

# TEXAS INSTRUMENTS

*Improving Man's Effectiveness Through Electronics*

## Model 960B Computer Maintenance Manual Electrical Drawings

MANUAL NO. 942773-9705  
ORIGINAL ISSUE 1 AUGUST 1974  
REVISED AND REISSUED 1 FEBRUARY 1977

**Digital Systems Division**



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## LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES DESTROY SUPERSEDED PAGES

Note: The portion of the text affected by the changes is indicated by a vertical bar in the outer margins of the page.

Model 960B Computer Maintenance Manual:  
Electrical Drawings (942773-9705)

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Total number of pages in this publication is 28 consisting of the following:

PAGE NO.	CHANGE NO.	PAGE NO.	CHANGE NO.	PAGE NO.	CHANGE NO.
Cover . . . . .	0				
Eff. Pages . . . . .	0				
1 - 22 . . . . .	0				
User's Resp . . . . .	0				
Bus. Reply . . . . .	0				
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Cover . . . . .	0				



MODEL 960B COMPUTER MAINTENANCE MANUAL  
ELECTRICAL DRAWINGS

This volume contains the electrical drawings necessary to properly maintain and service the Texas Instruments Model 960B Computer.

Drawings of the Communication Register Unit (CRU), the power supply, and the Direct Memory Access Channel (DMAC) are included in separate volumes. The load, pin, wire, and logic documentation lists are also in separate volumes. These publications are the following:

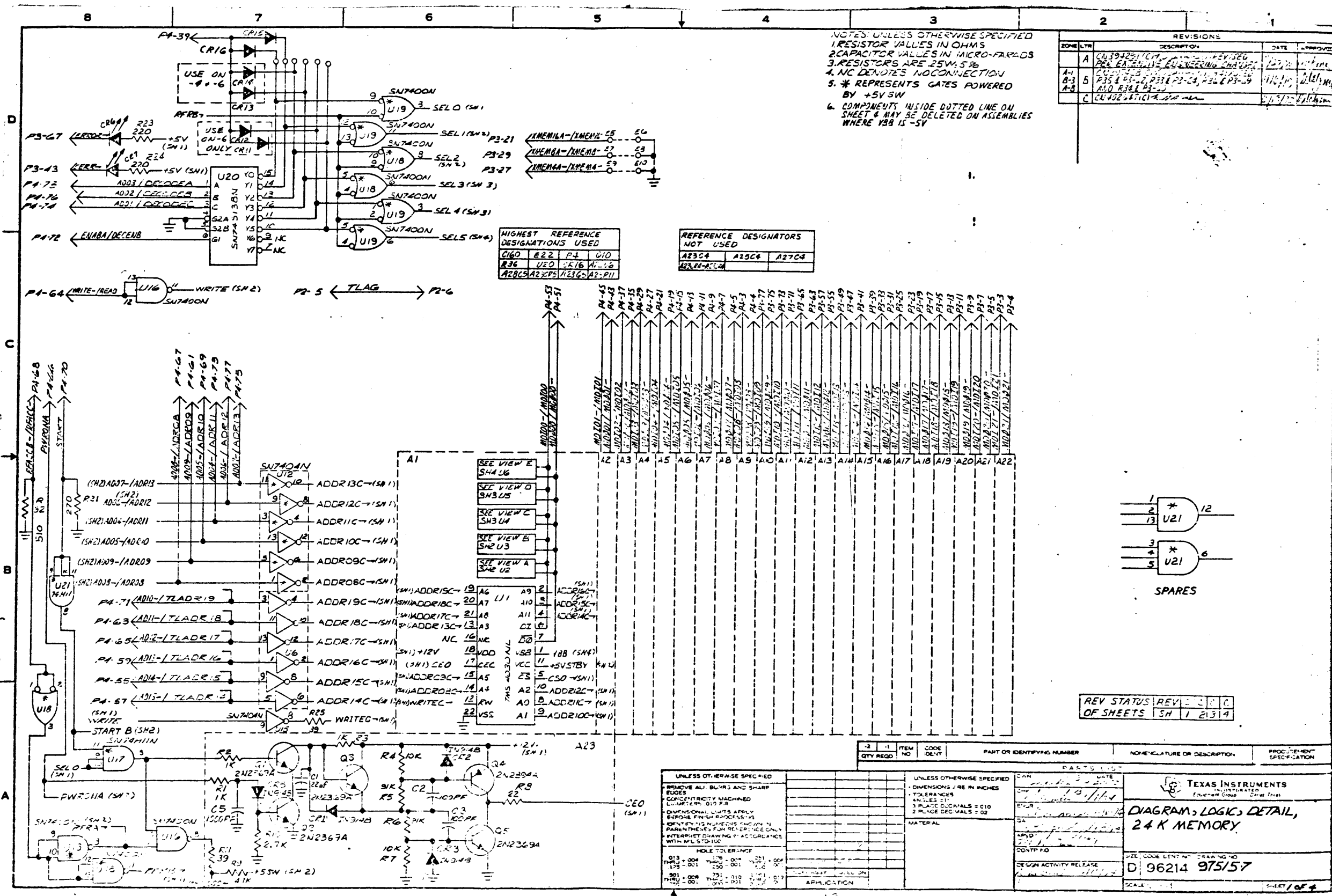
<u>Title</u>	<u>Manual No.</u>
Model 960 Computer Maintenance Manual: Communications Register Unit Diagrams and Parts Lists	226750-9704
Model 960B/980B Computer Maintenance Manual: Power Supply	942773-9703
Model 960/980 Computers Direct Memory Access Channel Manual	966312-9701
Model 960B Computer Maintenance Manual: Load, Pin and Wire Lists	942773-9706
Model 960B Computer Maintenance Manual: Logic Documentation List	942773-9707

The Model 960B electrical drawings are listed below according to function and are included after these introductory remarks in numeric order by TI part number.

<u>Description</u>	<u>Drawing No.</u>	<u>Manual Page No.</u>
Standard Equipment		
24K Memory, Logic Diagram	975157	3
AU Interconnect Board, Schematic Diagram	960763	11
CPU Motherboard, Schematic Diagram	943673	13
Memory Controller, Logic Diagram	943699	15
Control Panel, Logic Diagram	226757	29
ROM Loader, Logic Diagram	226863	33



<u>Description</u>	<u>Drawing No.</u>	<u>Manual Page No.</u>
Optional Equipment		
Left Memory Interconnect Board, Schematic Diagram	943712	35
Right Memory Interconnect Board, Schematic Diagram	943713	37
Left Memory Interconnect Board, Schematic Diagram	943715	39
Right Memory Interconnect Board, Schematic Diagram	943717	41

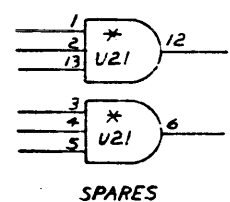


NOTES: UNLESS OTHERWISE SPECIFIED  
 1. RESISTOR VALUES IN OHMS  
 2. CAPACITOR VALUES IN MICRO-FARADS  
 3. RESISTORS ARE 25W, 5%  
 4. NC DENOTES NO CONNECTION  
 5. \* REPRESENTS GATES POWERED BY +5V SW  
 6. COMPONENTS INSIDE DOTTED LINE ON SHEET & MAY BE DELETED ON ASSEMBLIES WHERE VBB IS -5V

ZONE	LTN	REVISIONS	DESCRIPTION	DATE	APPROVED
A	01	1	INITIAL DESIGN	1/25/75	[Signature]
A-1	B-3	5	REVISED FOR FABRICATION	1/25/75	[Signature]
A-2	C	1	REVISED FOR FABRICATION	1/25/75	[Signature]

HIGHEST REFERENCE DESIGNATIONS USED			
U16D	E22	P1	U10
R36	U20	K16	A1-16
A23C4	A25C4	A27C4	

REFERENCE DESIGNATORS NOT USED		
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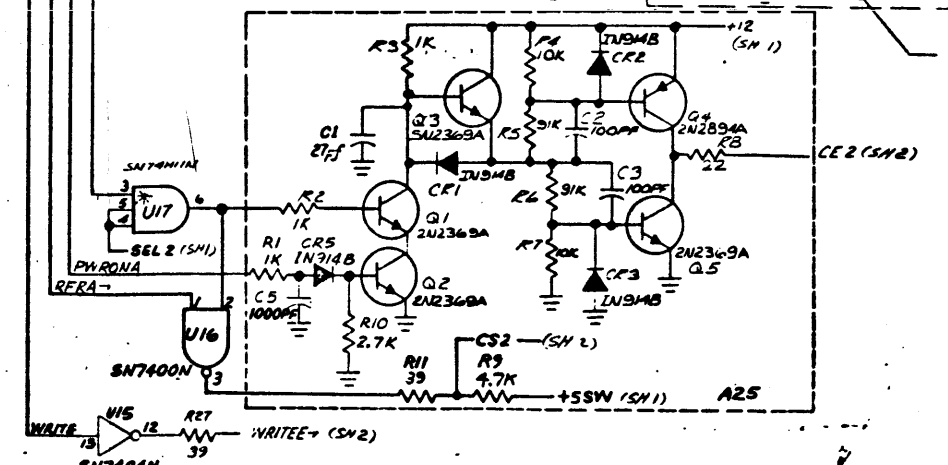
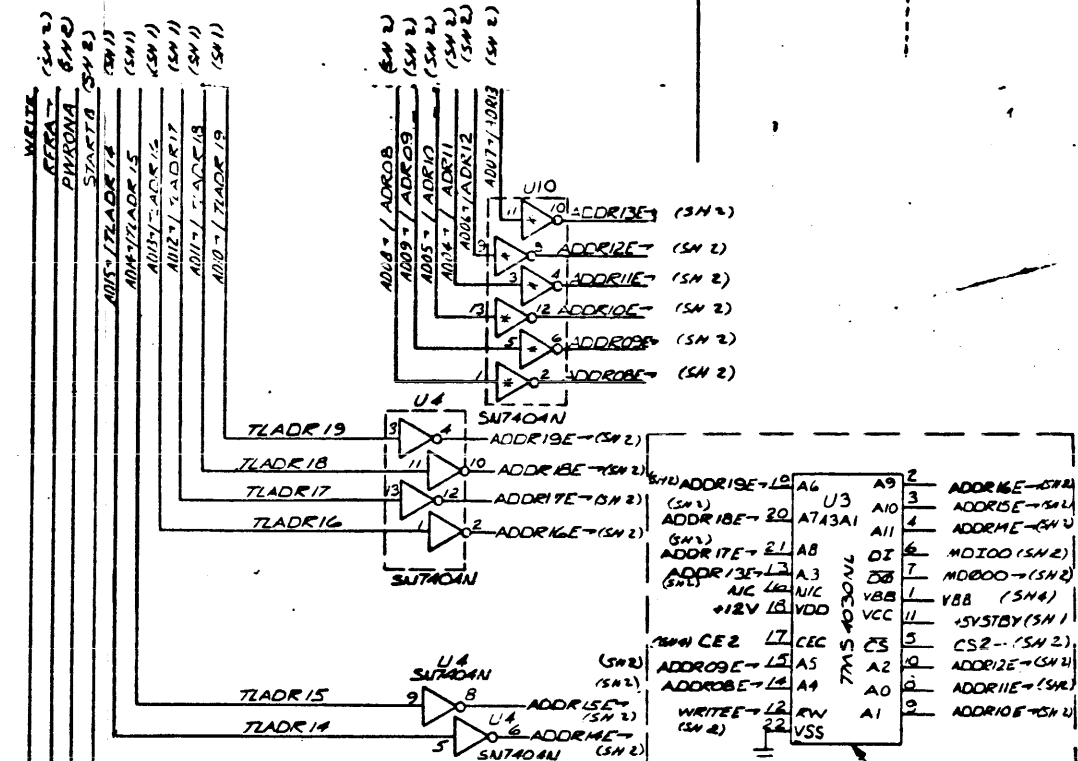
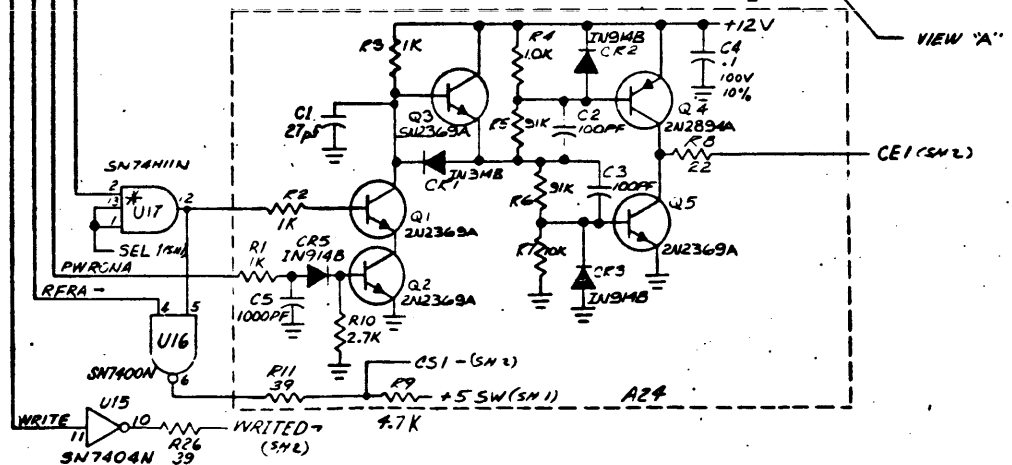
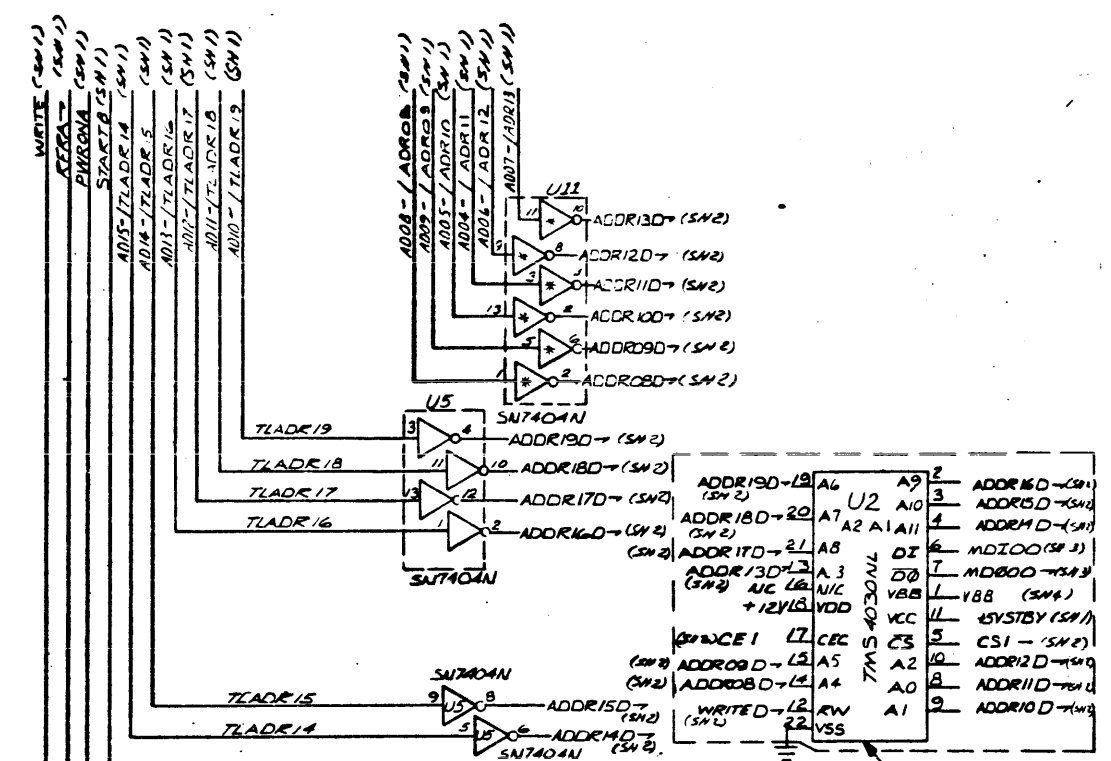


