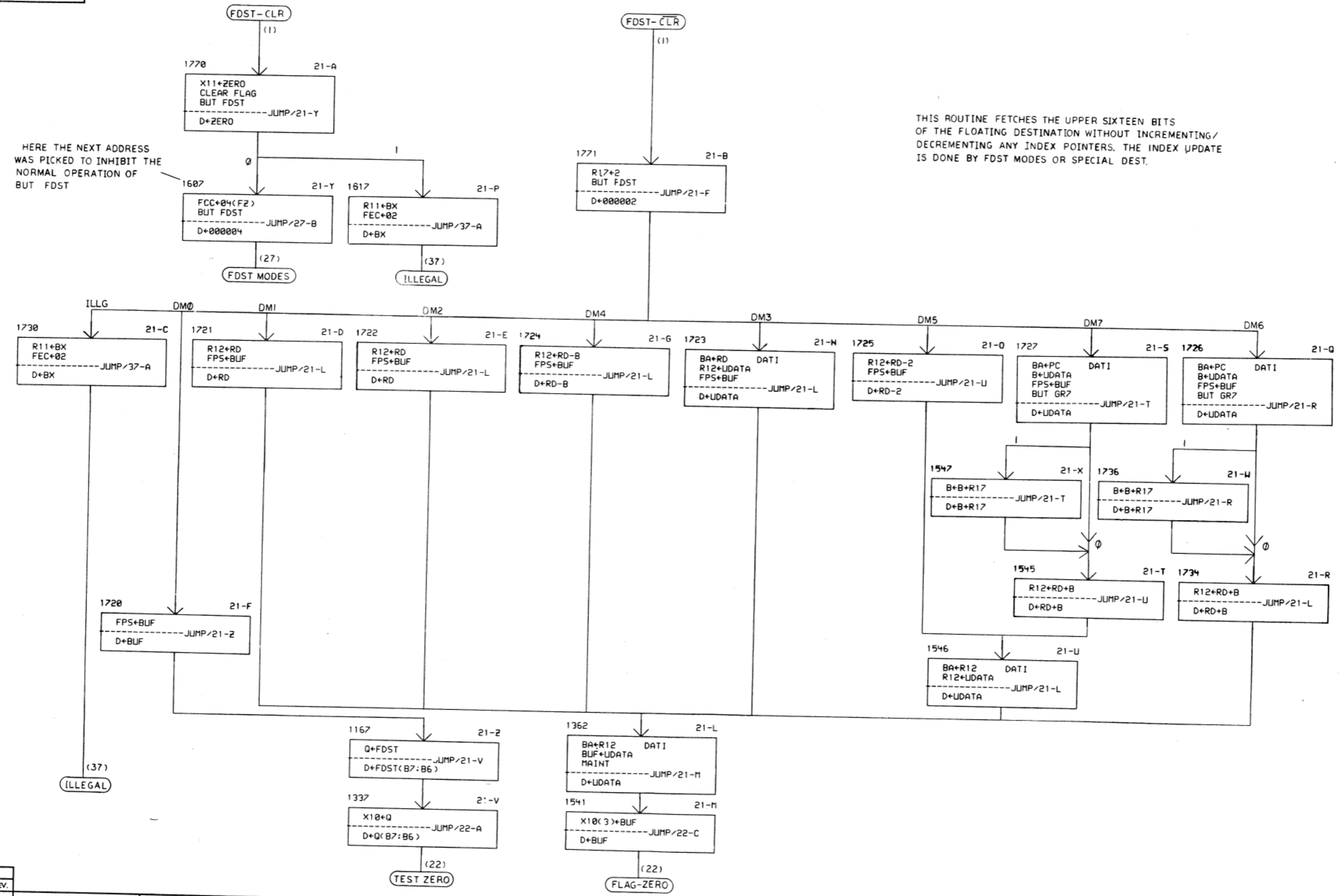
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII A FLOWS (20)	SIZE CODE	D FD	NUMBER	FPII-A-2	REV.	
SCALE	+	SHEET	23 OF 40	DIST.			

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HERE THE NEXT ADDRESS WAS PICKED TO INHIBIT THE NORMAL OPERATION OF BUT FDST

THIS ROUTINE FETCHES THE UPPER SIXTEEN BITS OF THE FLOATING DESTINATION WITHOUT INCREMENTING/DECREMENTING ANY INDEX POINTERS. THE INDEX UPDATE IS DONE BY FDST MODES OR SPECIAL DEST.

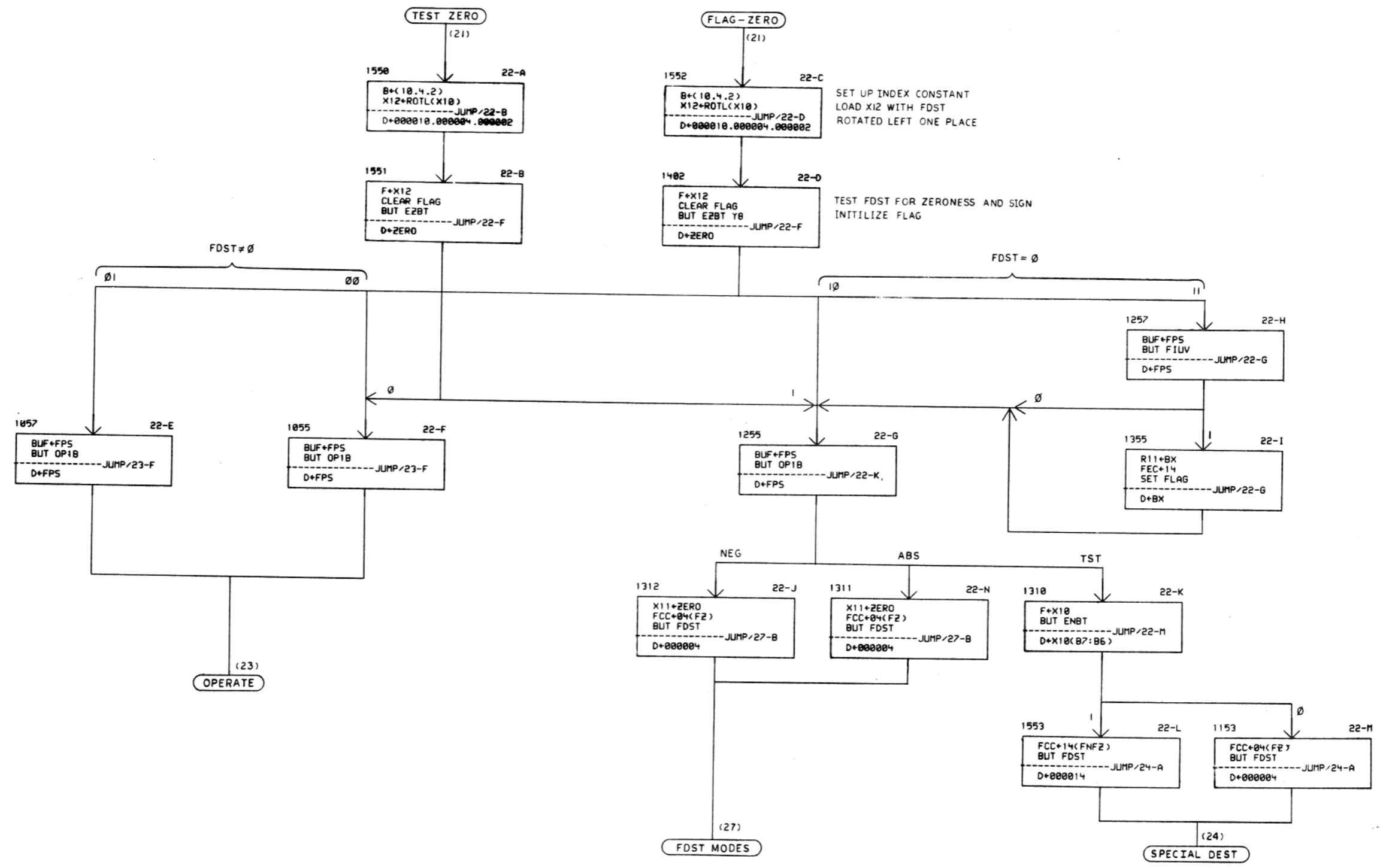


REVISIONS		
CHK	CHANGE NO.	REV.

65

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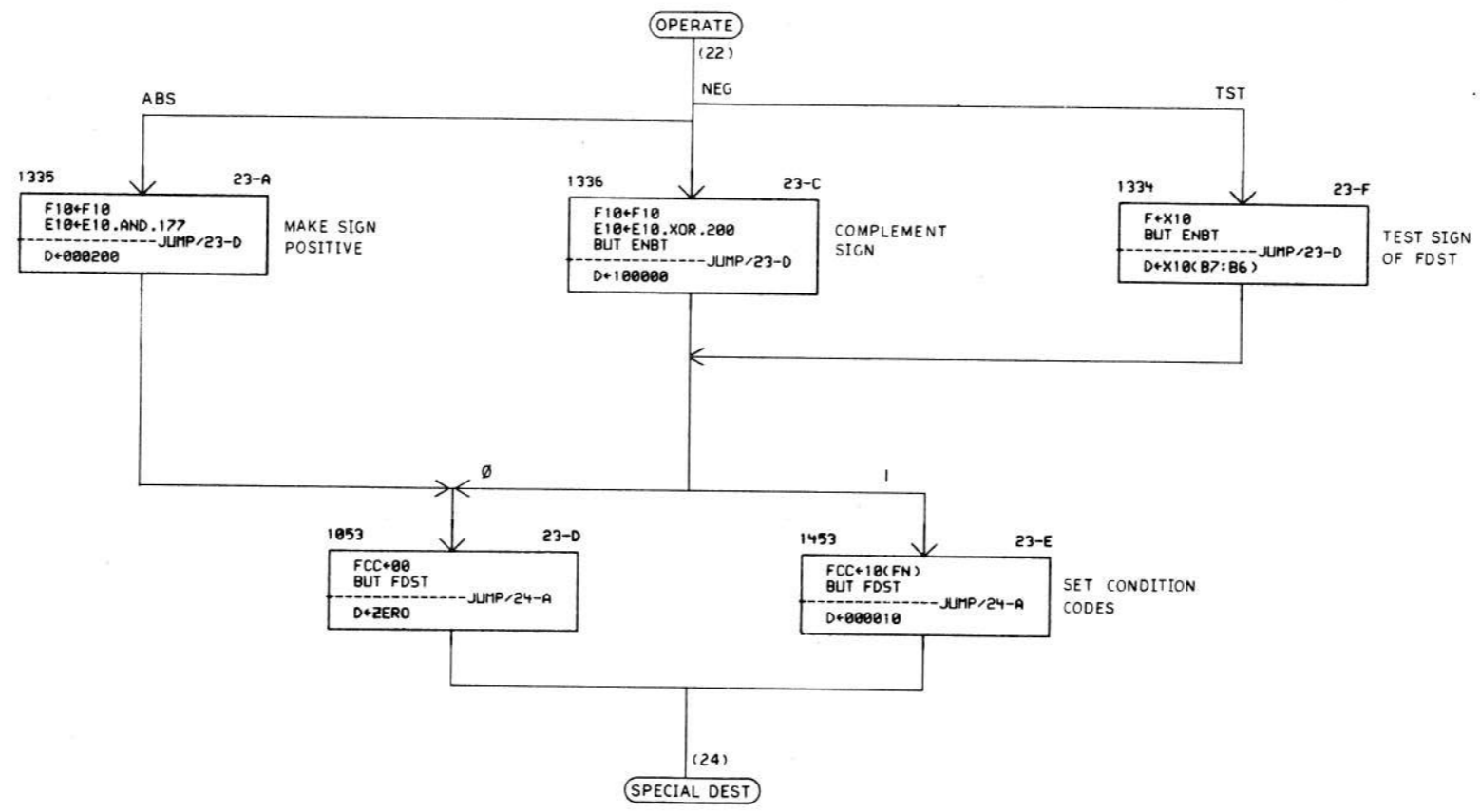
REV. 2  
D F D FPII-A-2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII A FLOWS (22)  
 SCALE: --- SHEET: 25 OF 40  
 SIZE CODE: D F D NUMBER: FPII-A-2 REV.:

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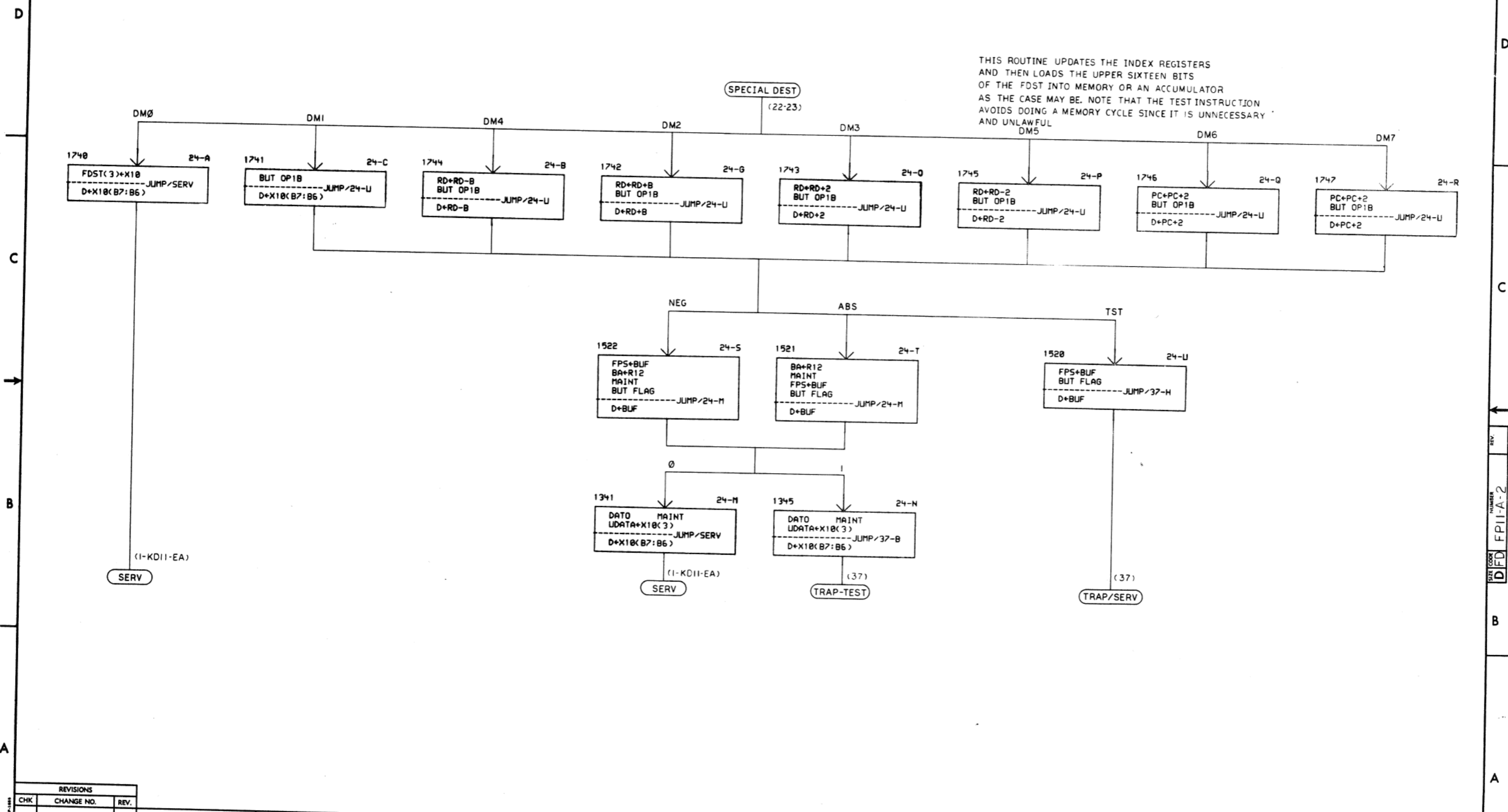


REVISIONS		
CHK	CHANGE NO.	REV.



