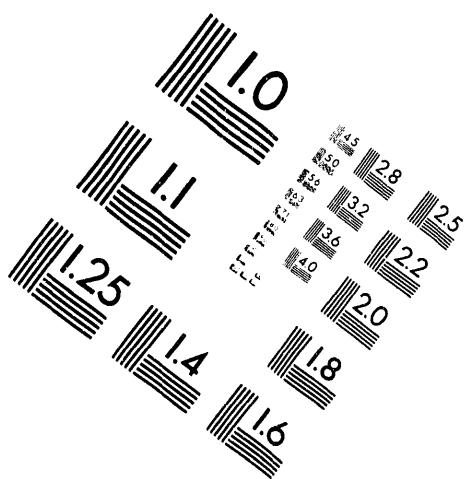
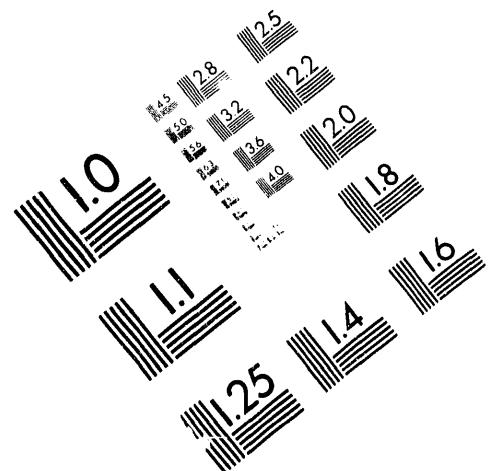




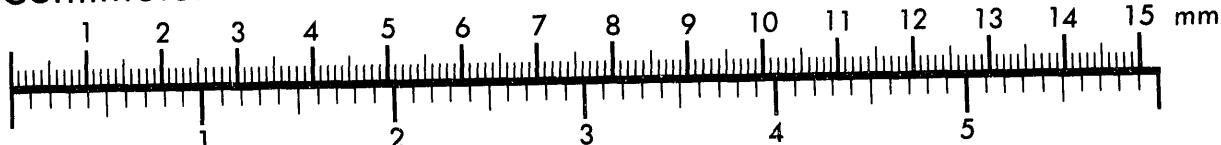
AIM

Association for Information and Image Management

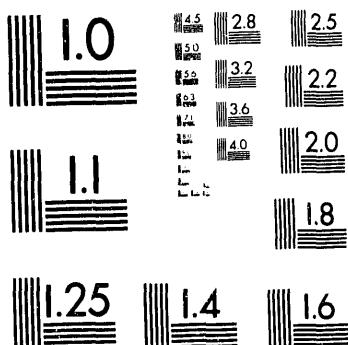
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301/587-8202



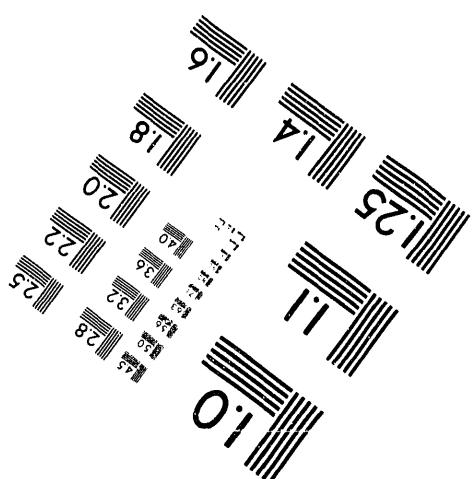
Centimeter



Inches



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10f1

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Electronic Schematics for the Donner 600 Crystal Tomograph

R.H. Huesman, S. E. Derenzo, W.W. Moses, J.L. Cahoon,
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Life Science Division
Center for Functional Imaging
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University of California
Berkeley, California 94720

September 1992

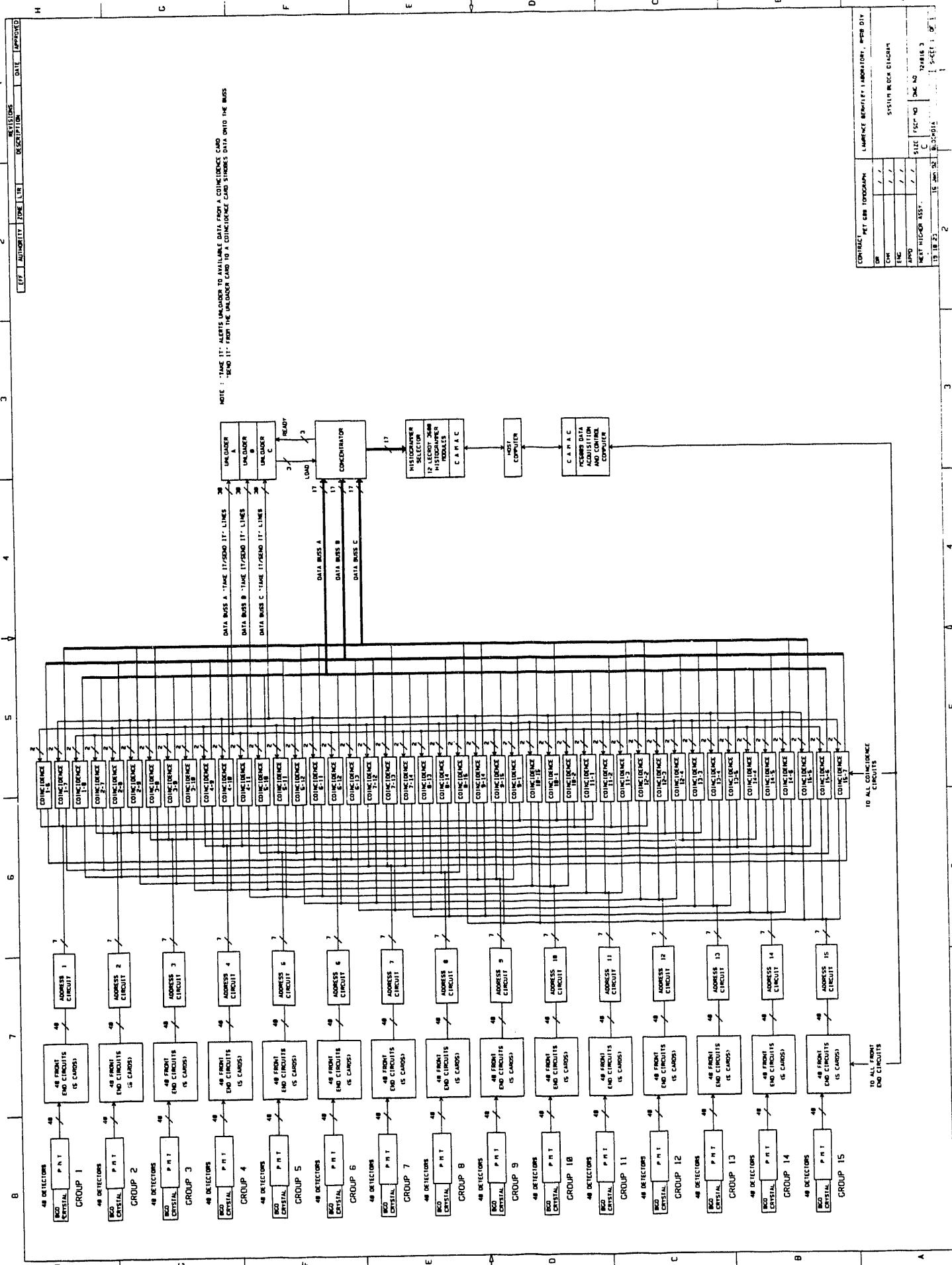
This work was supported in part by the Director, Office of Energy Research, Office of Health and Environmental Research of the U.S. Department of Energy, under contract No. DE-AC03-76SF00098, and in part by Public Health Service Grant Number P01 HL25840 awarded by the National Heart Lung and Blood Institute, Department of Health and Human Services.

MASTER

2B

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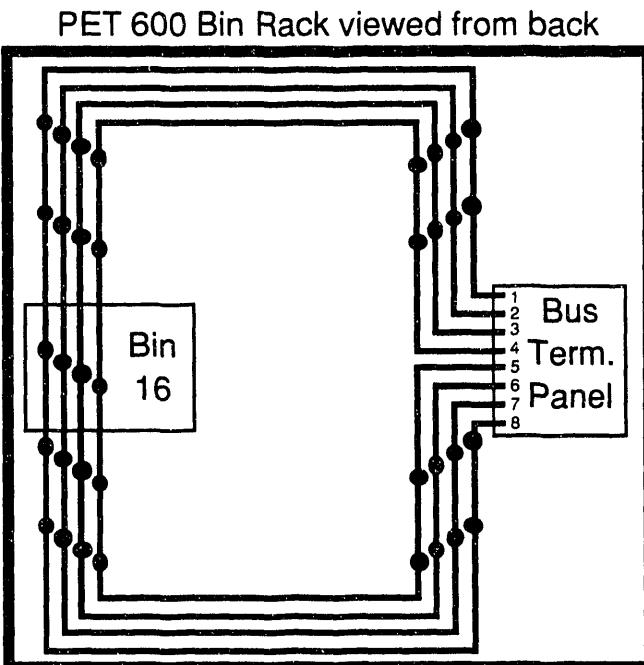
HOW TO READ THE PET 600 BACKPLANE DIAGRAMS

The following documents show how the PET 600 Tomograph is laid out and wired. All the drawings are done as seen from the back of the rack.

Cables connected to bin 1 through 15 are referred to by their bin number (**B#**) followed by their pin strip number (**P#**) and then by the lowest pin number in a connector (when there is more than one connector to a strip) - see diagram "BIN 1-15 CONNECTOR LAYOUT".

Since bin 16 has no labels on the back, the pin strips are referred to by the cards the strips are connected to - see "BIN 16 CONNECTOR LAYOUT". If there is more than one connector to a strip, the connectors are numbered from 1 up to 4 starting from left to right. The connector number is shown in the lower left corner of the connector. The information denoted by an arrow (->) inside the connector tells you where that connector is connected to at the other end.

The four databus in the system are P1, A, B, and C. P1 is the decoder databus. It carries instructions from the decoder driver in bin 16 to the decoders in bin 1 through 15. A, B, and C carry data from the coincidence cards in bin 1 through 15 to the concentrator card in bin 16. All databus starts from bin 16 and split into two directions; one goes to the top half of the rack and the other goes to the bottom half of the rack (see fig. 1). The databus are terminated in the databus terminator panel located on the opposite side of the rack.



Databus P1, A, B, and C originate from bin 16 and loop to the top and bottom through bin 1 to 15 then terminate at the Databus Terminator Panel.

HOW THE BINS INTERACT WITH EACH OTHER

In bin 1 to 15, there are a total of 12 pin strips with 13 connectors, some connectors are on the same strip. The connectors are described by their strip number (P#) and also by their lowest pin number when there is more than one connector to a strip.

P1 is connected to the decoder board which receives commands via the databus from the decoder driver in bin 16. This is how the individual decoders are controlled.

P2 and P6 are connected to the front end cards. P2 and P6 are the left right veto lines which prevent the adjacent crystals from recording the same event. The crystals within a group are internally wired for the left right veto. We use P2 and P6 connectors to connect the last crystal in a group to the first crystal in the next group.

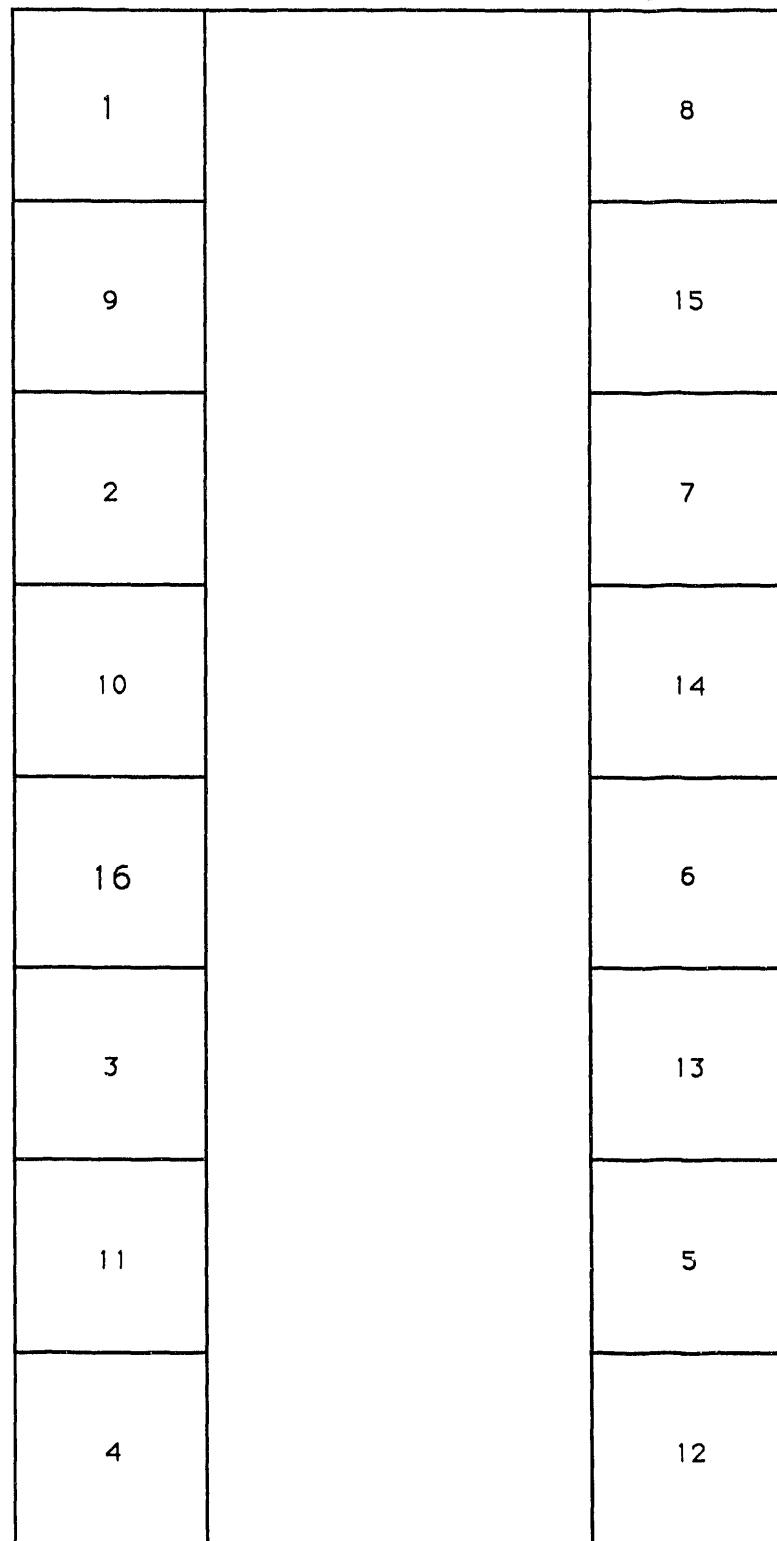
P7 is connected to the address card. There are three connectors on this strip, P7(1), P7(18), and P7(35). Pin strip P7 has four rows of pins (the rest have only two) and the connectors are placed on the central two rows (labeled B and C) leaving the outer two rows (labeled A and D) without connections. The crystals in this group are placed in coincidence with the crystals from six other groups. Three of the six coincidence circuits are located in the local bin - the remaining three are located in three remote bins. We use strip P7 cables to carry the local crystal addresses to remote coincidence cards to form the coincidences that are not processed locally.

P10, P11, P12 are the coincidence ports that receive the remote crystal addresses. There are two connectors for each strip making a total of six connectors, P10(3), P10(41), P11(3), P11(41), P12(3), and P12(41). P10(41), P11(41), and P12(41) are individually connected to the remote address cards in coincidence with the local address card. P10(3), P11(3), and P12(3) are connected to databus A, B, and C; this connector-databus order alternates from bin to bin. P10(3), P11(3), and P12(3) send out coincidence addresses to the concentrator card in bin 16 to be processed.

P13 takes in instructions from Unloader A, B, C in bin 16. These instructions tell the bin when it is time to use the databus and when to send data to the concentrator.

PET 600 Backplane

BIN RACK LAYOUT VIEWED FROM THE BACK



DRAWING NUMBER: 72X018 1
PAGE 3 OF 7

FOR EXPLANATION, SEE "HOW TO READ THE PET 600 BACKPLANE DIAGRAMS"

PET 600 Backplane

BIN 1-15 CONNECTOR LAYOUT

92.....	60	P1
91.....	59	DATA BUS DECODER

38 36	P2
37 35	FRONTEND

20 18	P6
19 17	FRONTEND

44.....35	B 27.....18	B 10.....1	B P7
44.....35	C 27.....18	C 10.....1	C ADDRESS

60.....42	P10
59.....41	ADDRESS
30.....4	P10
29 DATA BUS ..3	COINCIDENCE

60.....42	P11
59.....41	ADDRESS
30.....4	P11
29 DATA BUS ..3	COINCIDENCE

60.....42	P12
59.....41	ADDRESS
30.....4	P12
29 DATA BUS ..3	COINCIDENCE

10.....2	P13
9.....1	DATABUS A, B, C CONTROL LINES

Note: Bin 5,6,7,8,12,13,14,15 are right side up

and

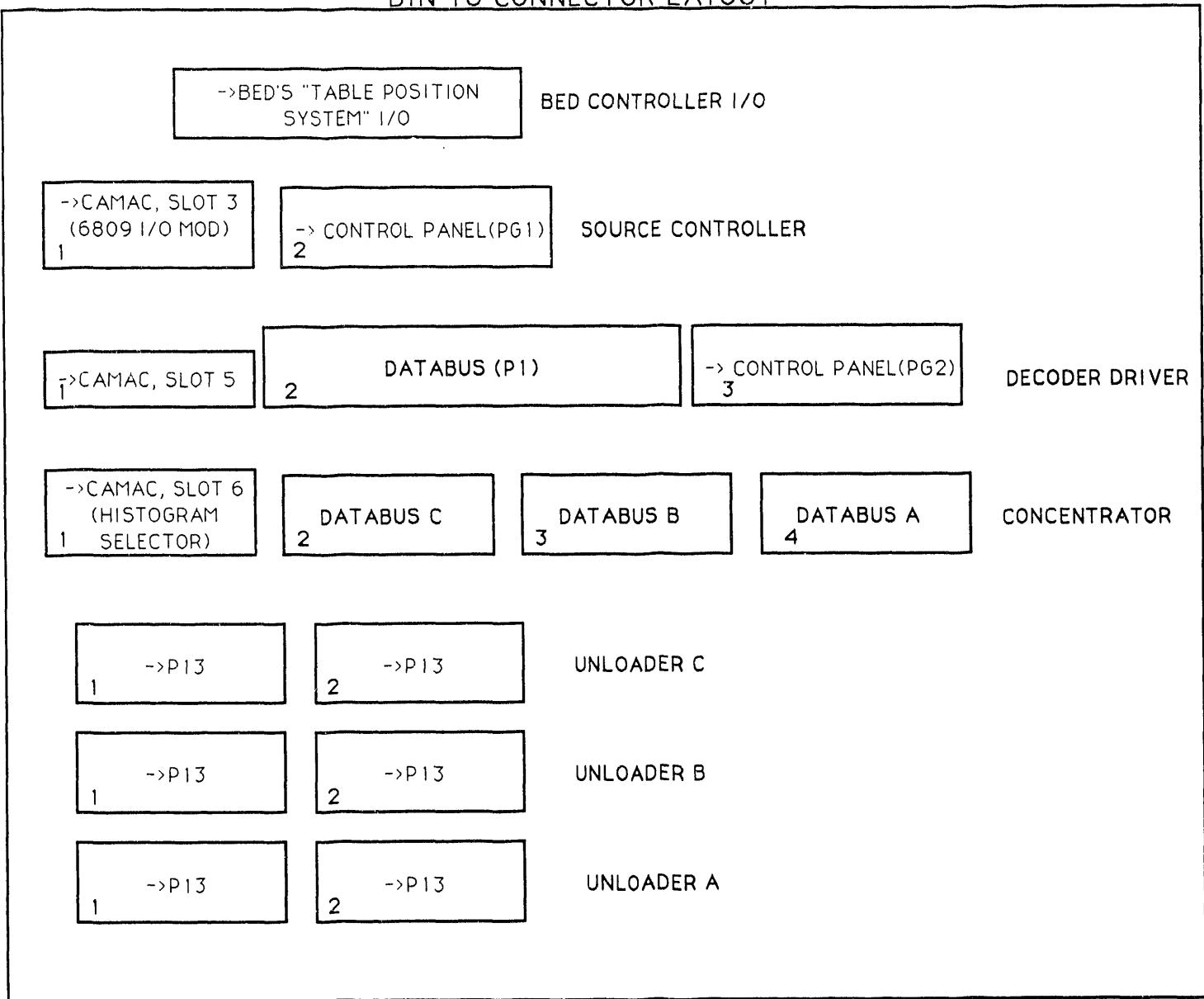
Bin 1,2,3,4,9,10,11 are upside down

DRAWING NUMBER:72X018 1
PAGE 4 OF 7

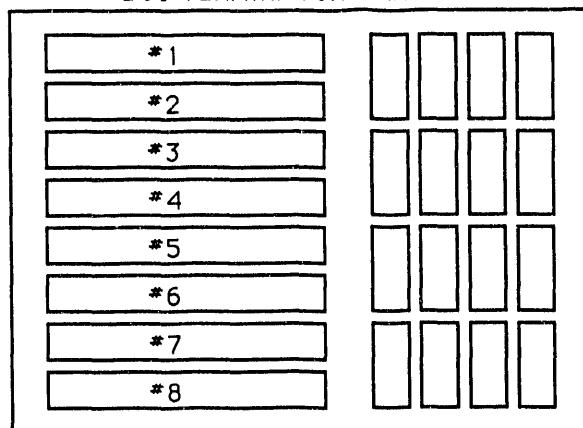
FOR EXPLANATION, SEE "HOW TO READ THE PET 600 BACKPLANE DIAGRAMS"

PET 600 Backplane

BIN 16 CONNECTOR LAYOUT



BUS TERMINATOR PANEL



DRAWING NUMBER:72X018 1
PAGE 5 OF 7

FOR EXPLANATION, SEE "HOW TO READ THE PET 600 BACKPLANE DIAGRAMS"

HOW TO READ THE CONNECTOR CHART

Bin 1 to 15 are labeled as follow:

B1

P1:B8P1 & B9P1
P2:B2P6
P6:B15P2
P7(1):B6P12(41)
P7(18):B7P11(41)
P7(35):B8P10(41)
P10(3):B8P11(3) & B9P12(3)
P10(41):B9P7(35)
P11(3):B8P12(3) & B9P10(3)
P11(41):B10P7(18)
P12(3):B8P10(3) & B9P11(3)
P12(41):B11P7(11)
P13:B16,U(A) & U(B) & U(C)

<- Bin 1

<- In pin strip P1: the cables are connected to Bin 8 strip P1 and to Bin 9 strip P1

<- In pin strip P6: the cable is connected to Bin 15 strip P2

<- In pin strip P7 (starting pin 1): the cable is connected to Bin 6 strip P12 (starting pin 41)

<- In pin strip P13: the cables are connected to Bin 16 into Unloader(A) and Unloader(B) and Unloader(C)

Bin 16 is labeled as follow:

B16

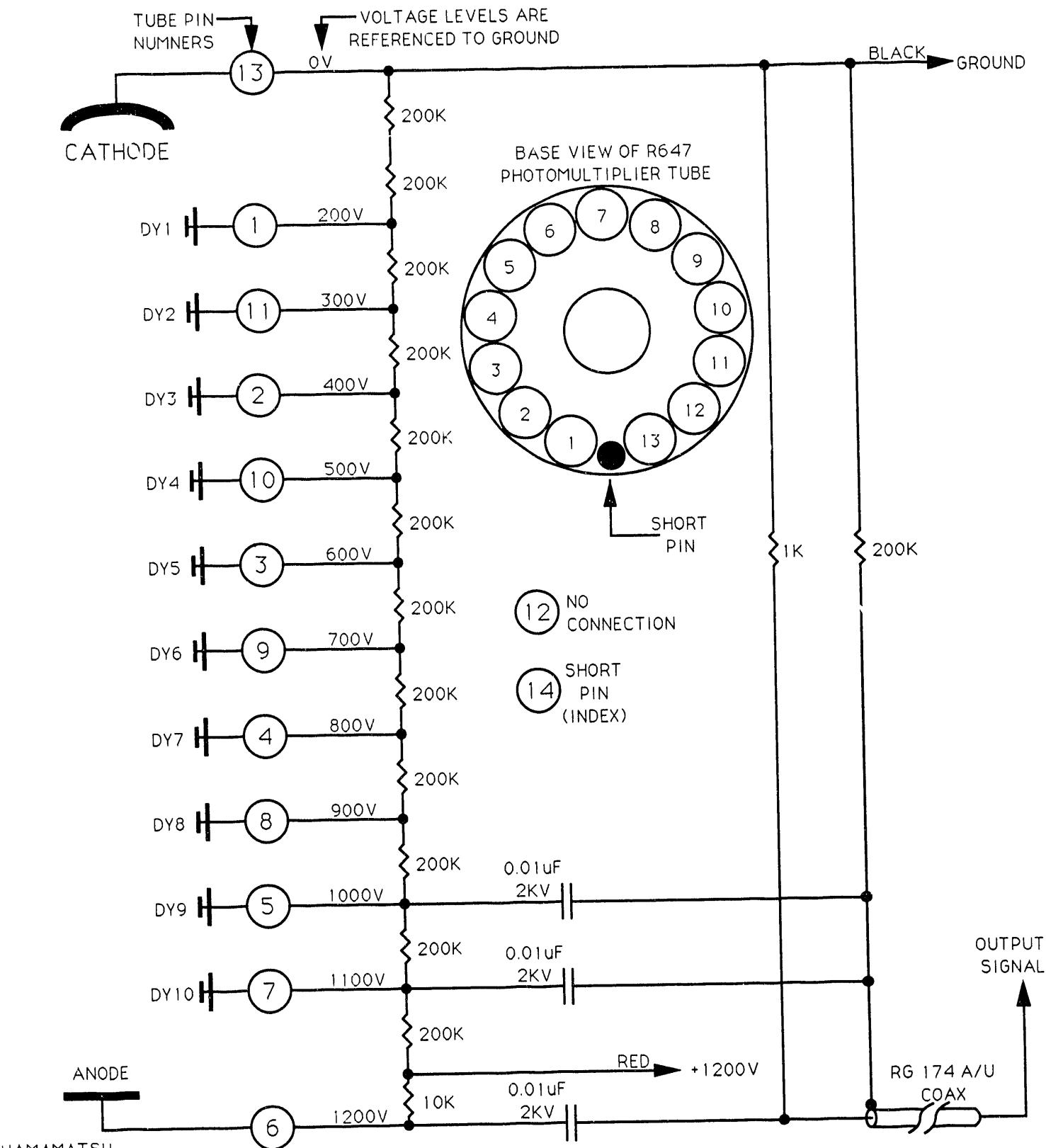
BED CONTROLLER I/O: BED'S "TABLE POSITION SYSTEM" I/O
SOURCE CONTROLLER(1): CAMAC, SLOT 3 (6809 I/O MOD)
SOURCE CONTROLLER(2): CONTROL PANEL (PG1)
DECODER(1): CAMAC, SLOT 5
DECODER(2): B3P1 & B10P1
DECODER(3): CONTROL PANEL (PG2)
CONCENTRATOR(1): CAMAC, SLOT 6 (HISTOGRAM SELECTOR)
CONCENTRATOR(2): B3P10(3) & B10P11(3)
CONCENTRATOR(3): B3P12(3) & B10P10(3)
CONCENTRATOR(4): B3P11(3) & B10P12(3)
UNLOADER A(1): ALL P13
UNLOADER A(2): ALL P13
UNLOADER B(1): ALL P13
UNLOADER B(2): ALL P13
UNLOADER C(1): ALL P13
UNLOADER C(2): ALL P13

<- Bin 16

(Bin 16 is not well labeled so the connectors are named after the boards they are attached to - see diagram "BIN 16 CONNECTOR LAYOUT". When there are more than one connector to one board, the connectors are numbered from 1 up to 4 starting from left to right. Due to lack of writing space in the chart, bin 16's board connectors are abbreviated as follow:

Decoder: D(1), D(2)
Concentrator: C(1), ..., C(4)
Unloader: U(A), U(B), U(C)

FOR EXPLANATION, SEE "HOW TO READ THE CONNECTOR CHART"



HAMAMATSU
 TYPE 647
 PHOTOMULTIPLIER
 TUBE

CONTRACT PET 600 TOMOGRAPH
 DR M.HO

LAWRENCE BERKELEY LABORATORY, RMRB DIV.

CHK

ENG J. CAHOON

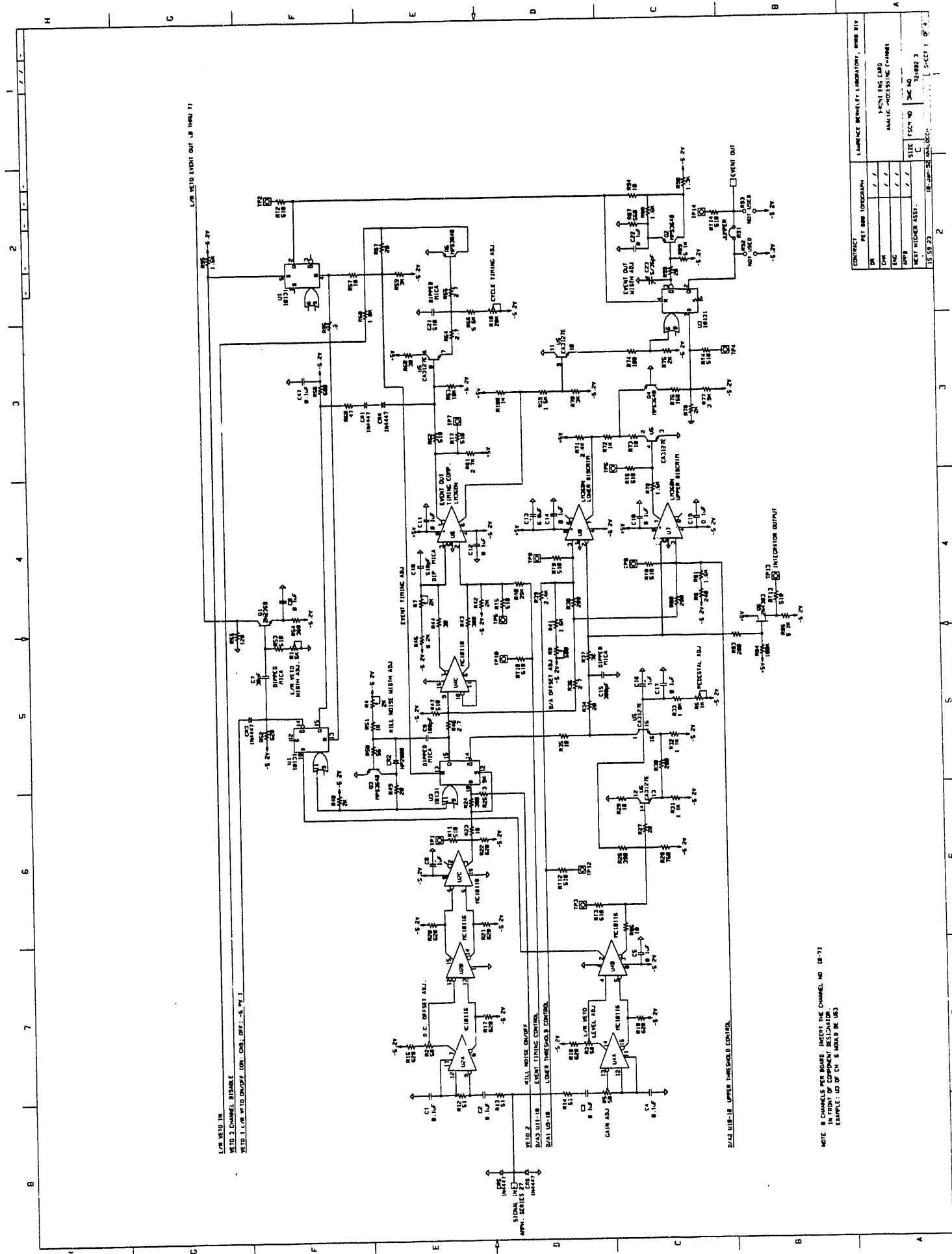
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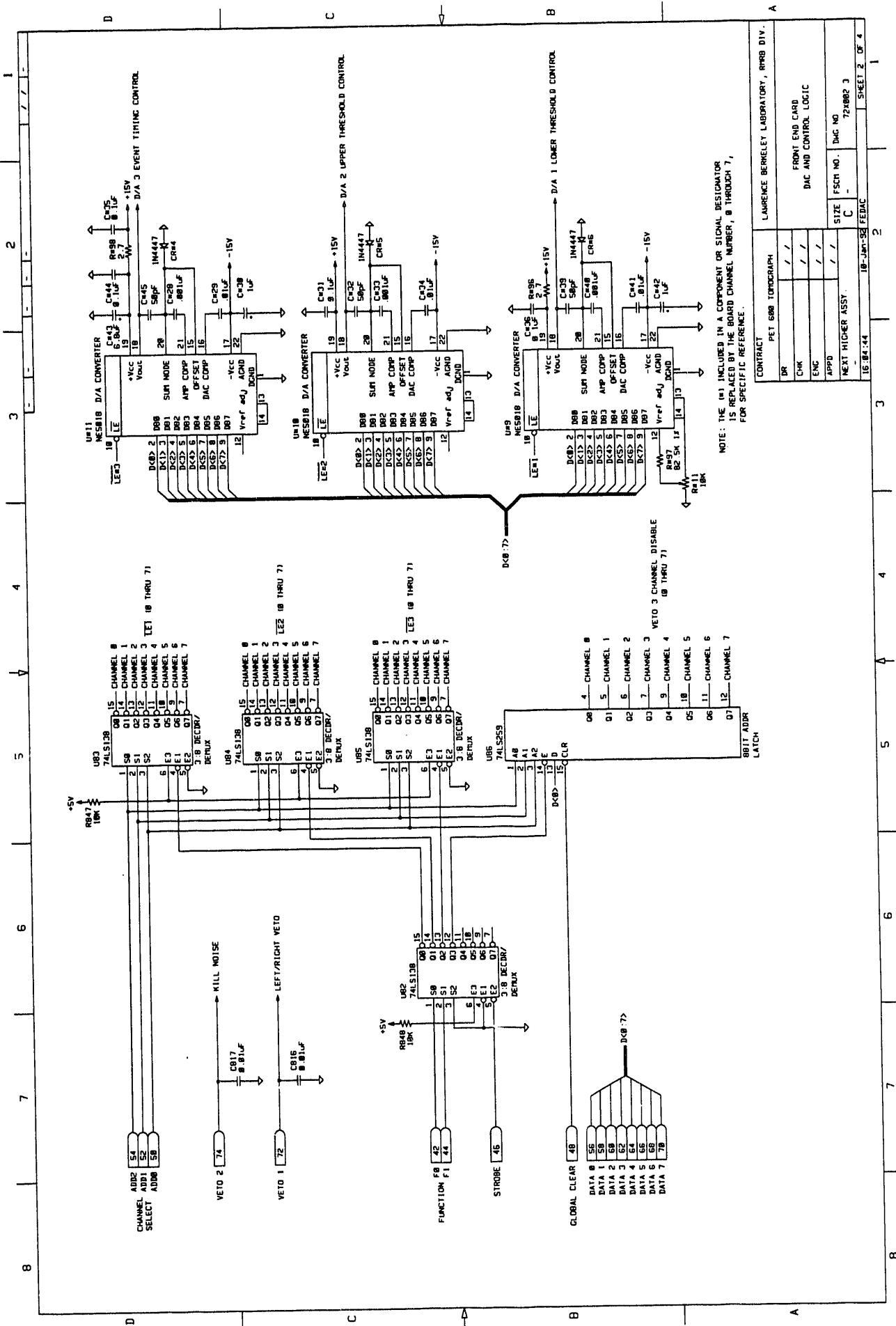
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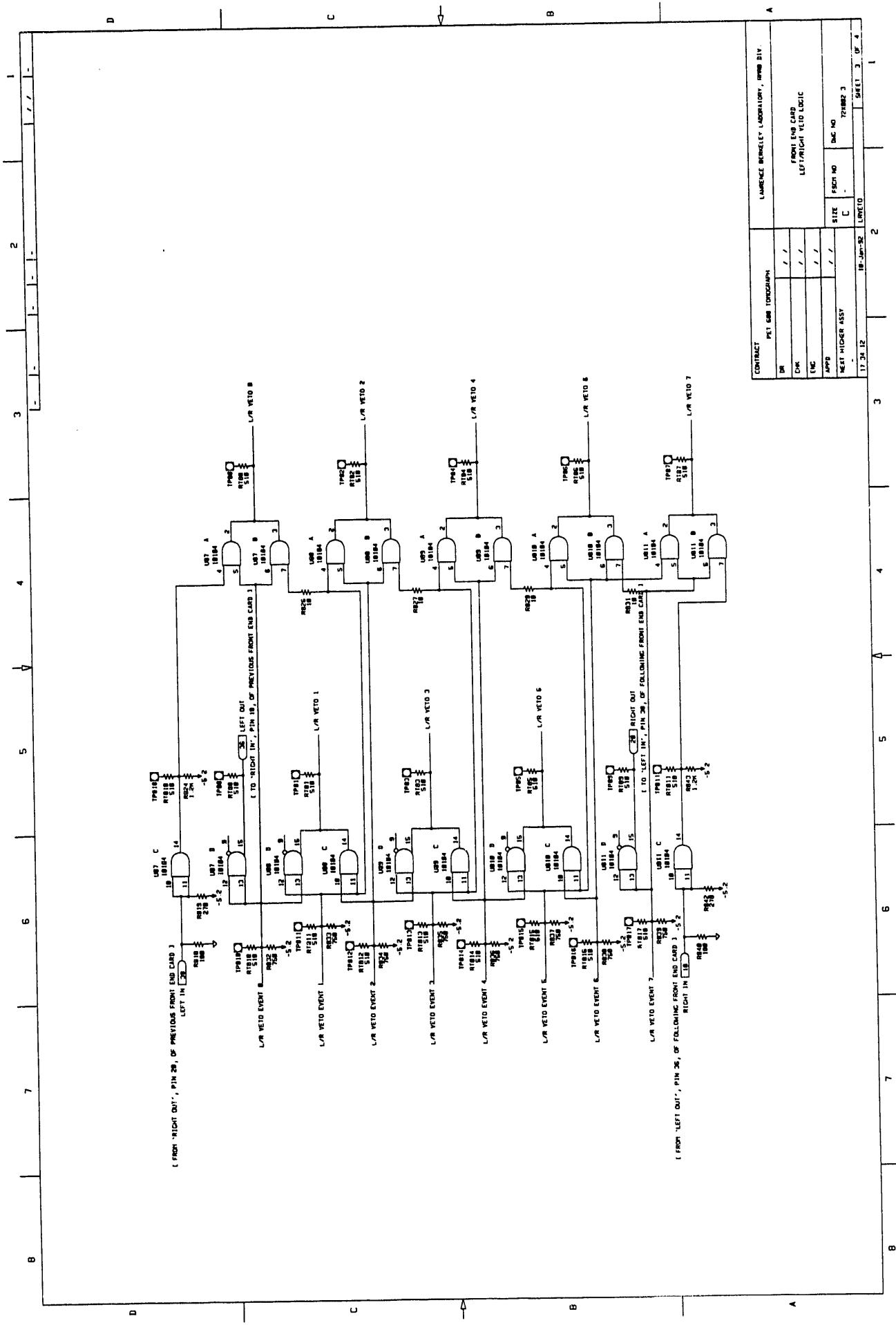
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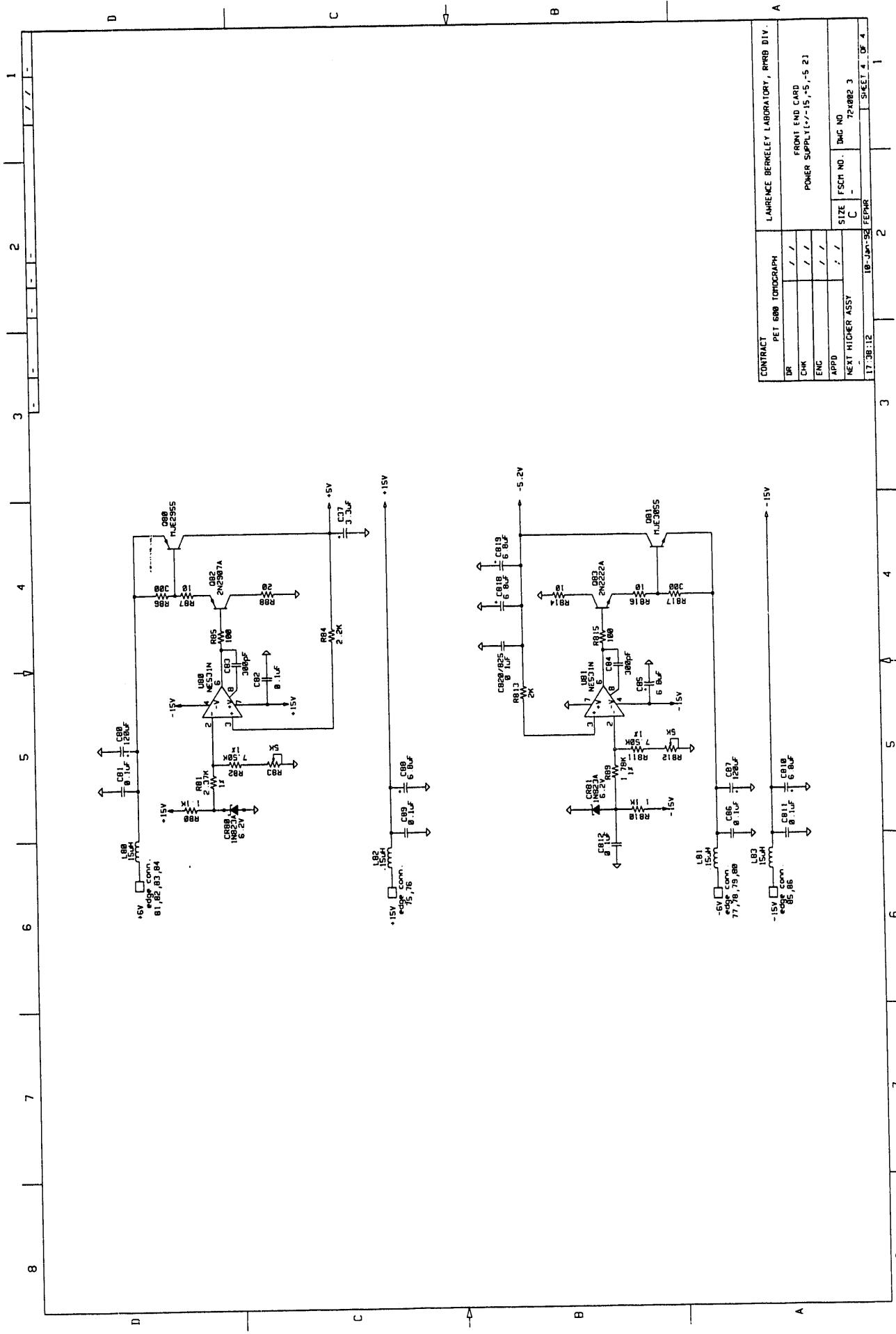
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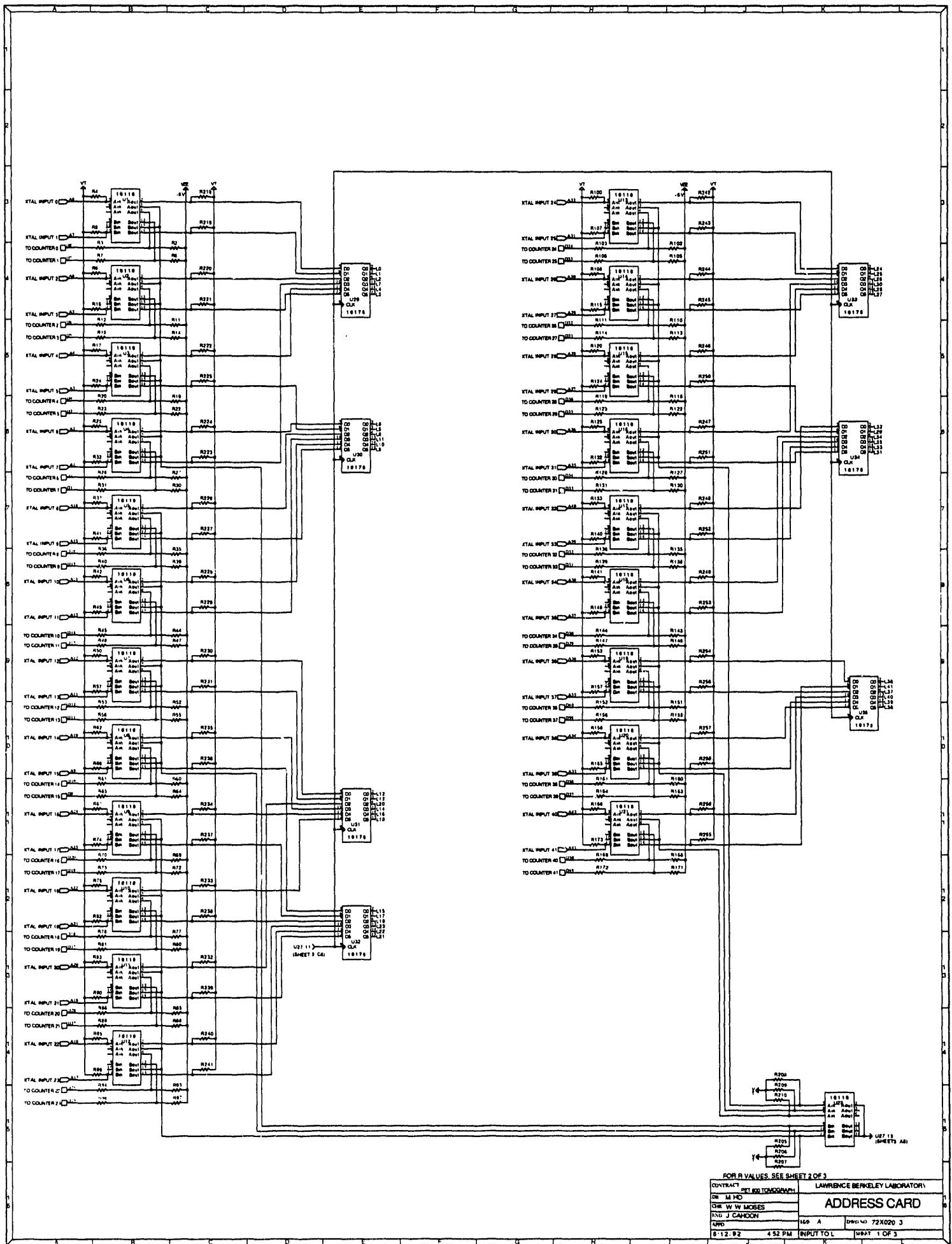
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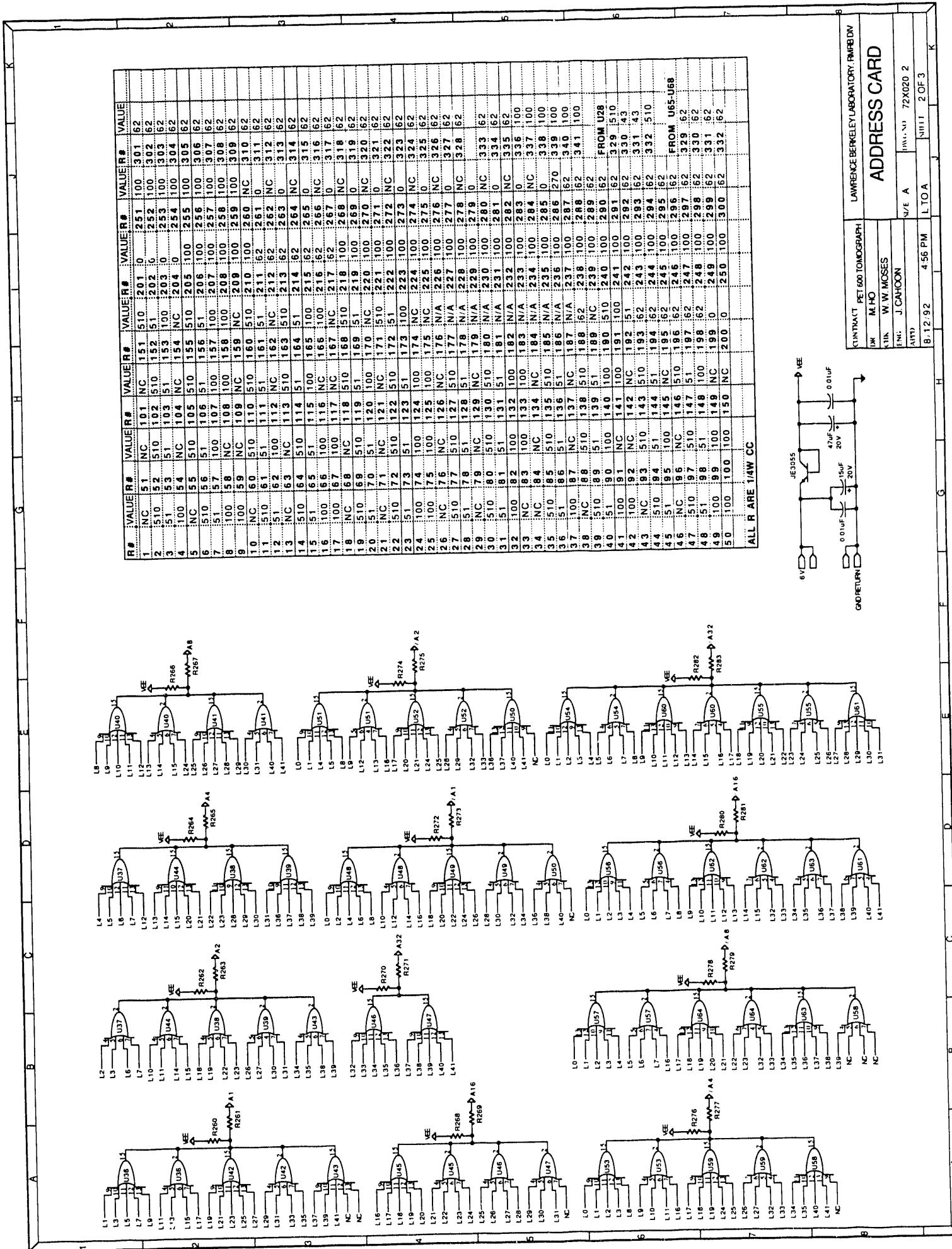