REV STATUS	REV	DATE
OF SHEETS	SH 1	21319

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UNLESS OTHERWISE SPECIFIED	APPROVAL	DATE	DESIGNER	DATE	DESIGN CHECKED
APPROVAL	DATE	DESIGNER	DATE	DESIGN CHECKED	DATE

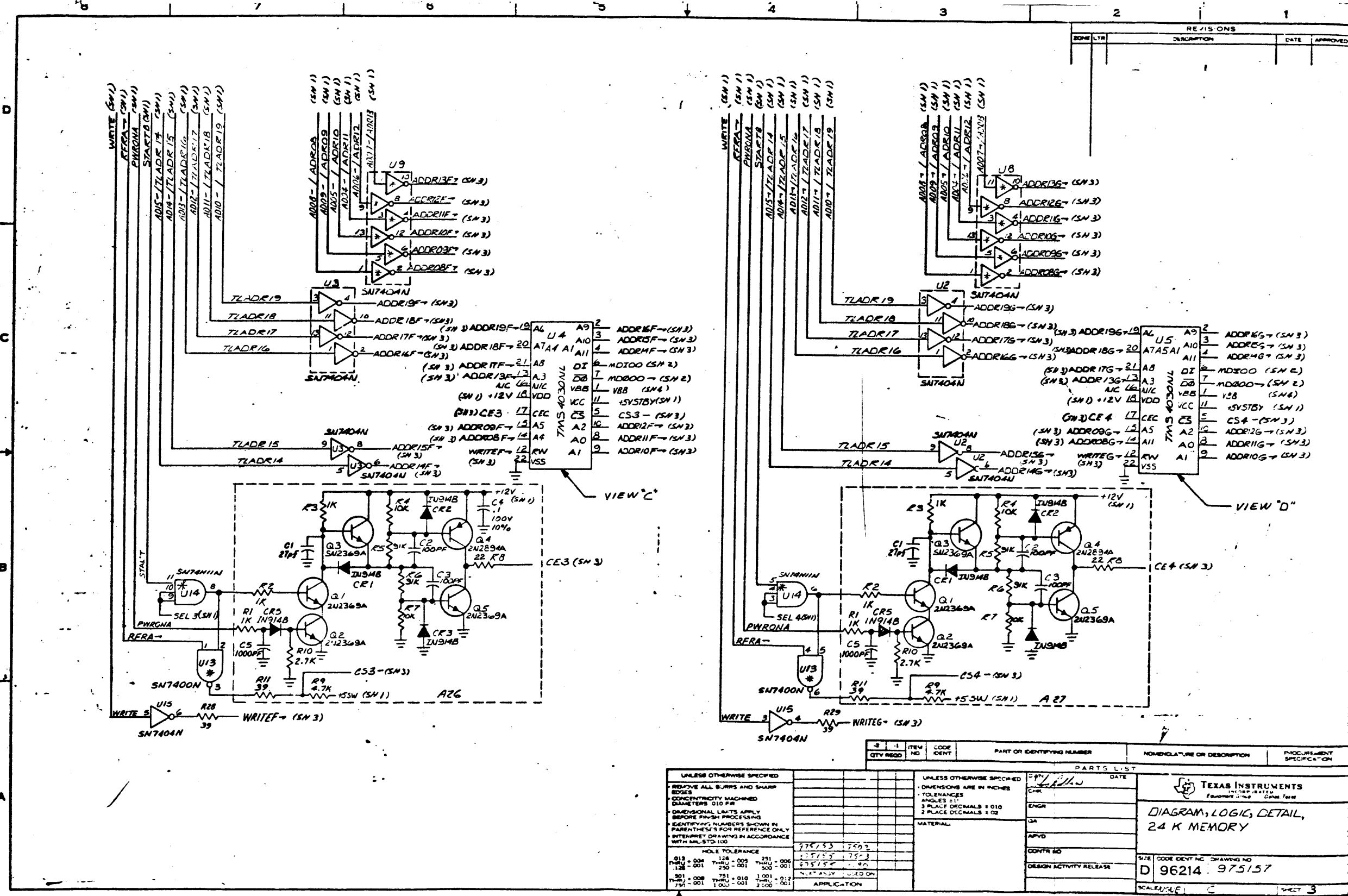
TEXAS INSTRUMENTS  
 INTEGRATED EQUIPMENT GROUP  
**DIAGRAMS LOGIC DETAIL, 24 K MEMORY**  
 SIZE: CODE LENT NO: DRAWING NO: D 96214 975/57  
 SCALE: 1:1 SHEET 1 OF 4

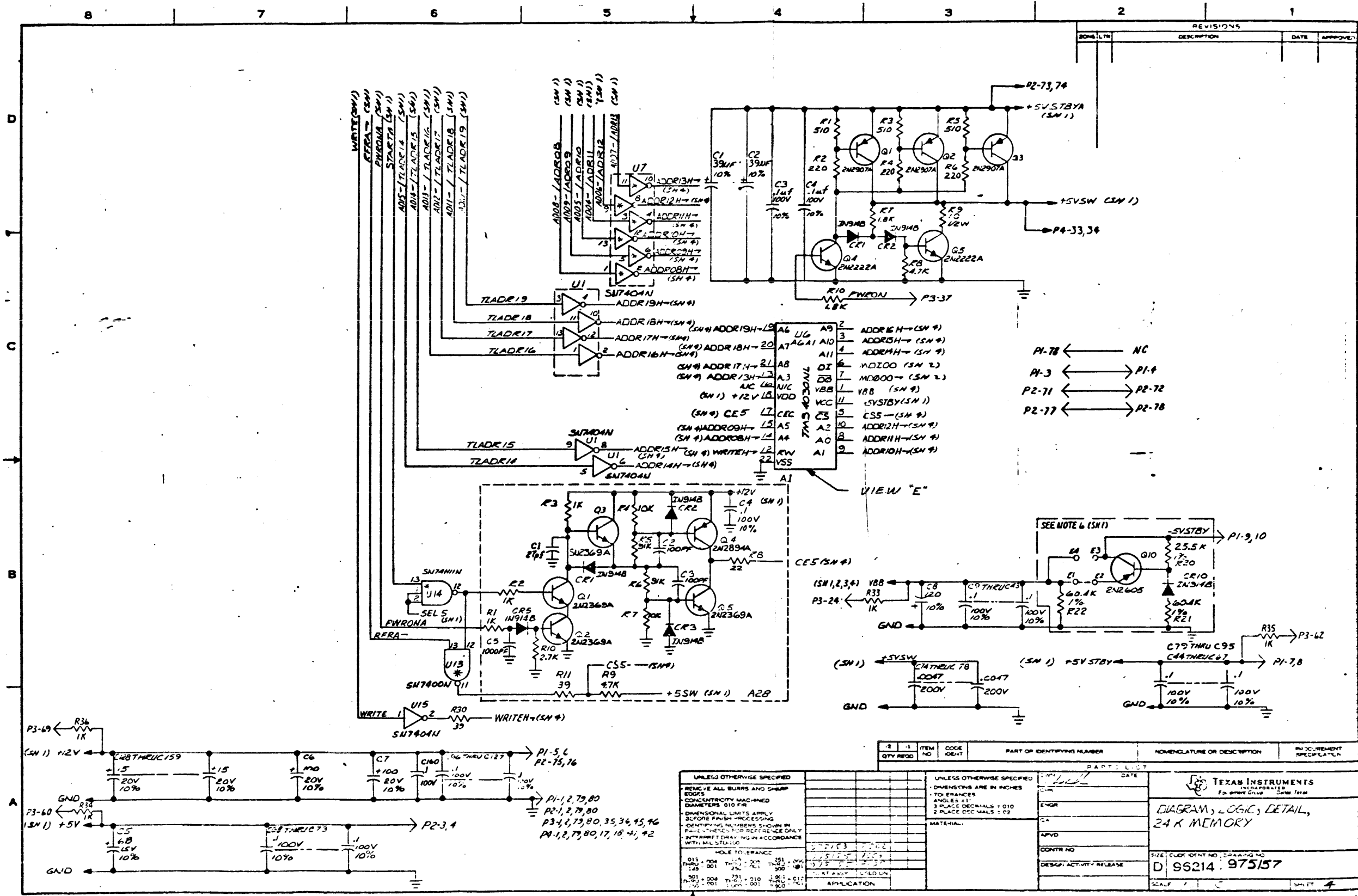
REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED



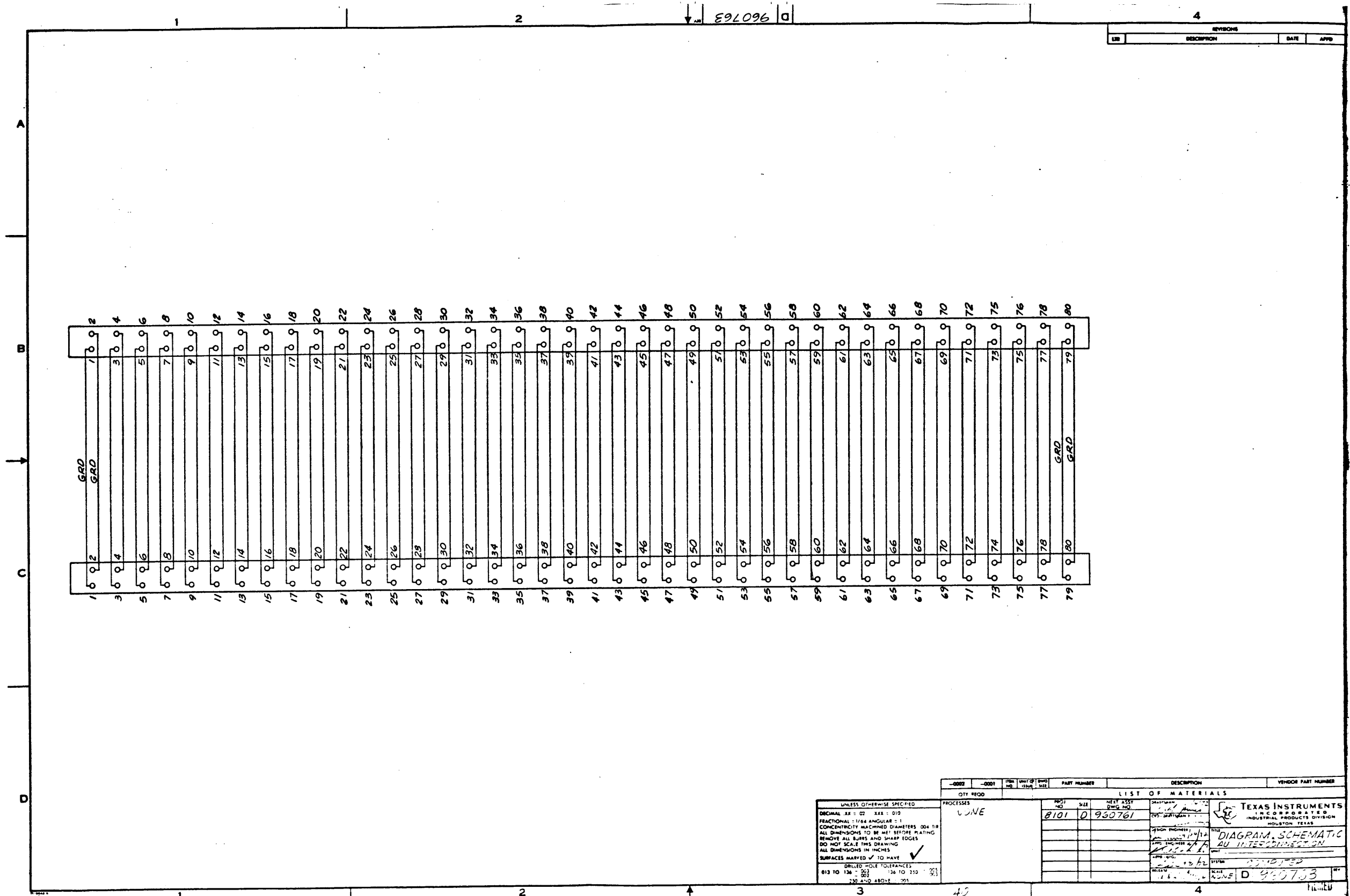
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UNLESS OTHERWISE SPECIFIED: REMOVE ALL BURRS AND SHARP EDGES CONCENTRICITY MACHINED DIMENSIONS .010 IN DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING IDENTIFYING NUMBERS SHALL BE IN PARENTHESES FOR REFERENCE ONLY INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-120	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± 1° 3 PLACE DECIMALS = .010 2 PLACE DECIMALS = .02	DATE: 1/25/53
		MATERIAL:
HOLE TOLERANCE: .013 - .024 ± .005 .025 - .049 ± .005 .050 - .099 ± .005 .100 - .149 ± .005 .150 - .249 ± .005 .250 - .499 ± .005 .500 - .999 ± .005 1.000 - 1.499 ± .005	APPLICATION:	DATE: 1/25/53
PARTS LIST		DATE: 1/25/53
TEXAS INSTRUMENTS INCORPORATED Equipment Group - Dallas, Texas		DATE: 1/25/53
DIAGRAM, LOGIC, DETAIL, 24 K MEMORY		DATE: 1/25/53
SIZE: CODE DENT (NO. DRAWING NO.) D 96214 : 375157		DATE: 1/25/53
SCALE: 1/16" = 1"		SHEET 2