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REV. 2  
 DFD  
 FPII-A-2



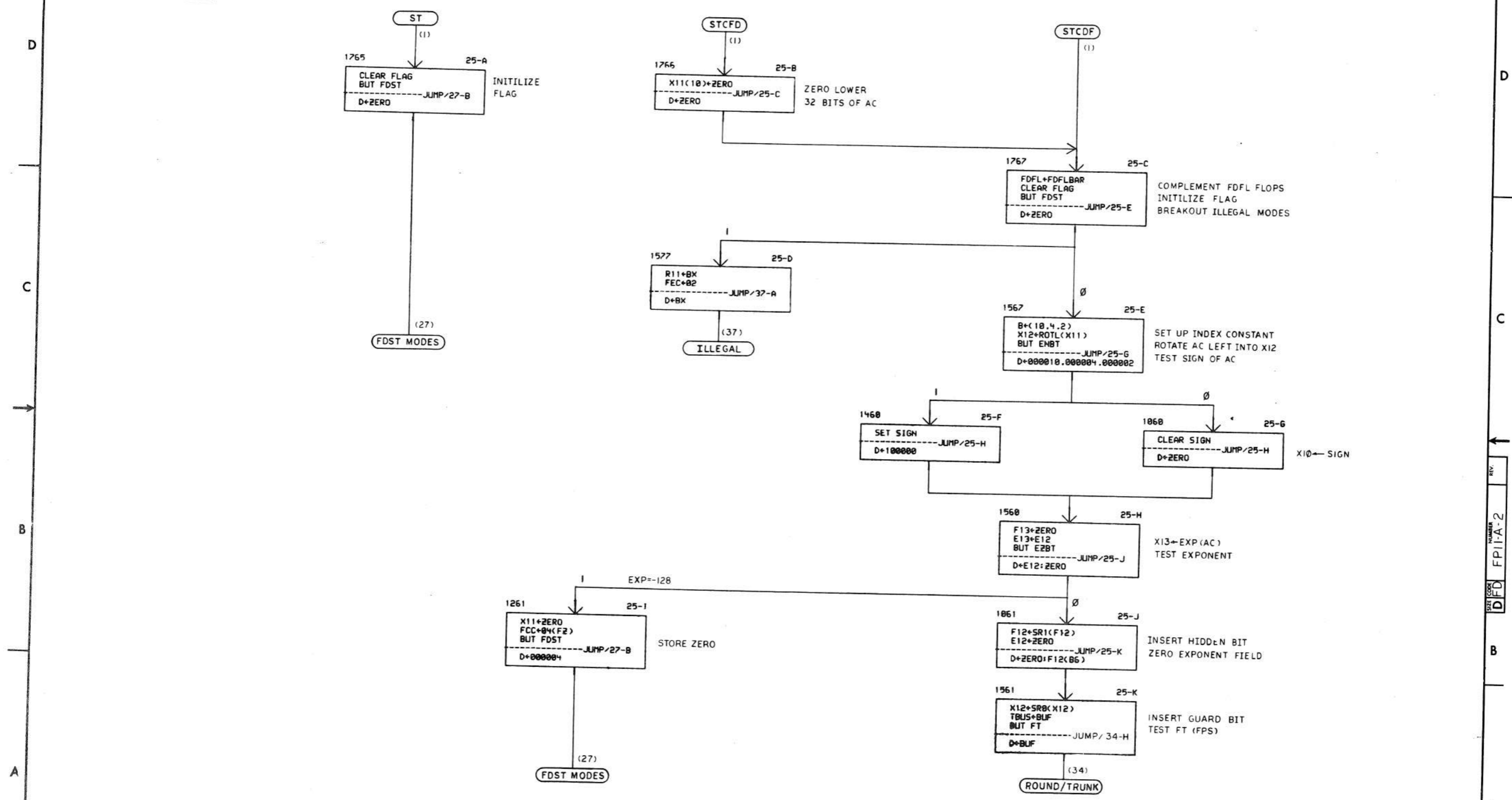
THIS ROUTINE UPDATES THE INDEX REGISTERS AND THEN LOADS THE UPPER SIXTEEN BITS OF THE FOST INTO MEMORY OR AN ACCUMULATOR AS THE CASE MAY BE. NOTE THAT THE TEST INSTRUCTION AVOIDS DOING A MEMORY CYCLE SINCE IT IS UNNECESSARY AND UNLAWFUL

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: FPII-A FLOWS (24)  
 SIZE CODE: DFD  
 NUMBER: FPII-A-2  
 SCALE: 1:1  
 SHEET: 27 OF 40  
 DIST.:

REV. 2  
 DFD  
 FPII-A-2

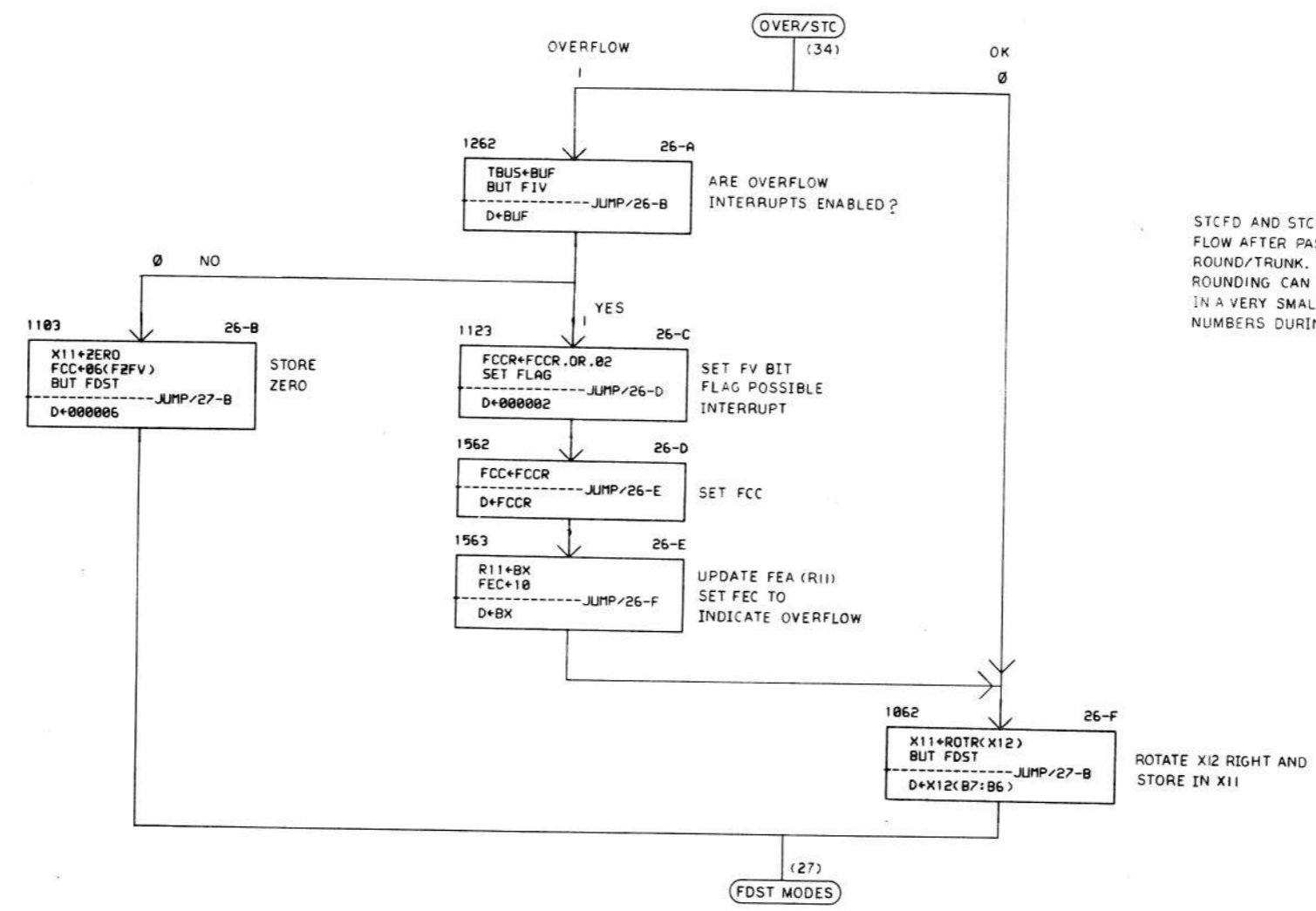
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION. COPYRIGHT © 1977 DIGITAL EQUIPMENT CORPORATION"



REVISIONS		
CHK	CHANGE NO.	REV.

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SIZE CODE D FD FPII-A-2 2



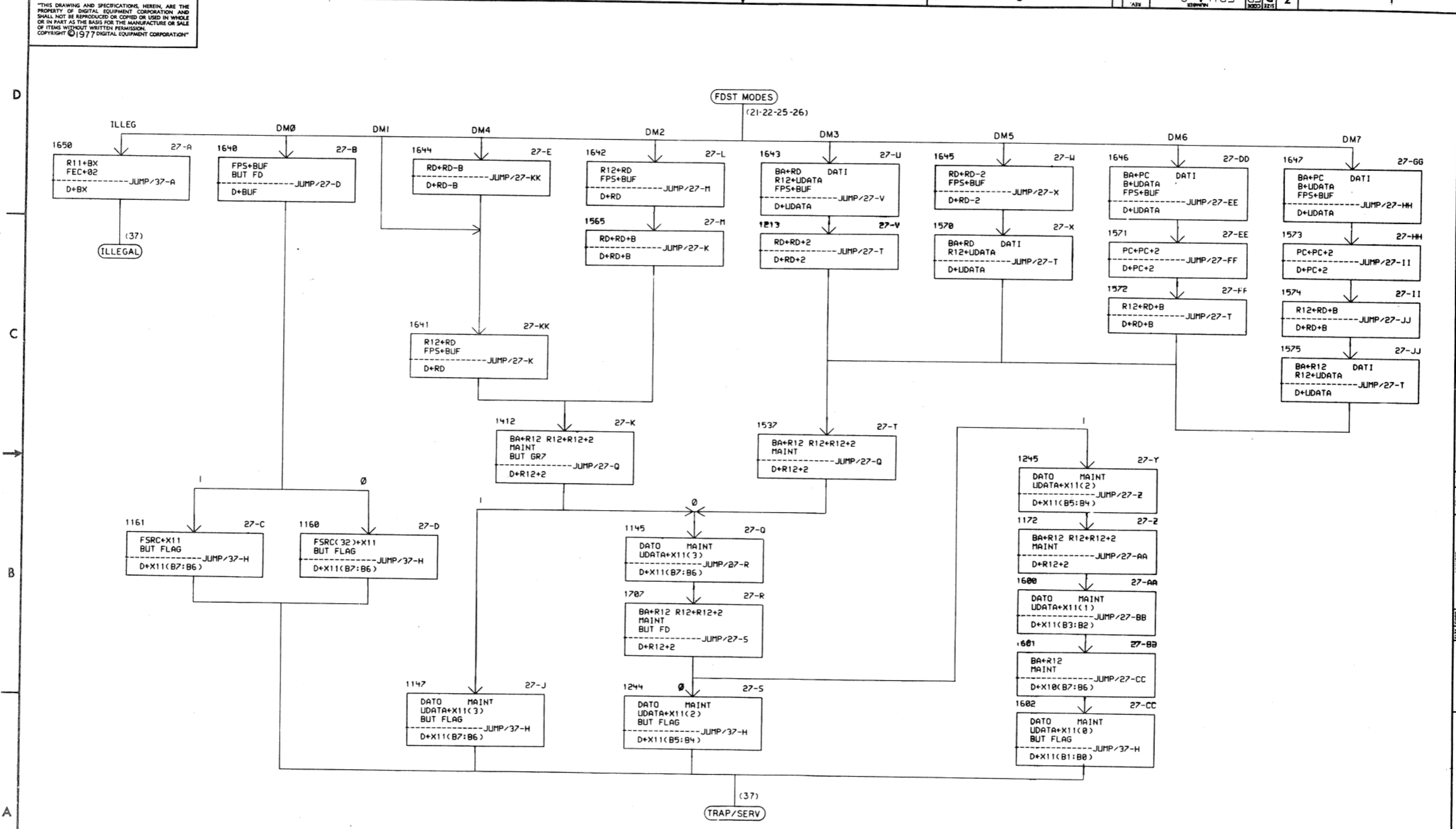
STCFD AND STCDF ENTER THIS FLOW AFTER PASSING THROUGH ROUND/TRUNK. THE PROCESS OF ROUNDING CAN CAUSE AN OVERFLOW IN A VERY SMALL CLASS OF VERY LARGE NUMBERS DURING STCDF (PROBABILITY =  $\frac{1}{\infty}$ )

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FPII-A FLOWS (26) SIZE CODE D FD NUMBER FPII-A-2 REV. SCALE SHEET 29 OF 40 DIST.