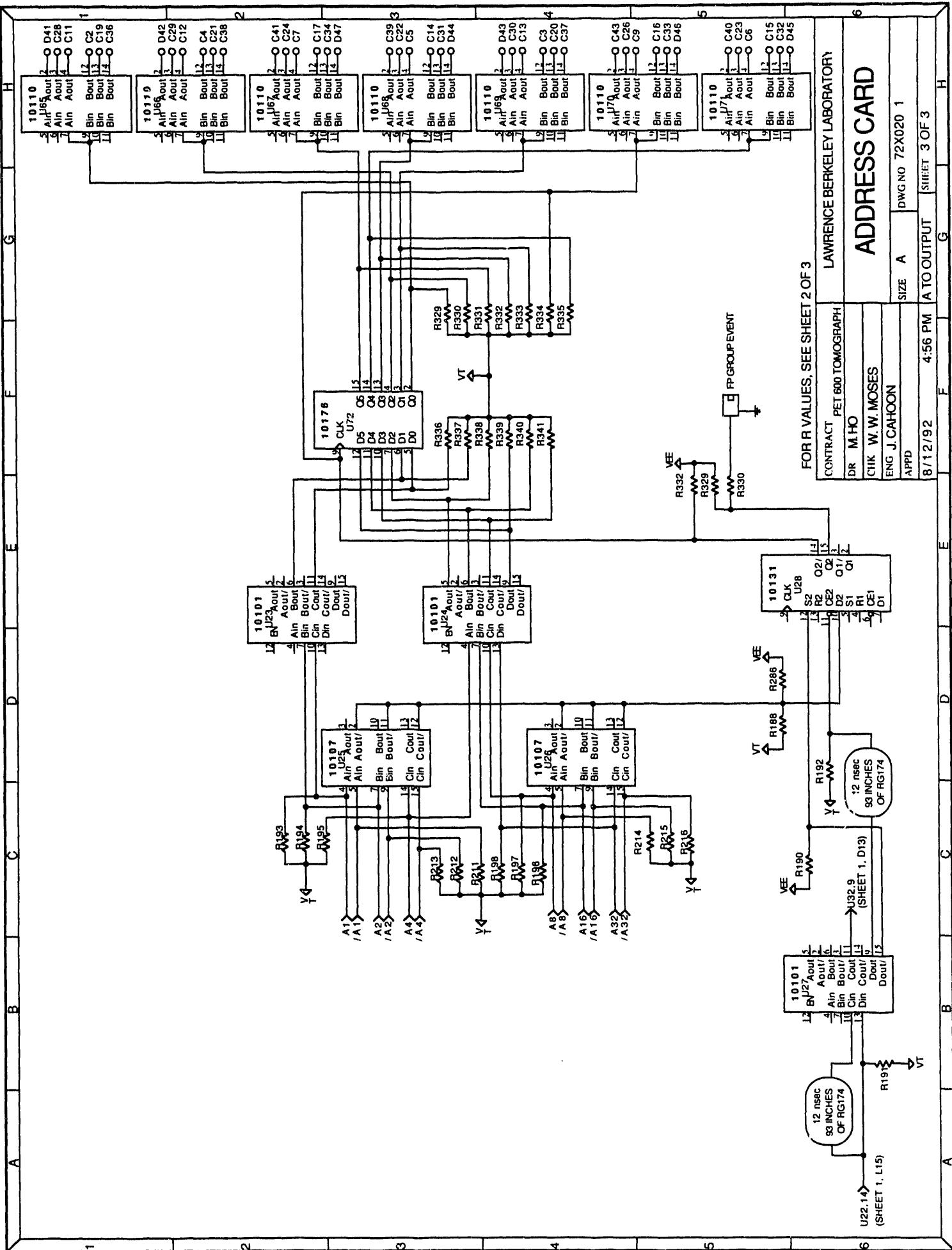


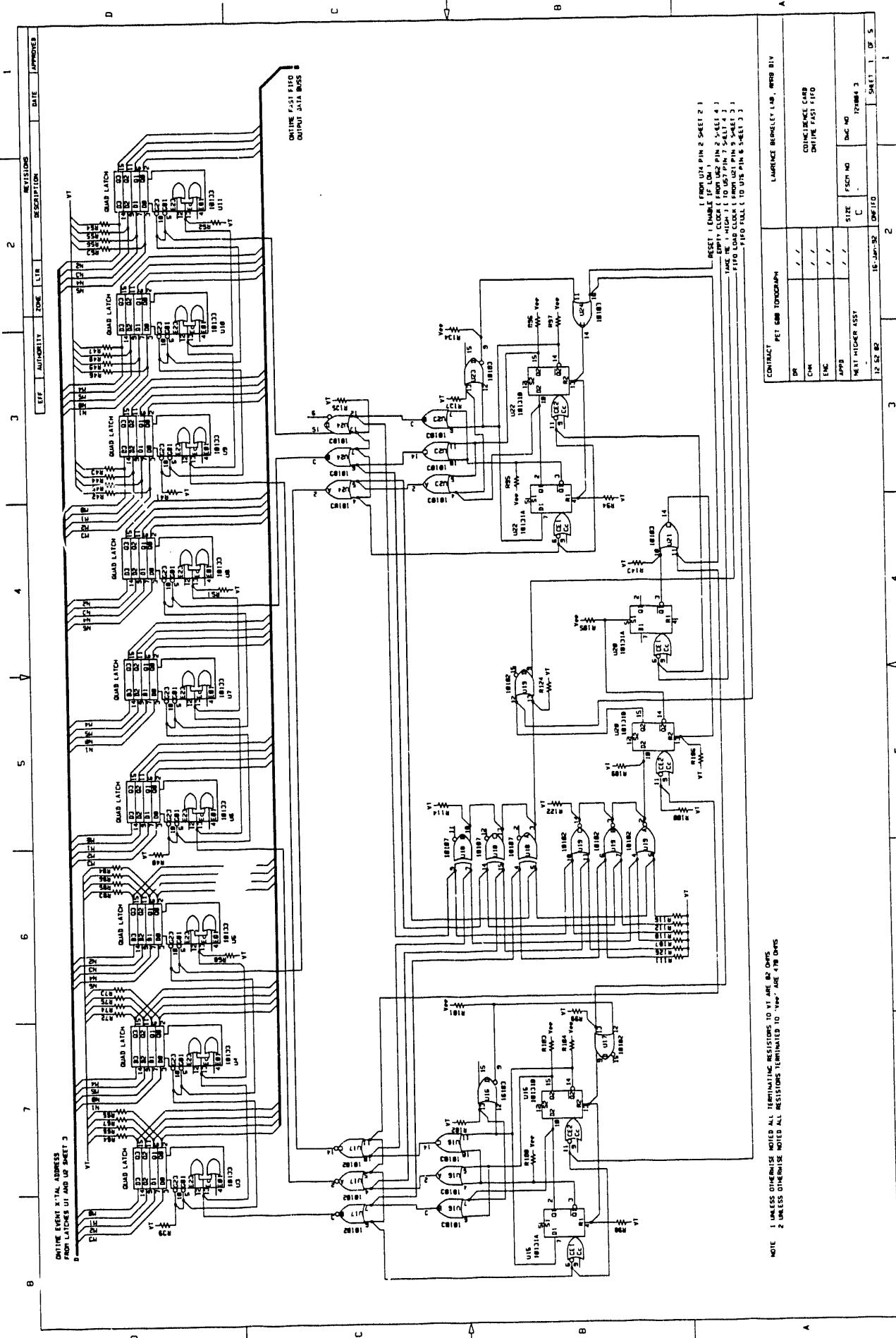


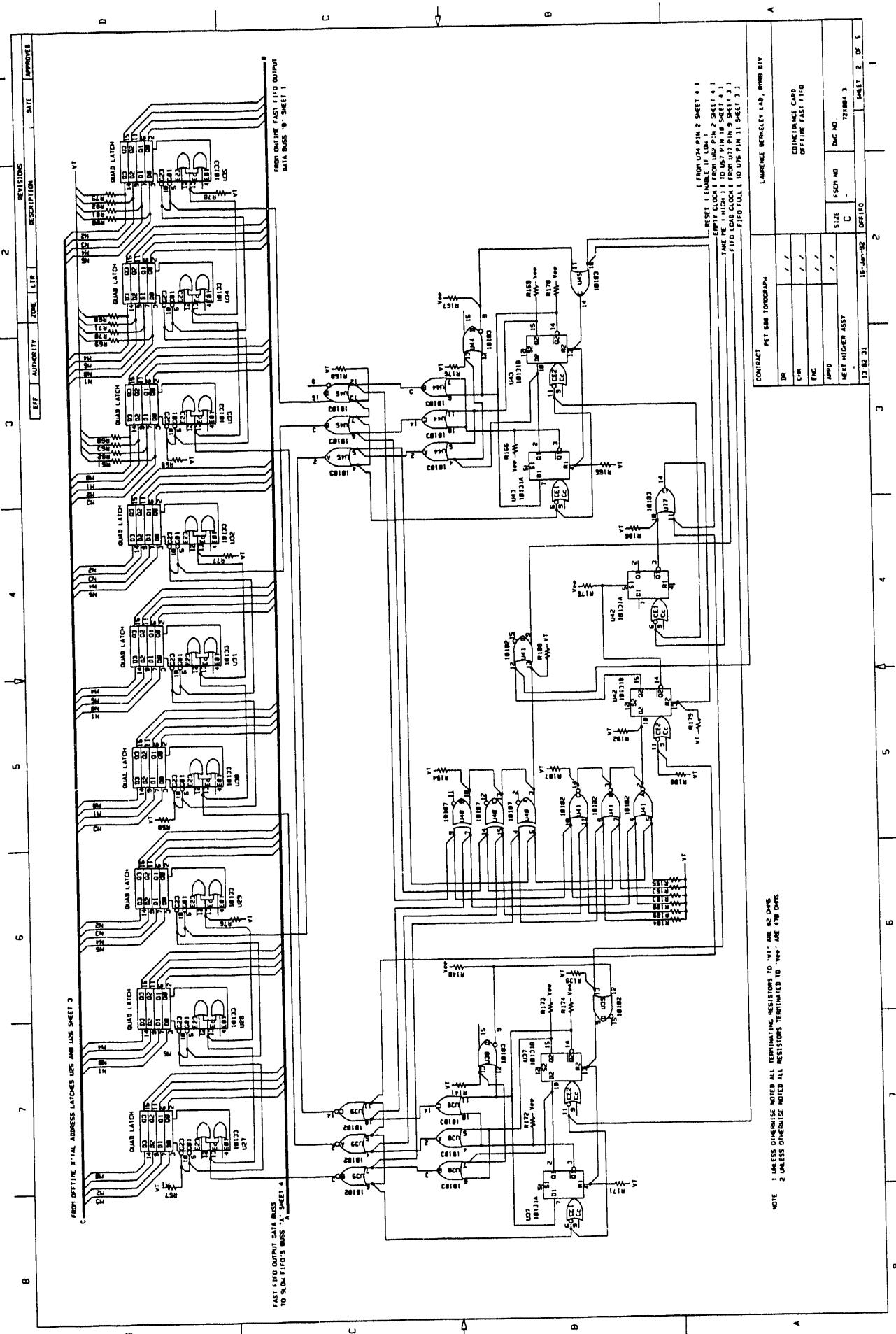






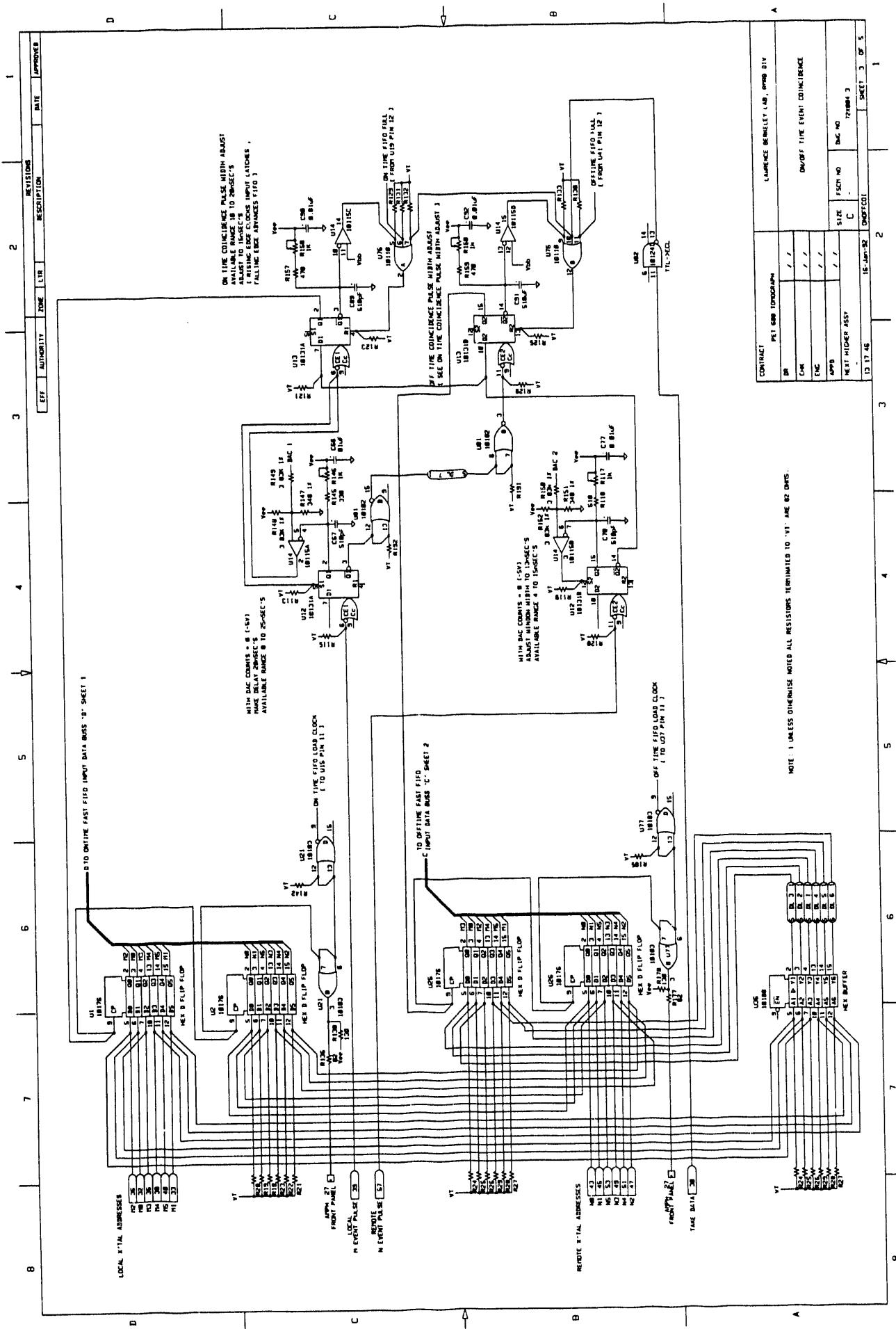


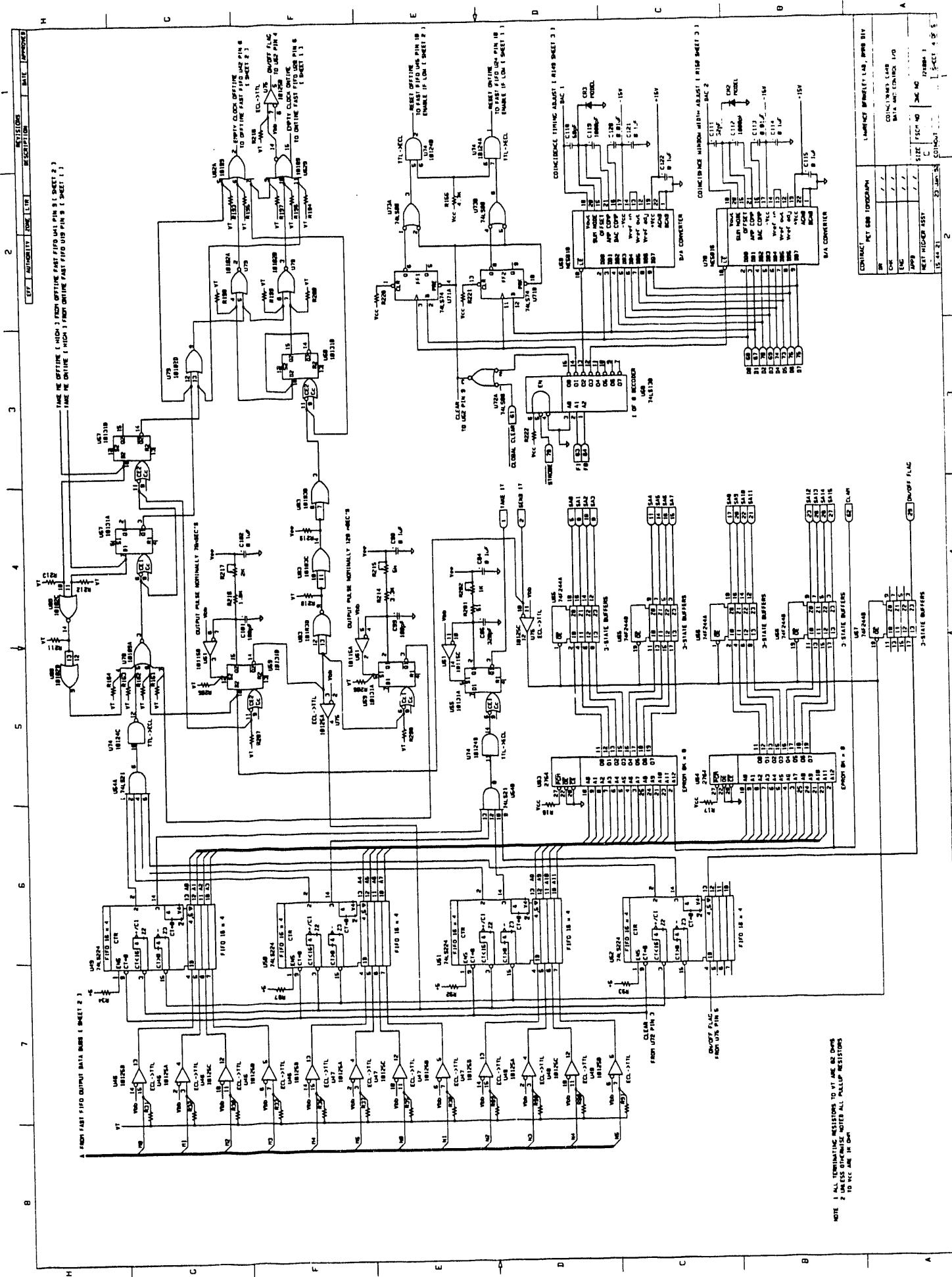


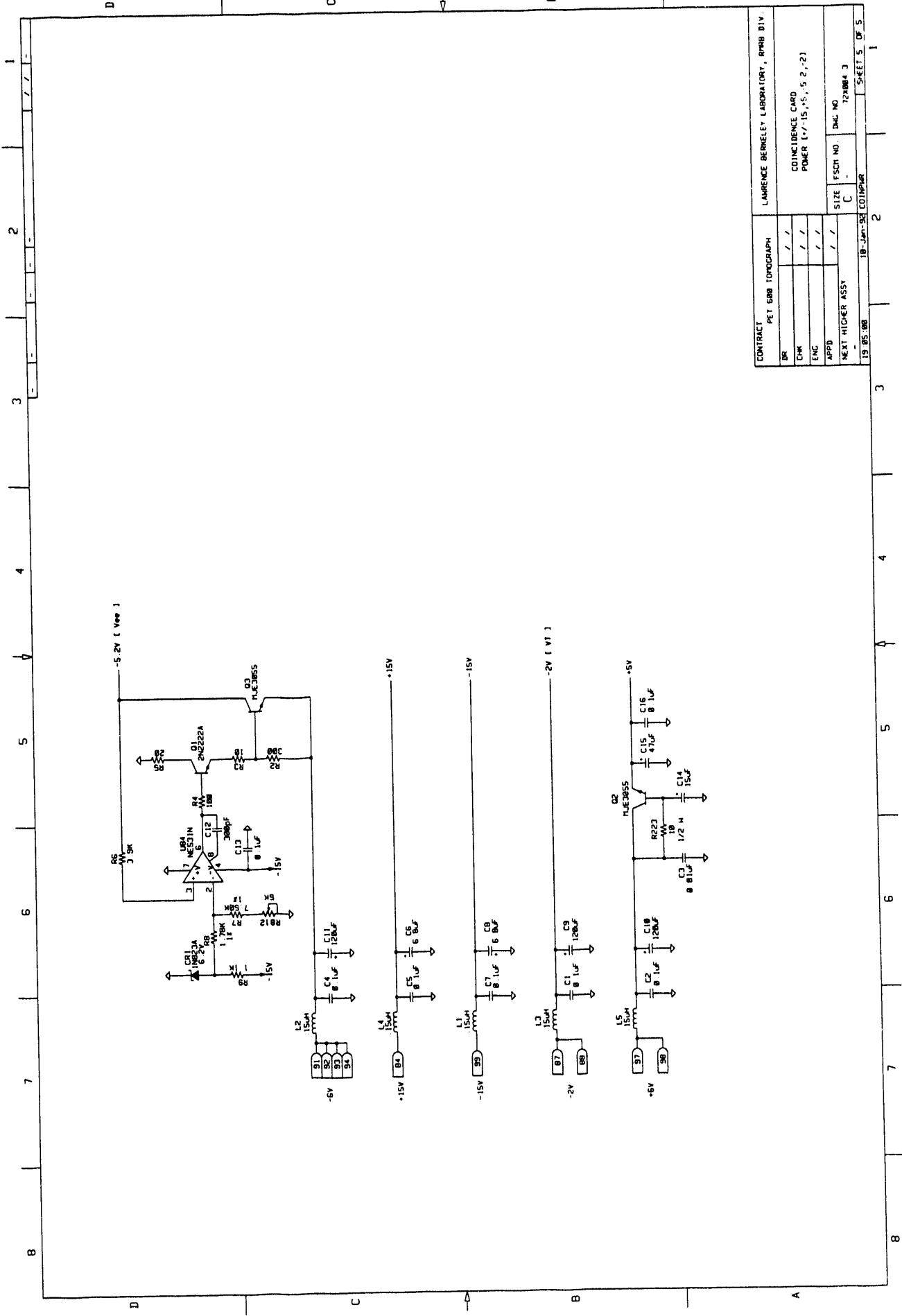


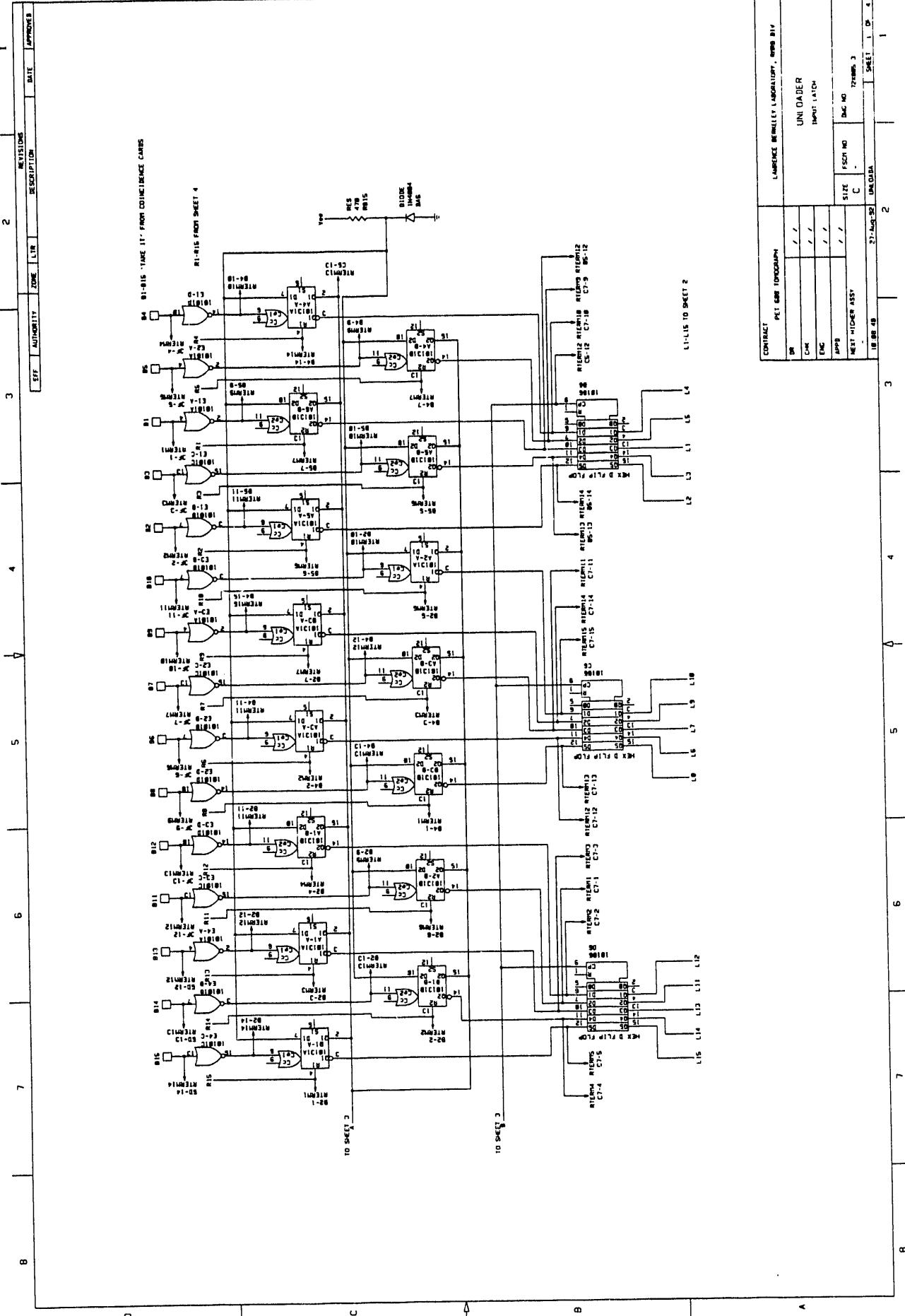
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2 UNLESS OTHERWISE NOTED ALL RESISTORS TERMINATED TO 'V_{SS}' ARE 470 OHMS

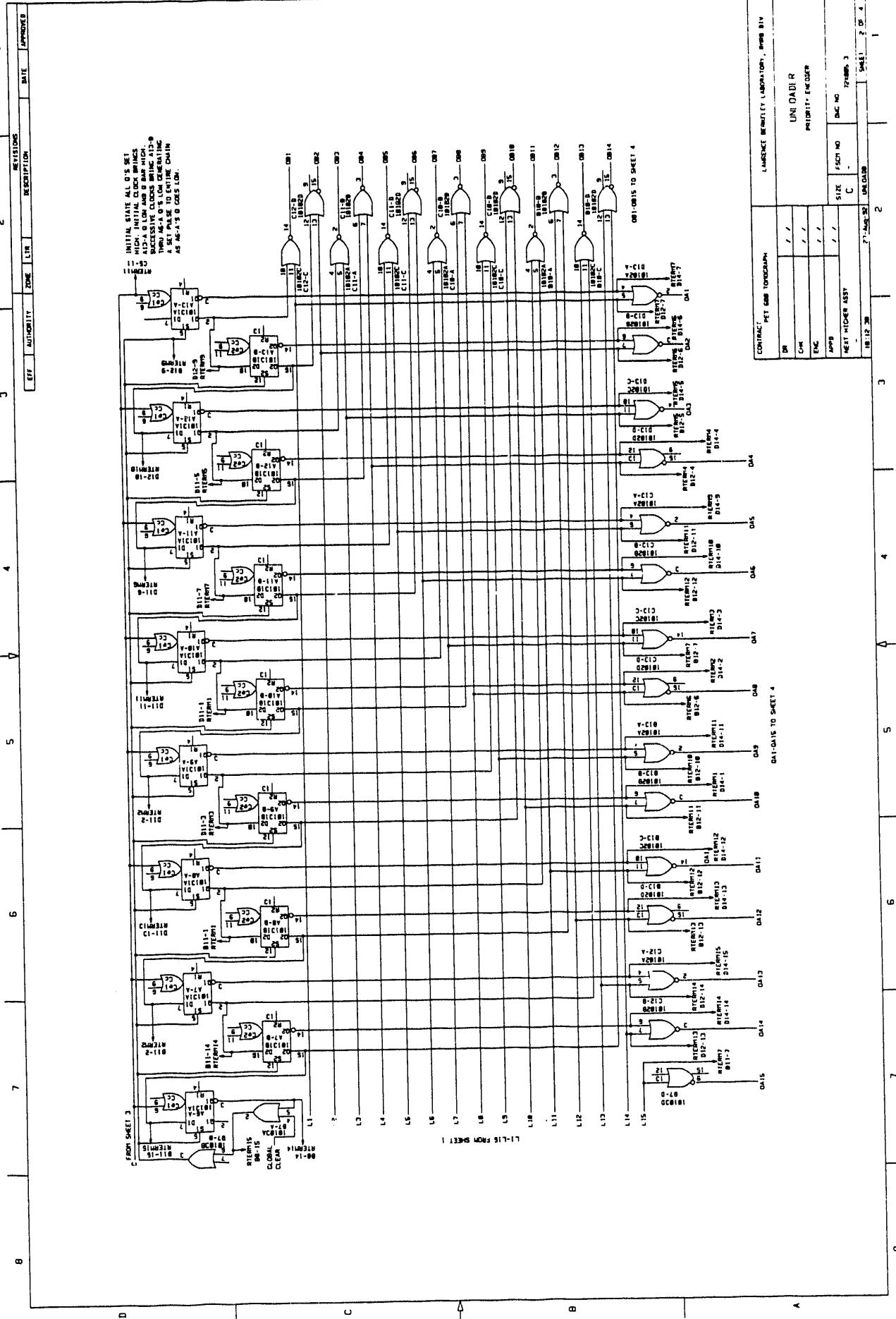
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REF	DESCRIPTION	MANUFACTURER	DATE	SCN NO	SIZE	SCN NO	REV
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C1	/	/	/	/	/	/	/
E1	/	/	/	/	/	/	/
L1	SCM	LAWRENCE BERKELEY LAB.	APR 1982	720000-3	C	16 Jun 82	0000
D	SCM	LAWRENCE BERKELEY LAB.	APR 1982	720000-3	C	16 Jun 82	0000