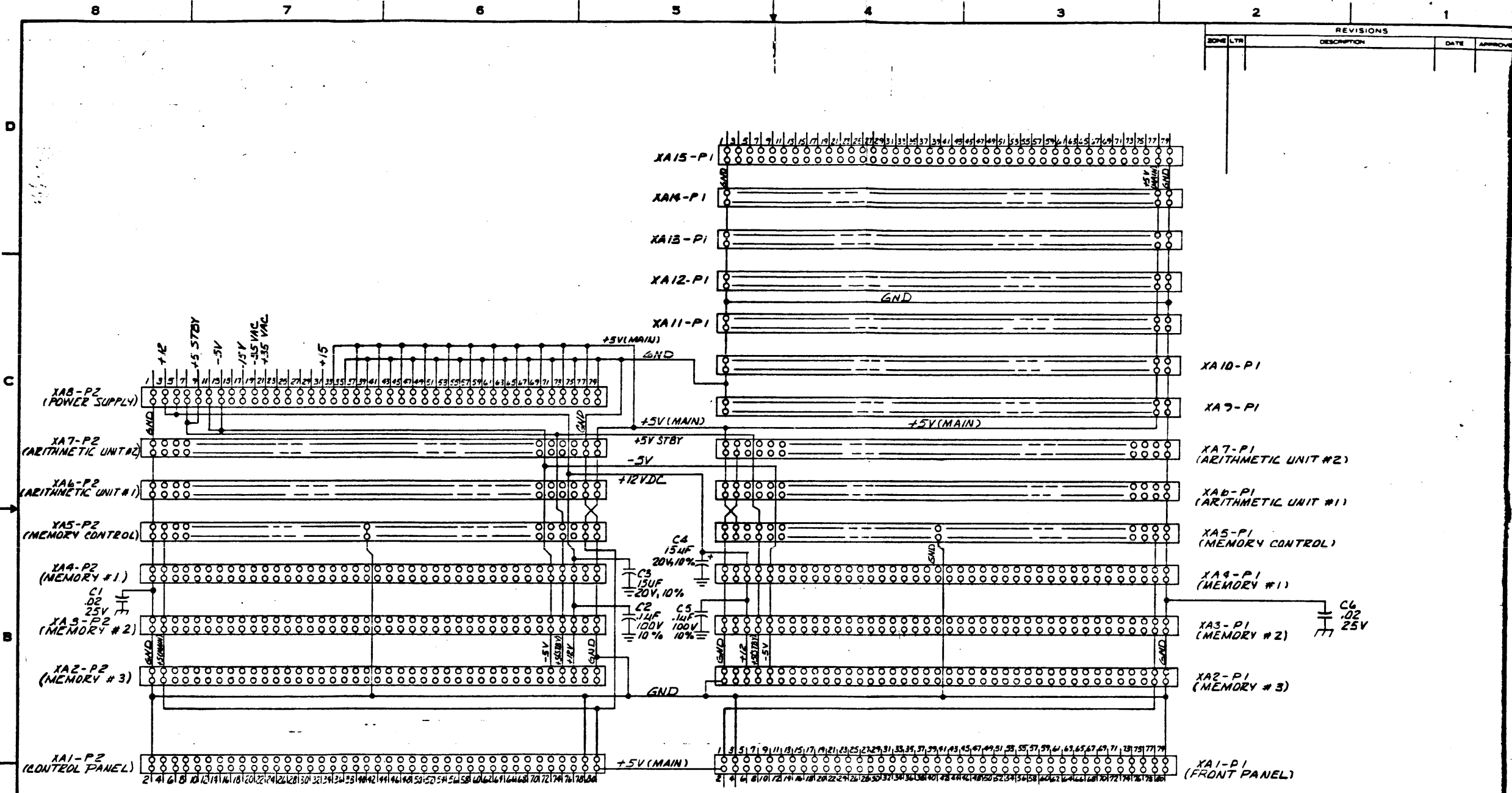






REVISIONS		
REV	DESCRIPTION	DATE

UNLESS OTHERWISE SPECIFIED		CITY REQD		PART NUMBER		DESCRIPTION		VENDOR PART NUMBER	
DECIMAL: .001 - .010		FRAC: 1/16, 1/8, 1/4, 1/2, 3/4, 1		MATERIAL		LIST OF MATERIALS		TEXAS INSTRUMENTS INCORPORATED INDUSTRIAL PRODUCTS DIVISION HOUSTON, TEXAS	
FRACTIONAL: 1/16 ANGULAR: 1		CONCENTRICITY MACHINED DIAMETERS: .004 TIR		ALL DIMENSIONS TO BE MET BEFORE PLATING		REMOVE ALL BURRS AND SHARP EDGES		TITLE: <b>DIAGRAM, SCHEMATIC</b> <b>BU INTERCONNECTION</b>	
DO NOT SCALE THIS DRAWING		ALL DIMENSIONS IN INCHES		SURFACES MARKED ✓ TO HAVE		DRAWN BY: <i>[Signature]</i> CHECKED BY: <i>[Signature]</i> DATE: 12-62		SCALE: <b>AS SHOWN</b> Dwg No: <b>D 960763</b>	
DRILLED HOLE TOLERANCES: .012 TO .124 - .001 .125 TO .250 - .0015 .251 AND ABOVE - .002		PROCESSES: NONE		NEXT ASSY Dwg No: <b>8101 D 960761</b>		APPROVED BY: <i>[Signature]</i> DATE: 12-62		FILE NO: <b>40</b>	



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVE

HIGHEST REF DES USED		
XA15-P1		
XA8-P2		
C-6		

QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

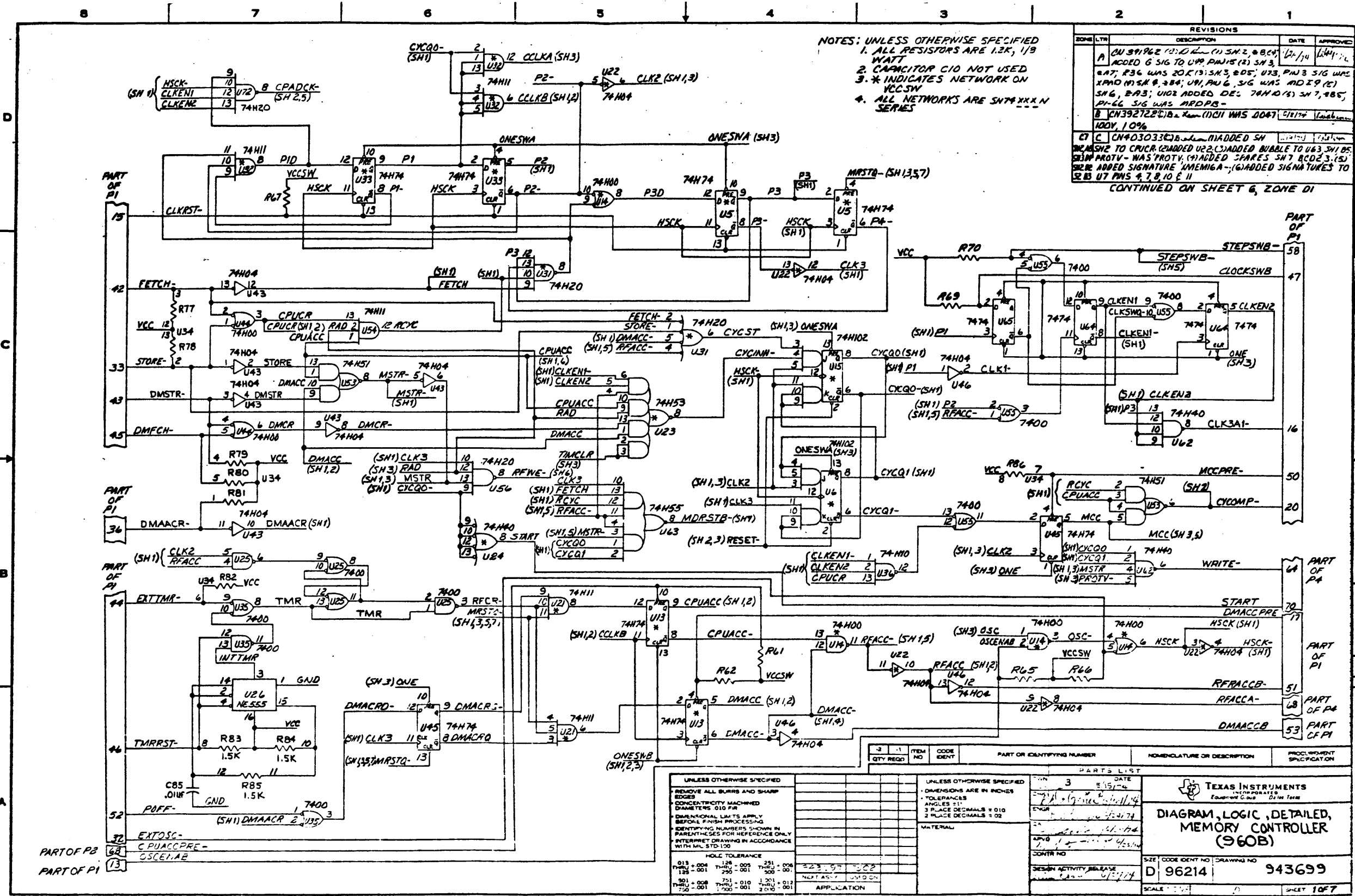
UNLESS OTHERWISE SPECIFIED		UNLESS OTHERWISE SPECIFIED	
REMOVE ALL BURRS AND SHARP EDGES	CONCENTRICITY MACHINED DIAMETERS .010 FIR	DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING	IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY. INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100
HOLE TOLERANCE			
.015 +.004	.125 +.008	.251 +.008	
.125 - .001	.250 - .001	.250 - .001	
.301 +.008	.751 +.010	1.001 +.012	
.750 - .001	1.000 - .001	2.000 - .001	

PARTS LIST	
OWN	DATE

TEXAS INSTRUMENTS <small>INCORPORATED</small> Equipment Group Dallas, Texas	<b>ELECTRONIC SCHEMATIC DIAGRAM</b> CPU BACK PANEL
SIZE: <b>D</b> CODE IDENT NO: <b>96214</b> DRAWING NO: <b>735673</b>	SHEET: <b>8</b>



NOTES: UNLESS OTHERWISE SPECIFIED  
 1. ALL RESISTORS ARE 1/8W, 1/8  
 WATT  
 2. CAPACITOR C10 NOT USED  
 3. \* INDICATES NETWORK ON  
 VCCSW  
 4. ALL NETWORKS ARE SNT#XXXN  
 SERIES