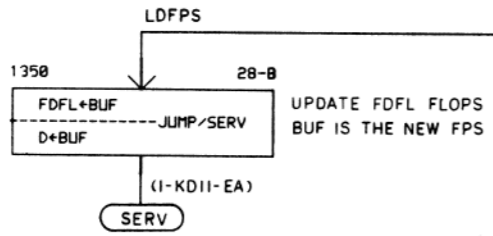
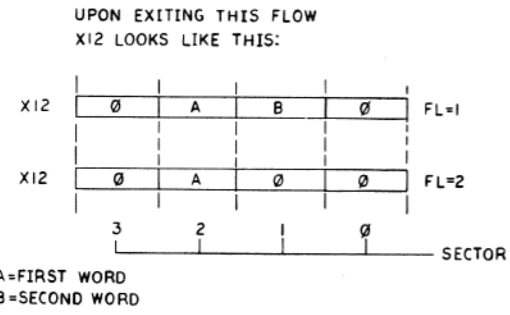
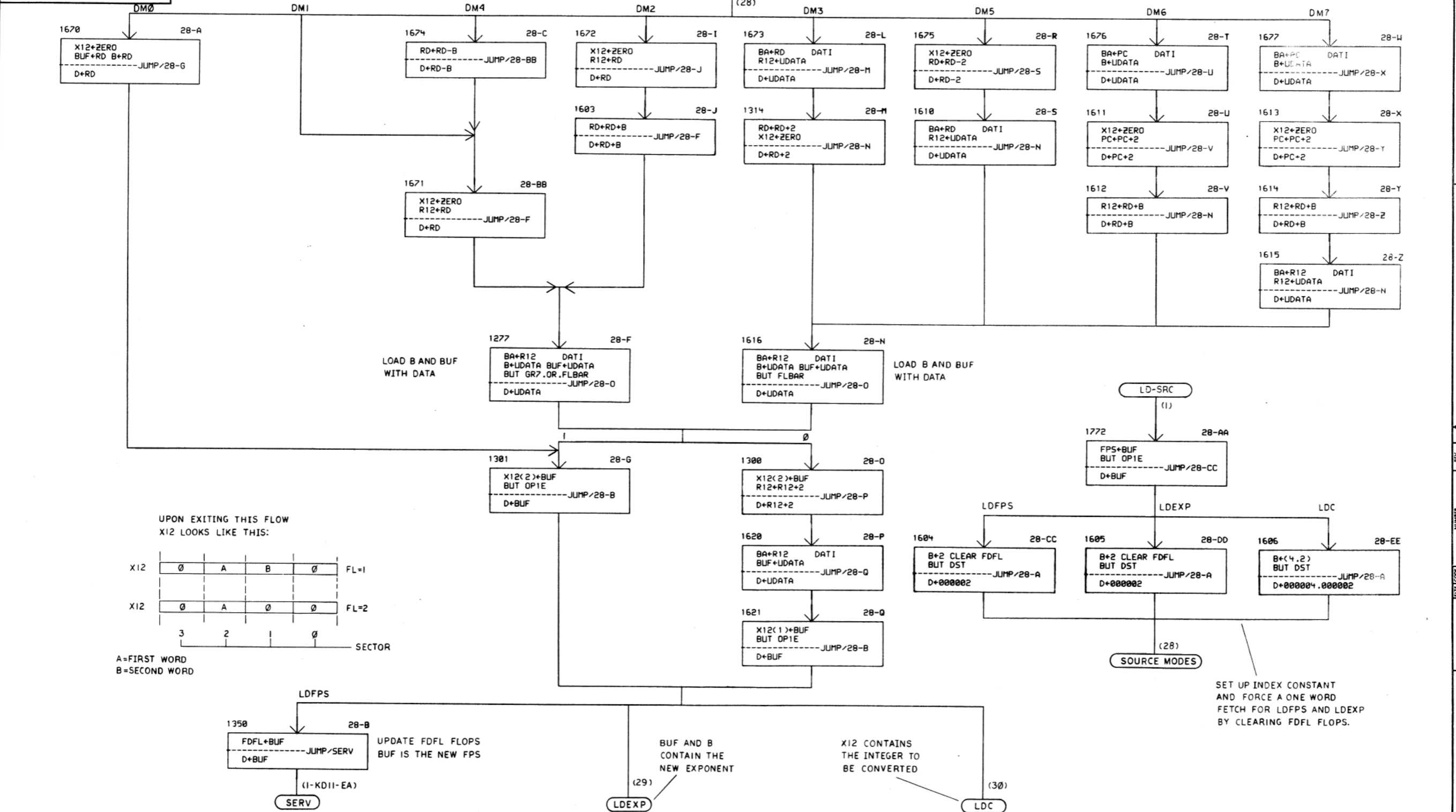
REV. NUMBER FPII-A-2 D FD

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REVISIONS		
CHK	CHANGE NO.	REV.

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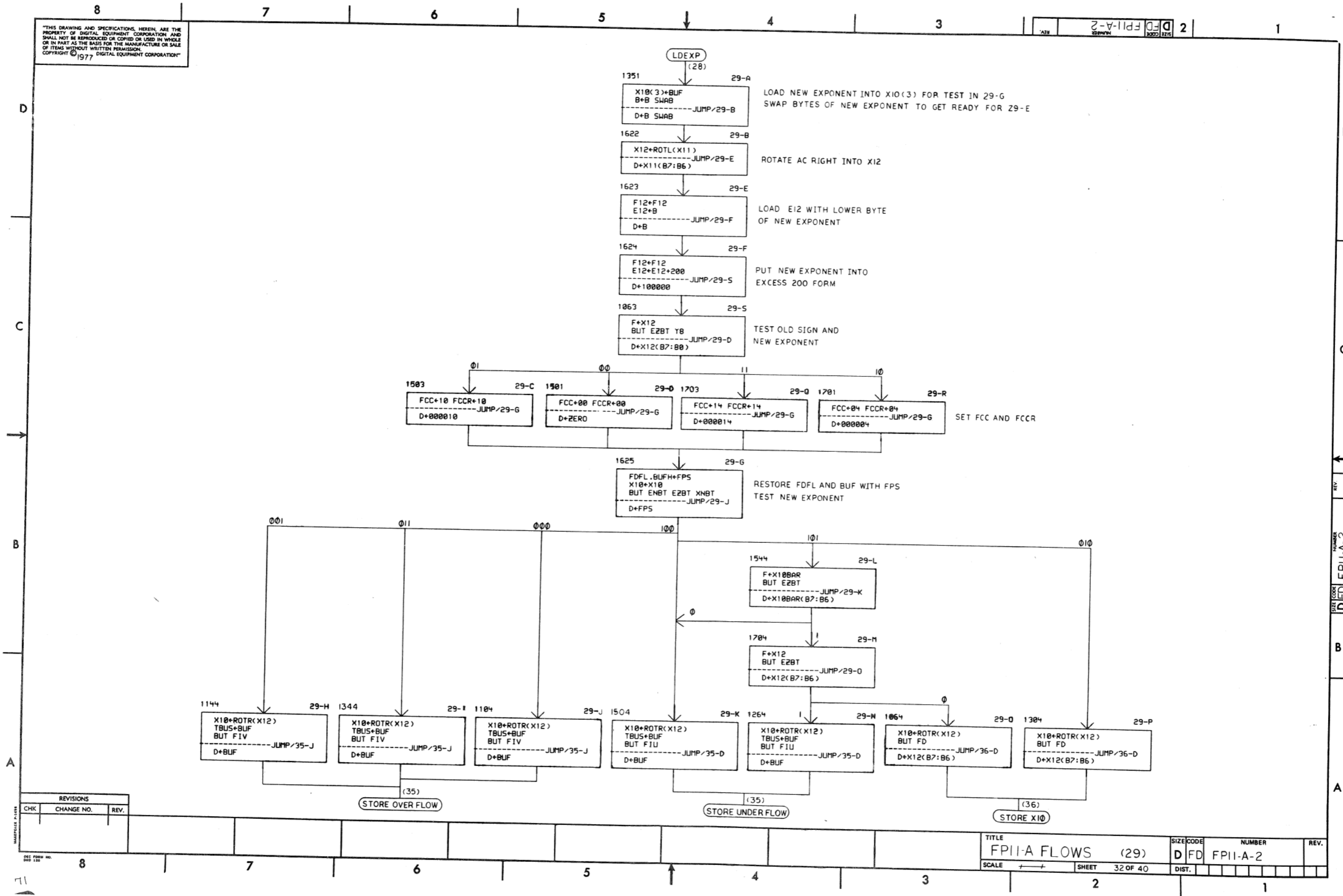


SET UP INDEX CONSTANT AND FORCE A ONE WORD FETCH FOR LD-FPS AND LD-EXP BY CLEARING FDFL FLOPS.

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (28)	SIZE CODE	D FD	NUMBER	FPII-A-2	REV.	
SCALE		SHEET	31	OF	40	DIST.	

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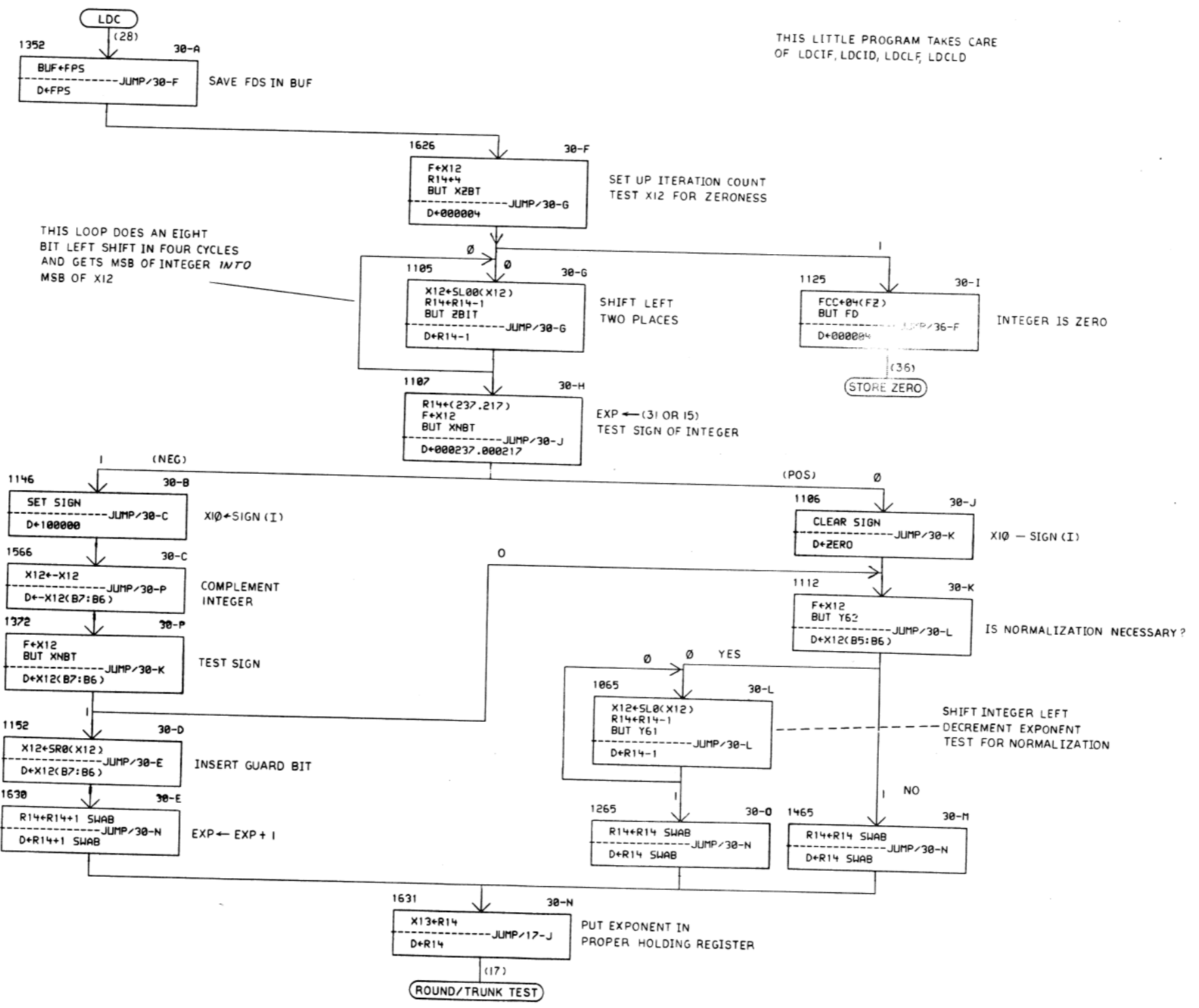


REVISIONS		
CHK	CHANGE NO.	REV.