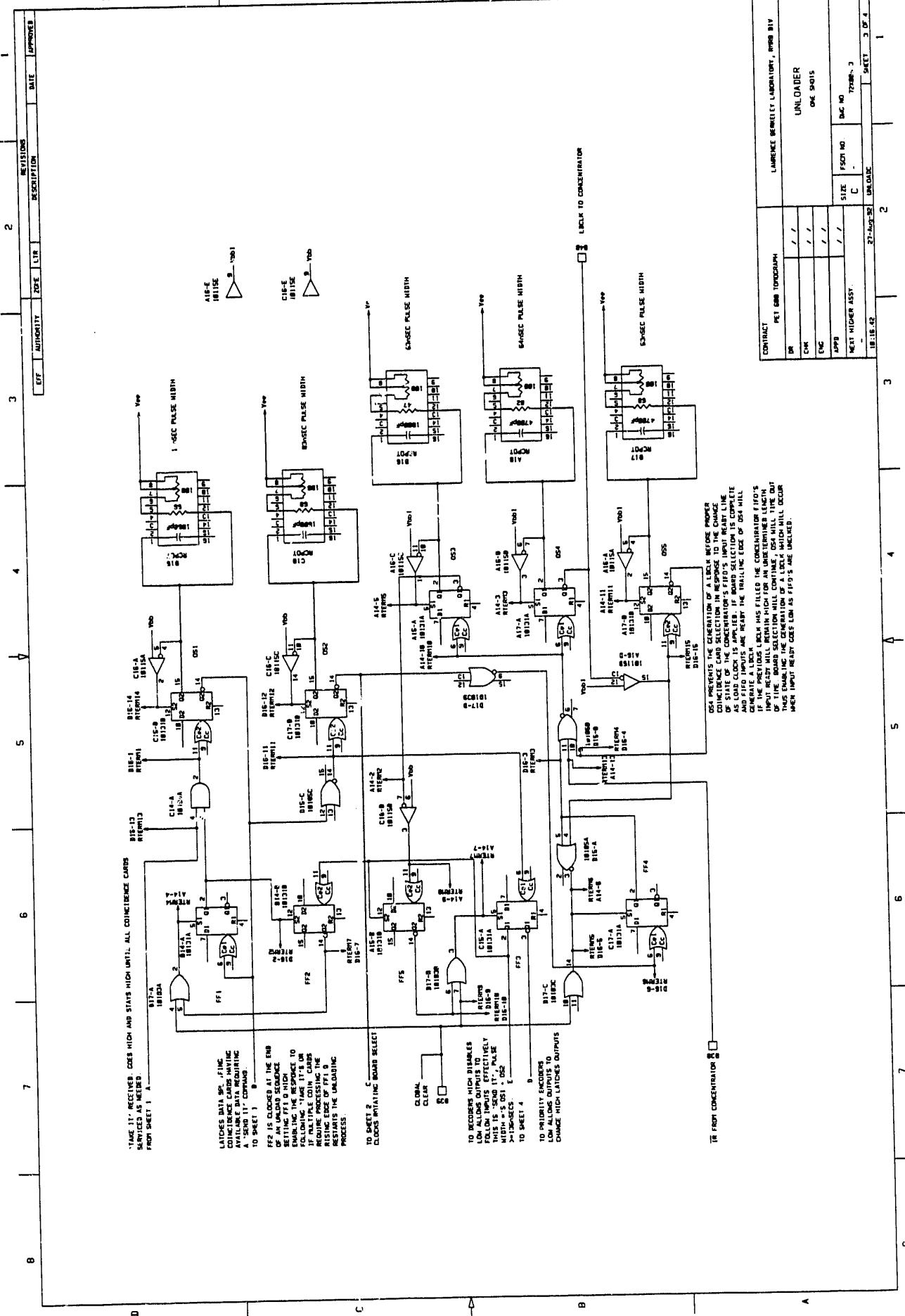


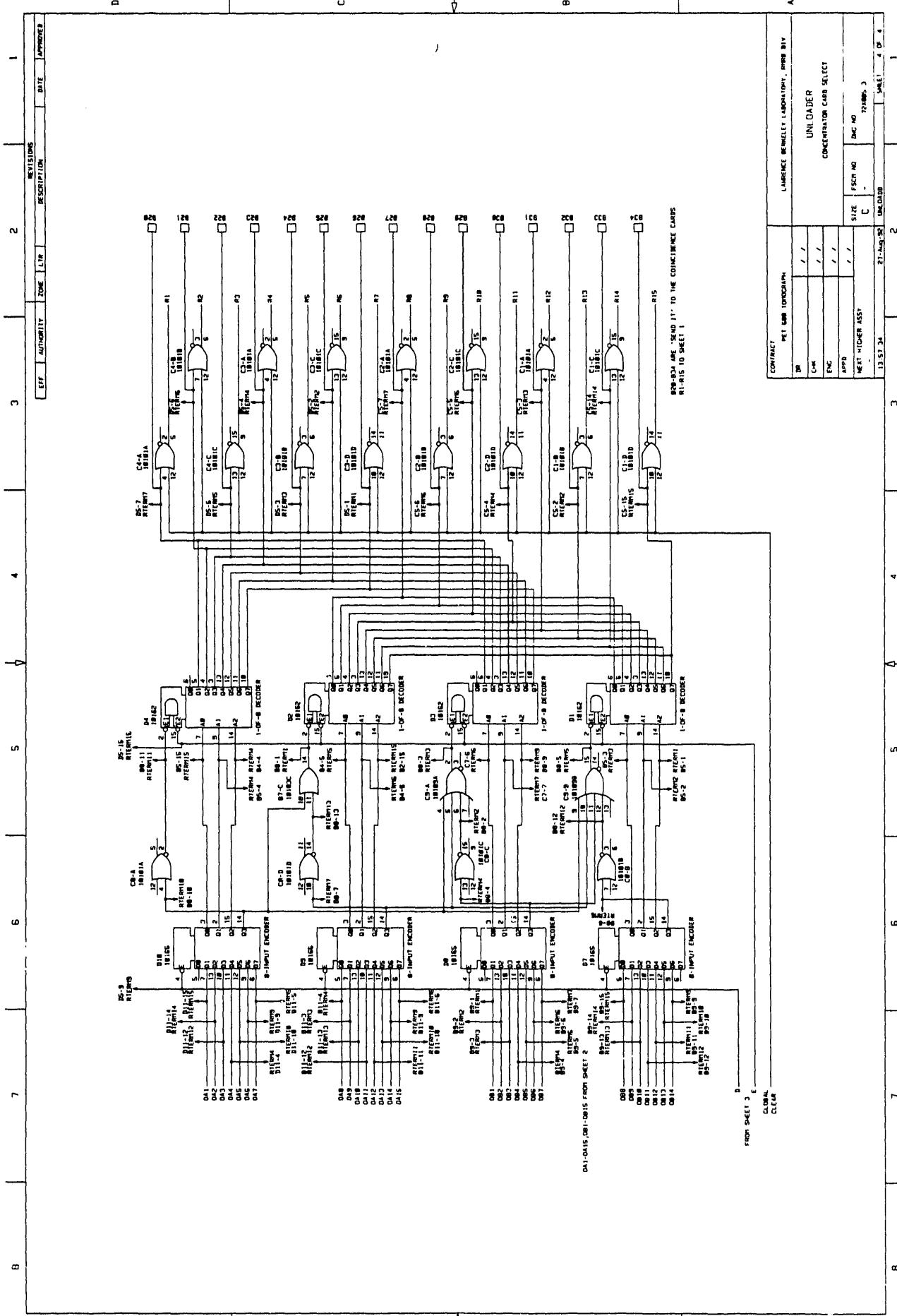


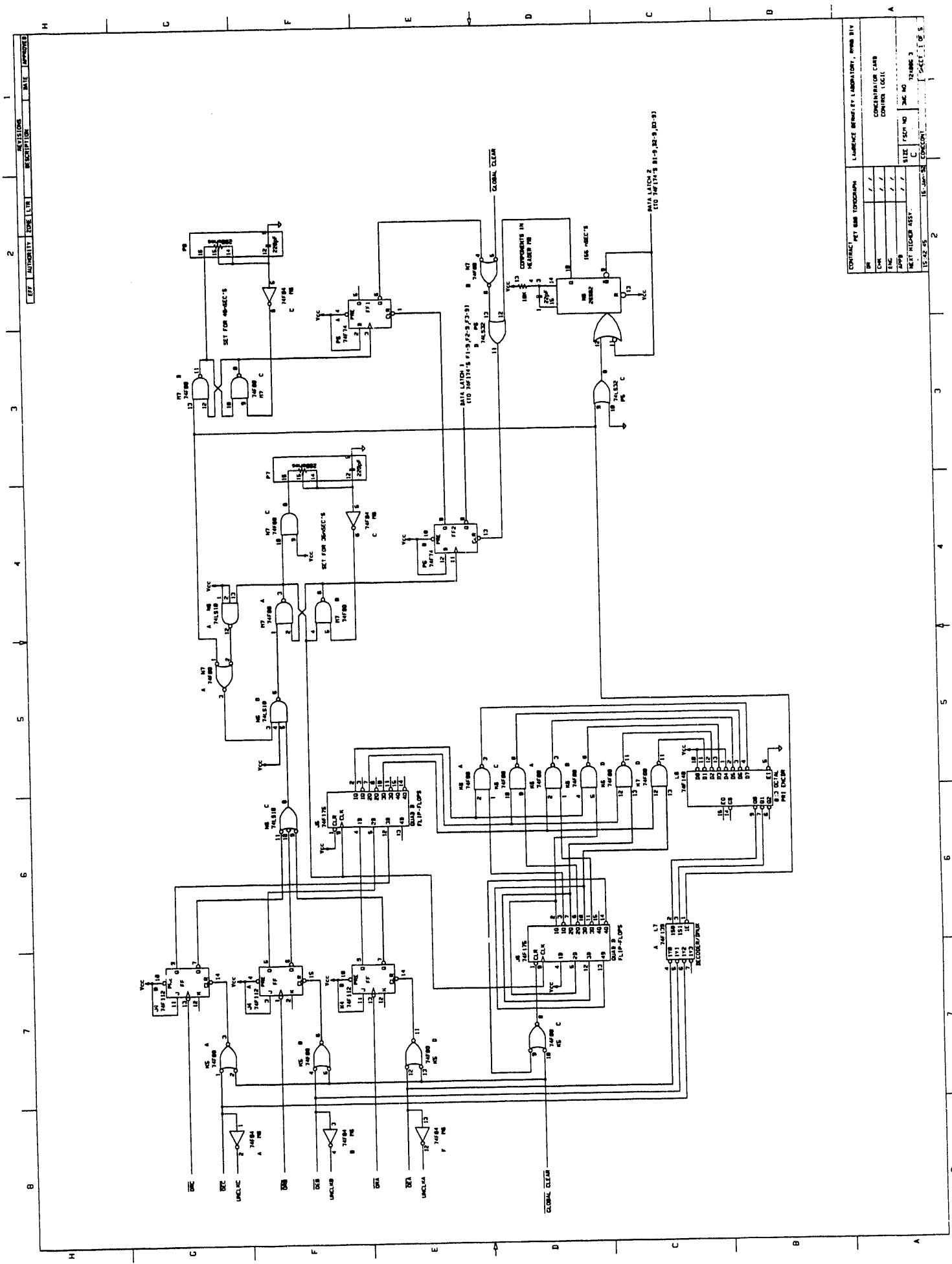


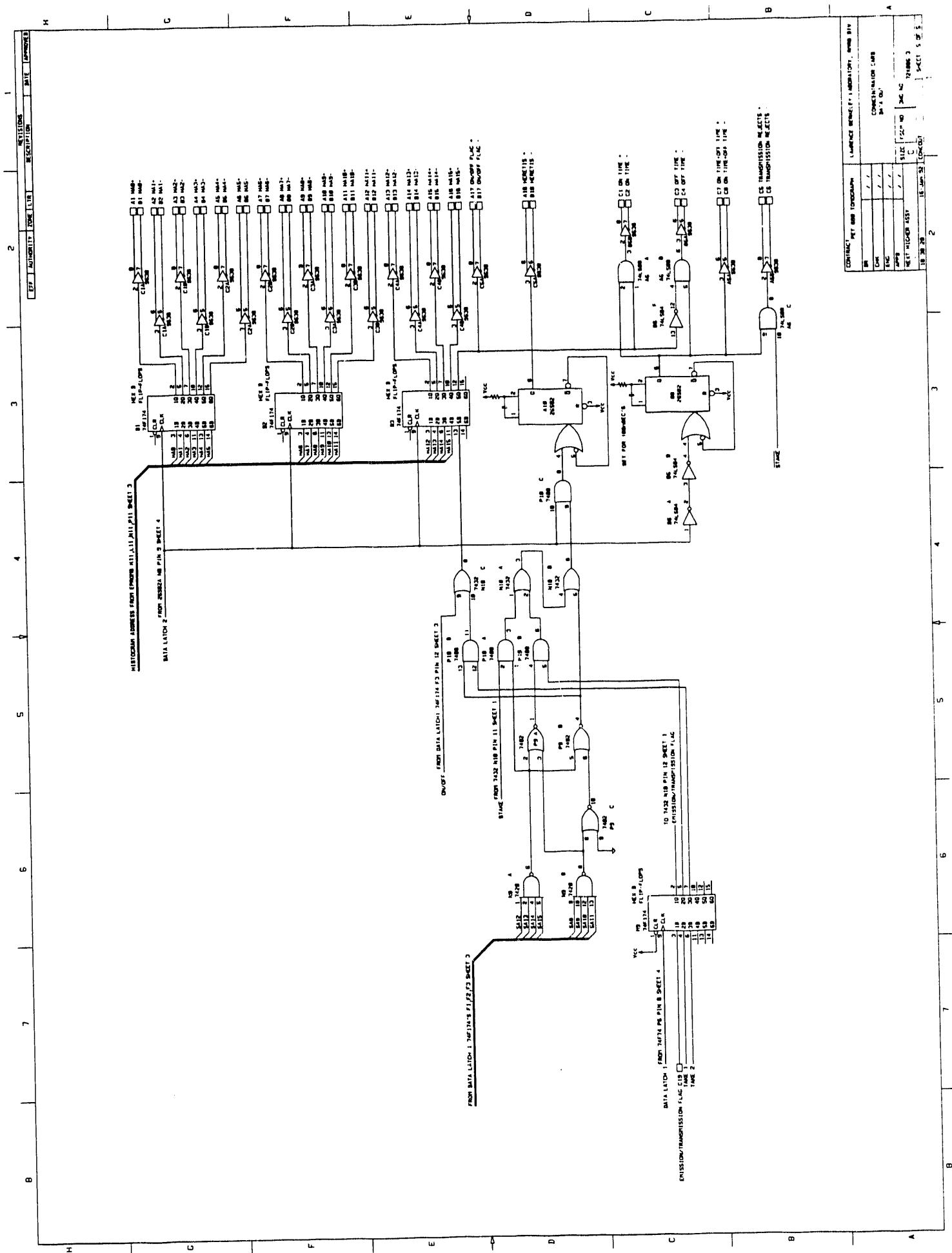


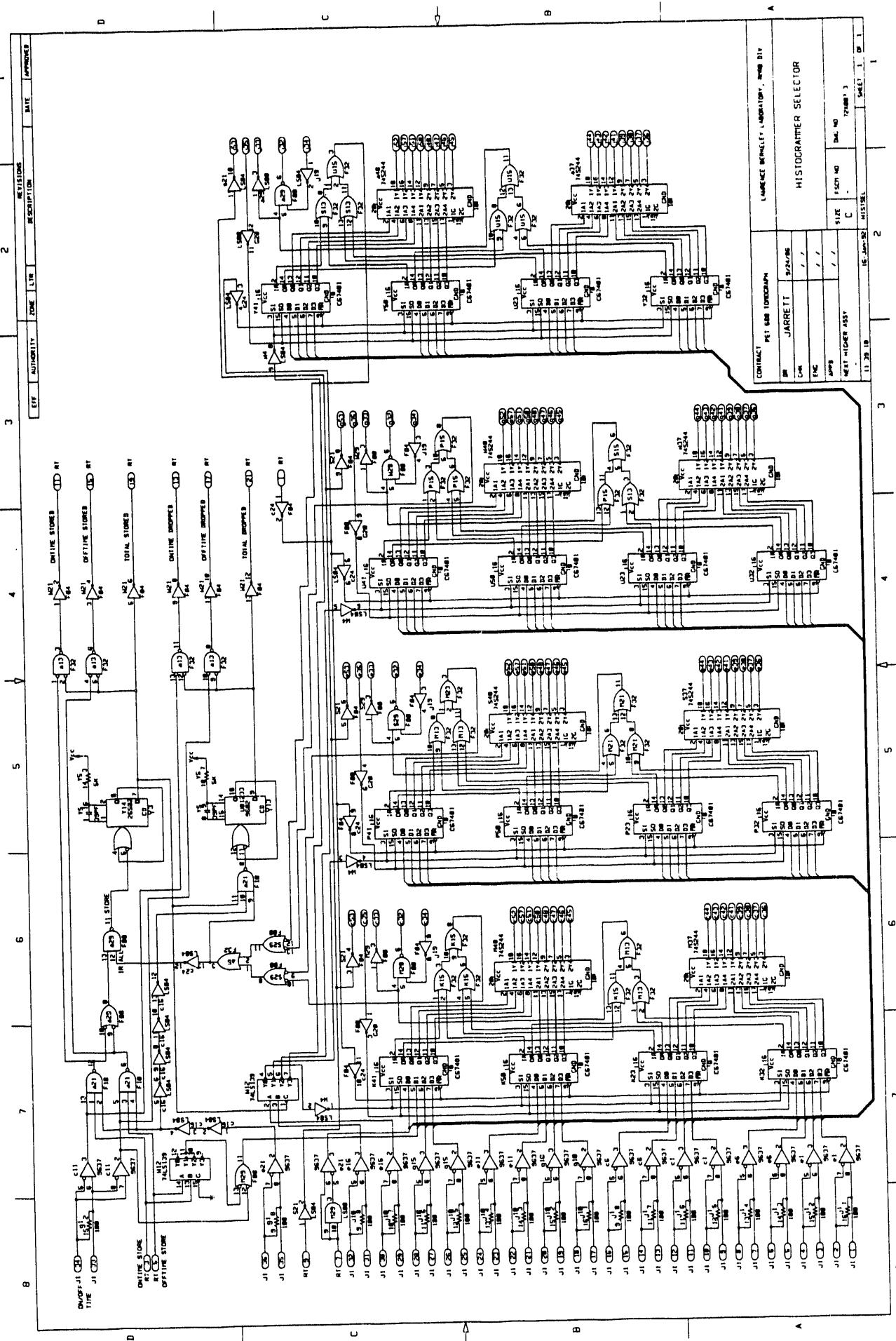


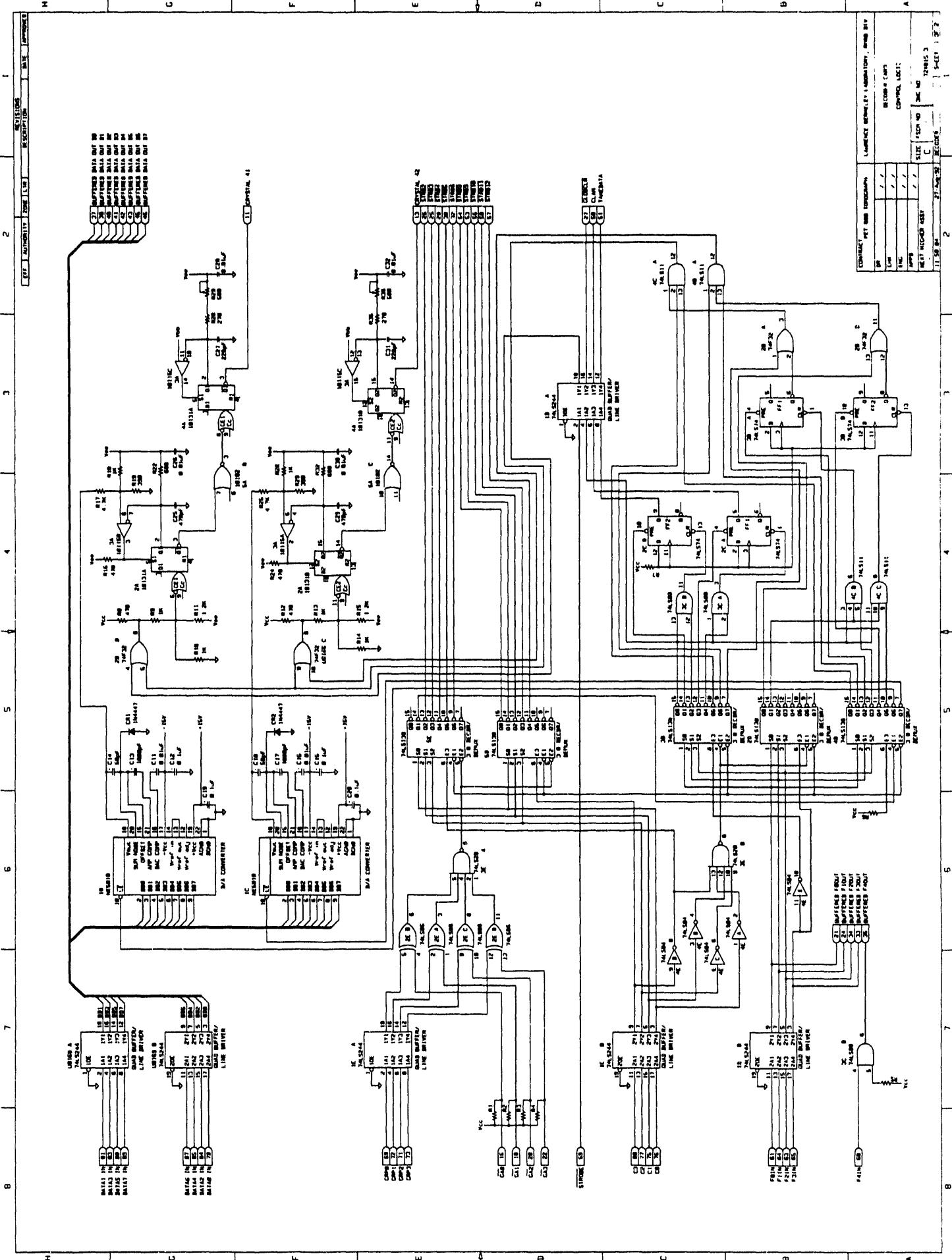




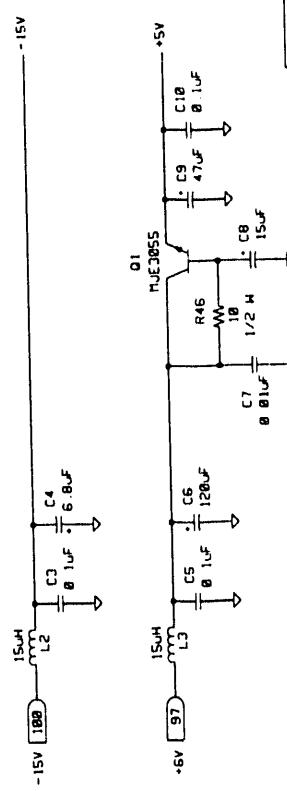
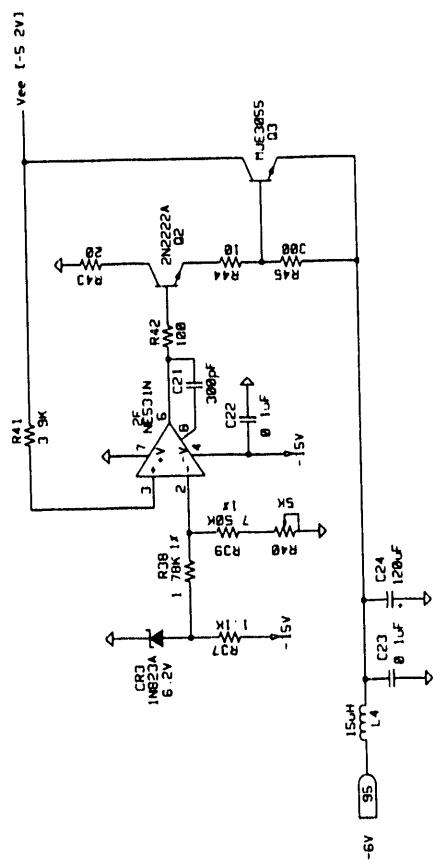






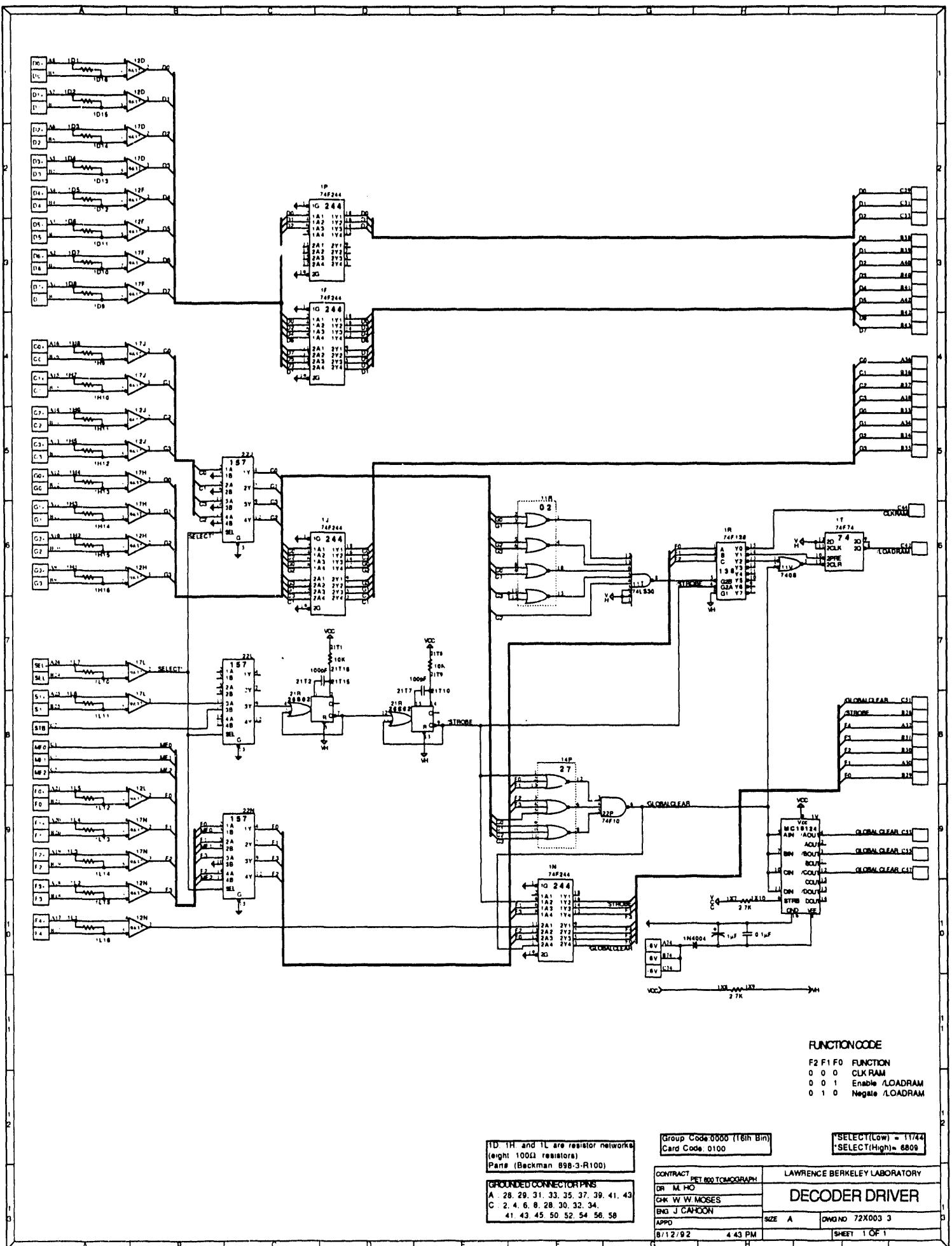


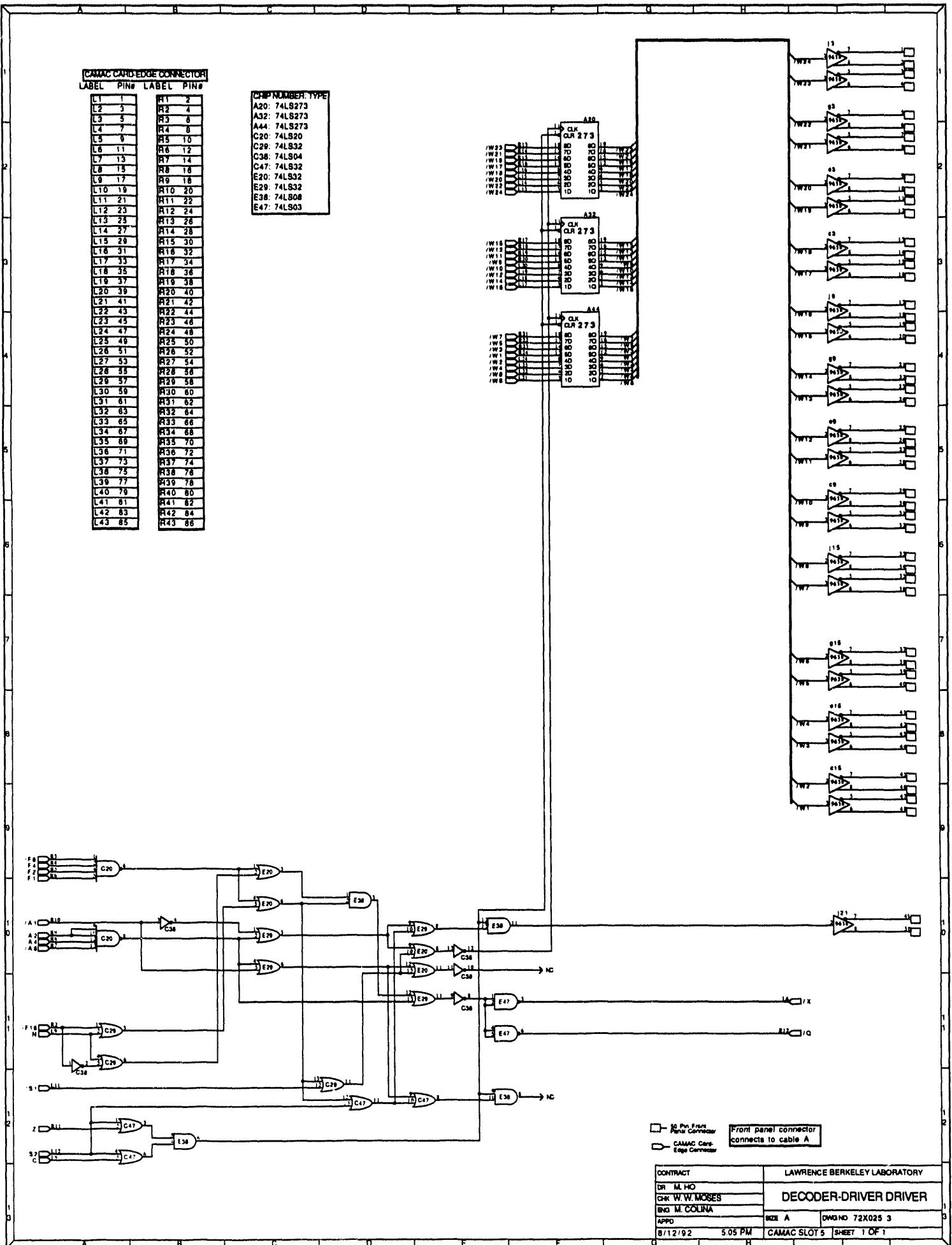
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EFF	AUTHORITY	ZONE	LTR				

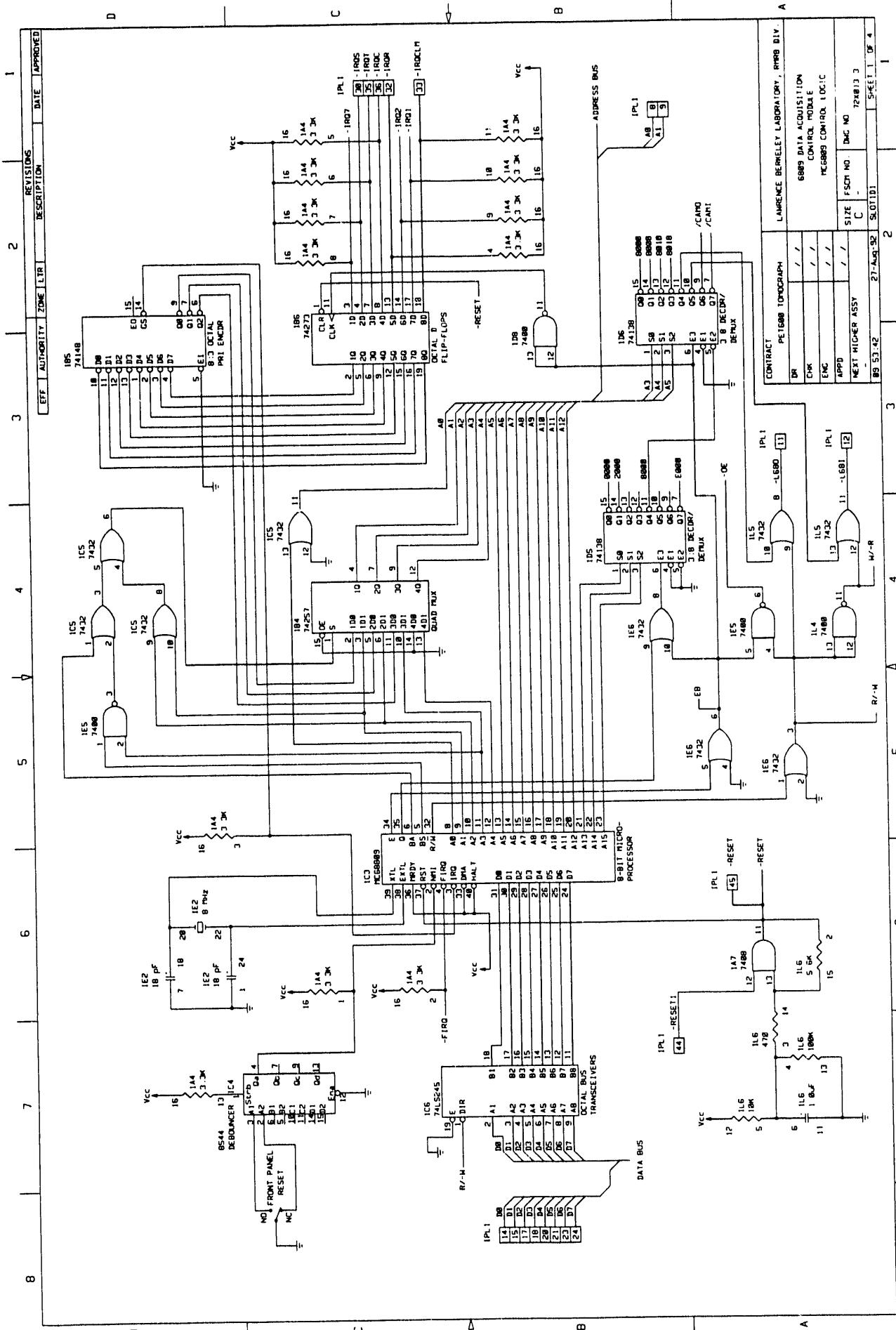


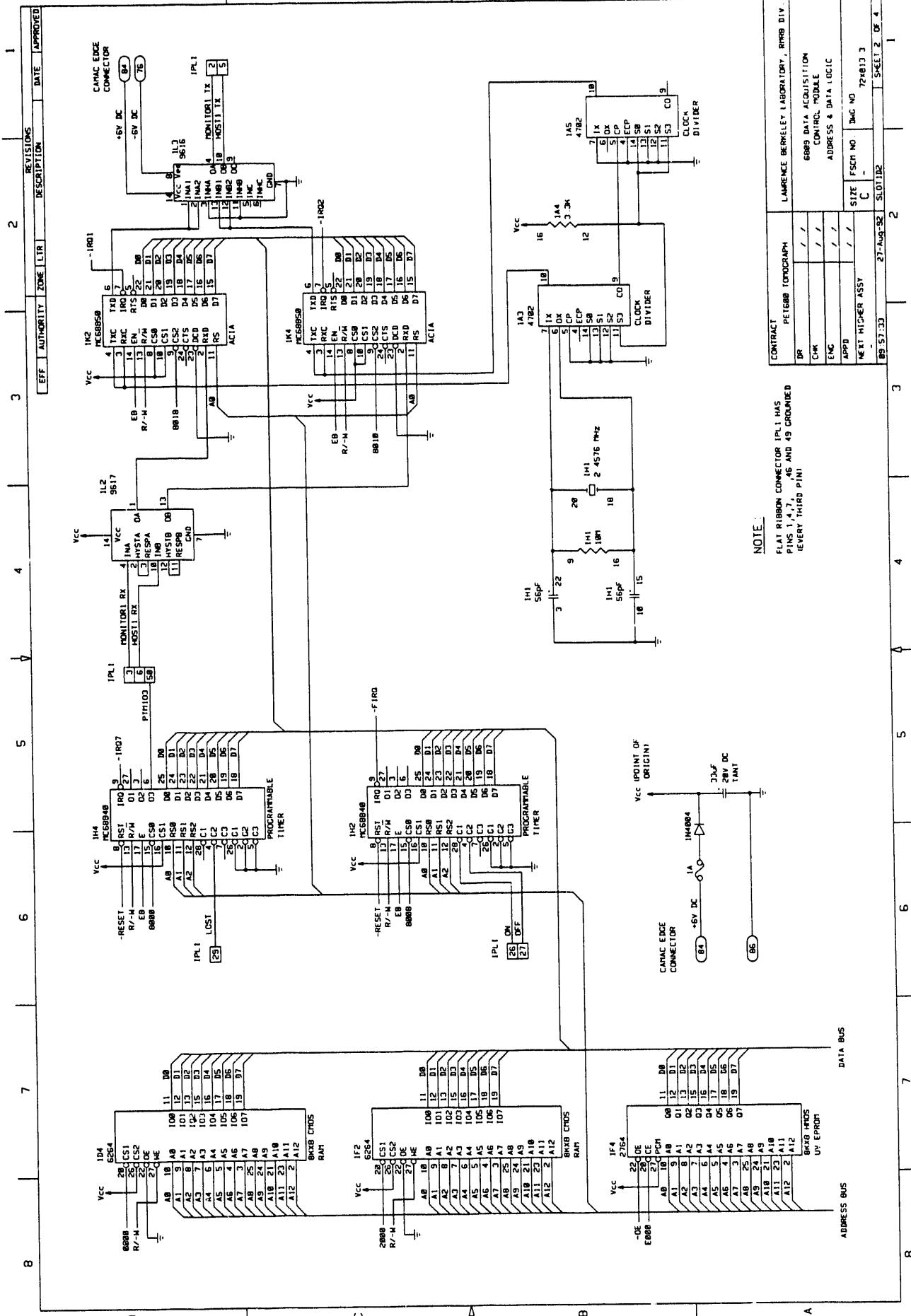
CONTRACT PET 688 TONOGRAPH			LAURENCE BERKELEY LABORATORY, RRBB DIV.		
DR	/	/	DECODER CARD		
CHK	/	/	POWER +/- 15V, S-2		
ENG	/	/			
APD	/	/			
NEXT HIGHER ASSY					
+6V	15uH	L1	C1	C10	
-15V	15uH	L2	C2	0.47uF	
+6V	15uH	L3	C3	0.1uF	
-15V	15uH	L4	C4	0.01uF	
+5V					