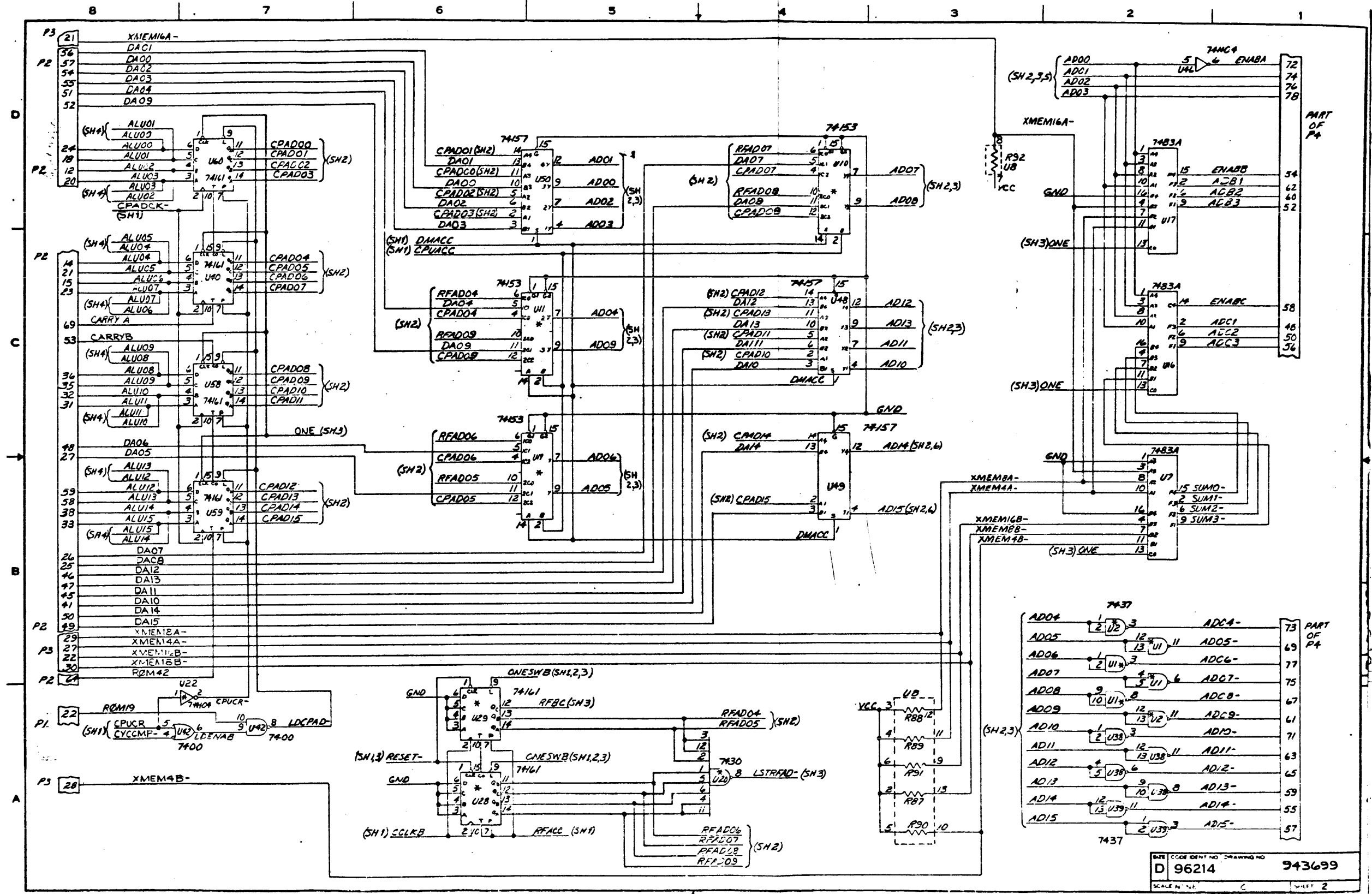
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A	12/14/74	ADD SIG TO UPP PINS (2) SH3, (1) SH2, (8) SH4, (1) SH5, (1) SH6, (1) SH7, (1) SH8, (1) SH9, (1) SH10, (1) SH11, (1) SH12, (1) SH13, (1) SH14, (1) SH15, (1) SH16, (1) SH17, (1) SH18, (1) SH19, (1) SH20, (1) SH21, (1) SH22, (1) SH23, (1) SH24, (1) SH25, (1) SH26, (1) SH27, (1) SH28, (1) SH29, (1) SH30, (1) SH31, (1) SH32, (1) SH33, (1) SH34, (1) SH35, (1) SH36, (1) SH37, (1) SH38, (1) SH39, (1) SH40, (1) SH41, (1) SH42, (1) SH43, (1) SH44, (1) SH45, (1) SH46, (1) SH47, (1) SH48, (1) SH49, (1) SH50, (1) SH51, (1) SH52, (1) SH53, (1) SH54, (1) SH55, (1) SH56, (1) SH57, (1) SH58, (1) SH59, (1) SH60, (1) SH61, (1) SH62, (1) SH63, (1) SH64, (1) SH65, (1) SH66, (1) SH67, (1) SH68, (1) SH69, (1) SH70, (1) SH71, (1) SH72, (1) SH73, (1) SH74, (1) SH75, (1) SH76, (1) SH77, (1) SH78, (1) SH79, (1) SH80, (1) SH81, (1) SH82, (1) SH83, (1) SH84, (1) SH85, (1) SH86, (1) SH87, (1) SH88, (1) SH89, (1) SH90, (1) SH91, (1) SH92, (1) SH93, (1) SH94, (1) SH95, (1) SH96, (1) SH97, (1) SH98, (1) SH99, (1) SH100	
B	12/14/74	ADD SIG TO UPP PINS (1) SH2, (8) SH4, (1) SH5, (1) SH6, (1) SH7, (1) SH8, (1) SH9, (1) SH10, (1) SH11, (1) SH12, (1) SH13, (1) SH14, (1) SH15, (1) SH16, (1) SH17, (1) SH18, (1) SH19, (1) SH20, (1) SH21, (1) SH22, (1) SH23, (1) SH24, (1) SH25, (1) SH26, (1) SH27, (1) SH28, (1) SH29, (1) SH30, (1) SH31, (1) SH32, (1) SH33, (1) SH34, (1) SH35, (1) SH36, (1) SH37, (1) SH38, (1) SH39, (1) SH40, (1) SH41, (1) SH42, (1) SH43, (1) SH44, (1) SH45, (1) SH46, (1) SH47, (1) SH48, (1) SH49, (1) SH50, (1) SH51, (1) SH52, (1) SH53, (1) SH54, (1) SH55, (1) SH56, (1) SH57, (1) SH58, (1) SH59, (1) SH60, (1) SH61, (1) SH62, (1) SH63, (1) SH64, (1) SH65, (1) SH66, (1) SH67, (1) SH68, (1) SH69, (1) SH70, (1) SH71, (1) SH72, (1) SH73, (1) SH74, (1) SH75, (1) SH76, (1) SH77, (1) SH78, (1) SH79, (1) SH80, (1) SH81, (1) SH82, (1) SH83, (1) SH84, (1) SH85, (1) SH86, (1) SH87, (1) SH88, (1) SH89, (1) SH90, (1) SH91, (1) SH92, (1) SH93, (1) SH94, (1) SH95, (1) SH96, (1) SH97, (1) SH98, (1) SH99, (1) SH100	
C	12/14/74	ADD SIG TO UPP PINS (1) SH2, (8) SH4, (1) SH5, (1) SH6, (1) SH7, (1) SH8, (1) SH9, (1) SH10, (1) SH11, (1) SH12, (1) SH13, (1) SH14, (1) SH15, (1) SH16, (1) SH17, (1) SH18, (1) SH19, (1) SH20, (1) SH21, (1) SH22, (1) SH23, (1) SH24, (1) SH25, (1) SH26, (1) SH27, (1) SH28, (1) SH29, (1) SH30, (1) SH31, (1) SH32, (1) SH33, (1) SH34, (1) SH35, (1) SH36, (1) SH37, (1) SH38, (1) SH39, (1) SH40, (1) SH41, (1) SH42, (1) SH43, (1) SH44, (1) SH45, (1) SH46, (1) SH47, (1) SH48, (1) SH49, (1) SH50, (1) SH51, (1) SH52, (1) SH53, (1) SH54, (1) SH55, (1) SH56, (1) SH57, (1) SH58, (1) SH59, (1) SH60, (1) SH61, (1) SH62, (1) SH63, (1) SH64, (1) SH65, (1) SH66, (1) SH67, (1) SH68, (1) SH69, (1) SH70, (1) SH71, (1) SH72, (1) SH73, (1) SH74, (1) SH75, (1) SH76, (1) SH77, (1) SH78, (1) SH79, (1) SH80, (1) SH81, (1) SH82, (1) SH83, (1) SH84, (1) SH85, (1) SH86, (1) SH87, (1) SH88, (1) SH89, (1) SH90, (1) SH91, (1) SH92, (1) SH93, (1) SH94, (1) SH95, (1) SH96, (1) SH97, (1) SH98, (1) SH99, (1) SH100	

CONTINUED ON SHEET 6, ZONE D1

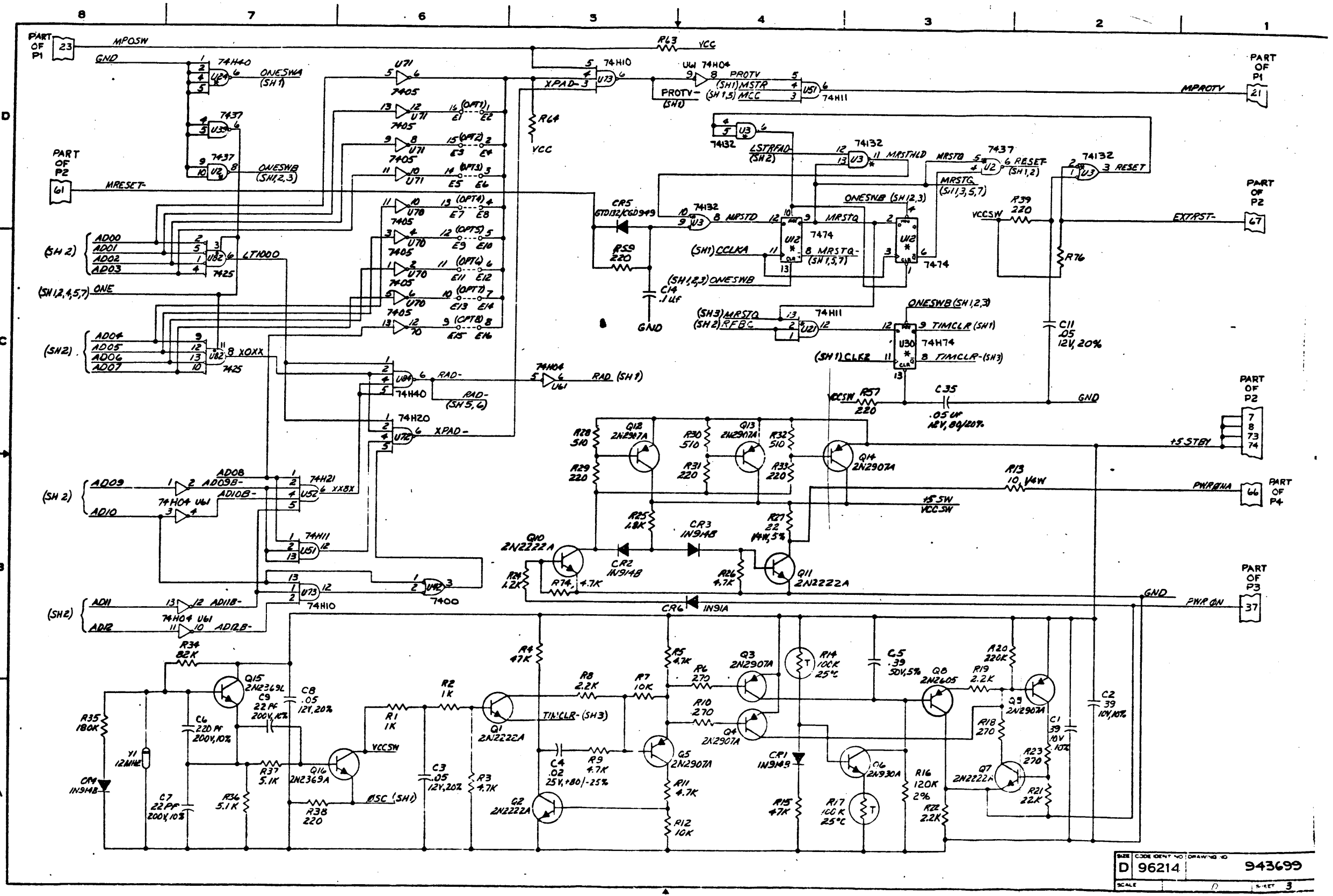
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DATE	BY	APP'D	CHK'D	DATE	BY	APP'D	CHK'D
3	15/74						