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FD FPII-A-2 2

THIS LITTLE PROGRAM TAKES CARE OF LDCIF, LDCID, LDCLF, LDCLD



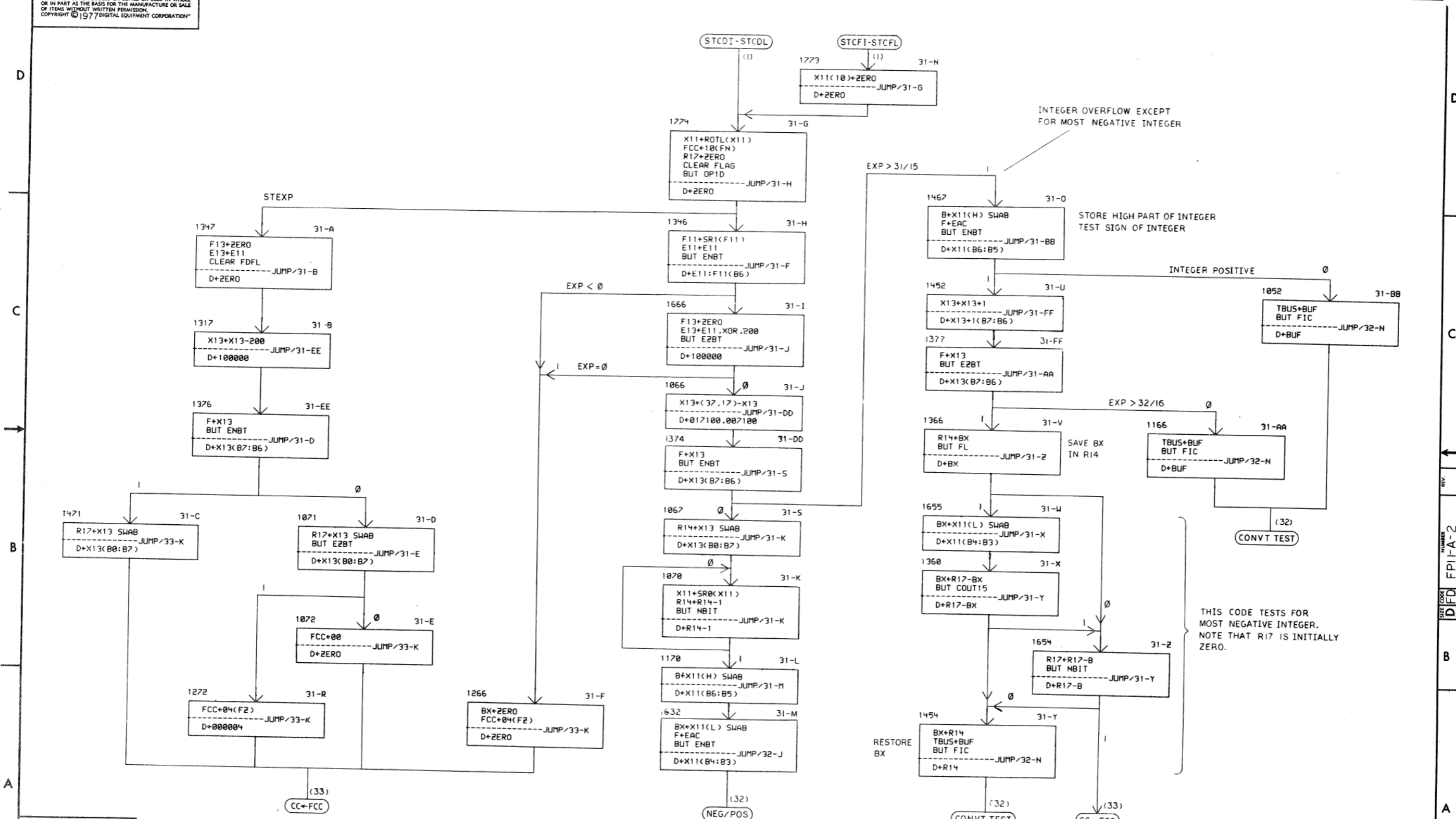
INTEGER IS MOST NEGATIVE NUMBER  
I = 2<sup>15</sup> OR 2<sup>31</sup>

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE		NUMBER		REV.
FPII-A FLOWS (30)		D FD		FPII-A-2		
SCALE		SHEET		DIST.		
8		33 OF 40				

REV. NUMBER FPII-A-2

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REVISIONS		
CHK	CHANGE NO.	REV.

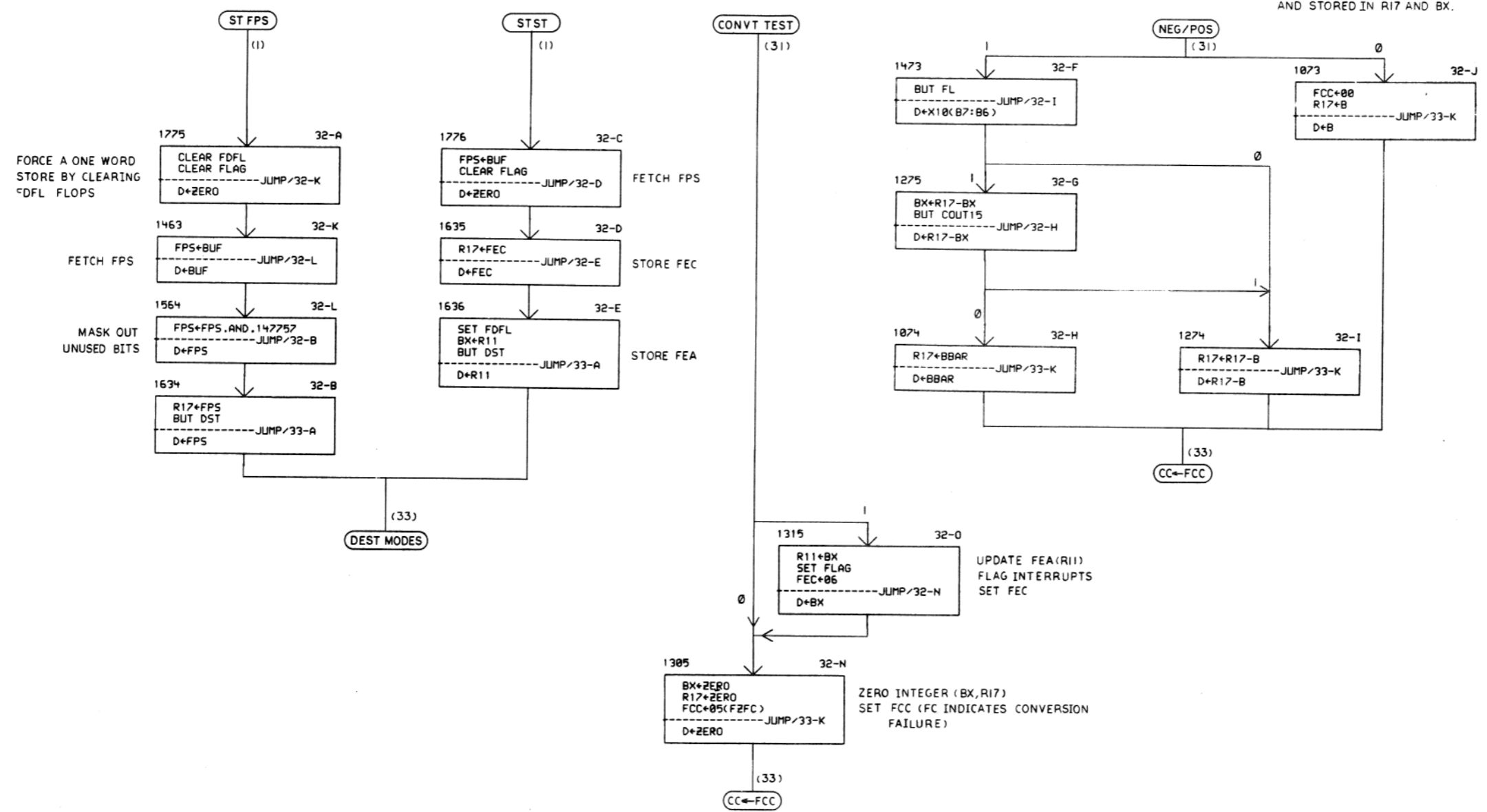
73



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REV. NUMBER  
D FD FPII-A-2 2

UPON ENTERING THIS ROUTINE, THE INTEGER IS IN B AND BX, R17 CONTAINS ZERO. THE INTEGER IS COMPLEMENTED (IF NECESSARY) AND STORED IN R17 AND BX.



FORCE A ONE WORD STORE BY CLEARING FDFL FLOPS

FETCH FPS

MASK OUT UNUSED BITS

FETCH FPS

STORE FEC

STORE FEA

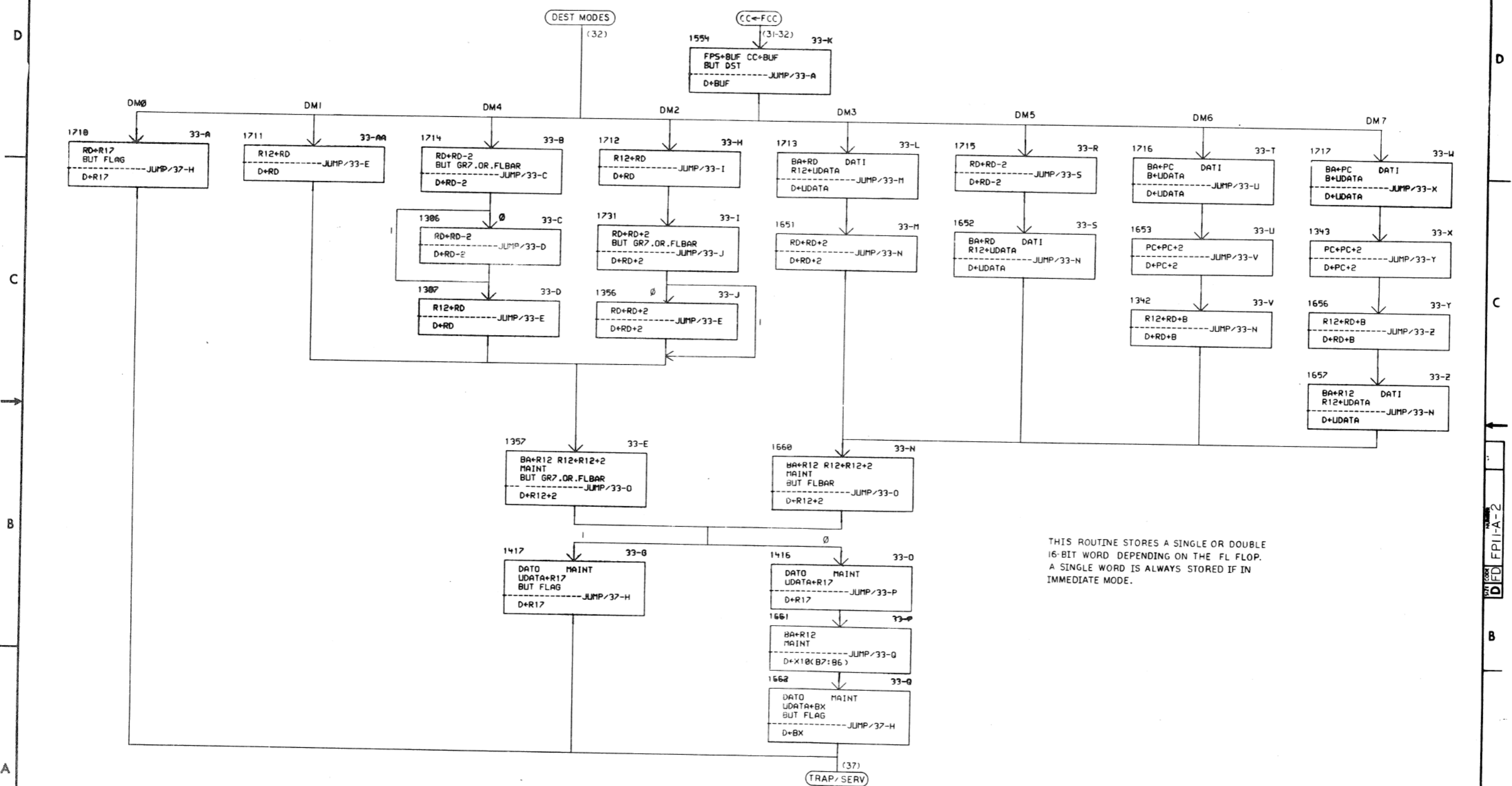
UPDATE FEA(R11)  
FLAG INTERRUPTS  
SET FEC

ZERO INTEGER (BX,R17)  
SET FCC (FC INDICATES CONVERSION FAILURE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (32)	SIZE CODE	D FD	NUMBER	FPII-A-2	REV.	
SCALE		SHEET	35 OF 40	DIST.			

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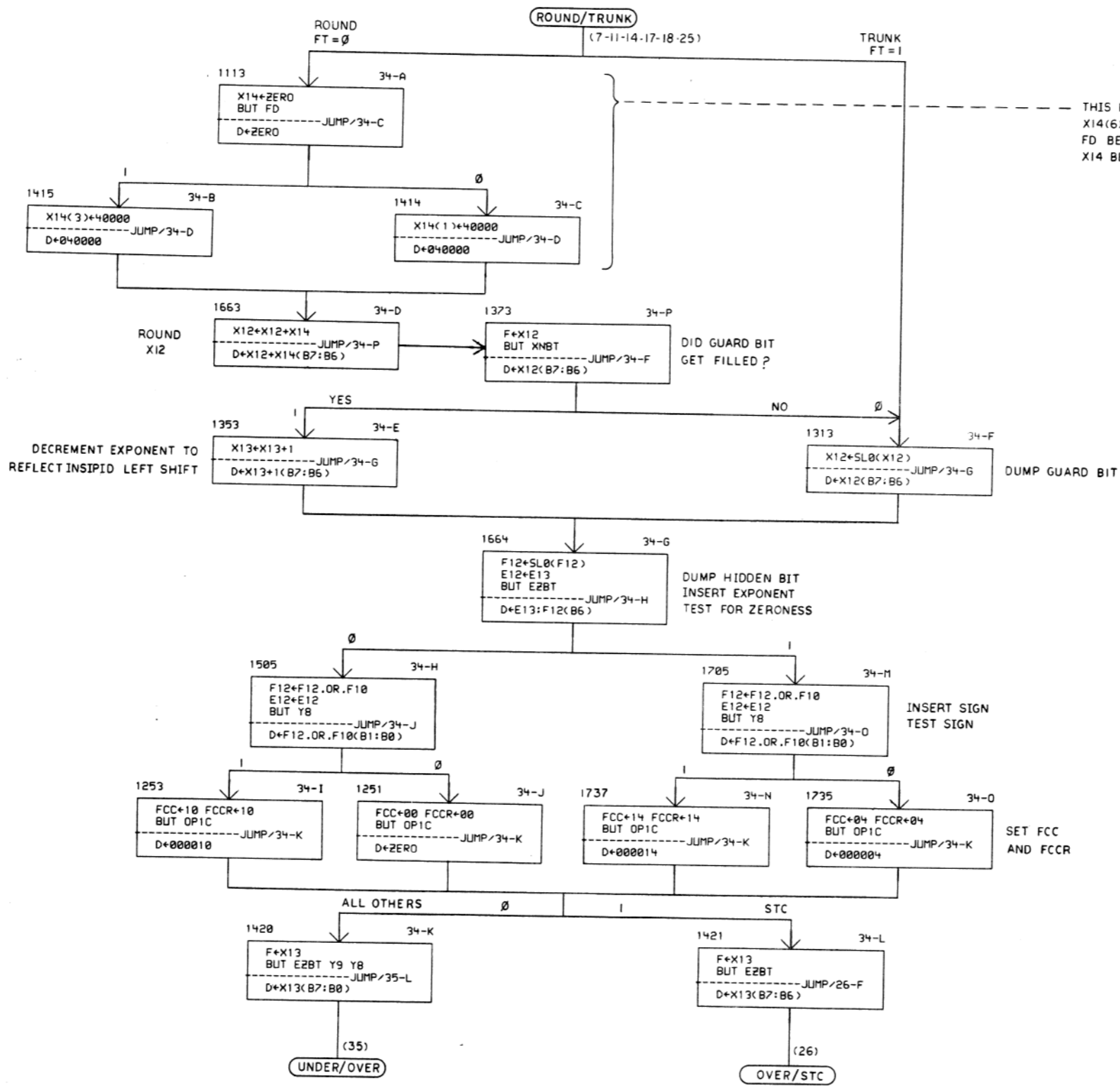
THIS ROUTINE STORES A SINGLE OR DOUBLE 16-BIT WORD DEPENDING ON THE FL FLOP. A SINGLE WORD IS ALWAYS STORED IF IN IMMEDIATE MODE.