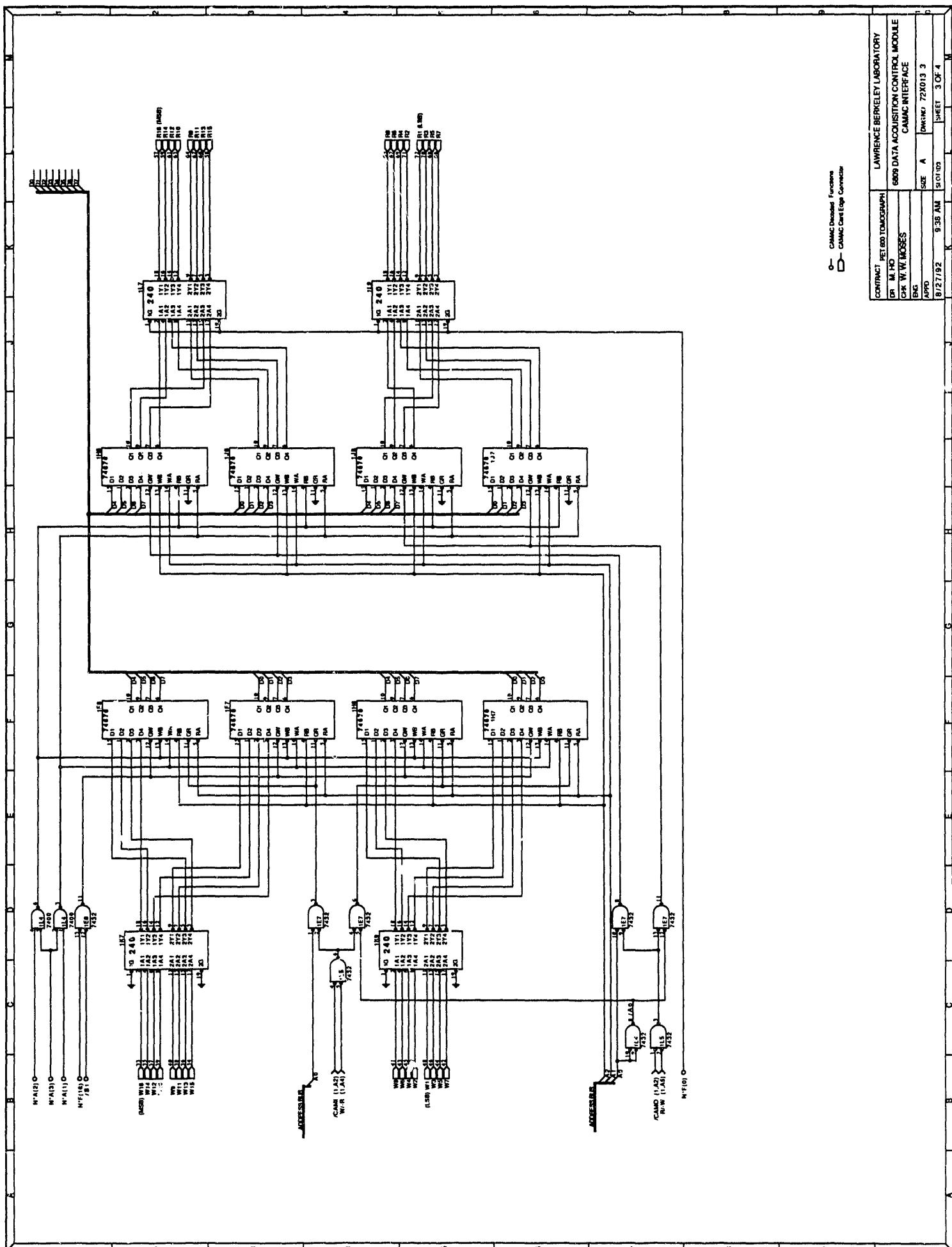
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C	-	-	13-Jan-92	13-Jan-92	1	2