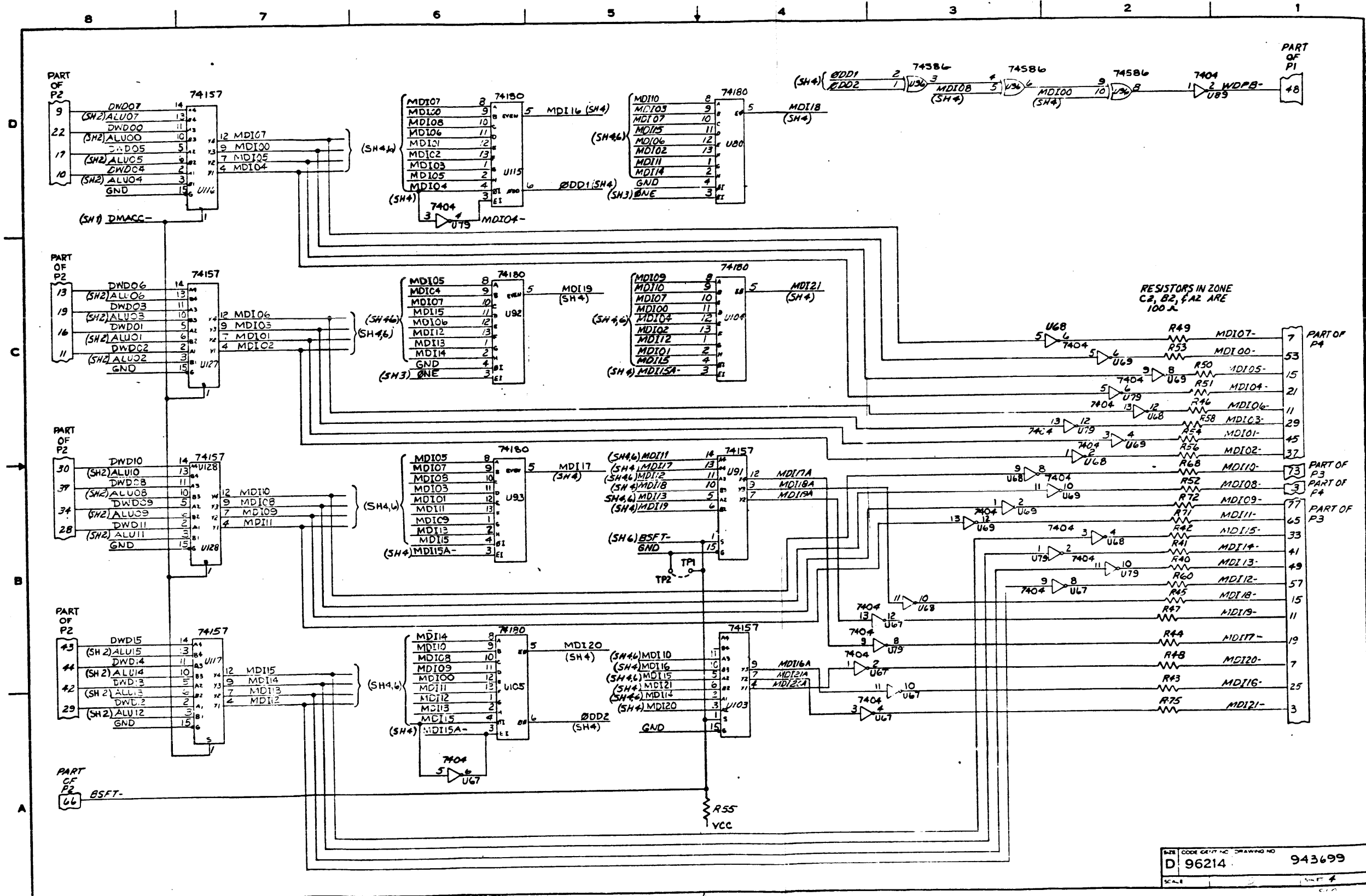
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<p>HOLE TOLERANCE</p> <table border="1"> <tr> <td>013</td> <td>128</td> <td>251</td> </tr> <tr> <td>THRU .008</td> <td>THRU .009</td> <td>THRU .009</td> </tr> <tr> <td>129</td> <td>252</td> <td>300</td> </tr> <tr> <td>THRU .008</td> <td>THRU .010</td> <td>THRU .012</td> </tr> <tr> <td>130</td> <td>253</td> <td>301</td> </tr> <tr> <td>THRU .001</td> <td>THRU .001</td> <td>THRU .001</td> </tr> </table>		013	128	251	THRU .008	THRU .009	THRU .009	129	252	300	THRU .008	THRU .010	THRU .012	130	253	301	THRU .001	THRU .001	THRU .001	<p>DATE</p> <p>3 15/74</p> <p>BY</p> <p>15/74</p> <p>APP'D</p> <p>15/74</p> <p>CHK'D</p> <p>15/74</p>	
013	128	251																			
THRU .008	THRU .009	THRU .009																			
129	252	300																			
THRU .008	THRU .010	THRU .012																			
130	253	301																			
THRU .001	THRU .001	THRU .001																			
<p>DESIGN ACTIVITY RELEASE</p> <p>DATE</p> <p>15/74</p>		<p>SIZE</p> <p>CODE IDENT NO</p> <p>DRAWING NO</p> <p>96214 943699</p> <p>SCALE</p> <p>1:1</p> <p>SHEET</p> <p>10/7</p>																			



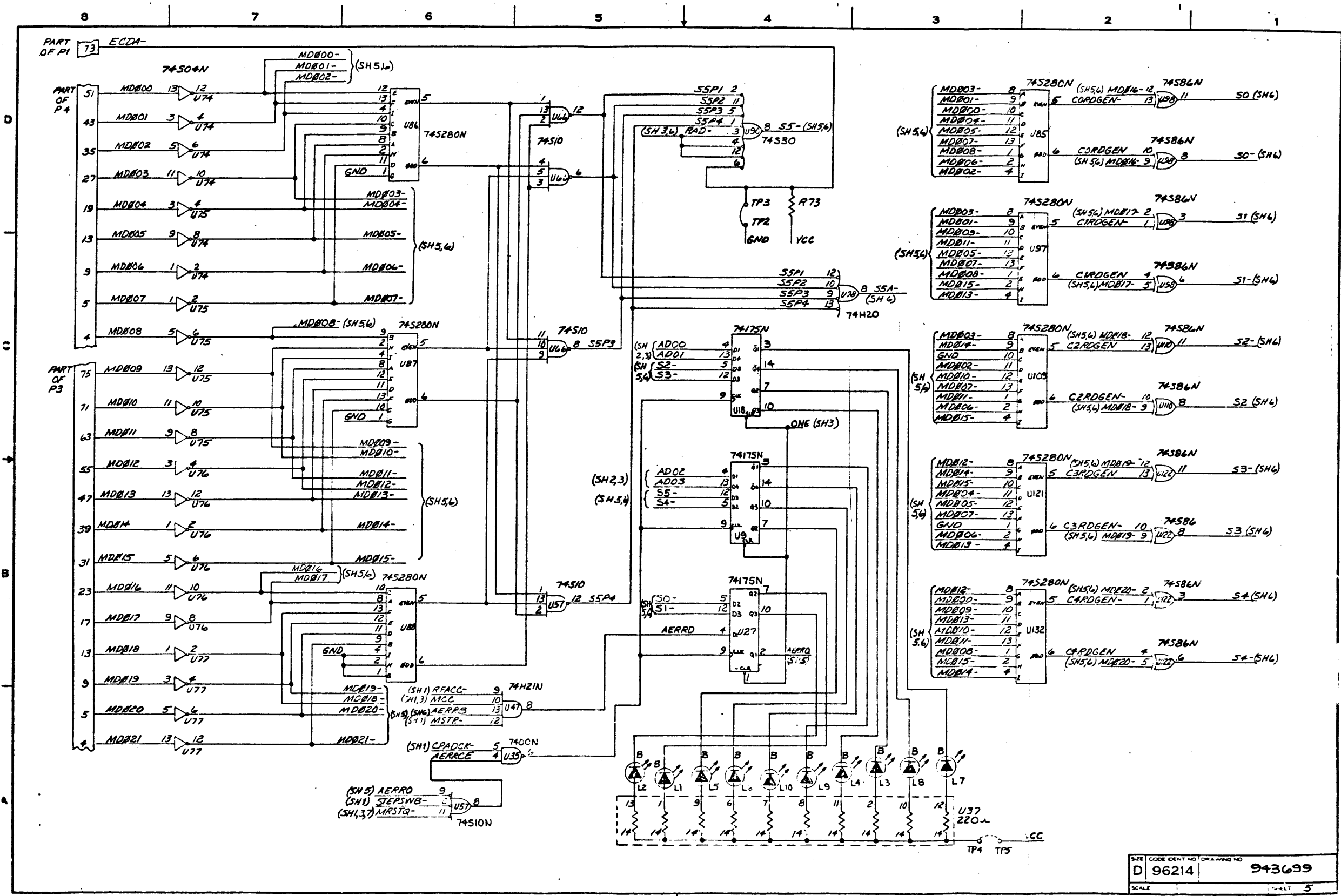
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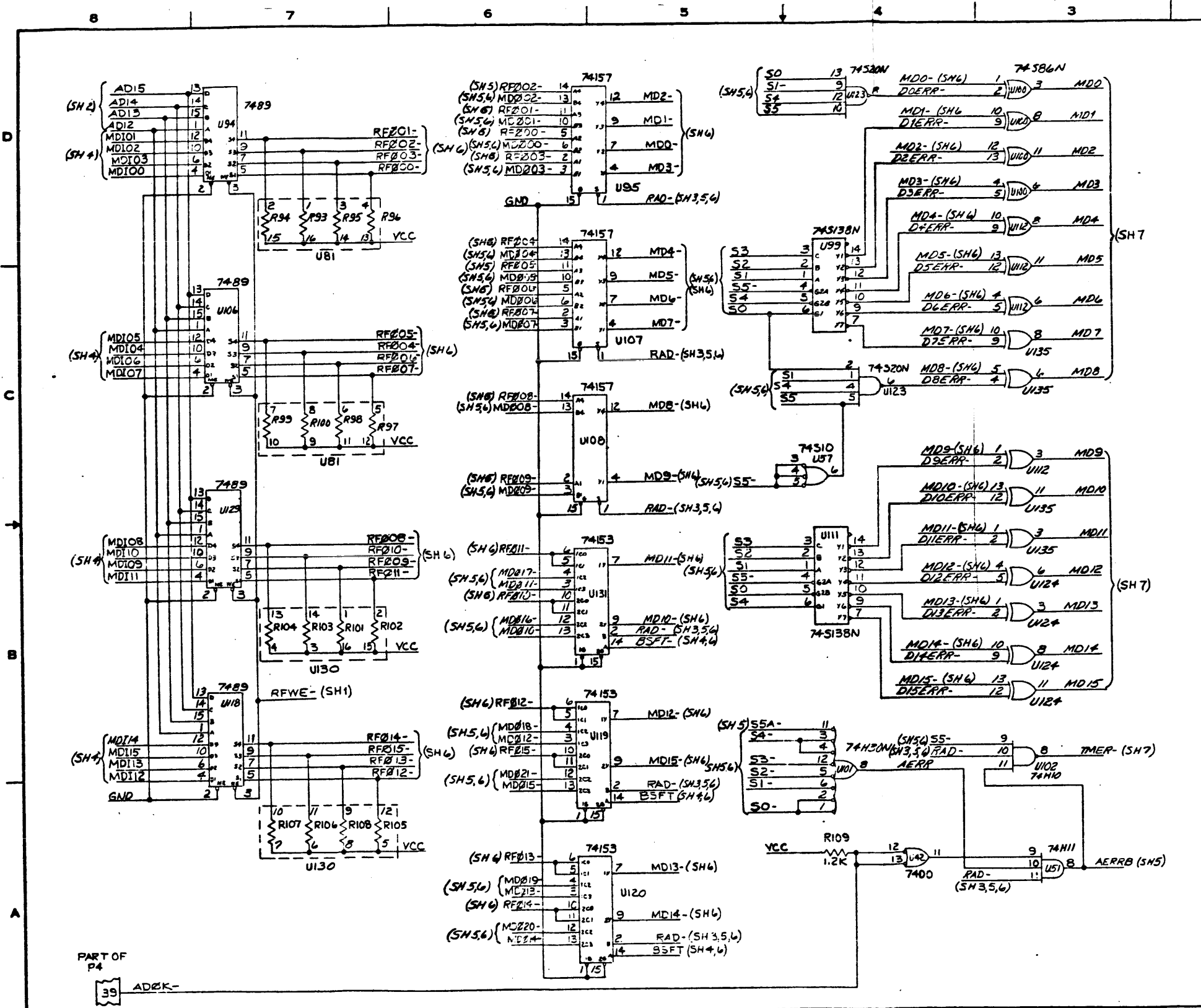
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 D 96214 943699  
 SCALE 0 3-LET 3