REVISIONS		
CHK	CHANGE NO.	REV.

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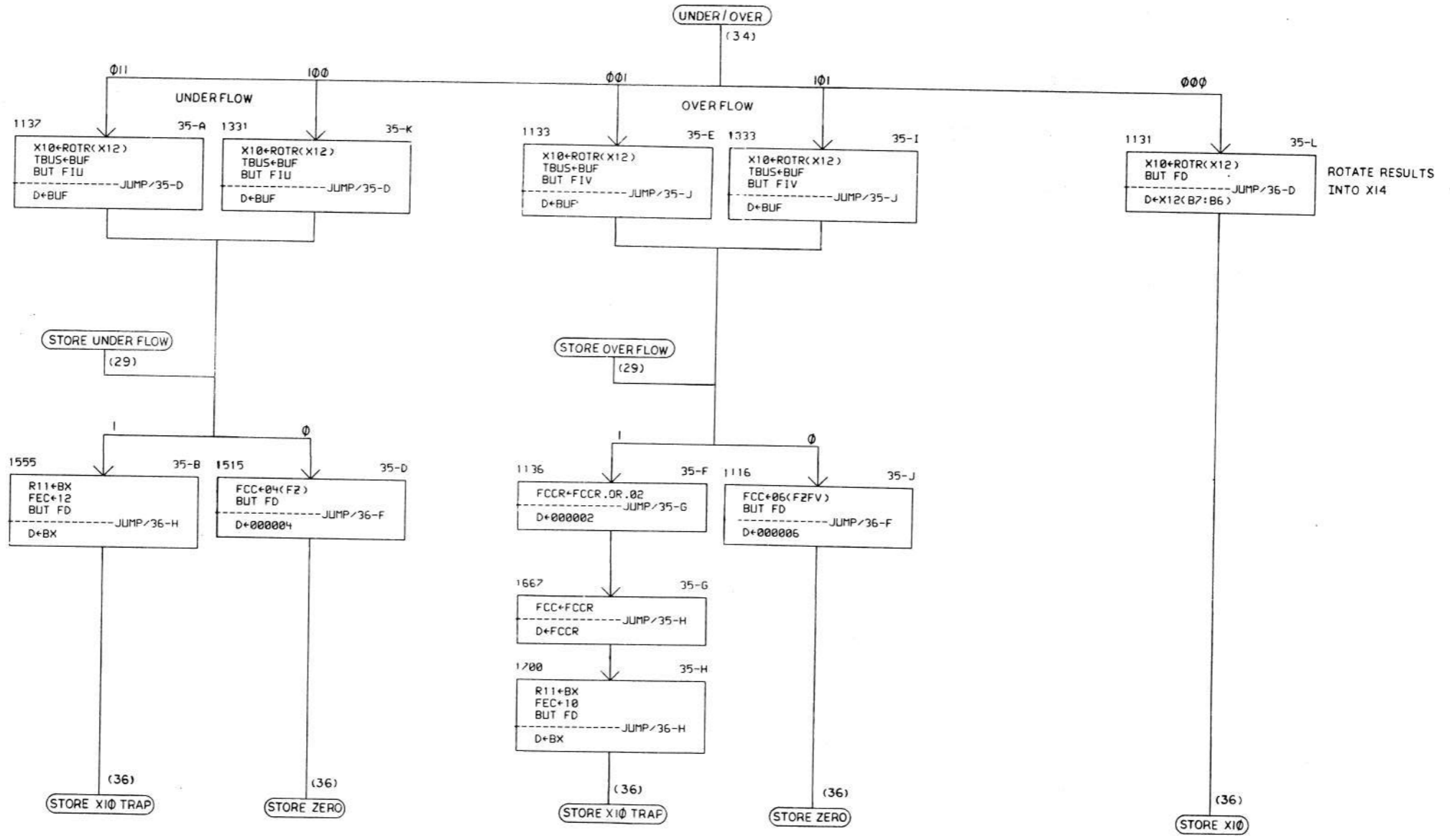
REV. 2  
 SIZE CODE D FD  
 NUMBER FPII-A-2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FPII-A FLOWS (34) SIZE CODE D FD NUMBER FPII-A-2  
 SCALE --- SHEET 37 OF 40 DIST.

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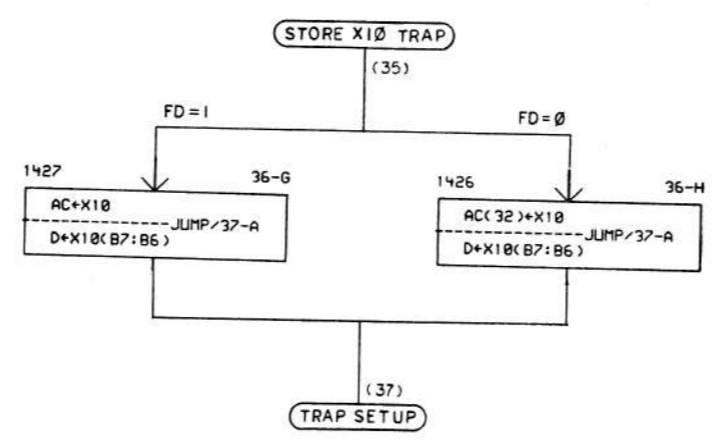
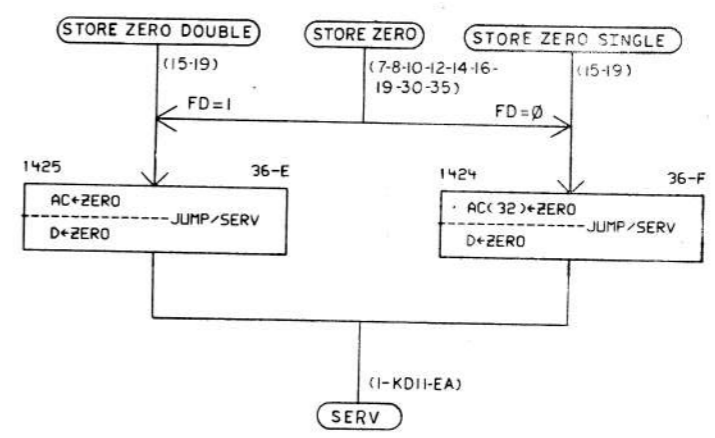
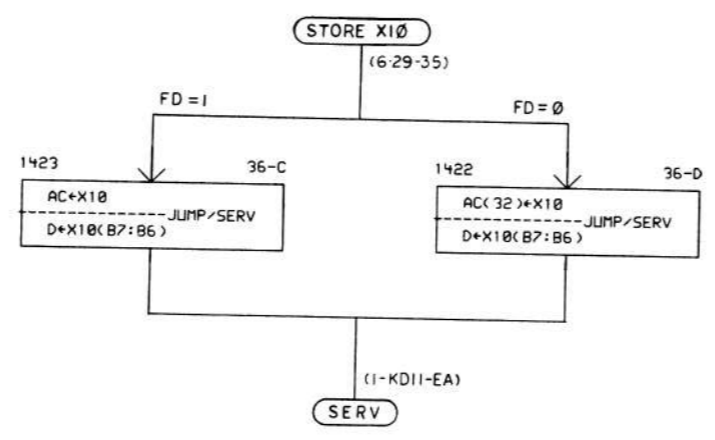
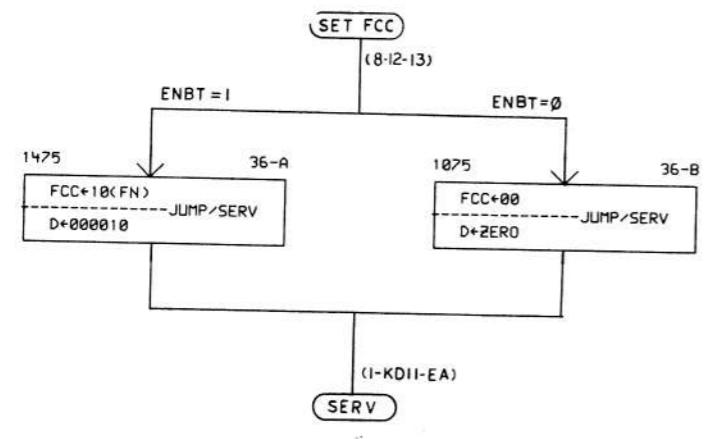


REVISIONS		
CHK	CHANGE NO.	REV.

REV. NUMBER DFD FPII-A-2

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REV. 2  
SIZE CODE DFD  
NUMBER FPII-A-2

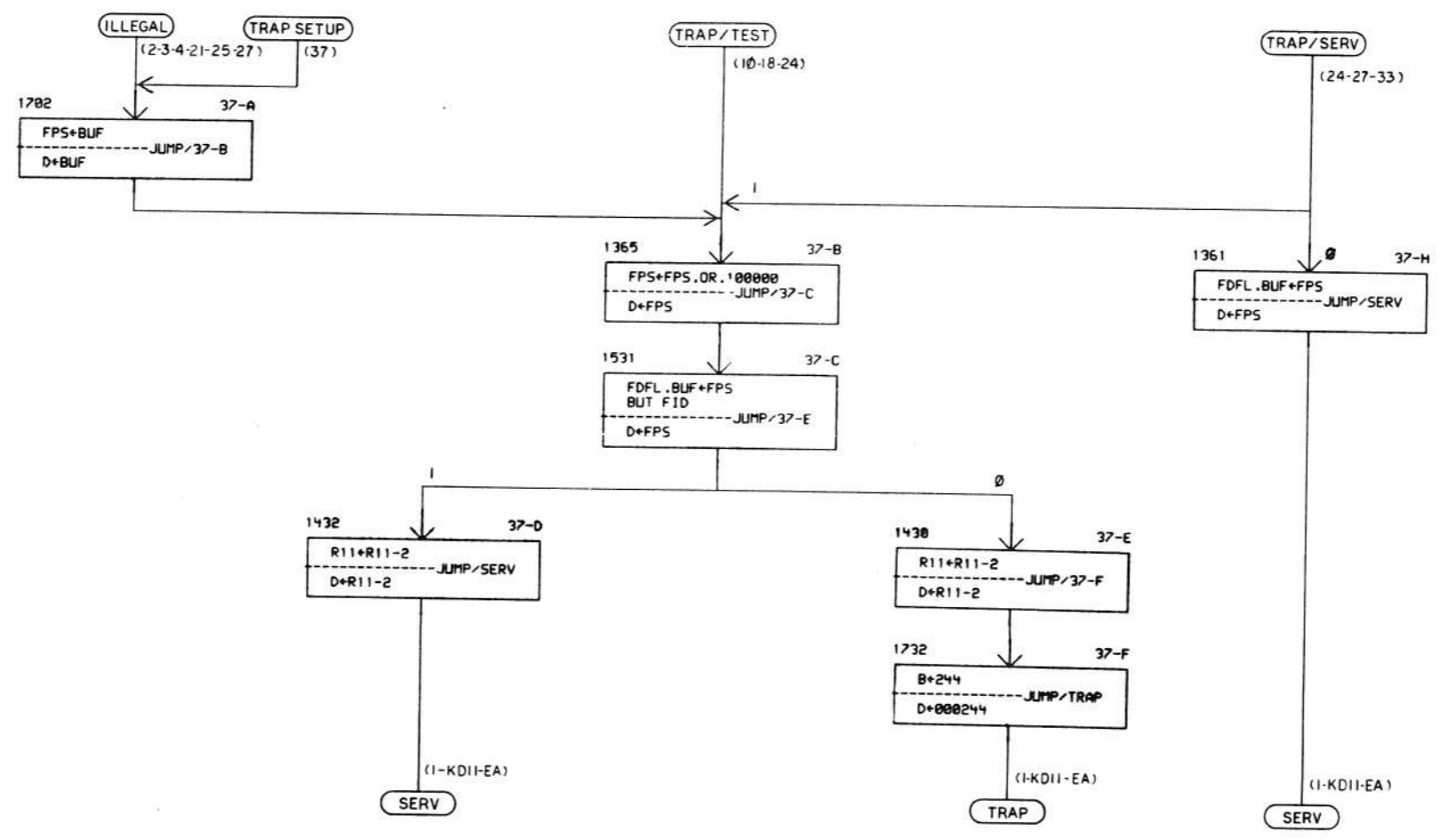


REVISIONS		
CHK	CHANGE NO.	REV.

8	7	6	5	4	3	2	1	
TITLE FPII A FLOWS (36)						SIZE CODE DFD	NUMBER FPII-A-2	REV.
SCALE						SHEET 39 OF 40	DIST.	

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SIZE CODE D FD FPII-A-2 2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE FPII-A FLOWS (37) SIZE CODE D FD NUMBER FPII-A-2 REV. 1  
 SCALE SHEET 40 OF 40 DIST.