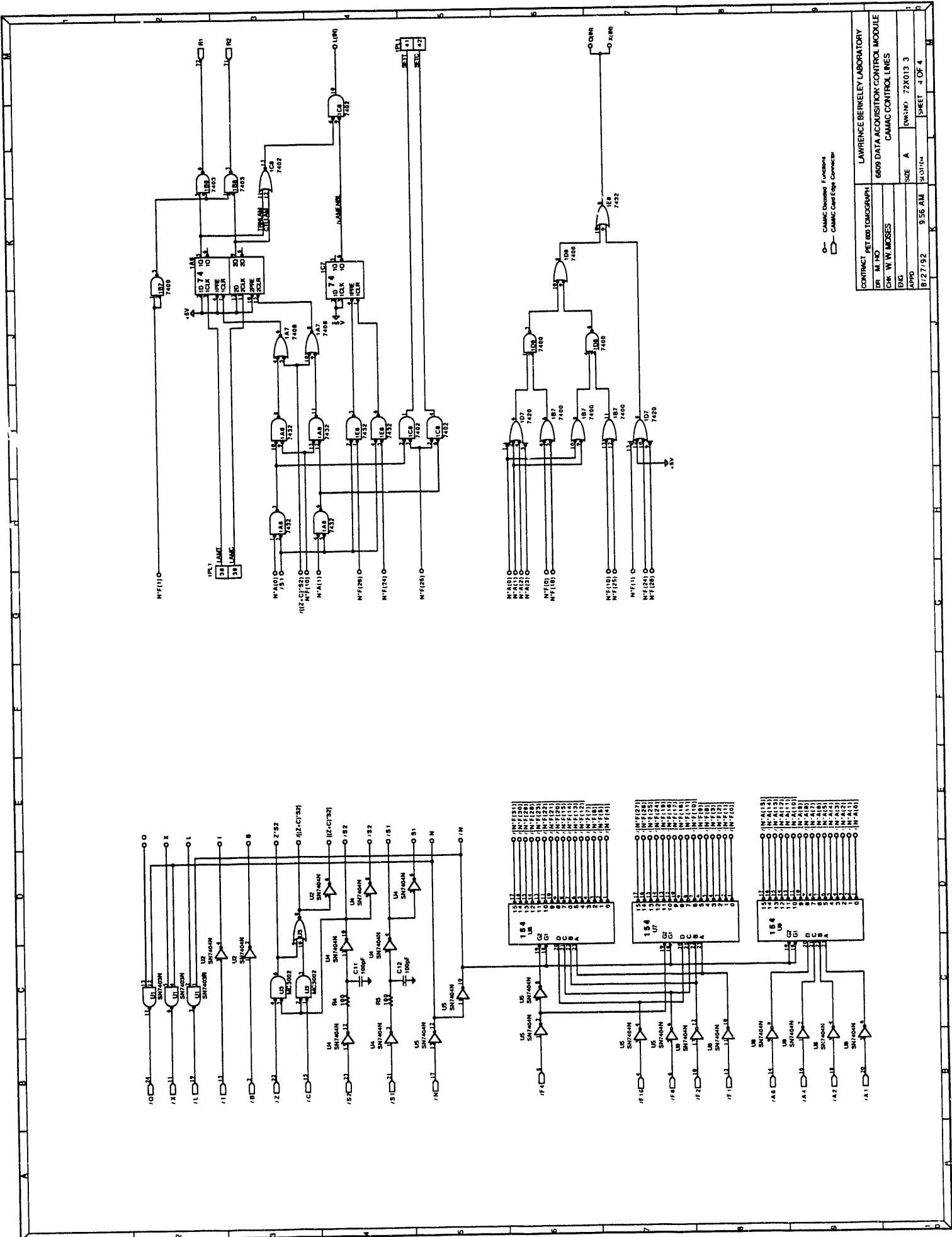


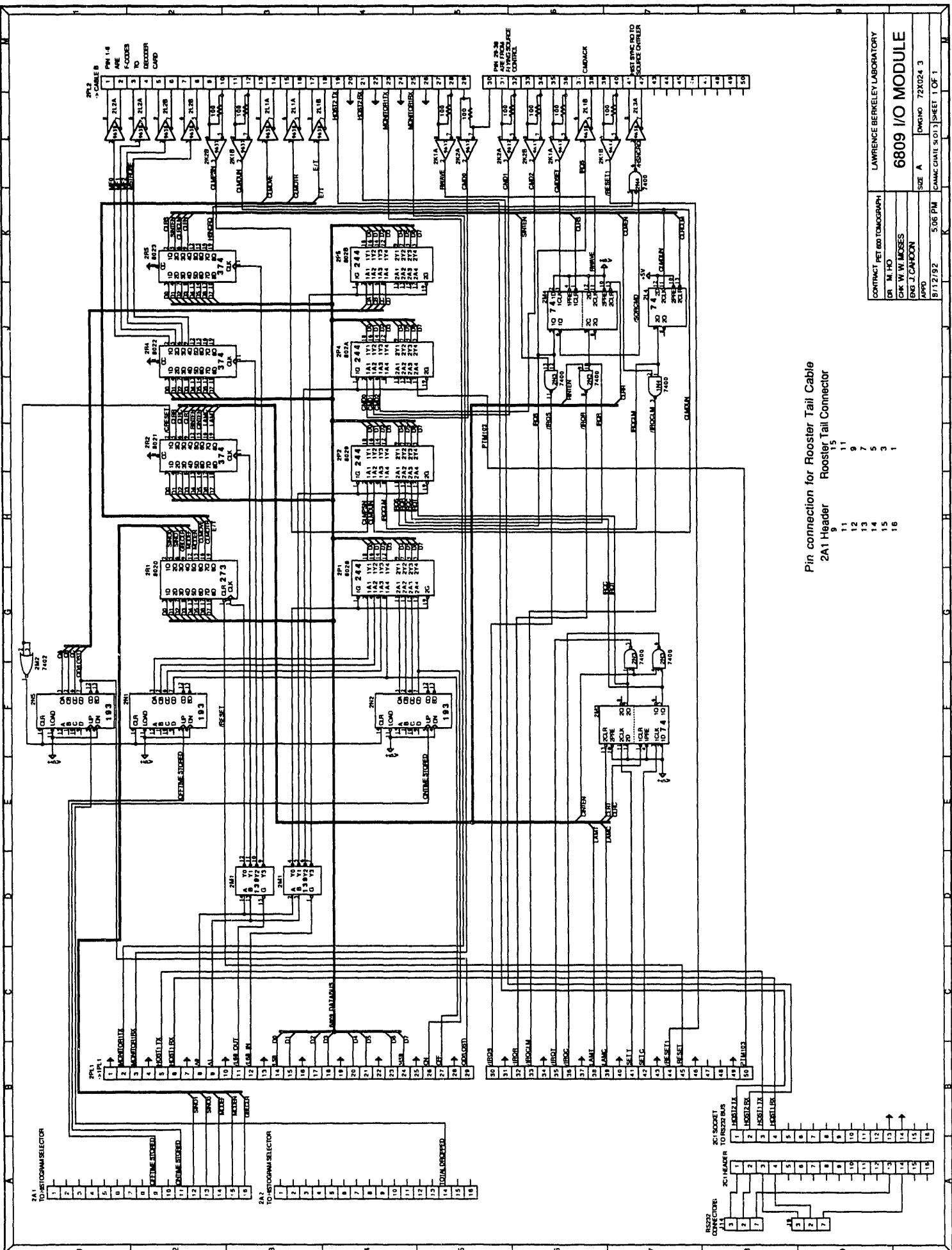


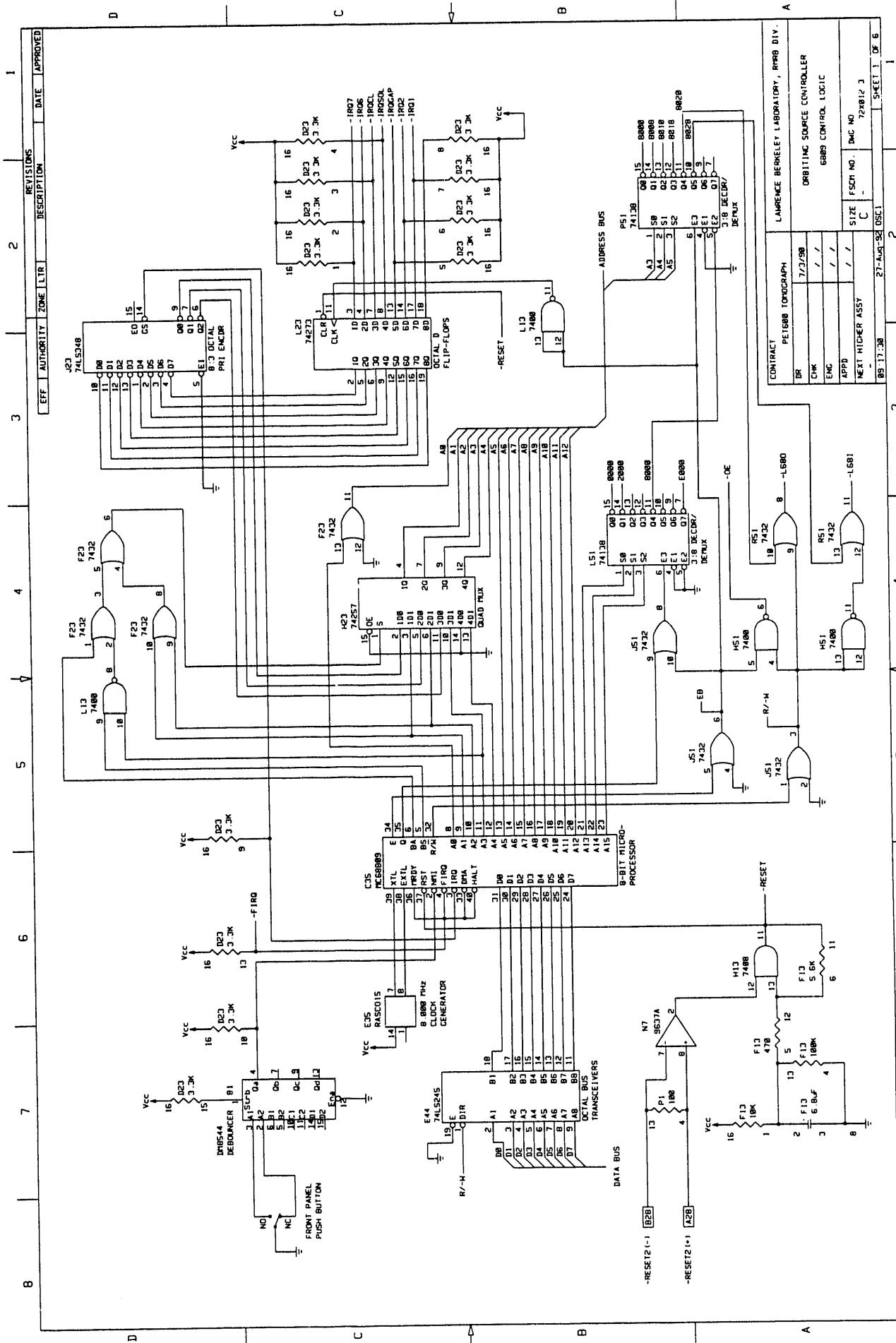


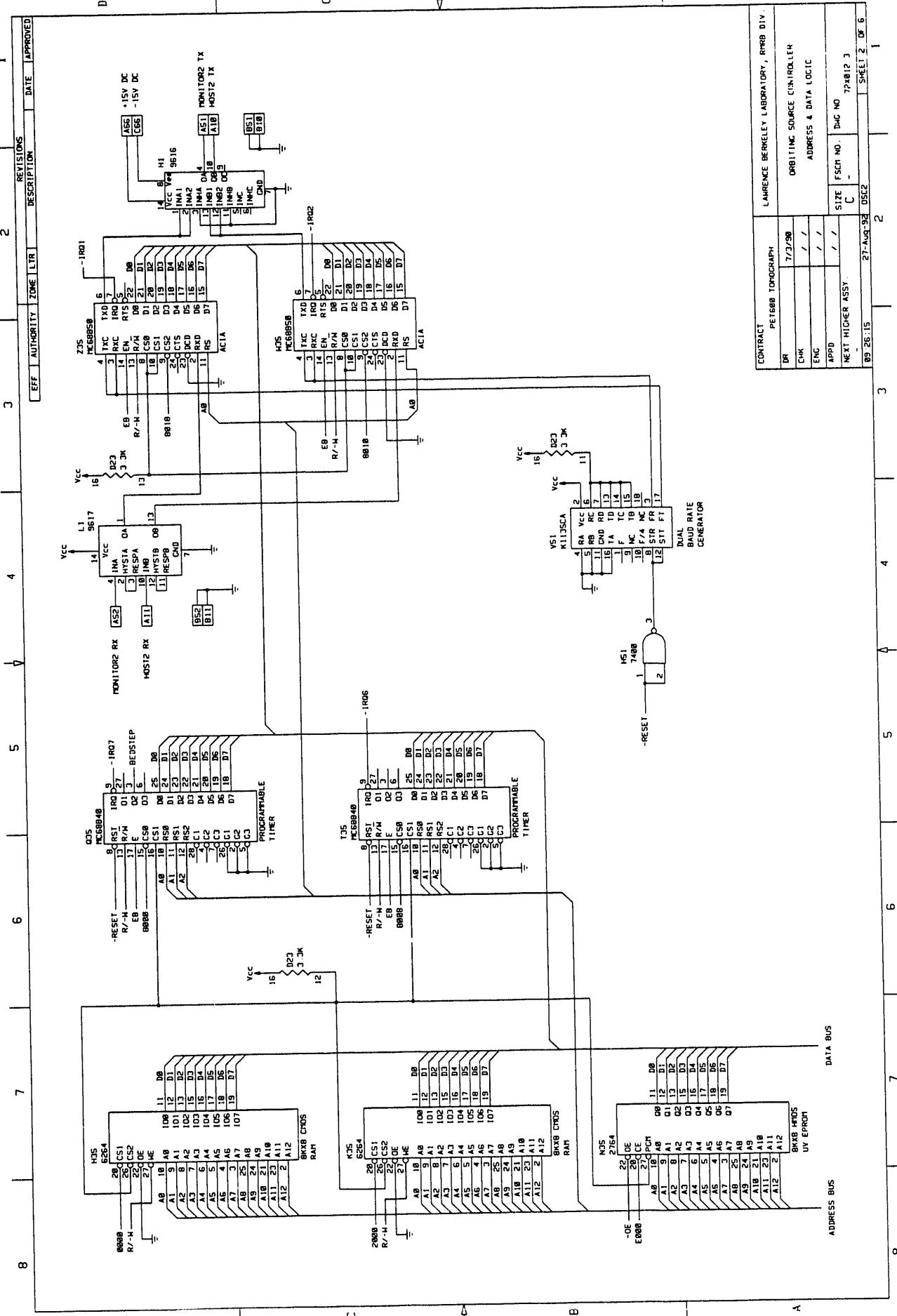


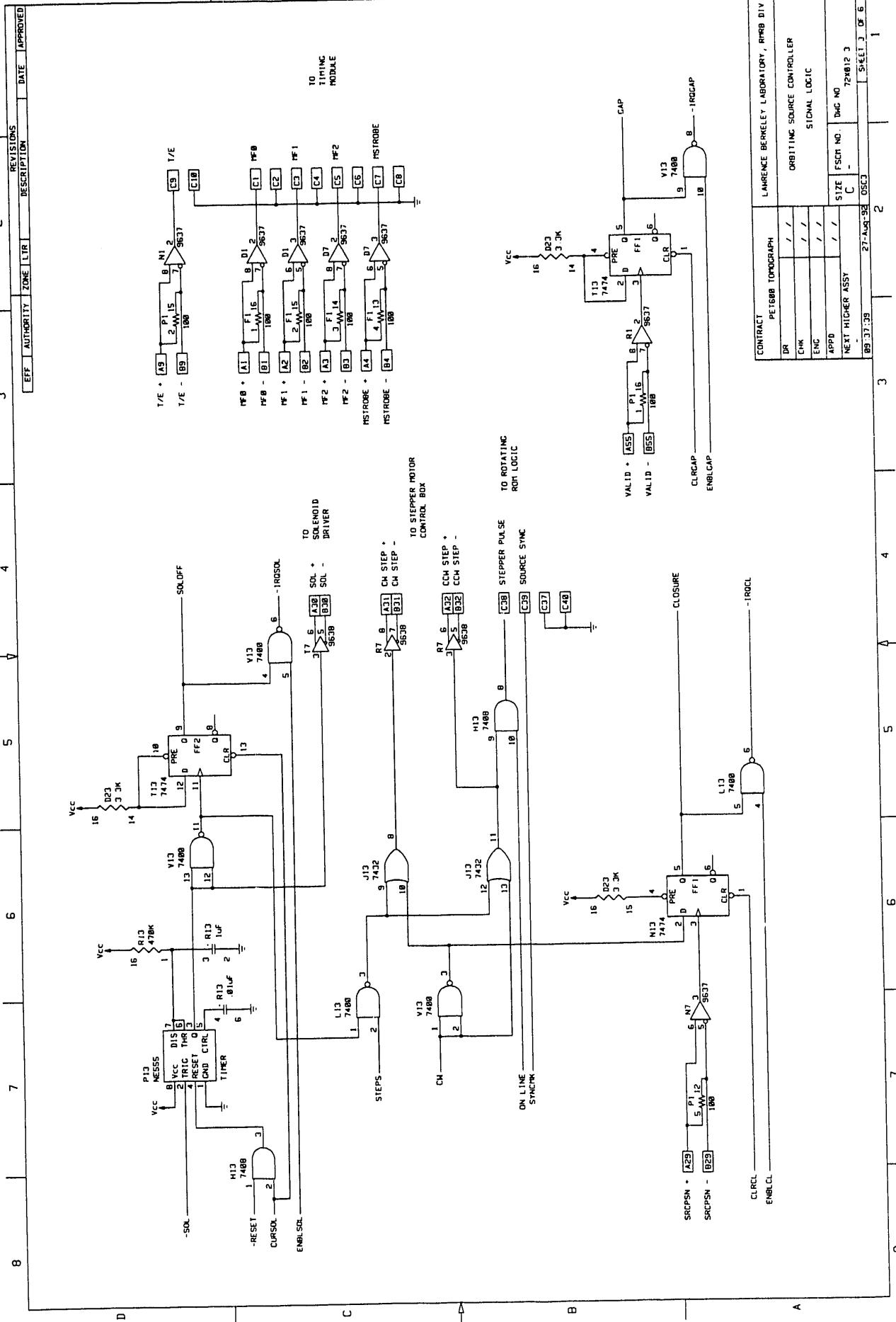


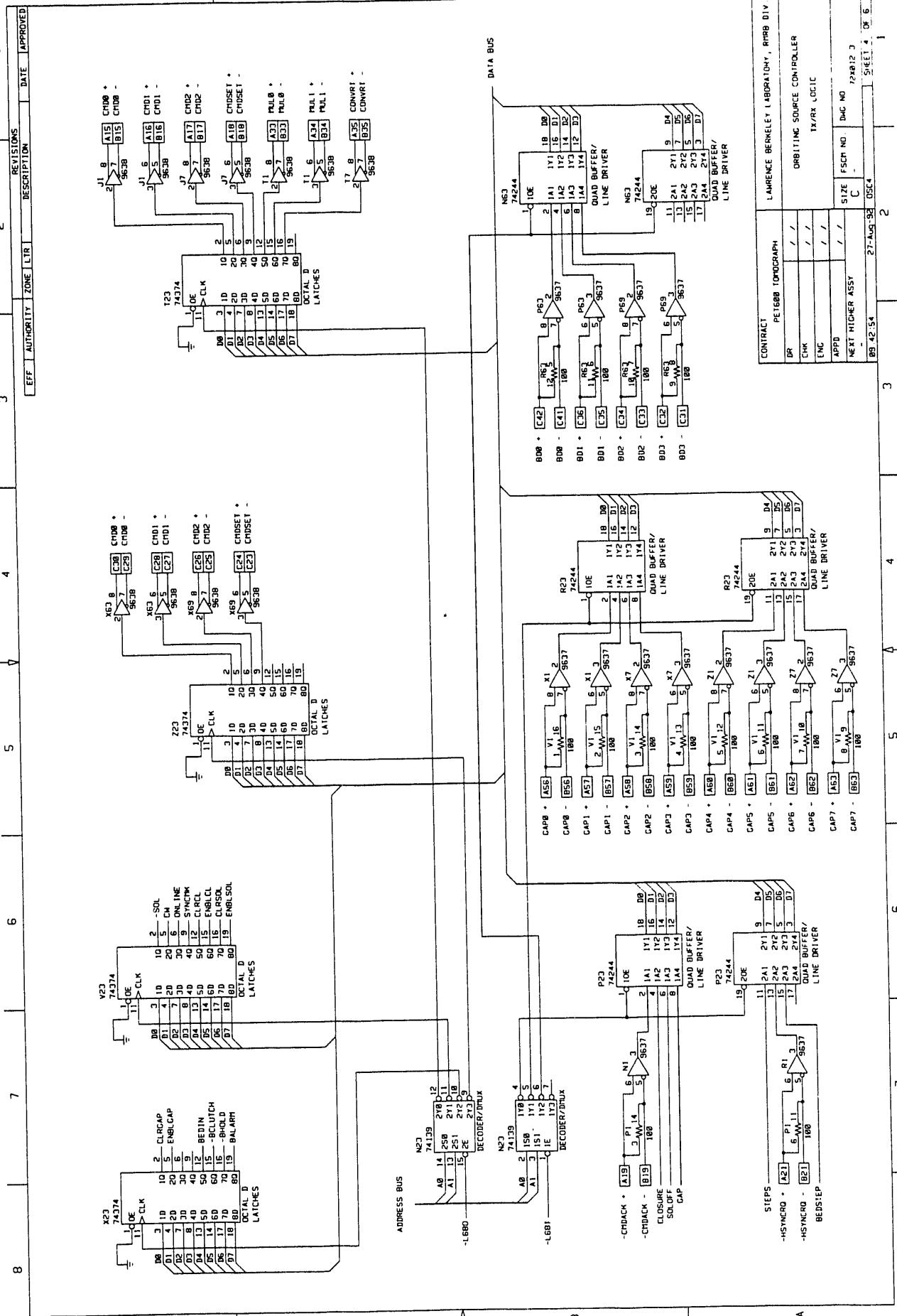










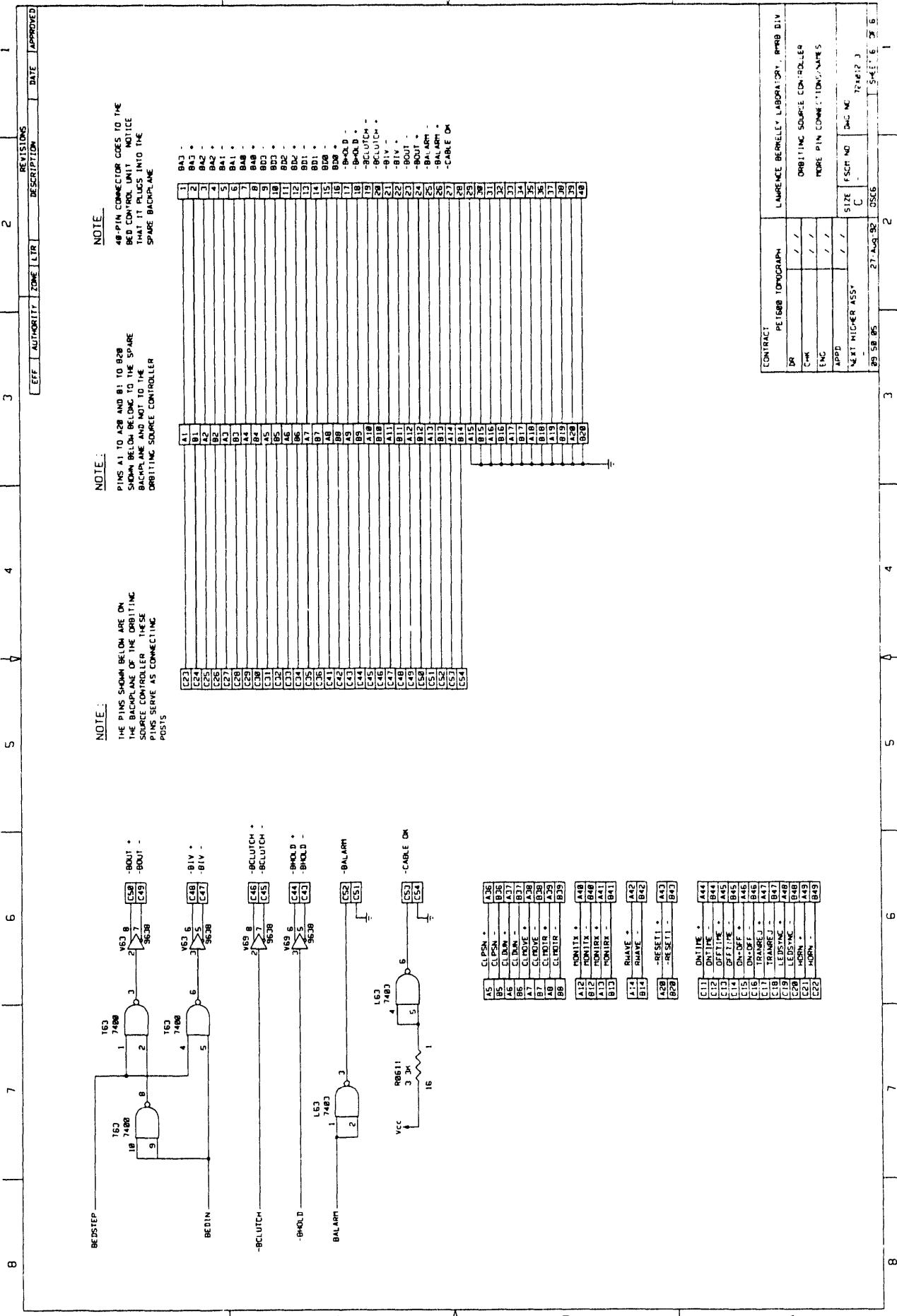


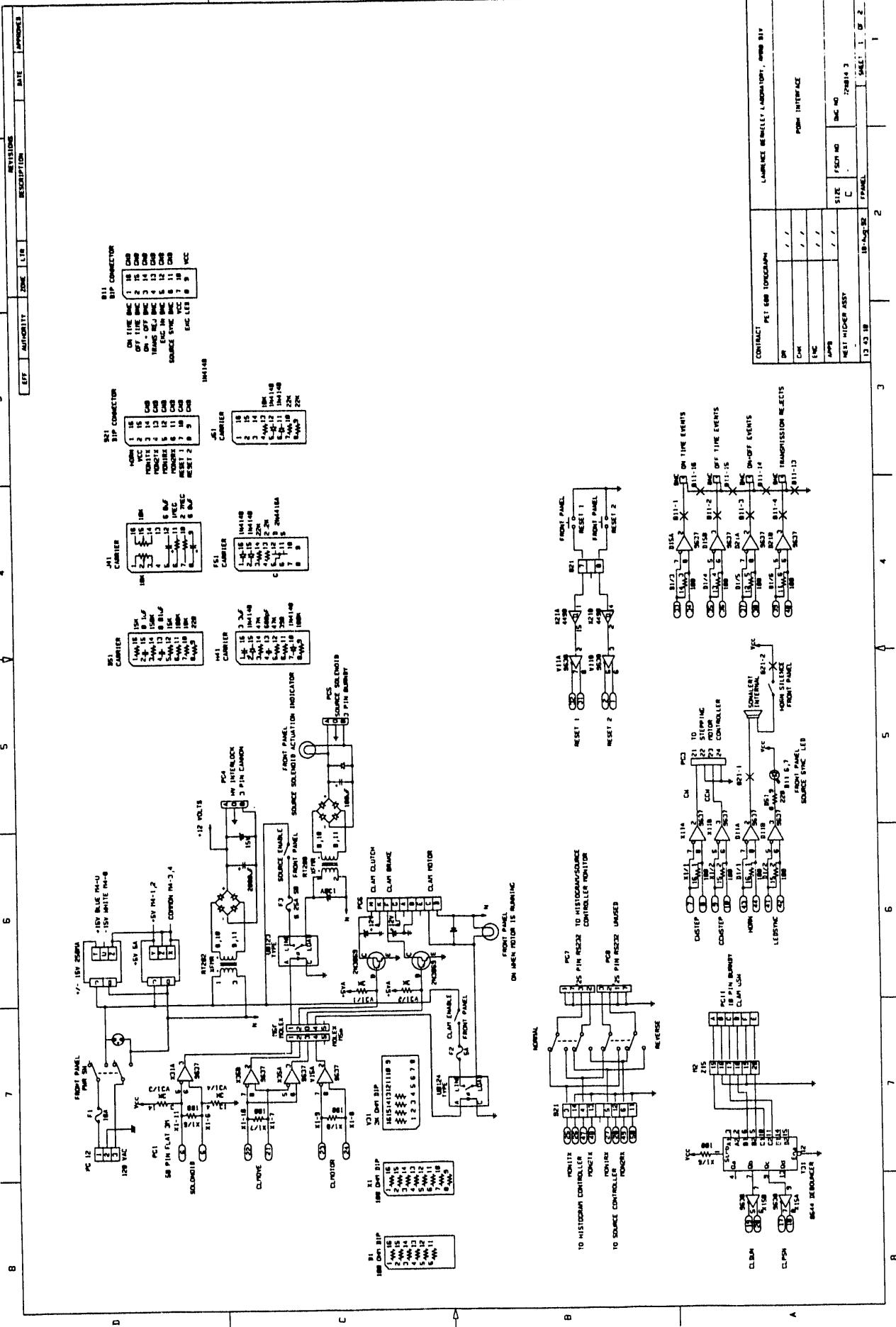
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1										
NOTE: CONNECTION TO INTERFACE BOX 50-PIN CONNECTOR										
A1 1 RF8 * A1 2 RF8 - A2 3 RF1 * B2 4 RF1 - A3 5 RF2 * B3 6 RF2 - A4 7 NSPROBE * B4 8 CLPSN - A5 9 CLPSN * B5 10 CLPSN - A6 11 CL.DIN * B6 12 CL.DIN - A7 13 CL.DIN * B7 14 CL.DIN - A8 15 CL.MDR * B8 16 CL.MDR - A9 17 T.E. * B9 18 T.E. - A10 19 HOS12RX * B10 20 HOS12RX - A11 21 HOS12RX + B11 22 HOS12RX - A12 23 MON1TX * B12 24 MON1TX - A13 25 MON1RX + B13 26 MON1RX - A14 27 RHAIVE * B14 28 RHAIVE - A15 29 CRUB + B15 30 CRUB - A16 31 CRD1 + B16 32 CRD1 - A17 33 CRD2 + B17 34 CRD2 - A18 35 CRDSET + B18 36 CRDSET - A19 37 CRDACK + B19 38 CRDACK - A20 39 RESET1 + B20 40 RESET1 - A21 41 -NSCMD 1 + B21 42 -NSCMD 1 - A22 43 HDMIN + B22 44 HDMIN - A23 45 HDMIN + B23 46 HDMIN - A24 47 HDM2RX + B24 48 HDM2RX - A25 49 HDM2RX + B25 50 HDM2RX - A26 51 HDM2RX + B26 52 HDM2RX - A27 53 HDM2RX + B27 54 HDM2RX - A28 55 HDM2RX + B28 56 HDM2RX - A29 57 HDM2RX + B29 58 HDM2RX - A30 59 HDM2RX + B30 60 HDM2RX -										
NOTE: CONNECTION TO HISTOGRAMMER CONTROLLER 50-PIN CONNECTOR										
A1 1 RF8 * A1 2 RF8 - A2 3 RF1 * B2 4 RF1 - A3 5 RF2 * B3 6 RF2 - A4 7 NSPROBE * B4 8 CLPSN - A5 9 CLPSN * B5 10 CLPSN - A6 11 CL.DIN * B6 12 CL.DIN - A7 13 CL.DIN * B7 14 CL.DIN - A8 15 CL.MDR * B8 16 CL.MDR - A9 17 T.E. * B9 18 T.E. - A10 19 HOS12RX * B10 20 HOS12RX - A11 21 HOS12RX + B11 22 HOS12RX - A12 23 MON1TX * B12 24 MON1TX - A13 25 MON1RX + B13 26 MON1RX - A14 27 RHAIVE * B14 28 RHAIVE - A15 29 CRUB + B15 30 CRUB - A16 31 CRD1 + B16 32 CRD1 - A17 33 CRD2 + B17 34 CRD2 - A18 35 CRDSET + B18 36 CRDSET - A19 37 CRDACK + B19 38 CRDACK - A20 39 RESET1 + B20 40 RESET1 - A21 41 -NSCMD 1 + B21 42 -NSCMD 1 - A22 43 HDMIN + B22 44 HDMIN - A23 45 HDMIN + B23 46 HDMIN - A24 47 HDM2RX + B24 48 HDM2RX - A25 49 HDM2RX + B25 50 HDM2RX - A26 51 HDM2RX + B26 52 HDM2RX - A27 53 HDM2RX + B27 54 HDM2RX - A28 55 HDM2RX + B28 56 HDM2RX - A29 57 HDM2RX + B29 58 HDM2RX - A30 59 HDM2RX + B30 60 HDM2RX -										
NOTE: THE PINS SHOWN ABOVE AS A1 TO A6 AND B1 TO B6 BELONG TO THE BACKPLANE ROWS A AND B OF THE DRILLING SOURCE CONTROLLER. THE PINS SHOWN AS 1 TO 20 AND 1 TO 50 BELONG TO 28-PIN AND 50-PIN CONNECTORS THAT PLUG DIRECTLY TO THE BACKPLANE ROWS A AND B										
A 45										

CONTRACT	PE 1568 100GRAPH	LAWRENCE BERKELEY LABORATORY, PB68 DIV
DR	/ /	ORBITINC SOURCE CONTROLLER
CHK	/ /	PIN CONNECTIONS/NAMES
ENC	/ /	
APPD	/ /	
NEXT HIGHER ASSY		
	C -	SIZE
		ESCH NO.
		BU NO.
		724812 3
		SHEET 5, OF 6

NOTE:

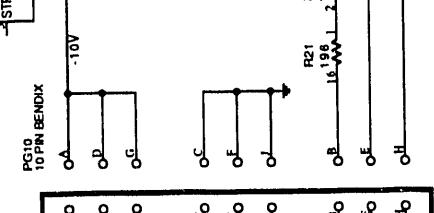
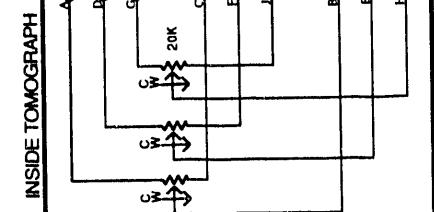
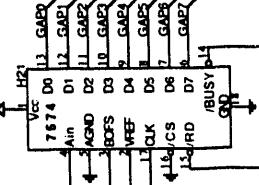
THE PINS SHOWN ABOVE AS A1 TO A6 AND B1 TO B6 BELONG TO THE BACKPLANE ROWS A AND B OF
THE DRILLING SOURCE CONTROLLER. THE PINS SHOWN AS 1 TO 20 AND 1 TO 50 BELONG TO
28-PIN AND 50-PIN CONNECTORS THAT PLUG DIRECTLY TO THE BACKPLANE ROWS A AND B





INSIDE CONTROL PANEL

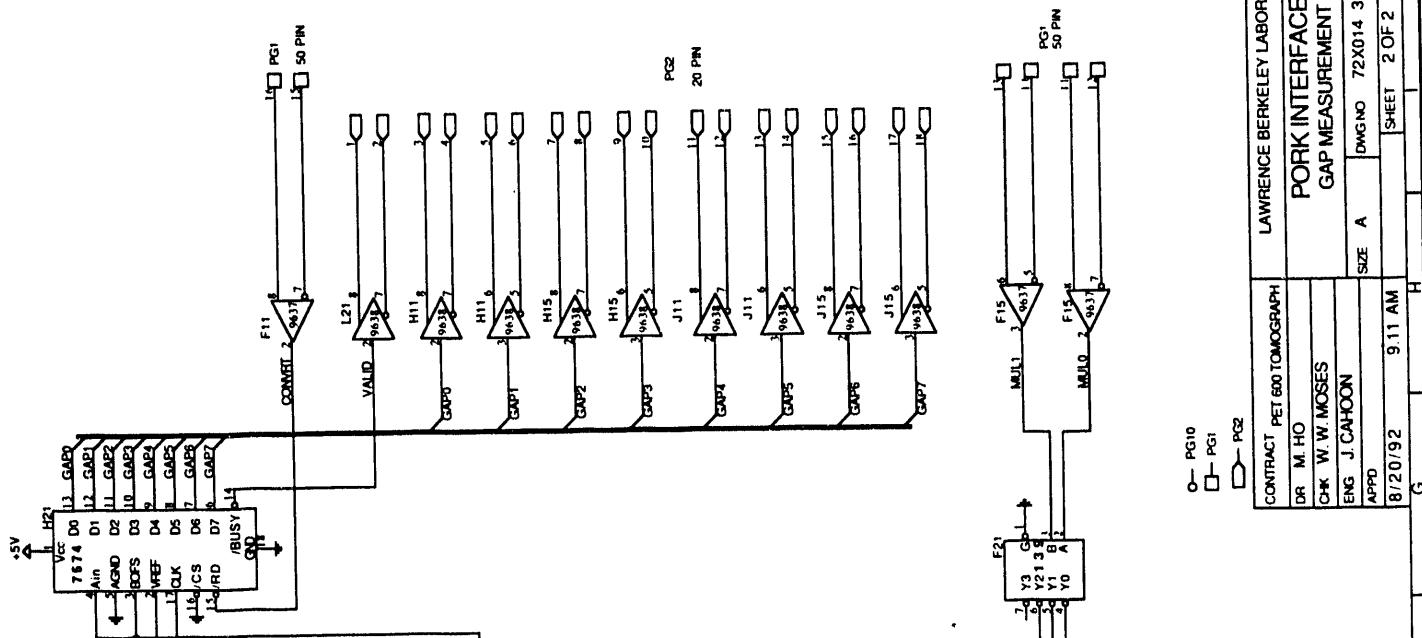
*5V



R_{BC} = 5.8K @ 5mm Half Gap
R_{BC} increases as gap decreases (CCW Adj.)

REF PAGE 1
DUAL IN LINE CONNECTORS

B11	1	ONTIME	B21	1	HORN
OPA	2	OFFTIME		2	VCC
GRN	3	ONTIME-OFFTIME		3	MONITOR 1 TX
VIO	4	TRANS REJ		4	MONITOR 2 TX
WHT	5	ECG SIGNAL		5	MONITOR 1 RX
BNR	6	ECG LED CATHODE		6	MONITOR 2 RX
OPA	7	+5V LED ANODE		7	RESET 1 P.B.
GRN	8			8	RESET 2 P.B.
YEL	9			9	GND
FED	10			10	GND
BLK	11	GND		11	GND
GRN	12	GND		12	GND
BLU	13	GND		13	GND
YEL	14	GND		14	GND
FED	15	GND		15	GND
BLK	16	GND		16	GND



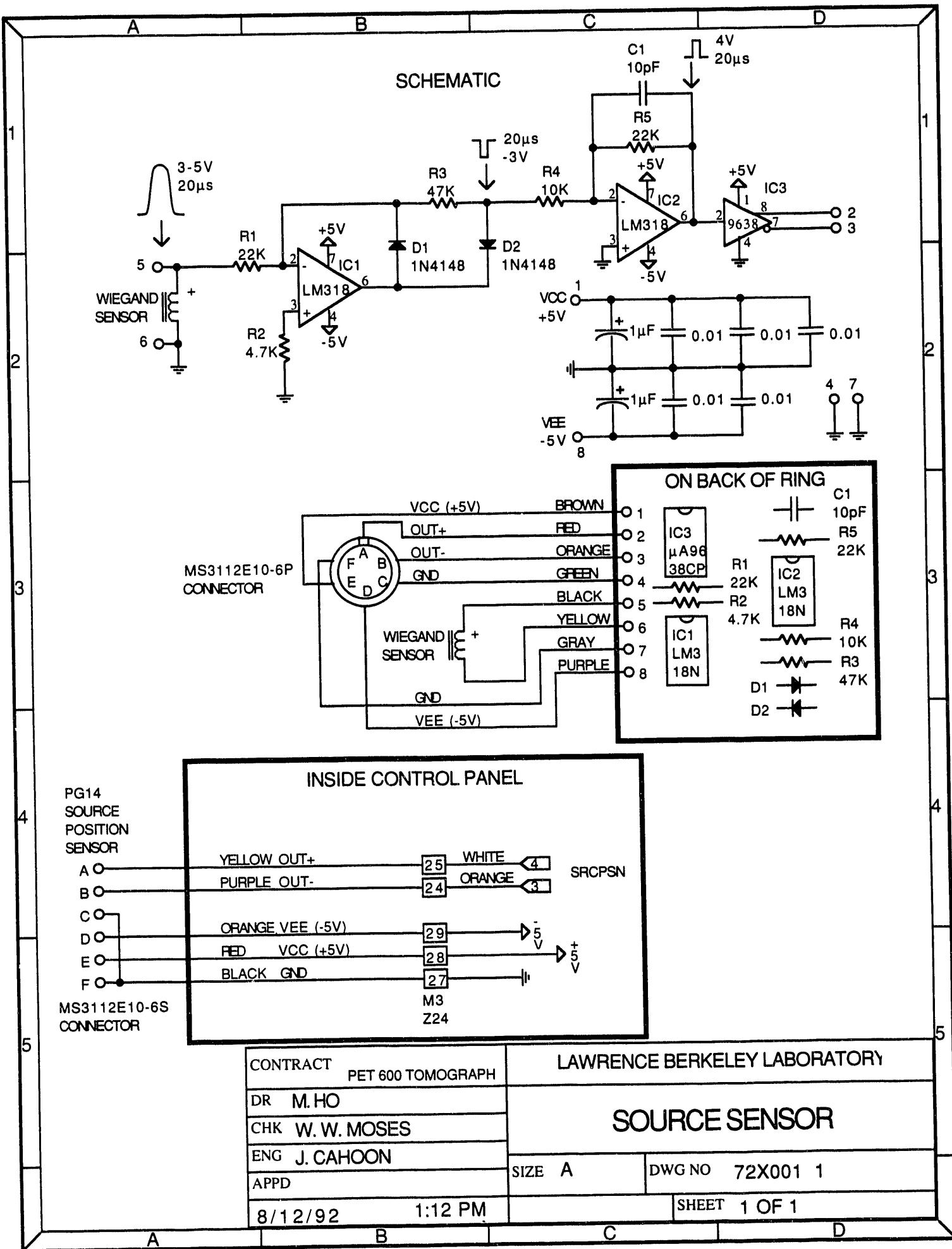
LAWRENCE BERKELEY LABORATORY

PORK INTERFACE
GAP MEASUREMENT

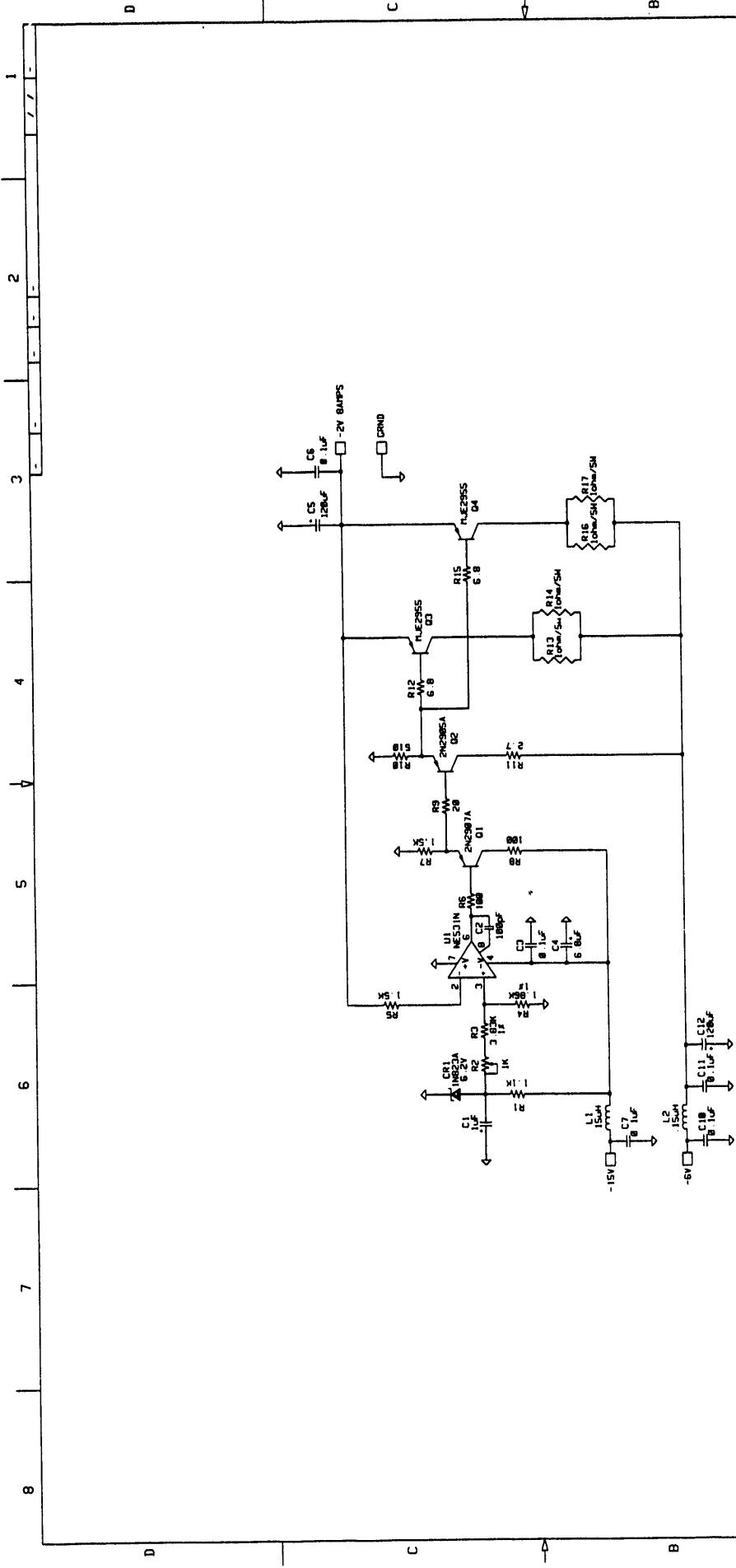
SIZE A | DWG NO 72X014 3
APPD | SHEET 2 OF 2