SHEET CODE OF IT NO. DRAWING NO.  
**D 96214**      **943699**  
 SCALE:      SHEET 4



SIZE	CODE	REV	NO	DRAWING NO
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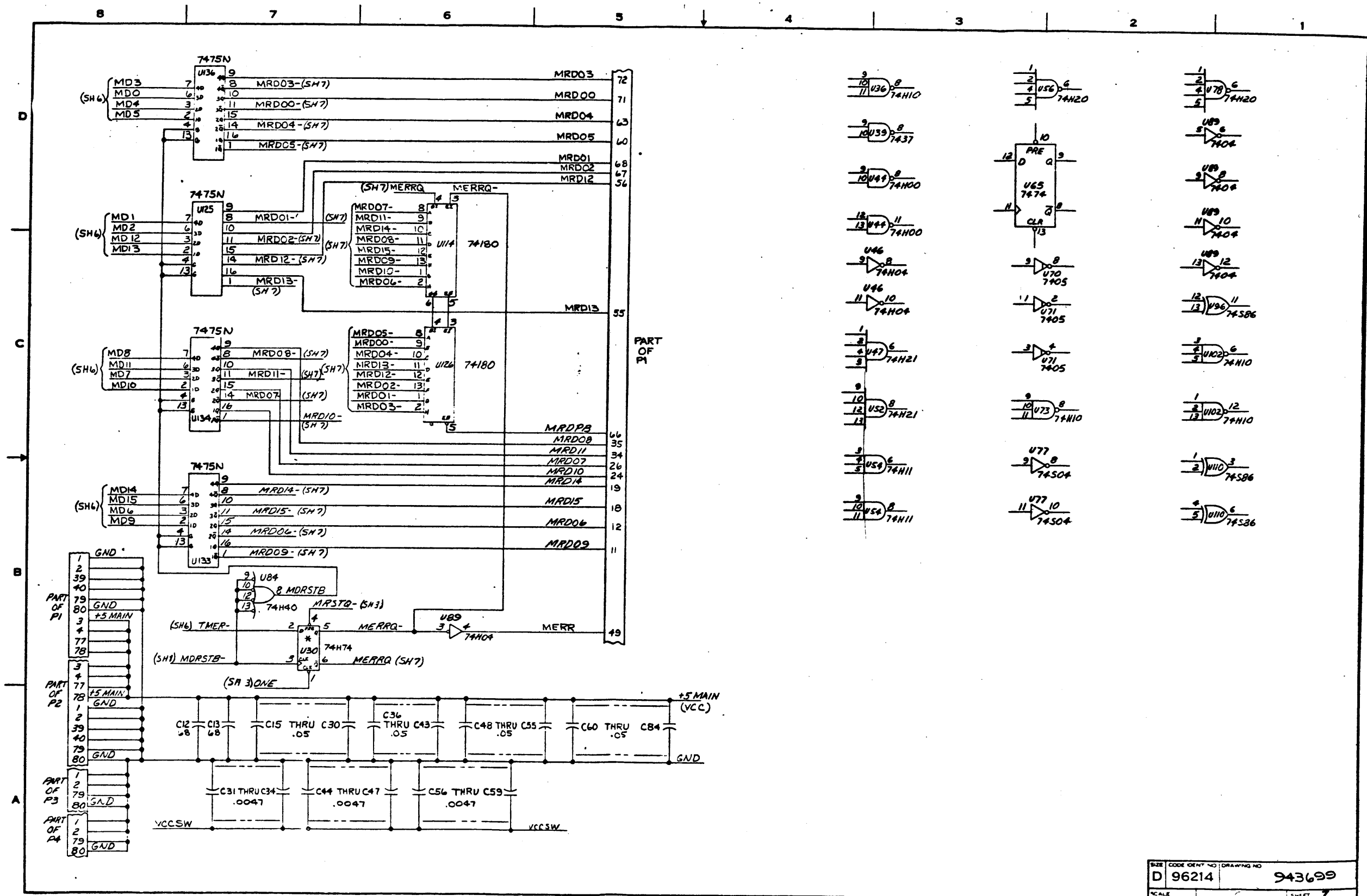


REVISIONS			
REV. LTR	DESCRIPTION	DATE	APPROVED
	CN397476 (CIR D.2. Rev. SH 1, (1)) ADDED "-" TO STE SWB 2 PLACES C1, 2 CORRECTED LOGIC SYMBOL OF U23, C5, 13, ADDED "-" TO CPUACCPRE AP. (4) U115 PIN 3 DID GO TO MD13A & ADDED MD10A D-6 SH6 (5) R16 WAS 470K A3, SH3, 16 ADDED "-" RF008 & RF009, B7, SH6	1/16/75	J. B. Y. S.

PART OF  
P4  
ADZK-  
39

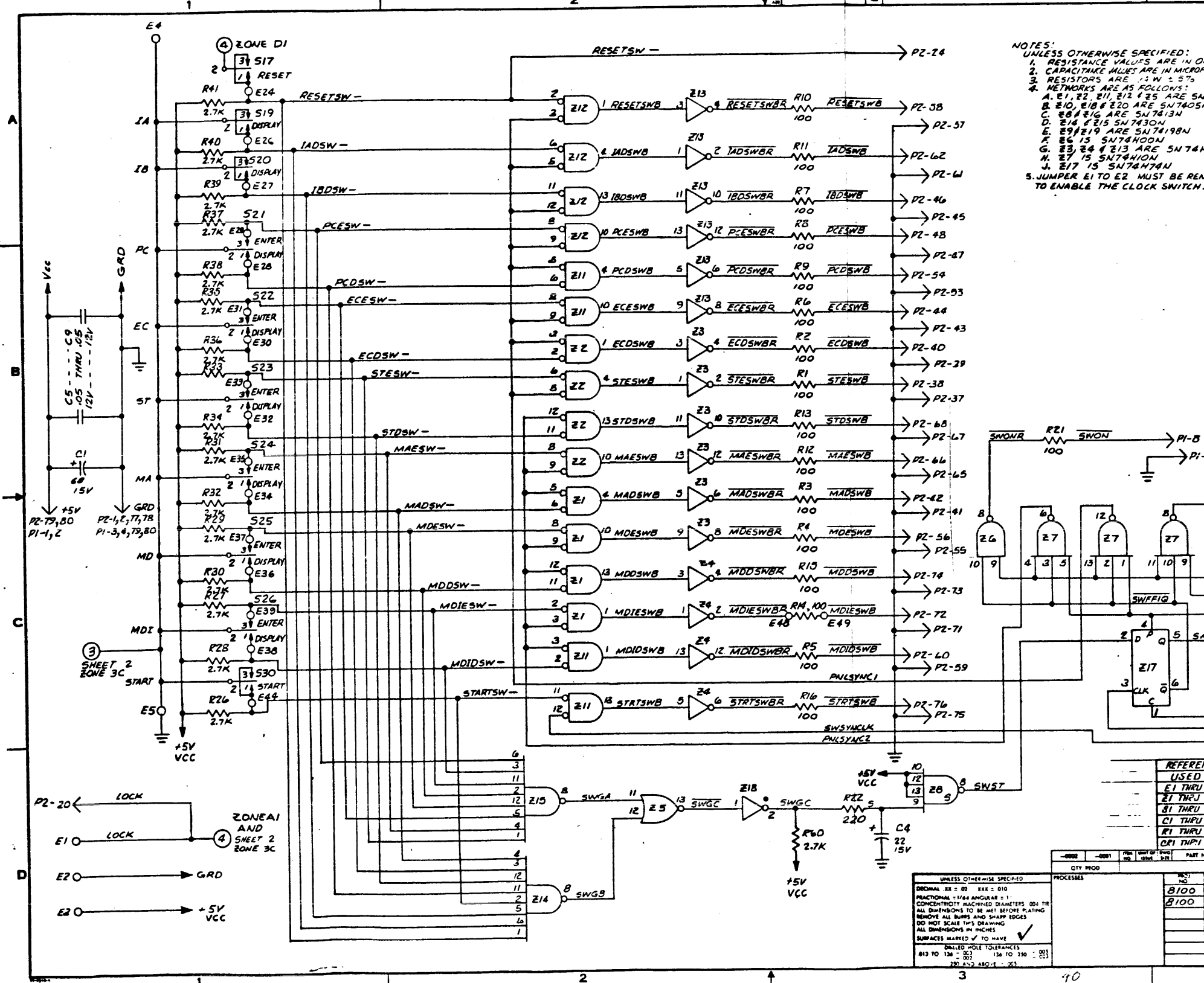
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D 96214 943699  
SCALE SHEET 6





SIZE	CODE IDENT NO	DRAWING NO
D	96214	943699
SCALE		SHEET 7

226757



NOTES:  
 UNLESS OTHERWISE SPECIFIED:  
 1. RESISTANCE VALUES ARE IN OHMS  
 2. CAPACITANCE VALUES ARE IN MICROFARADS  
 3. RESISTORS ARE 1/2 W ± 5%  
 4. NETWORKS ARE AS FOLLOWS:  
 A. Z1, Z2, Z11, Z12, Z25 ARE SN7402N  
 B. Z10, Z18, Z20 ARE SN7405N  
 C. Z8, Z16 ARE SN7413N  
 D. Z14, Z15 ARE SN7430N  
 E. Z9, Z19 ARE SN74198N  
 F. Z6, Z13 ARE SN7400N  
 G. Z3, Z4, Z13 ARE SN7404N  
 H. Z7 IS SN7400N  
 J. Z17 IS SN7400N  
 5. JUMPER E1 TO E2 MUST BE REMOVED TO ENABLE THE CLOCK SWITCH.

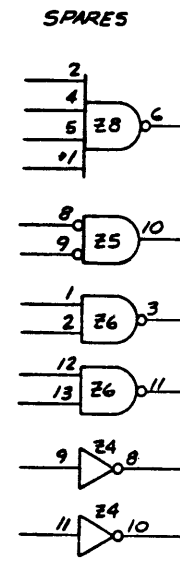
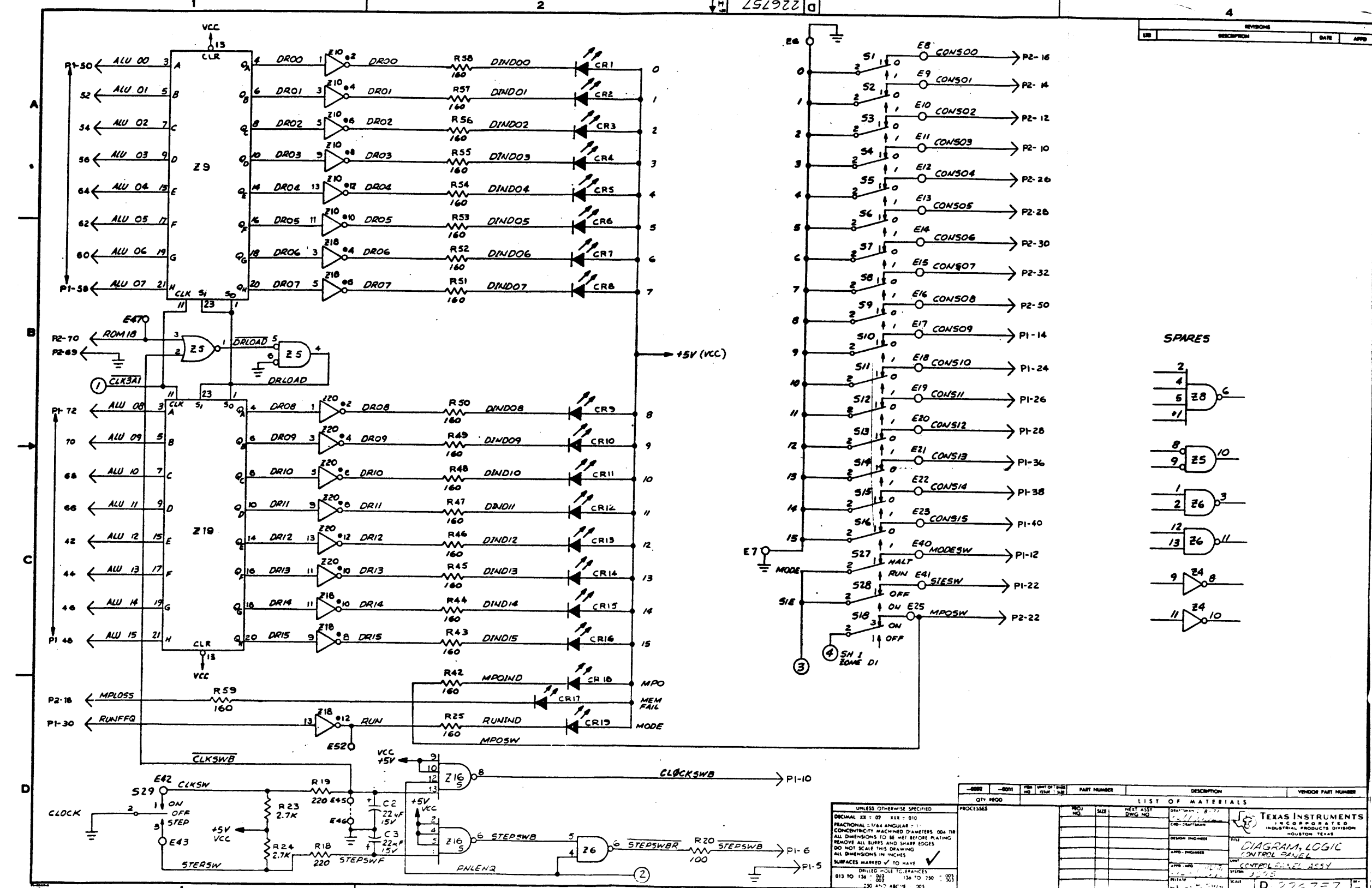
REV	DESCRIPTION	DATE	APP'D
A	3/15/71 L. WILSON S21 THRU S26 REVERSED E NPS		
B	4-12-71 L. WILSON 1 - MG R18, R19, R22 VALUES WERE 510 Ω 2 ADDED NOTES E #6, E #5 3 CHG TO TITLE UNIT "CONTROL" WAS "FRONT..."	4-12-71	L. WILSON
C	5/13/71 (C. J.) 1 S21, S17, S19, S20, S30 ADDED POSITION 3. ADDED "TO" SIGNATURES IN ROWS A112 THRU C12. 2 DIODE SYMBOLS WAS "4" (SN 2) 3 ADDED (C. J.) (SN 1)		
D	9/16/71 C. J. TANNER 1) C5 THRU C9 WAS TIME 10.		
E	10/18/71 C. J. TANNER 1) ADDED E47 THRU E52		
FORMAL RELEASE			
F	3/7/72 (D. J.) L. WILSON DELETED: NOTE 6 WAS R14 INSTALLED ON 226755 ASSY ONLY	3/7/72	L. WILSON
G	3/7/72 (A. J.) L. WILSON SMT2: ADDED Z9 PIN13 + Z19 PIN13 TO VCC		
H	3/7/72 (C. J.) D. WILSON CHG: SN 1, S17-2 WAS CONNECTED TO GRD	7/10/72	D. WILSON