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# MICRO FIELD DEFINITIONS

## FCTL/=3,6,53,D

A.AND.B=41  
D.AND.A=45  
A.OR.B=31  
D.OR.A=35  
D.XOR.A=65  
BBAR=73  
QPASS=62  
BPASS=63  
APASS=64  
DPASS=67  
ZERO=42  
ABAR.AND.B=51  
DBAR.AND.A=55  
A+B=1  
D+A=5  
BPLUS=3  
B-1=13  
-B-1=23  
B-A-1=11  
A-D-1=15  
A-B-1=21  
D-A-1=25

## ECTL/=3,6,59,D

A.AND.B=41  
D.AND.A=45  
D.OR.A=35  
A.XOR.B=61  
D.XOR.A=65  
BBAR=73  
QPASS=62  
BPASS=63  
APASS=64  
DPASS=67  
ZERO=42  
ABAR.AND.B=51  
DBAR.AND.A=55  
A+B=1  
D+A=5  
BPLUS=3  
B-1=13  
-B-1=23  
B-A-1=11  
A-D-1=15  
A-B-1=21  
D-A-1=25

## ECIN/=0,1,60,D

ZERO=0  
ONE=1

## BSEL/=3,2,62,D

AC.OR.1=0  
FDST=1  
FSRC=1  
AC=2  
BROM=3

## ASEL/=1,1,63,D

AC=0  
AROM=1

## TOUT/=1,1,64,D

NOP=0  
1134\_TBUS=1

## DCTL/=0,4,68,D

NOP=0  
LDBT=1  
LDBF=2  
LDQF=3  
ROTL=4  
ROTR=5  
SLALU0=6  
SROALU=7  
SR1ALU=10  
SLALU0.LDBF=11  
SR1ALU.LDBF=12  
SROALUQ=14  
SLALU0Q=15

## RET/=1,1,69,D

RETURN=0  
STAY=1

## BUT/=0,6,75,D

NOP=0  
ENBT=54  
EZBT=52  
RUSRQ=55  
FNBT=56  
XZBT=57  
Q8.Q40=60  
COUT63=61  
EZBT.OP1A=13  
FID=41  
EZBT.Y8.Y9=62  
EZBT.Y8=63  
ENBT.Y8=64  
ENBT.EZBT.FNBT=65  
FNBT.XZBT=66  
FIV=42  
Y62=43  
FIU=45  
FIUV=46  
FIC=47  
FT=44  
ENBT.EZBT=67  
Y8=50  
Y61=44  
FD.FIV=2  
Y62.OP1A=3  
BREAKOUT=31  
FD=32  
OP1B=34  
OP1C=35  
OP1D=36  
OP1E=37  
FDST=71  
FSRC=71  
DST=72  
SRC=72  
GR7=73  
GR7.FLBAR=74  
FL=75  
FLBAR=76  
OP2A=77

## CONST/=10,6,81,D

NOP=0  
ZERO=53  
ONES=40  
OCT2=41  
OCT5=42  
OCT4=43  
OCT6=44  
OCT10=45  
OCT12=46  
OCT14=47  
OCT100=50  
OCT200=51  
OCT100000=60  
OCT40000=61  
OCT147757=63  
(143.159)=62  
OCT10.4.2=64  
OCT4.2=65  
FDLBAR=66  
OCT4.10.2=67  
(56.24)=55  
(57.25)=56  
(58.26)=57  
OCT244=52  
(31.15)=54  
(56.24)\*=70  
OCT170000=71  
BYTE10=3  
BYTE32=4  
BYTE43=5  
BYTE54=6  
BYTE65=7  
BYTE76=10  
BYTE07=11

## MISC/=11,4,85,D

TBUS\_1134=0  
TBUS\_BUF=1  
BUF\_TBUS=4  
BUF\_1134=5  
FDFL\_TBUS=6  
FCC\_TBUS=7  
SERV.BR=10  
NOP=11  
FDFL\_BUF=12  
FDFL\_BUF\_TBUS=13  
FDFL\_BUFH\_TBUS=15



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AROM/=0,3,88,D

- AR10=0
- AR11=1
- AR12=2
- AR13=3
- AR14=4
- FCCR=6
- FPS=7

BROM/=0,3,91,D

- BR10=0
- BR11=1
- BR12=2
- BR13=3
- BR14=4
- FEC=5
- FCCR=6
- FPS=7

SECT/=17,4,95,D

- S1=1
- S2=2
- S3=3
- S4=4
- S7=7
- S10=10
- S14=14
- S17=17

RSPA/=0,4,47,D

- PC=10
- R11=6
- R12=5
- R14=3
- R17=0

FORCE KER/=0,1,43,D

KER=1

BUT SERV/=0,1,42,D

SERV=1

PREVIOUS MODE/=1,1,41,D

ASSERT=0

FORCE RS+1/=1,1,40,D

RS+1=0

DST SEL/=3,2,39,D

- RD=2
- ROM=0

SRC SEL/=0,2,37,D

- RD=2
- ROM=0
- RBA=3

BUT BITS/=0,4,35,D

- NOP=0
- NBIT=1
- ZBIT=2
- C05=3
- COU7=7
- NBITZBIT=11
- NOSERV=17

AMUX/=1,2,31,D

- UBUS=3
- ALU=1

SSMUX/=0,2,29,D

- STRT=0
- SWAB=2

BBX CTRL/=0,4,27,D

- HOLD=0
- LOADB=1
- LOADBX=2

ALU BLEG/=5,5,23,D

- ZERO=0
- A+1=2
- A-1=3
- A-B=4
- A=5
- B=6
- A+B=10
- A-BX=22
- A+2=24
- A-2=25
- BX=27
- BBAR=30

AUX CTRL/=0,1,18,D

AUX=1

CYCLE/=1,1,17,D

- SHORT=1
- LONG=0

LOAD BA/=0,1,16,D

BA=1

ENAB MAINT/=0,1,15,D

MAINT=1

BUS CTRL/=0,2,14,D

- DATI=0
- DATO=2

DATA TRAN/=0,1,12,D

TRAN=1

MISC CTRL/=0,3,11,D

- NOP=0
- LOADCC=3
- LOADC=6
- COUNT=7

J/=0,9,8,+

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FPII-A MACRO DEFINITIONS

AC(32)_X10	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC,AROM/AR10,SECT/S14"
AC(32)_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC,SECT/S14"
AC.OR.1(32)_X12	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR12,SECT/S14"
AC.OR.1(32)_X14	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR14,SECT/S14"
AC.OR.1(32)_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC.OR.1,SECT/S14"
AC.OR.1_X12	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR12"
AC.OR.1_X14	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC.OR.1,AROM/AR14"
AC.OR.1_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC.OR.1"
AC_X10	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/AC,AROM/AR10"
AC_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BSEL/AC"
BA_PC	"LOAD BA/BA,RSPA/PC"
BA_R12	"LOAD BA/BA,RSPA/R12"
BA_R12 R12_R12+2	"LOAD BA/BA,DST SEL/ROM,RSPA/R12,ALU BLEG/A+2,TOUT/NOP"
BA_RD	"LOAD BA/BA, SRC SEL/RD"
BUF_FPS	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,MISC/BUF_TBUS,BROM/FPS"
BUF_RD B_RD	"MISC/BUF_1134,BBX CTRL/LOADB, SRC SEL/RD,TOUT/NOP,CONST/NOP"
BUF_UDATA	"MISC/BUF_1134,AMUX/UBUS,TOUT/NOP,CONST/NOP"
BUT (Q8.Q40)	"BUT/Q8.Q40,CYCLE/LONG"
BUT (Q8.Q40) ZBIT	"BUT/Q8.Q40,BUT BITS/ZBIT,CYCLE/LONG"
BUT BR.OR.PFAIL	"BUT/BUSRQ,CYCLE/LONG"
BUT BREAKOUT	"BUT/BREAKOUT"
BUT COUT15	"BUT BITS/COUT,CYCLE/LONG"
BUT COUT63 ZBIT	"BUT/COUT63,BUT BITS/ZBIT,CYCLE/LONG"
BUT DST	"BUT/DST"
BUT ENBT	"BUT/ENBT,CYCLE/LONG"
BUT ENBT EZBT	"BUT/ENBT,EZBT,CYCLE/LONG"
BUT ENBT EZBT XNBT	"BUT/ENBT,EZBT, FNBT,CYCLE/LONG"
BUT ENBT Y8	"BUT/ENBT.Y8,CONST/BYTE07,CYCLE/LONG"
BUT EZBT	"BUT/EZBT,CYCLE/LONG"
BUT EZBT OP1A	"BUT/EZBT.OP1A,CYCLE/LONG"
BUT EZBT Y8	"BUT/EZBT.Y8,CONST/BYTE07,CYCLE/LONG"
BUT EZBT Y9 Y8	"BUT/EZBT.Y8.Y9,CONST/BYTE07,CYCLE/LONG"
BUT FD	"BUT/FD"
BUT FDST	"BUT/FDST"
BUT FIC	"BUT/FIC,CYCLE/LONG"
BUT FID	"BUT/FID,CYCLE/LONG"
BUT FIU	"BUT/FIU,CYCLE/LONG"
BUT FIUV	"BUT/FIUV,CYCLE/LONG"
BUT FIV	"BUT/FIV,CYCLE/LONG"
BUT FIV FD	"BUT/FD.FIV,CYCLE/LONG"
BUT FL	"BUT/FL"
BUT FLAG	"BUT BITS/C05"
BUT FLBAR	"BUT/FLBAR"
BUT FSRC	"BUT/FSRC"
BUT FT	"BUT/FT,CYCLE/LONG"
BUT GR7	"BUT/GR7"
BUT GR7.OR.FLBAR	"BUT/GR7.FLBAR"
BUT NBIT	"BUT BITS/NBIT,CYCLE/LONG"
BUT NBIT ZBIT	"BUT BITS/NBITZBIT,CYCLE/LONG"
BUT NOSERV	"BUT BITS/NOSERV"
BUT OP1B	"BUT/OP1B"
BUT OP1C	"BUT/OP1C"
BUT OP1D	"BUT/OP1D"

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REV NUMBER SIZE CODE  
FPII-A-5 B FD

BUT OP1E	"BUT/OP1E"
BUT OP2A	"BUT/OP2A"
BUT SERV(BR.OR.PFAIL)	"BUT SERV/SERV,MISC/SERV.BR"
BUT SRC	"BUT/SRC"
BUT XNBT	"BUT/FNBT,CYCLE/LONG"
BUT XNBT XZBT	"BUT/FNBT.XZBT,CYCLE/LONG"
BUT XZBT	"BUT/XZBT,CYCLE/LONG"
BUT Y61	"BUT/Y61,CONST/BYTE65,CYCLE/LONG"
BUT Y62	"BUT/Y62,CONST/BYTE65,CYCLE/LONG"
BUT Y62 OP1A	"BUT/Y62.OP1A,CONST/BYTE65,CYCLE/LONG"
BUT Y8	"BUT/Y8,CONST/BYTE10,CYCLE/LONG"
BUT ZBIT	"BUT BITS/ZBIT,CYCLE/LONG"
BX_R11	"BBX CTRL/LOADBX,RSPA/R11,TOUT/NOP"
BX_R14	"BBX CTRL/LOADBX,RSPA/R14,TOUT/NOP"
BX_R17-BX	"BBX CTRL/LOADBX,RSPA/R17,ALU BLEG/A-BX,TOUT/NOP"
BX_X11(L) SWAB	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE43,BROM/BR11,BBX CTRL/LOADBX,SSMUX/SWAB"
BX_X11(L) SWAB F_EAC	"FCTL/BPASS,ECTL/APASS,ASEL/AC,CONST/BYTE43,BROM/BR11,BBX CTRL/LOADBX,SSMUX/SWAB"
BX_ZERO	"BBX CTRL/LOADBX,ALU BLEG/ZERO,TOUT/NOP"
B_(10,4,2)	"CONST/OCT10.4.2,BBX CTRL/LOADB"
B_(4,10,2)	"CONST/OCT4.10.2,BBX CTRL/LOADB"
B_(4,2)	"CONST/OCT4.2,BBX CTRL/LOADB"
B_2 CLEAR FDFL	"CONST/OCT2,MISC/FDFL_TBUS,BBX CTRL/LOADB"
B_244	"CONST/OCT244,BBX CTRL/LOADB"
B_B SWAB	"BBX CTRL/LOADB,ALU BLEG/B,SSMUX/SWAB,TOUT/NOP"
B_B+R17	"DST SEL/ROM,RSPA/R17,ALU BLEG/A+B,BBX CTRL/LOADB,TOUT/NOP"
B_R17	"BBX CTRL/LOADB,RSPA/R17,TOUT/NOP"
B_UDATA	"BBX CTRL/LOADB,AMUX/UBUS,TOUT/NOP"
B_UDATA BUF_UDATA	"BBX CTRL/LOADB,AMUX/UBUS,MISC/BUF_1134,TOUT/NOP,CONST/NOP"
B_X11(H) SWAB	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE65,BROM/BR11,BBX CTRL/LOADB,SSMUX/SWAB"
B_X11(H) SWAB F_EAC	"FCTL/BPASS,ECTL/APASS,ASEL/AC,CONST/BYTE65,BROM/BR11,BBX CTRL/LOADB,SSMUX/SWAB"
B_X13-X14 SWAB	"BBX CTRL/LOADB,FCTL/A-B-1,ECTL/A-B-1,ECIN/ONE,CONST/BYTE07,AROM/AR13,BROM/BR14,SSMUX/SWAB,CYCLE/LONG"
B_X14-X13 SWAB	"BBX CTRL/LOADB,FCTL/B-A-1,ECTL/B-A-1,ECIN/ONE,CONST/BYTE07,AROM/AR13,BROM/BR14,SSMUX/SWAB,CYCLE/LONG"
CC_FCC	"MISC/TBUS_BUF,MISC CTRL/LOADCC,CONST/NOP"
CLEAR FD(FPS)	"FCTL/DBAR.AND.A,ECTL/DBAR.AND.A,DCTL/LDBF,CONST/OCT200,AROM/FPS,BROM/FPS"
CLEAR FDFL	"CONST/ZERO,MISC/FDFL_TBUS"
CLEAR FL(FPS)	"FCTL/DBAR.AND.A,ECTL/DBAR.AND.A,DCTL/LDBF,CONST/OCT100,AROM/FPS,BROM/FPS"
CLEAR FLAG	"MISC CTRL/LOADC,ALU BLEG/ZERO,TOUT/NOP"
CLEAR SIGN	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR10"
CLEAR SIGN T_X12	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBT,AROM/AR12,BROM/BR10"
DATI	"DATA TRAN/TRAN"
DATO	"DATA TRAN/TRAN,BUS CTRL/DATO,CYCLE/LONG"
F10_F10 E10_E10.AND.177	"FCTL/BPASS,ECTL/DBAR.AND.A,DCTL/LDBF,CONST/OCT100000,AROM/AR10,BROM/BR10"
F10_F10 E10_E10.XOR.200	"FCTL/BPASS,ECTL/D.XOR.A,DCTL/LDBF,CONST/OCT100000,AROM/AR10,BROM/BR10"
F11_SR1(F11) E11_E11	"FCTL/BPASS,ECTL/BPASS,DCTL/SR1ALU.LDBF,BROM/BR11"
F11_SR1(F11) E11_ZERO	"FCTL/BPASS,ECTL/ZERO,DCTL/SR1ALU.LDBF,BROM/BR11"
F12_F12 E12_B	"FCTL/BPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_1134,BROM/BR12,ALU BLEG/B,TOUT/NOP,CONST/NOP"
F12_F12 E12_E12+200	"FCTL/BPASS,ECTL/D+A,DCTL/LDBF,CONST/OCT100000,AROM/AR12,BROM/BR12,CYCLE/LONG"
F12_F12 E12_E12.AND.360	"FCTL/BPASS,ECTL/D.AND.A,DCTL/LDBF,CONST/OCT170000,AROM/AR12,BROM/BR12"
F12_F12.OR.F10 E12_E12	"FCTL/A.OR.B,ECTL/BPASS,DCTL/LDBF,AROM/AR10,BROM/BR12"
F12_SLO(F12) E12_E13	"FCTL/BPASS,ECTL/APASS,DCTL/SLALU0.LDBF,AROM/AR13,BROM/BR12"
F12_SR1(F12) E12_ZERO	"FCTL/BPASS,ECTL/ZERO,DCTL/SR1ALU.LDBF,BROM/BR12"
F13_ZERO E13_E11	"FCTL/ZERO,ECTL/APASS,DCTL/LDBF,AROM/AR11,BROM/BR13"
F13_ZERO E13_E11.XOR.200	"FCTL/ZERO,ECTL/D.XOR.A,DCTL/LDBF,CONST/OCT100000,AROM/AR11,BROM/BR13"
F13_ZERO E13_E12	"FCTL/ZERO,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR13"
F13_ZERO E13_E12 T_X12	"FCTL/ZERO,ECTL/APASS,DCTL/LDBT,AROM/AR12,BROM/BR13"