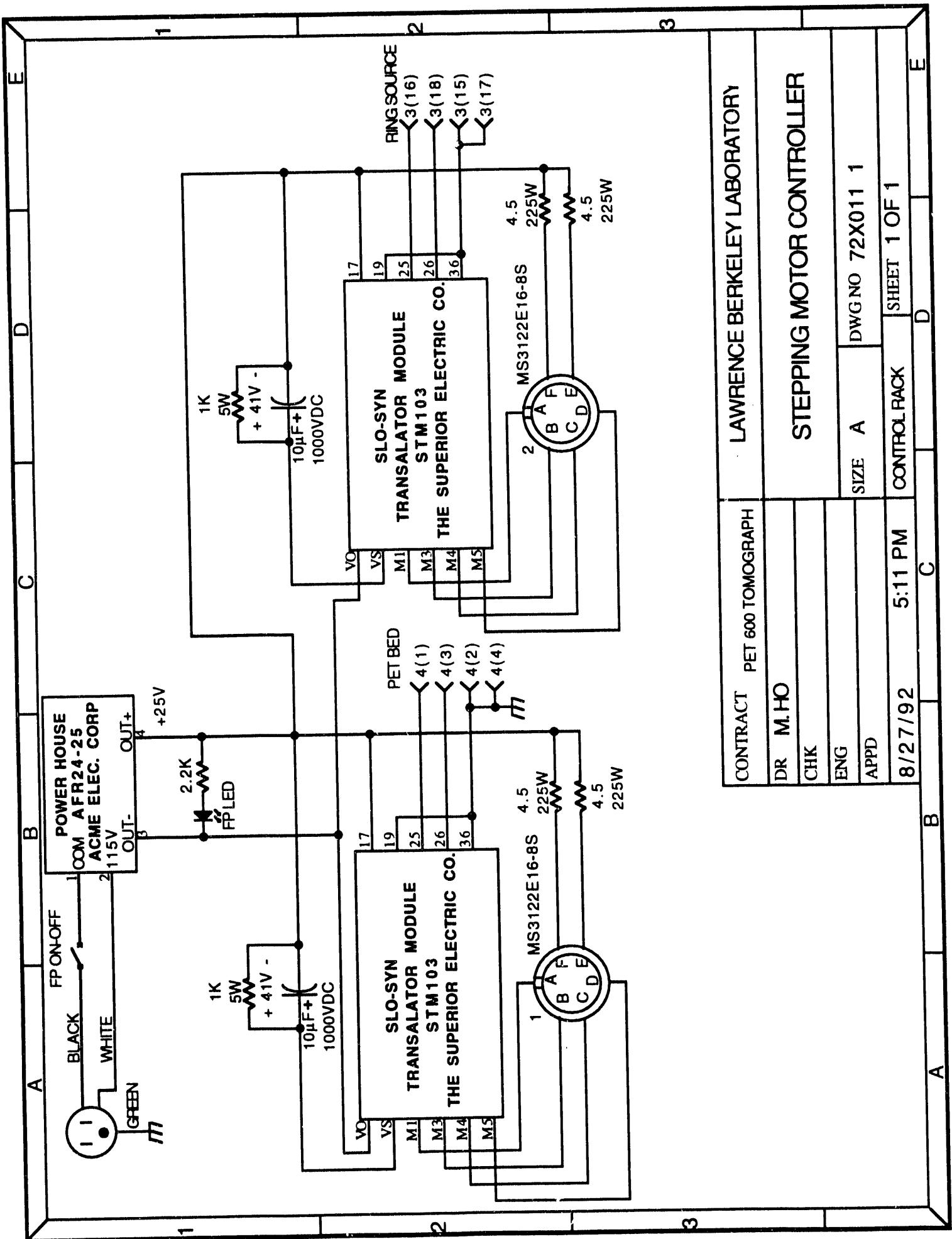
CONTRACT PET 600 TOMOGRAPH

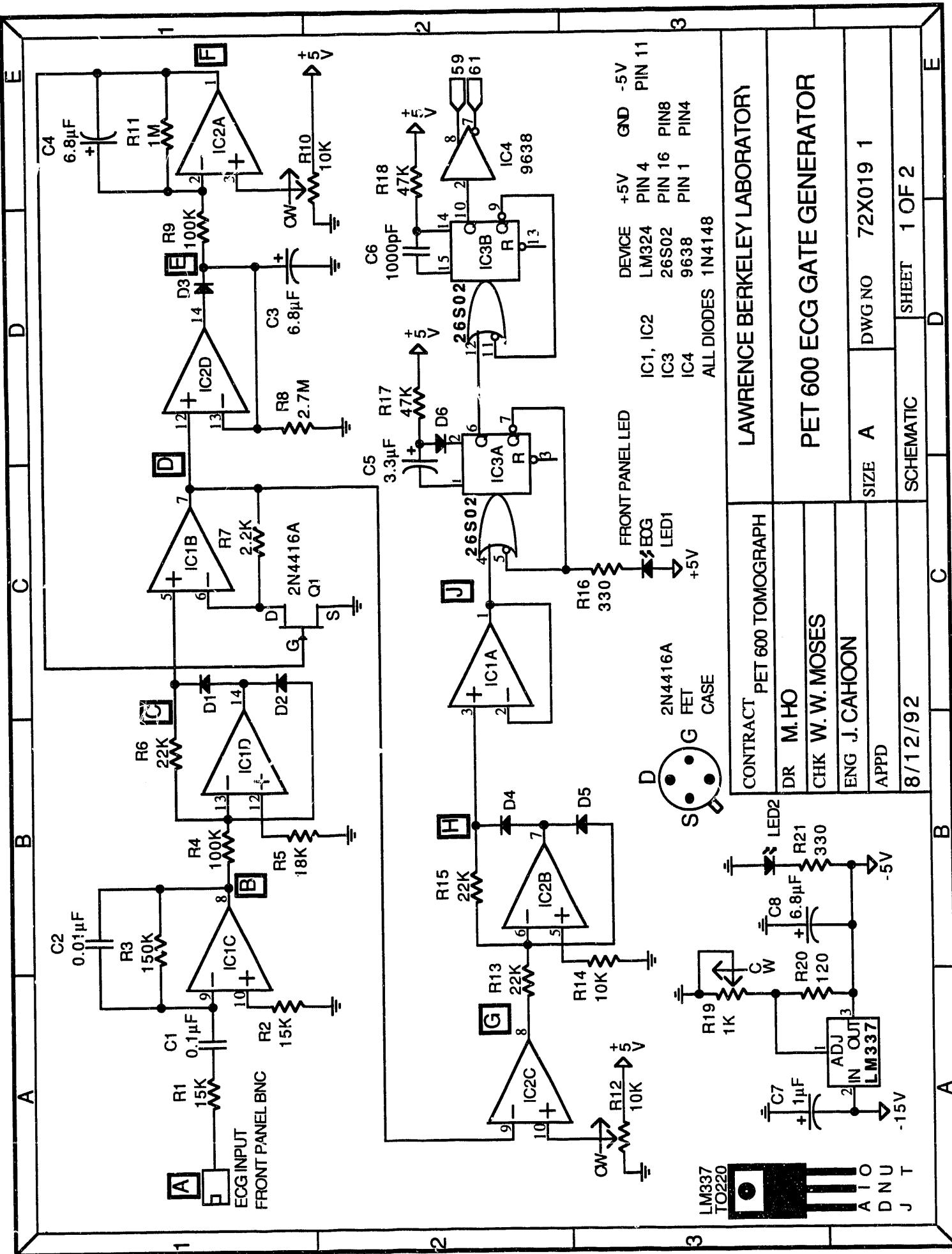
DR M. HO
CH W. MOSES
ENG J. CAHOON

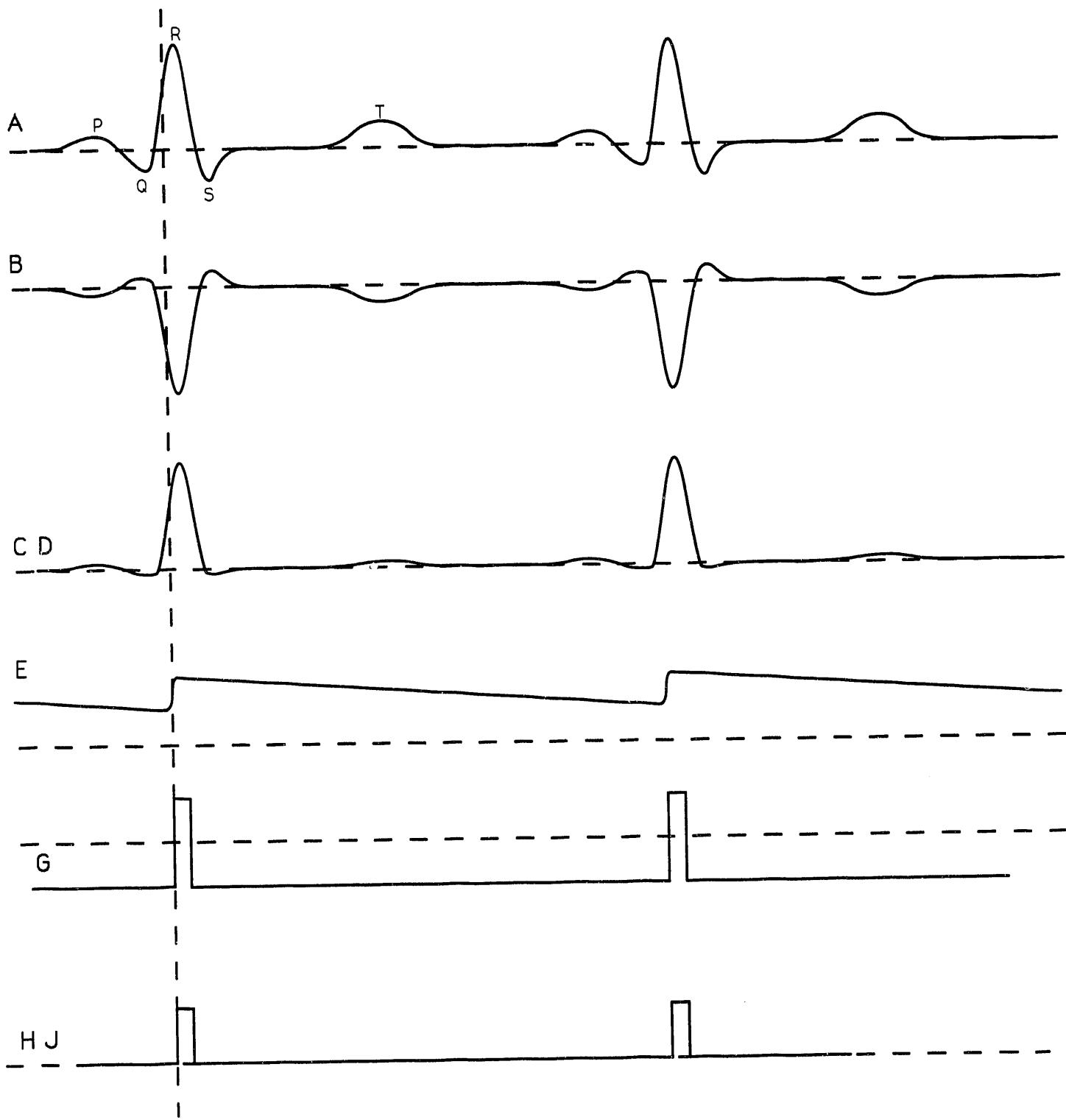


CONTRACT PET 600 TOMOGRAPH				LAWRENCE BERKELEY LABORATORY, RIBS DIV.	
DR	/ /	/ /	/ /	-2 VOL 1 REGULATOR	
CHE	/ /	/ /	/ /		
ENG	/ /	/ /	/ /		
APPD	/ /	/ /	/ /		
NEXT HIGHER ASSY.		SHEET 1 OF 1		1	
15.51:59		17-Jun-89		2	
1		3		4	
5		6		7	
8		9		10	



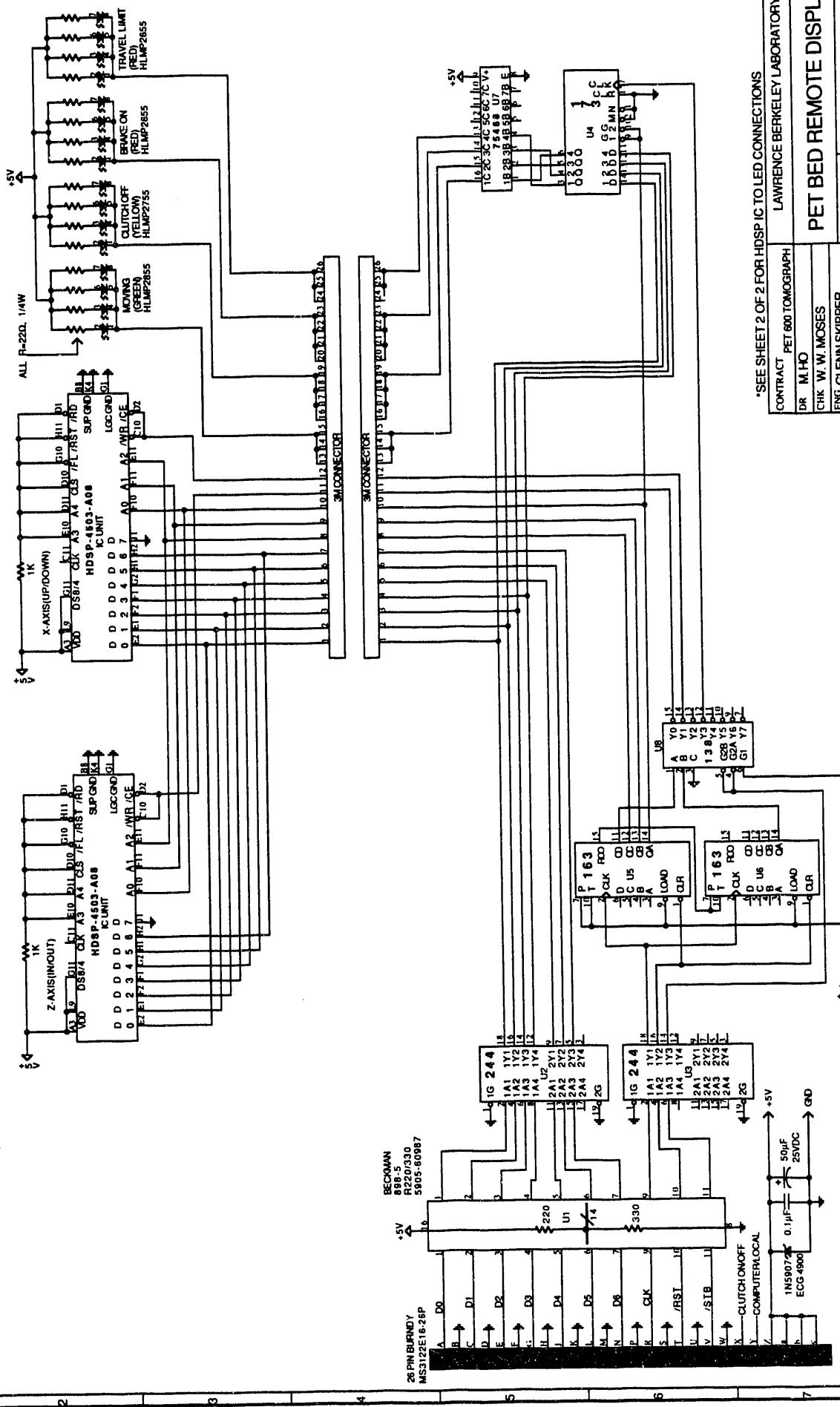


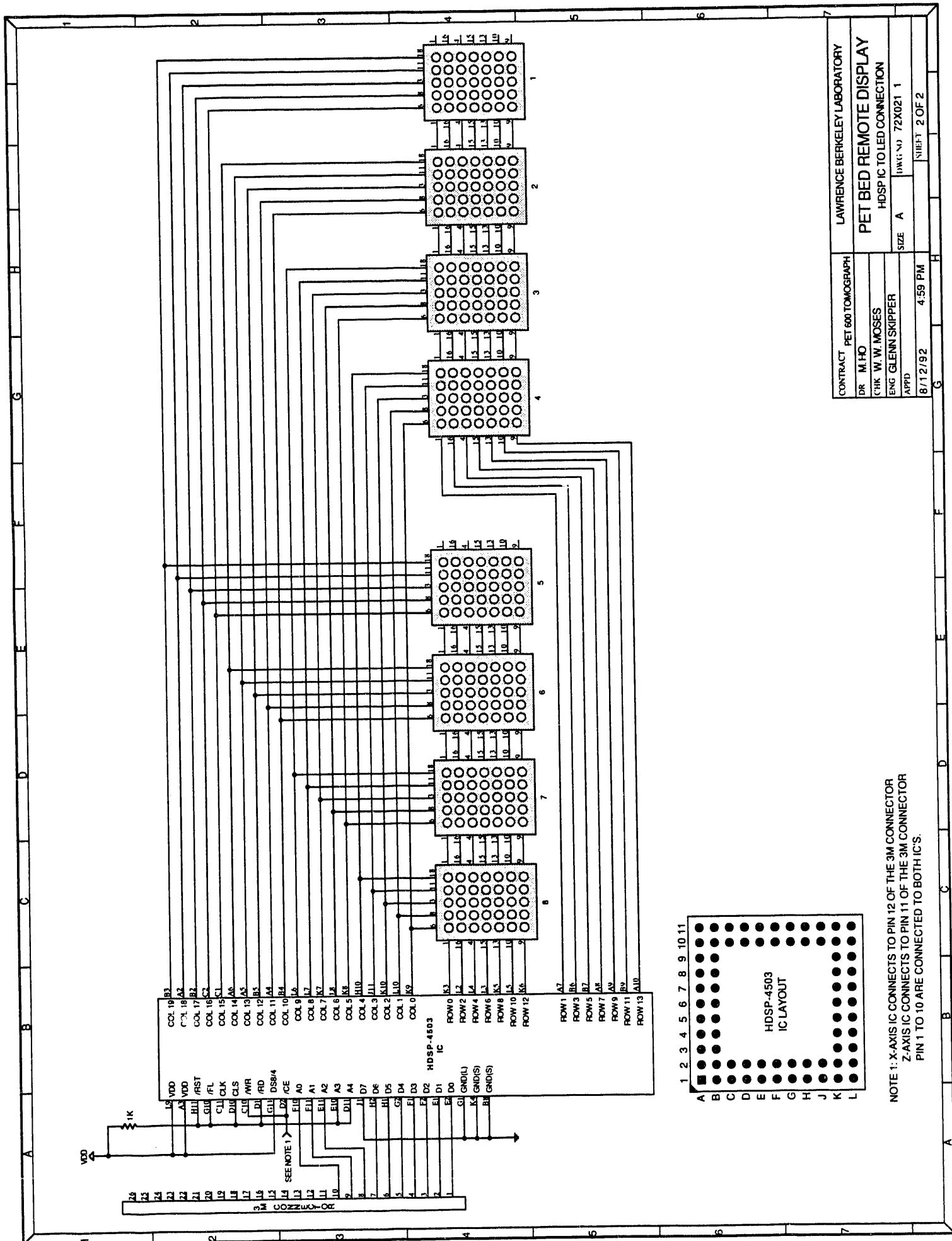


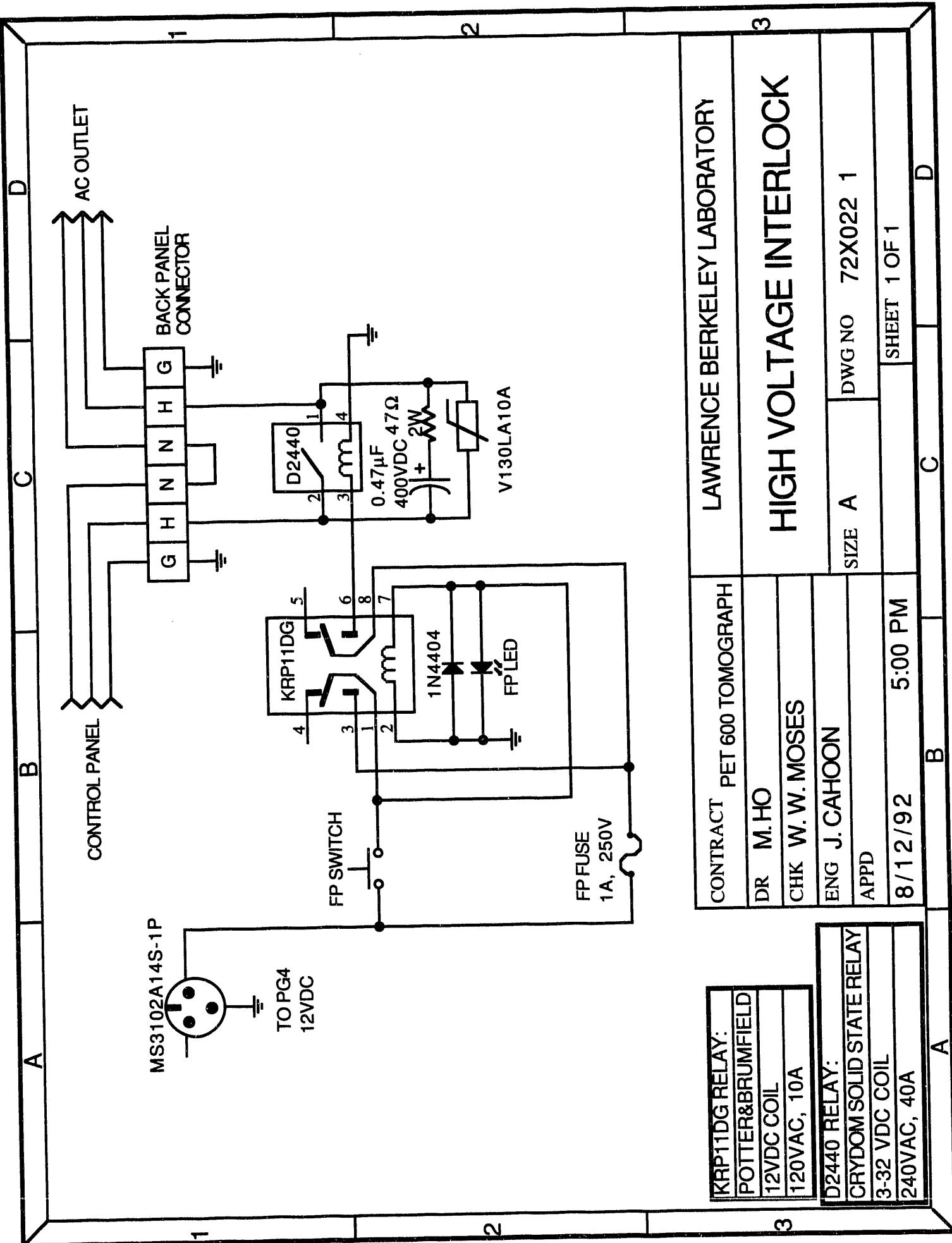


CONTRACT	PET 600 TOMOGRAPH	LAWRENCE BERKELEY LABORATORY	
DR	M. HO	PET 600 ECG GATE GENERATOR	
CHK	W. W. MOSES		
ENG	J. CAHOON		
APPD		SIZE A	DWG NO. 72X019 1
2/7/92		WAVEFORM	SHEET 2 OF 2

EQUIVALENT TO REMOTE POSITION DISPLAY UNIT IN DRAWING NUMBER 13X463-S1
 DIFFERENCES: LARGER DISPLAY (1.04 INCH)
 NO CLUTCH ON/OFF SWITCH (BURNDY CONNECTOR, PIN U)
 NO COMPUTER/LOCAL SWITCH (BURNDY CONNECTOR, PIN V)







**DATE
FILMED**

8 / 4 / 93

END