REFERENCE DESIGNATORS	USED	NOT USED
E1 THRU E52		
Z1 THRU Z20		
R1 THRU R19		
C1 THRU C9		
P1 THRU P6		
O1 THRU O19		

QTY	PROCD	DESCRIPTION	VENDOR PART NUMBER
1		SWG1	
1		SWG2	
1		SWG3	
1		SWG4	
1		SWG5	
1		SWG6	
1		SWG7	
1		SWG8	
1		SWG9	
1		SWG10	
1		SWG11	
1		SWG12	
1		SWG13	
1		SWG14	
1		SWG15	
1		SWG16	
1		SWG17	
1		SWG18	
1		SWG19	
1		SWG20	
1		SWG21	
1		SWG22	
1		SWG23	
1		SWG24	
1		SWG25	
1		SWG26	
1		SWG27	
1		SWG28	
1		SWG29	
1		SWG30	
1		SWG31	
1		SWG32	
1		SWG33	
1		SWG34	
1		SWG35	
1		SWG36	
1		SWG37	
1		SWG38	
1		SWG39	
1		SWG40	
1		SWG41	
1		SWG42	
1		SWG43	
1		SWG44	
1		SWG45	
1		SWG46	
1		SWG47	
1		SWG48	
1		SWG49	
1		SWG50	
1		SWG51	
1		SWG52	
1		SWG53	
1		SWG54	
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1		SWG60	
1		SWG61	
1		SWG62	
1		SWG63	
1		SWG64	
1		SWG65	
1		SWG66	
1		SWG67	
1		SWG68	
1		SWG69	
1		SWG70	
1		SWG71	
1		SWG72	
1		SWG73	
1		SWG74	
1		SWG75	
1		SWG76	
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1		SWG78	
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1		SWG81	
1		SWG82	
1		SWG83	
1		SWG84	
1		SWG85	
1		SWG86	
1		SWG87	
1		SWG88	
1		SWG89	
1		SWG90	
1		SWG91	
1		SWG92	
1		SWG93	
1		SWG94	
1		SWG95	
1		SWG96	
1		SWG97	
1		SWG98	
1		SWG99	
1		SWG100	

D 226757

REVISIONS			
REV.	DESCRIPTION	DATE	APP'D.

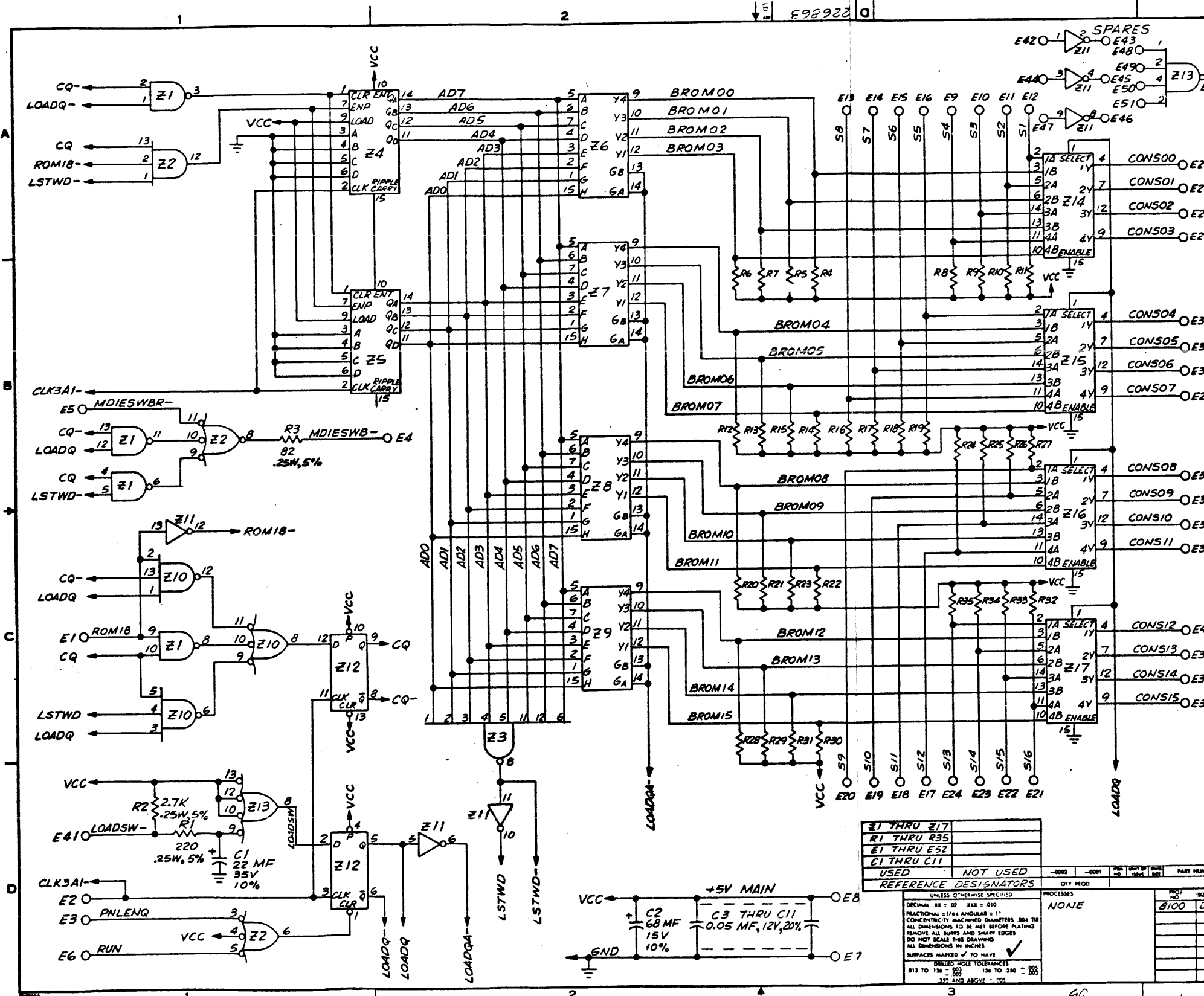


UNLESS OTHERWISE SPECIFIED		LIST OF MATERIALS				 TEXAS INSTRUMENTS INDUSTRIAL PRODUCTS DIVISION HOUSTON, TEXAS
DECIMAL	FRACTIONAL	QTY	DESCRIPTION	REF. ASST	VENO. PART NUMBER	

DECIMAL XX - 09    XXX - 010  
 FRACTIONAL - 3/16 ANGULAR - 1/16  
 CONCENTRICITY MACHINED DIAMETERS 004 TIR  
 ALL DIMENSIONS TO BE MET BEFORE PLATING  
 REMOVE ALL BURRS AND SHARP EDGES  
 DO NOT SCALE THIS DRAWING  
 ALL DIMENSIONS IN INCHES  
 SURFACES MARKED ✓ TO HAVE  
 UNLESS OTHERWISE SPECIFIED  
 013 TO 134 - 001  
 136 TO 150 - 001  
 152 AND ABOVE - 001

DESIGN ENGINEER:   
 APP'D:   
 DATE: 12/26/65  
 SCALE:   
**D 226757**

226863



REV	DESCRIPTION	DATE	APP'D
A	2/11/72 1124, 215, 216 & 217 PIN 15 WAS CONNECTED TO VCC. 2) ZONE D1 LOADSW WAS LOADSW		
FORMAL RELEASE			
B	3/23/73 (E) B. O. D. 4-13-73		
(1) ZONE D-4: NOTE 2-X WAS SN38049-26, L WAS SN38050-27, M WAS SN38051-28, N WAS SN38052-29			

- NOTES:**  
 UNLESS OTHERWISE SPECIFIED  
 1. RESISTORS ARE 470.0 OHM, .25W, 5%  
 2. NETWORKS ARE AS FOLLOWS:  
 A. SN7400N - Z1  
 B. SN7404N - Z11  
 C. SN7410N - Z10  
 D. SN7411N - Z2  
 E. SN7413N - Z13  
 F. SN7430N - Z3  
 G. SN7474N - Z12  
 H. SN74157N - Z14, Z15, Z16, Z17  
 J. SN74163N - Z4, Z5  
 K. SN45784 - Z6  
 L. SN45785 - Z7  
 M. SN45786 - Z8  
 N. SN45787 - Z9

QTY	DESCRIPTION	REF. DESIG.
1	Z1 THRU Z17	
1	R1 THRU R35	
1	E1 THRU E32	
1	C1 THRU C11	
1	USED	
1	NOT USED	
1	REFERENCE DESIGNATORS	
1	UNLESS OTHERWISE SPECIFIED	
1	DECIMAL 32 - 02	
1	FRACTIONAL 1/64 ANGLE = 1°	
1	CONCENTRICITY MACHINED DIAMETERS .004 TO .010	
1	ALL DIMENSIONS TO BE MET BEFORE PLATING	
1	REMOVE ALL BURRS AND SHARP EDGES	
1	DO NOT SCALE THIS DRAWING	
1	ALL DIMENSIONS IN INCHES	
1	SURFACES MARKED ✓ TO HAVE	
1	DRILLED HOLE TOLERANCES	
1	.012 TO .130 - .001	
1	.130 TO .330 - .002	
1	.330 AND ABOVE - .003	

PROJ. NO.	REV.	DATE	BY	CHKD.	APP'D.	DESCRIPTION	QUANTITY	UNIT	REMARKS
8100	D	2/26/61				DIAGRAM, LOGIC, DET, ROM LOADER			
						COMPUTER			
						NONE			

8

7

6

5

4

3

2

REVISIONS				
ZONE	LTN	DESCRIPTION	DATE	APPROVED

D  
C  
B  
A

J1	J2	J3
1 GND	1 GND	1 GND
2 GND	2 GND	2 GND
3 MD108-	3 MD108-	3 MD108-
4 MD108	4 MD108	4 MD108
5 MD107	5 MD107	5 MD107
6 MD107-	6 MD107-	6 MD107-
7 MD106	7 MD106	7 MD106
8 MD106-	8 MD106-	8 MD106-
9 MD105	9 MD105	9 MD105
10 MD105-	10 MD105-	10 MD105-
11 GND	11 GND	11 GND
12 GND	12 GND	12 GND
13 MD104	13 MD104	13 MD104
14 MD104-	14 MD104-	14 MD104-
15 MD103	15 MD103	15 MD103
16 MD103-	16 MD103-	16 MD103-
17 MD102	17 MD102	17 MD102
18 MD102-	18 MD102-	18 MD102-
19 AD1K-	19 AD1K-	19 AD1K-
20 GND	20 GND	20 GND
21 GND	21 GND	21 GND
22 MD101	22 MD101	22 MD101
23 MD101-	23 MD101-	23 MD101-
24 MD100	24 MD100	24 MD100
25 MD100-	25 MD100-	25 MD100-
26 AD14-	26 AD14-	26 AD14-
27 AD15-	27 AD15-	27 AD15-
28 AD13-	28 AD13-	28 AD13-
29 AD13-76 AD09-	29 AD13-76 AD09-	29 AD13-76 AD09-
30 AD13-74 AD11-	30 AD13-74 AD11-	30 AD13-74 AD11-
31 WRITE-	31 WRITE-	31 WRITE-
32 WRITE-	32 WRITE-	32 WRITE-
33 FWRDVA AD08-	33 FWRDVA AD08-	33 FWRDVA AD08-
34 FWRDVA AD08-	34 FWRDVA AD08-	34 FWRDVA AD08-
35 FWRDVA AD08-	35 FWRDVA AD08-	35 FWRDVA AD08-
36 FWRDVA AD08-	36 FWRDVA AD08-	36 FWRDVA AD08-
37 FWRDVA AD08-	37 FWRDVA AD08-	37 FWRDVA AD08-
38 FWRDVA AD08-	38 FWRDVA AD08-	38 FWRDVA AD08-
39 FWRDVA AD08-	39 FWRDVA AD08-	39 FWRDVA AD08-
40 FWRDVA AD08-	40 FWRDVA AD08-	40 FWRDVA AD08-
41 FWRDVA AD08-	41 FWRDVA AD08-	41 FWRDVA AD08-
42 FWRDVA AD08-	42 FWRDVA AD08-	42 FWRDVA AD08-
43 FWRDVA AD08-	43 FWRDVA AD08-	43 FWRDVA AD08-
44 FWRDVA AD08-	44 FWRDVA AD08-	44 FWRDVA AD08-
45 FWRDVA AD08-	45 FWRDVA AD08-	45 FWRDVA AD08-
46 FWRDVA AD08-	46 FWRDVA AD08-	46 FWRDVA AD08-
47 FWRDVA AD08-	47 FWRDVA AD08-	47 FWRDVA AD08-
48 FWRDVA AD08-	48 FWRDVA AD08-	48 FWRDVA AD08-
49 FWRDVA AD08-	49 FWRDVA AD08-	49 FWRDVA AD08-
50 FWRDVA AD08-	50 FWRDVA AD08-	50 FWRDVA AD08-
51 FWRDVA AD08-	51 FWRDVA AD08-	51 FWRDVA AD08-
52 FWRDVA AD08-	52 FWRDVA AD08-	52 FWRDVA AD08-
53 FWRDVA AD08-	53 FWRDVA AD08-	53 FWRDVA AD08-
54 FWRDVA AD08-	54 FWRDVA AD08-	54 FWRDVA AD08-
55 FWRDVA AD08-	55 FWRDVA AD08-	55 FWRDVA AD08-
56 FWRDVA AD08-	56 FWRDVA AD08-	56 FWRDVA AD08-
57 FWRDVA AD08-	57 FWRDVA AD08-	57 FWRDVA AD08-
58 FWRDVA AD08-	58 FWRDVA AD08-	58 FWRDVA AD08-
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61 FWRDVA AD08-	61 FWRDVA AD08-	61 FWRDVA AD08-
62 FWRDVA AD08-	62 FWRDVA AD08-	62 FWRDVA AD08-
63 FWRDVA AD08-	63 FWRDVA AD08-	63 FWRDVA AD08-
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66 FWRDVA AD08-	66 FWRDVA AD08-	66 FWRDVA AD08-
67 FWRDVA AD08-	67 FWRDVA AD08-	67 FWRDVA AD08-
68 FWRDVA AD08-	68 FWRDVA AD08-	68 FWRDVA AD08-
69 FWRDVA AD08-	69 FWRDVA AD08-	69 FWRDVA AD08-
70 FWRDVA AD08-	70 FWRDVA AD08-	70 FWRDVA AD08-
71 FWRDVA AD08-	71 FWRDVA AD08-	71 FWRDVA AD08-
72 FWRDVA AD08-	72 FWRDVA AD08-	72 FWRDVA AD08-
73 FWRDVA AD08-	73 FWRDVA AD08-	73 FWRDVA AD08-
74 FWRDVA AD08-	74 FWRDVA AD08-	74 FWRDVA AD08-
75 FWRDVA AD08-	75 FWRDVA AD08-	75 FWRDVA AD08-
76 FWRDVA AD08-	76 FWRDVA AD08-	76 FWRDVA AD08-
77 FWRDVA AD08-	77 FWRDVA AD08-	77 FWRDVA AD08-
78 FWRDVA AD08-	78 FWRDVA AD08-	78 FWRDVA AD08-
79 FWRDVA AD08-	79 FWRDVA AD08-	79 FWRDVA AD08-
80 FWRDVA AD08-	80 FWRDVA AD08-	80 FWRDVA AD08-