TITLE	SIZE CODE	NUMBER	REV
FPII-A FLOWS	B FD	FPII-A-5	
SHEET 5 OF 8			

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REV	NUMBER	SIZE	CODE
	FPII-A-3	B	FD

F14_SLO(F14) E14_E13	"FCTL/BPASS,ECTL/APASS,DCTL/SLALUO,LDBF,AROM/AR13,BROM/BR14"
F14_ZERO E14_E12	"FCTL/ZERO,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR14"
F14_ZERO E14_E12 T_X12	"FCTL/ZERO,ECTL/APASS,DCTL/LDBT,AROM/AR12,BROM/BR14"
FCCR_FCCR.OR.02	"FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT2,AROM/FCCR,BROM/FCCR"
FCC_00	"CONST/ZERO,MISC/FCC_TBUS"
FCC_00 FCCR_00	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/ZERO,MISC/FCC_TBUS,BROM/FCCR"
FCC_04 FCCR_04	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT4,MISC/FCC_TBUS,BROM/FCCR"
FCC_04(FZ)	"CONST/OCT4,MISC/FCC_TBUS"
FCC_05(FZFC)	"CONST/OCT5,MISC/FCC_TBUS"
FCC_06(FZFU)	"CONST/OCT6,MISC/FCC_TBUS"
FCC_10 FCCR_10	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT10,MISC/FCC_TBUS,BROM/FCCR"
FCC_10(FN)	"CONST/OCT10,MISC/FCC_TBUS"
FCC_14 FCCR_14	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT14,MISC/FCC_TBUS,BROM/FCCR"
FCC_14(FNFZ)	"CONST/OCT14,MISC/FCC_TBUS"
FCC_FCCR	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,MISC/FCC_TBUS,BROM/FCCR"
FDL.BUFH_FPS X10_X10	"FCTL/BPASS,ECTL/BPASS,DCTL/LDBT,CONST/BYTE10,MISC/FD.L.BUFH_TBUS,AROM/FPS,BROM/BR10"
FDL.BUF_FPS	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,MISC/FD.L.BUF_TBUS,BROM/FPS"
FDL.BUF_FPS F_E13	"FCTL/BPASS,ECTL/APASS,CONST/BYTE10,MISC/FD.L.BUF_TBUS,AROM/AR13,BROM/FPS"
FDL_BUF	"MISC/FD.L_BUF,CONST/NOP"
FDL_FDLBAR	"CONST/FD.LBAR,MISC/FD.L_TBUS"
FDST(3)_X10	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/FDST,AROM/AR10,SECT/S10"
FEC_02	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT2,BROM/FEC"
FEC_04	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT4,BROM/FEC"
FEC_06	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT6,BROM/FEC"
FEC_10	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT10,BROM/FEC"
FEC_12	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT12,BROM/FEC"
FEC_14	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT14,BROM/FEC"
FPS_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/FPS,CONST/NOP"
FPS_BUF CC_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/FPS,MISC CTRL/LOADCC,CONST/NOP"
FPS_FPS.AND.147757	"FCTL/D.AND.A,ECTL/D.AND.A,DCTL/LDBF,CONST/OCT147757,AROM/FPS,BROM/FPS"
FPS_FPS.OR.100000	"FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT100000,AROM/FPS,BROM/FPS"
FSRC(32)_X11	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/FSRC,AROM/AR11,SECT/S14"
FSRC_X11	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,BSEL/FSRC,AROM/AR11"
F_AC	"FCTL/BPASS,ECTL/BPASS,BSEL/AC"
F.AC.XOR.200	"FCTL/D.XOR.A,ECTL/D.XOR.A,ASEL/AC,CONST/OCT100000"
F_Q	"FCTL/QPASS,ECTL/QPASS"
F_X10	"FCTL/BPASS,ECTL/BPASS,BROM/BR10"
F_X10BAR	"FCTL/BBAR,ECTL/BBAR,BROM/BR10"
F_X12	"FCTL/BPASS,ECTL/BPASS,BROM/BR12"
F_X13	"FCTL/BPASS,ECTL/BPASS,BROM/BR13"
MAINT	ENAB MAINT/MAINT"
PC_PC+2	"DST SEL/ROM,RSPA/PC,ALU BLEG/A+2,TOUT/NOP"
PC_PC-2	"DST SEL/ROM,RSPA/PC,ALU BLEG/A-2,TOUT/NOP"
Q_(F12*EAC)	"FCTL/APASS,ECTL/BPASS,DCTL/LDQF,BSEL/AC,AROM/AR12"
Q_FDST	"FCTL/BPASS,ECTL/BPASS,DCTL/LDQF,BSEL/FDST"
Q_FSRC	"FCTL/BPASS,ECTL/BPASS,DCTL/LDQF,BSEL/FSRC"
Q_X12	"FCTL/BPASS,ECTL/BPASS,DCTL/LDQF,BROM/BR12"
Q_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDQF"
R11_BX	"DST SEL/ROM,RSPA/R11,ALU BLEG/BX,TOUT/NOP"
R11_R11-2	"DST SEL/ROM,RSPA/R11,ALU BLEG/A-2,TOUT/NOP"
R12_R12+2	"DST SEL/ROM,RSPA/R12,ALU BLEG/A+2,TOUT/NOP"
R12_RD	"DST SEL/ROM,RSPA/R12,ALU BLEG/A+2,TOUT/NOP"
R12_RD+B	"DST SEL/ROM,RSPA/R12,ALU BLEG/A+B,TOUT/NOP"
R12_RD-2	"DST SEL/ROM,RSPA/R12,ALU BLEG/A-2,TOUT/NOP"
R12_RD-B	"DST SEL/ROM,RSPA/R12,ALU BLEG/A-B,TOUT/NOP"

TITLE	SIZE CODE	NUMBER	REV
FPII-A FLOWS	B FD	FPII-A-5	

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REV NUMBER FPII-A-3 B FD B

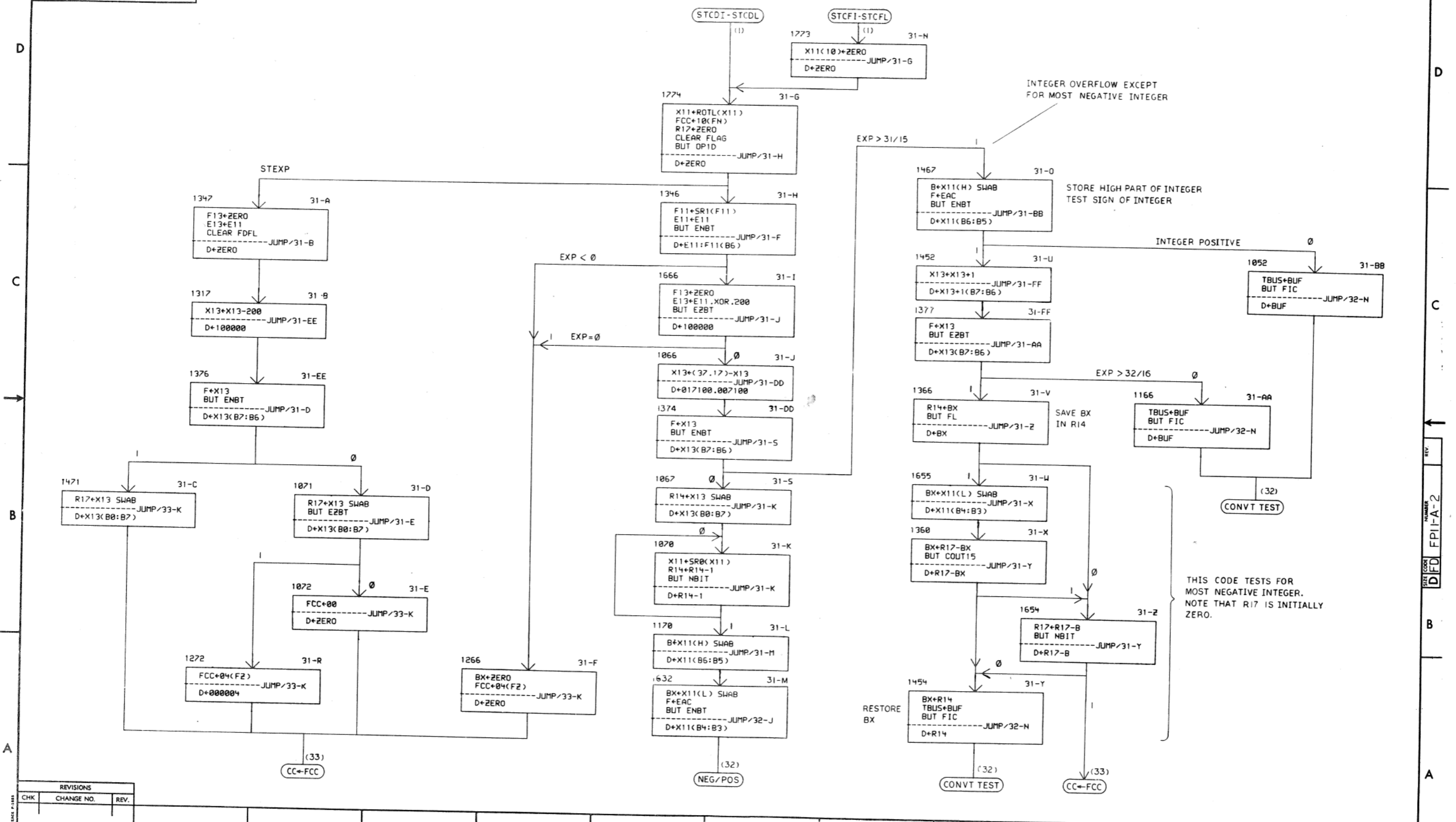
R12_UDATA	"DST SEL/ROM,RSPA/R12,AMUX/UBUS,TOUT/NOP"
R14_(237,217)	"CONST/(143,159),DST SEL/ROM,RSPA/R14"
R14_(70,30)	"CONST/(56,24),DST SEL/ROM,RSPA/R14"
R14_(72,32)	"CONST/(58,26),DST SEL/ROM,RSPA/R14"
R14_4	"CONST/OCT4,DST SEL/ROM,RSPA/R14"
R14_B	"DST SEL/ROM,RSPA/R14,ALU BLEG/B,TOUT/NOP"
R14_BX	"DST SEL/ROM,RSPA/R14,ALU BLEG/BX,TOUT/NOP"
R14_R14 SWAB	"DST SEL/ROM,RSPA/R14,SSMUX/SWAB,TOUT/NOP"
R14_R14+1	"DST SEL/ROM,RSPA/R14,ALU BLEG/A+1,TOUT/NOP"
R14_R14+1 SWAB	"DST SEL/ROM,RSPA/R14,ALU BLEG/A+1,SSMUX/SWAB,TOUT/NOP"
R14_R14-1	"DST SEL/ROM,RSPA/R14,ALU BLEG/A-1,TOUT/NOP"
R14_X11 SWAB	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR11,DST SEL/ROM,RSPA/R14,SSMUX/SWAB,CYCLE/LONG"
R14_X13 SWAB	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR13,DST SEL/ROM,RSPA/R14,SSMUX/SWAB,CYCLE/LONG"
R14_X14 SWAB	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR14,DST SEL/ROM,RSPA/R14,SSMUX/SWAB,CYCLE/LONG"
R17_(71,31)	"DST SEL/ROM,RSPA/R17,CONST/(57,25)"
R17_2	"CONST/OCT2,DST SEL/ROM,RSPA/R17"
R17_B	"DST SEL/ROM,RSPA/R17,ALU BLEG/B,TOUT/NOP"
R17_BBAR	"DST SEL/ROM,RSPA/R17,ALU BLEG/BBAR,TOUT/NOP"
R17_FEC	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,BROM/FEC,DST SEL/ROM,RSPA/R17,CYCLE/LONG"
R17_FPS	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,BROM/FPS,DST SEL/ROM,RSPA/R17,CYCLE/LONG"
R17_R17-B	"DST SEL/ROM,RSPA/R17,ALU BLEG/A-B,TOUT/NOP"
R17_X13 SWAB	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE07,BROM/BR13,DST SEL/ROM,RSPA/R17,SSMUX/SWAB,CYCLE/LONG"
R17_ZERO	"DST SEL/ROM,RSPA/R17,ALU BLEG/ZERO,TOUT/NOP"
RD_RD+2	"DST SEL/RD,SRC SEL/RD,ALU BLEG/A+2,TOUT/NOP"
RD_RD+B	"DST SEL/RD,SRC SEL/RD,ALU BLEG/A+B,TOUT/NOP"
RD_RD-2	"DST SEL/RD,SRC SEL/RD,ALU BLEG/A-2,TOUT/NOP"
RD_RD-B	"DST SEL/RD,SRC SEL/RD,ALU BLEG/A-B,TOUT/NOP"
RETURN	"RET/RETURN"
SERV(BR.OR.PFAIL)	"MISC/SERV.BR"
SET FD(FPS)	"FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT200,AROM/FPS,BROM/FPS"
SET FDFL	"CONST/ONES,MISC/FDFL,TBUS"
SET FL(FPS)	"FCTL/D.OR.A,ECTL/D.OR.A,DCTL/LDBF,CONST/OCT100,AROM/FPS,BROM/FPS"
SET FLAG	"MISC CTRL/COUNT"
SET SIGN	"FCTL/ZERO,ECTL/DPASS,DCTL/SLALU0,CONST/OCT100000,BROM/BR10"
TBUS_BUF	"MISC/TBUS_BUF,CONST/NOP"
T_B	"ALU BLEG/B,TOUT/NOP"
T_R14	"RSPA/R14,TOUT/NOP"
T_R14-B	"RSPA/R14,ALU BLEG/A-B,TOUT/NOP"
T_R17+B	"RSPA/R17,ALU BLEG/A+B,TOUT/NOP"
UDATA_BX	"ALU BLEG/BX,TOUT/NOP"
UDATA_R17	"SRC SEL/ROM,RSPA/R17,TOUT/NOP"
UDATA_X10(3)	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE76,BROM/BR10"
UDATA_X11(0)	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE10,BROM/BR11"
UDATA_X11(1)	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE32,BROM/BR11"
UDATA_X11(2)	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE54,BROM/BR11"
UDATA_X11(3)	"FCTL/BPASS,ECTL/BPASS,CONST/BYTE76,BROM/BR11"
X10(0)_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S1,CONST/NOP"
X10(1)_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S2,CONST/NOP"
X10(10)_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR10,SECT/S3"
X10(2)_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S4,CONST/NOP"
X10(210)_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR10,SECT/S7"
X10(3)_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR10,SECT/S10,CONST/NOP"
X10_Q	"FCTL/QPASS,ECTL/QPASS,DCTL/LDBF,BROM/BR10"
X10_ROT(L ZERO*(EAC.XOR.E10)	"FCTL/ZERO,ECTL/A.XOR.B,DCTL/ROTL,ASEL/AC,BROM/BR10"

TITLE	SIZE CODE	NUMBER	REV
FPII-A FLOWS	B FD	FPII-A-5	
SHEET 7 OF 8			

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X10_ROT(X12)	"FCTL/APASS,ECTL/APASS,DCTL/ROTR,AROM/AR12,BROM/BR10"
X10_X11	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR11,BROM/BR10"
X11(10)_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR11,SECT/S3"
X11_(70.30)-X14	"FCTL/D-A-1,ECTL/D-A-1,DCTL/LDBF,ECIN/ONE,CONST/(56.24)*,AROM/AR14,BROM/BR11,CYCLE/LONG"
X11_AC	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,ASEL/AC,BROM/BR11"
X11_ROT(X11)	"FCTL/BPASS,ECTL/BPASS,DCTL/ROTL,BROM/BR11"
X11_ROT(X12)	"FCTL/APASS,ECTL/APASS,DCTL/ROTR,AROM/AR12,BROM/BR11"
X11_SL0(X11-X12) Q_SLC63(Q)	"FCTL/B-A-1,ECTL/B-A-1,DCTL/SLALUOQ,ECIN/ONE,AROM/AR12,BROM/BR11"
X11_SL0(X12+X11) Q_SLC63(Q)	"FCTL/A+B,ECTL/A+B,DCTL/SLALUOQ,AROM/AR12,BROM/BR11"
X11_SR0(X11)	"FCTL/BPASS,ECTL/BPASS,DCTL/SR1ALU,BROM/BR11"
X11_SR1(X11)	"FCTL/BPASS,ECTL/BPASS,DCTL/SR1ALU,BROM/BR11"
X11_X12	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR11"
X11_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR11"
X12(1)_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR12,SECT/S2,CONST/NOP"
X12(2)_BUF	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_BUF,BROM/BR12,SECT/S4,CONST/NOP"
X12_-X12	"FCTL/-B-1,ECTL/-B-1,ECIN/ONE,DCTL/LDBF,BROM/BR12,CYCLE/LONG"
X12_ROT(X10)	"FCTL/APASS,ECTL/APASS,DCTL/ROTL,AROM/AR10,BROM/BR12"
X12_ROT(X11)	"FCTL/APASS,ECTL/APASS,DCTL/ROTL,AROM/AR11,BROM/BR12"
X12_ROT(F10,OR,F12)*E12)	"FCTL/A,OR,B,ECTL/BPASS,DCTL/ROTR,AROM/AR10,BROM/BR12"
X12_SL0(Q)	"FCTL/QPASS,ECTL/QPASS,DCTL/SLALUO,BROM/BR12"
X12_SL0(X12)	"FCTL/BPASS,ECTL/BPASS,DCTL/SLALUO,BROM/BR12"
X12_SL00(X12)	"FCTL/A+B,ECTL/A+B,DCTL/SLALUO,AROM/AR12,BROM/BR12,CYCLE/LONG"
X12_SR0(X11+X12) Q_SR0(Q)	"FCTL/A+B,ECTL/A+B,DCTL/SROALUQ,AROM/AR11,BROM/BR12"
X12_SR0(X11BAR,AND,X12)	"FCTL/ABAR,AND,B,ECTL/ABAR,AND,B,DCTL/SROALU,AROM/AR11,BROM/BR12"
X12_SR0(X12)	"FCTL/BPASS,ECTL/BPASS,DCTL/SROALU,BROM/BR12"
X12_SR0(X12) Q_SR0(Q)	"FCTL/BPASS,ECTL/BPASS,DCTL/SROALUQ,BROM/BR12"
X12_X10	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR10,BROM/BR12"
X12_X11-X12	"FCTL/A-B-1,ECTL/A-B-1,DCTL/LDBF,ECIN/ONE,AROM/AR11,BROM/BR12,CYCLE/LONG"
X12_X12+X11	"FCTL/A+B,ECTL/A+B,DCTL/LDBF,AROM/AR11,BROM/BR12,CYCLE/LONG"
X12_X12+X14	"FCTL/A+B,ECTL/A+B,DCTL/LDBF,AROM/AR14,BROM/BR12,CYCLE/LONG"
X12_X12-X11	"FCTL/B-A-1,ECTL/B-A-1,DCTL/LDBF,ECIN/ONE,AROM/AR11,BROM/BR12,CYCLE/LONG"
X12_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR12"
X13_(37.17)-X13	"FCTL/D-A-1,ECTL/D-A-1,DCTL/LDBF,ECIN/ONE,CONST/(31.15),AROM/AR13,BROM/BR13,CYCLE/LONG"
X13_R14	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_1134,BROM/BR13,RSPA/R14,CYCLE/LONG,TOUT/NOP,CONST/NOP"
X13_X13+1	"FCTL/BPLUS,ECTL/BPLUS,DCTL/LDBF,ECIN/ONE,BROM/BR13"
X13_X13+200	"FCTL/D+A,ECTL/D+A,DCTL/LDBF,CONST/OCT100000,AROM/AR13,BROM/BR13,CYCLE/LONG"
X13_X13+X14	"FCTL/A+B,ECTL/A+B,DCTL/LDBF,AROM/AR14,BROM/BR13"
X13_X13-1	"FCTL/B-1,ECTL/B-1,DCTL/LDBF,BROM/BR13"
X13_X13-200	"FCTL/A-D-1,ECTL/A-D-1,DCTL/LDBF,ECIN/ONE,CONST/OCT100000,AROM/AR13,BROM/BR13,CYCLE/LONG"
X13_X13-X14	"FCTL/B-A-1,ECTL/B-A-1,ECIN/ONE,DCTL/LDBF,AROM/AR14,BROM/BR13"
X13_X14	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR14,BROM/BR13"
X14(1)_40000	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT40000,BROM/BR14,SECT/S2"
X14(3)_40000	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,CONST/OCT40000,BROM/BR14,SECT/S10"
X14_R14	"FCTL/DPASS,ECTL/DPASS,DCTL/LDBF,MISC/TBUS_1134,BROM/BR14,RSPA/R14,CYCLE/LONG,TOUT/NOP,CONST/NOP"
X14_ROT(F10,OR,F14)*E14)	"FCTL/A,OR,B,ECTL/BPASS,DCTL/ROTR,AROM/AR10,BROM/BR14"
X14_X11,AND,X14	"FCTL/A,AND,B,ECTL/A,AND,B,DCTL/LDBF,AROM/AR11,BROM/BR14"
X14_X12	"FCTL/APASS,ECTL/APASS,DCTL/LDBF,AROM/AR12,BROM/BR14"
X14_X13,XOR,200	"FCTL/D,XOR,A,ECTL/D,XOR,A,DCTL/LDBF,CONST/OCT100000,AROM/AR13,BROM/BR14"
X14_ZERO	"FCTL/ZERO,ECTL/ZERO,DCTL/LDBF,BROM/BR14"

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INTEGER OVERFLOW EXCEPT FOR MOST NEGATIVE INTEGER

STORE HIGH PART OF INTEGER TEST SIGN OF INTEGER

INTEGER POSITIVE

THIS CODE TESTS FOR MOST NEGATIVE INTEGER. NOTE THAT R17 IS INITIALLY ZERO.

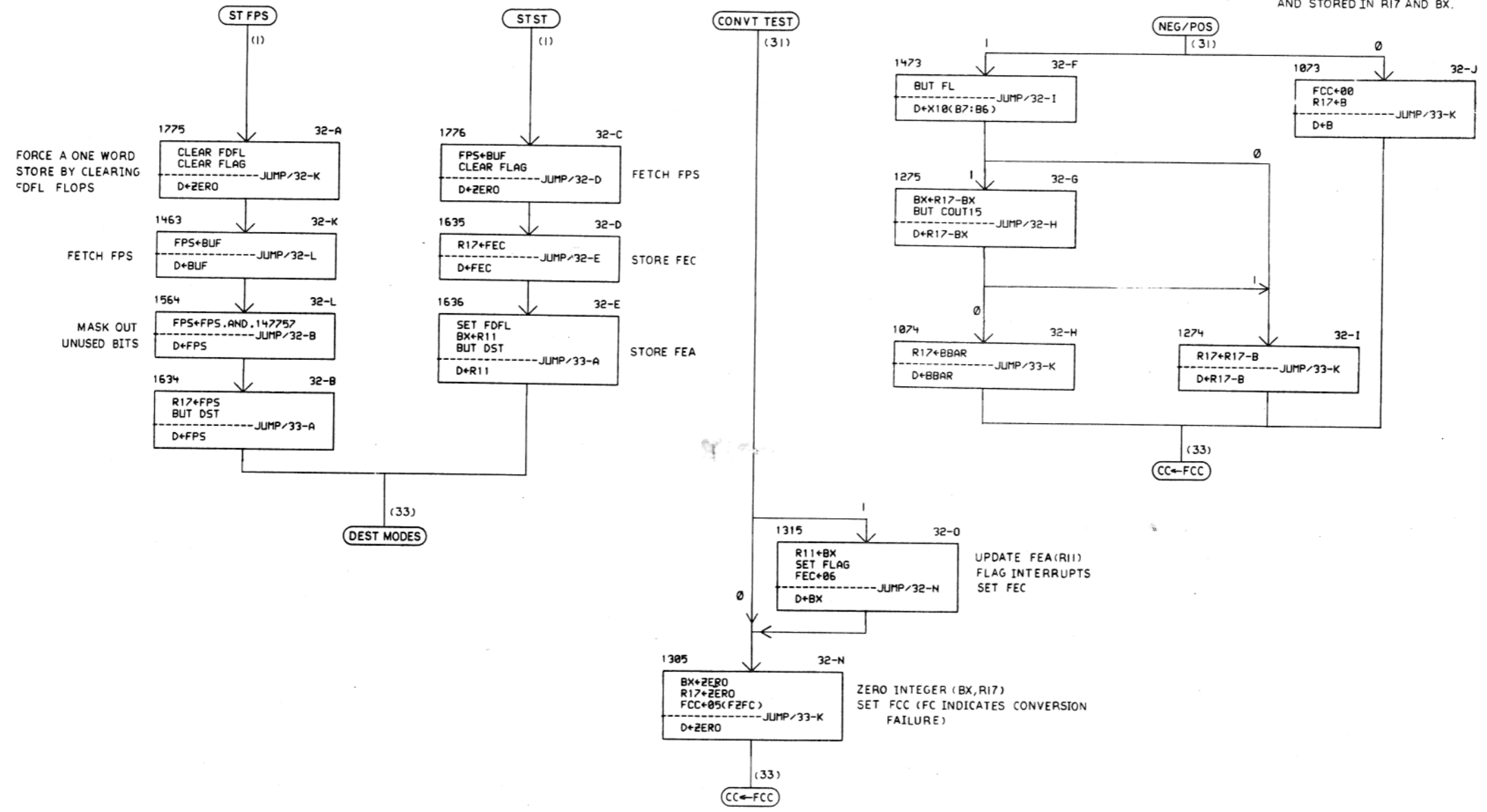
REVISIONS		
CHK	CHANGE NO.	REV.

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REV. 2  
D/FD FPII-A-2

UPON ENTERING THIS ROUTINE, THE INTEGER IS IN B AND BX, R17 CONTAINS ZERO. THE INTEGER IS COMPLEMENTED (IF NECESSARY) AND STORED IN R17 AND BX.



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FPII-A FLOWS (32)	SIZE CODE	D/FD	NUMBER	FPII-A-2	REV.	
SCALE		SHEET	35 OF 40	DIST.			