HIGHEST REFERENCE DESIGNATIONS USED  
J3

QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

UNLESS OTHERWISE SPECIFIED		UNLESS OTHERWISE SPECIFIED	
REMOVE ALL BURRS AND SHARP EDGES	CONCENTRICITY MACHINED	DIMENSIONS ARE IN INCHES	TOLERANCES
DIAMETERS .010 MIN	BEFORE FINISH PROCESSING	ANGLES 1:1	3 PLACE DECIMALS ± .010
IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY	INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100	MATERIAL	2 PLACE DECIMALS ± .02
HOLE TOLERANCE			
Ø13 + .004	Ø16 + .005	Ø21 + .006	Ø23 + .005
Ø18 + .001	Ø20 + .001	Ø25 + .002	Ø27 + .002
Ø30 + .008	Ø32 + .010	Ø36 + .012	Ø40 + .015
Ø40 + .015	Ø45 + .020	Ø50 + .025	Ø55 + .030

TEXAS INSTRUMENTS DALLAS, TEXAS	ELECTRONIC SCHEMATIC DIAGRAM, LEFT MEMORY INTERCONNECT
SIZE CODE IDENT NO DRAWING NO	D 96214 945712
SCALE	AS SHOWN

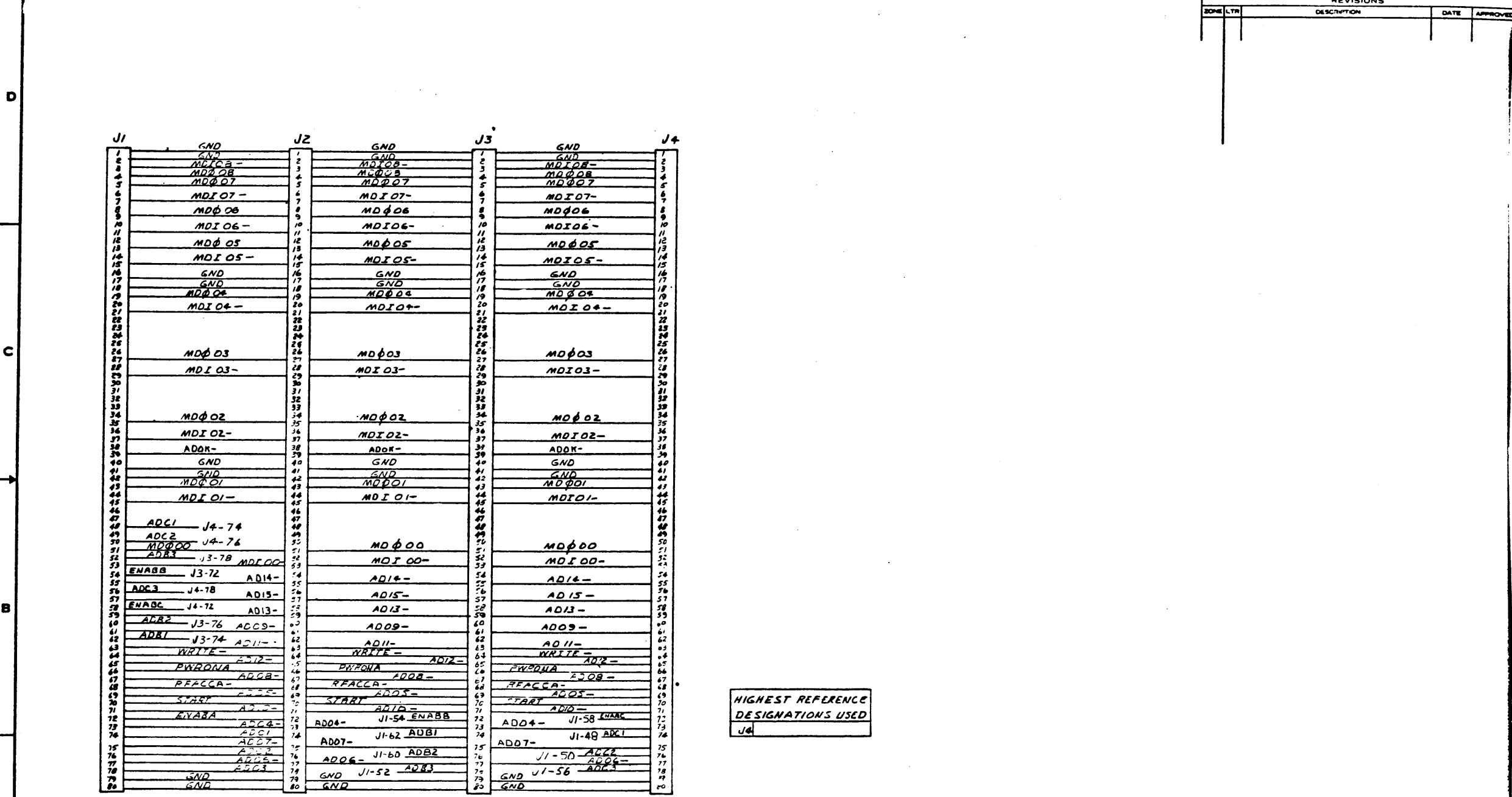
8 7 6 5 4 3 2 1

REVISIONS				
ZONE	LYR	DESCRIPTION	DATE	APPROVED

J1	J2	J3
1 GND	1 GND	1
2 GND	2 MDI 21-	2
3 MDI 21-	3 MDI 21-	3
4 MDI 21-	4 MDI 21-	4
5 MDI 20-	5 MDI 20-	5
6 MDI 20-	6 MDI 20-	6
7 MDI 19	7 MDI 19	7
8 MDI 19-	8 MDI 19-	8
9 MDI 19-	9 MDI 19-	9
10 MDI 18	10 MDI 18	10
11 MDI 18-	11 MDI 18-	11
12 MDI 18-	12 MDI 18-	12
13 MDI 17	13 MDI 17	13
14 MDI 17-	14 MDI 17-	14
15 MDI 17-	15 MDI 17-	15
16 XMEM 16A-	16 XMEM 16B-	16
17 XMEM 16B-	17 MDI 16	17
18 MDI 16	18 MDI 16-	18
19 MDI 16-	19 MDI 16-	19
20 XMEM 15A-	20 XMEM 15B-	20
21 XMEM 15B-	21 XMEM 15A-	21
22 XMEM 15A-	22 MDI 15	22
23 MDI 15	23 MDI 15-	23
24 MDI 15-	24 MDI 15-	24
25 GND	25 GND	25
26 GND	26 GND	26
27 PWRDN	27 PWRDN	27
28 MDI 14	28 MDI 14	28
29 MDI 14-	29 MDI 14-	29
30 MDI 14-	30 MDI 14-	30
31 GND	31 GND	31
32 GND	32 GND	32
33 MDI 13	33 MDI 13	33
34 MDI 13-	34 MDI 13-	34
35 MDI 13-	35 MDI 13-	35
36 MDI 12	36 MDI 12	36
37 MDI 12-	37 MDI 12-	37
38 MDI 12-	38 MDI 12-	38
39 MDI 11	39 MDI 11	39
40 MDI 11-	40 MDI 11-	40
41 MDI 11-	41 MDI 11-	41
42 MDI 10	42 MDI 10	42
43 MDI 10-	43 MDI 10-	43
44 MDI 10-	44 MDI 10-	44
45 MDI 09	45 MDI 09	45
46 MDI 09-	46 MDI 09-	46
47 GND	47 GND	47
48 GND	48 GND	48

HIGHEST REFERENCE DESIGNATIONS USED  
J3

QTY	REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	QUANTITY OR DESCRIPTION	PROCUREMENT SPECIFICATION
PARTS LIST						
UNLESS OTHERWISE SPECIFIED				UNLESS OTHERWISE SPECIFIED		
REMOVE ALL BURRS AND SHARP EDGES CONCENTRICITY MACHINED DIAMETERS .010 P/R DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100				DIMENSIONS ARE IN INCHES TOLERANCES ANGLES ±1° 3 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.02		
HOLE TOLERANCE .013 - .004 THRU .125 - .001 .125 - .001 THRU .251 - .010 .251 - .010 THRU .500 - .001 .500 - .001 THRU 1.000 - .001 1.000 - .001 THRU 2.000 - .001				MATERIAL 943713 7503 HEAT ASSY. USED ON APPLICATION		
TEXAS INSTRUMENTS Equipment Group Dallas Texas				ELECTRONIC SCHEMATIC DIAGRAM MEMORY INTERCONNECT, RIGHT		
DESIGN ACTIVITY RELEASE DATE 7/1/74				SIZE CODE IDENT NO DRAWING NO D 96214 943713		
SCALE 1:1				1 SHEET		



HIGHEST REFERENCE DESIGNATIONS USED

J4

-3	-1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
PARTS LIST						
UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS AND SHARP EDGES CONCENTRICITY MACHINED DIAMETERS .010 PIR DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ± .01 ANGLES ± 1° 3 PLACE DECIMALS ± .010 2 PLACE DECIMALS ± .02		
HOLE TOLERANCE .013 + .004 .125 - .001				2437/4 2501 2437/4 7-2 NEXT ASSY USED ON		
MATERIAL:				DATE: 6/13/74 ENGR: [Signature] DSGN ACTIVITY RELEASE: [Signature]		
SIZE				CODE IDENT NO		DRAWING NO
				D 96214		945715
SCALE (NAME)				SHEET		

8

7

6

5

4

3

2

1

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED

D

C

B

A

J1	J2	J3	J4
1 GND	1 GND	1 GND	1 GND
2 MDI 21-	2 MDI 21-	2 MDI 21-	2 MDI 21-
3 MDI 20-	3 MDI 20-	3 MDI 20-	3 MDI 20-
4 MDI 19-	4 MDI 19-	4 MDI 19-	4 MDI 19-
5 MDI 18-	5 MDI 18-	5 MDI 18-	5 MDI 18-
6 MDI 17-	6 MDI 17-	6 MDI 17-	6 MDI 17-
7 XMEM 16B-	7 XMEM 16B-	7 MDI 16-	7 MDI 16-
8 XMEM 16A-	8 XMEM 16A-	8 MDI 15-	8 MDI 15-
9 XMEM 16C-	9 XMEM 16C-	9 MDI 14-	9 MDI 14-
10 XMEM 24-	10 XMEM 24-	10 MDI 13-	10 MDI 13-
11 XMEM 22-	11 XMEM 22-	11 MDI 12-	11 MDI 12-
12 XMEM 23-	12 XMEM 23-	12 MDI 11-	12 MDI 11-
13 XMEM 21-	13 XMEM 21-	13 MDI 10-	13 MDI 10-
14 XMEM 20-	14 XMEM 20-	14 MDI 09-	14 MDI 09-
15 GND	15 GND	15 GND	15 GND
16 GND	16 GND	16 GND	16 GND
17 PWRON	17 PWRON	17 PWRON	17 PWRON
18 MDI 14-	18 MDI 14-	18 MDI 14-	18 MDI 14-
19 MDI 13-	19 MDI 13-	19 MDI 13-	19 MDI 13-
20 MDI 12-	20 MDI 12-	20 MDI 12-	20 MDI 12-
21 MDI 11-	21 MDI 11-	21 MDI 11-	21 MDI 11-
22 MDI 10-	22 MDI 10-	22 MDI 10-	22 MDI 10-
23 MDI 09-	23 MDI 09-	23 MDI 09-	23 MDI 09-
24 GND	24 GND	24 GND	24 GND
25 GND	25 GND	25 GND	25 GND

HIGHEST REFERENCE  
DESIGNATIONS USED

J4

QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
PARTS LIST					
UNLESS OTHERWISE SPECIFIED			DATE		
REMOVE ALL BURRS AND SHARP EDGES			DIMENSIONS ARE IN INCHES		
CONCENTRICITY MACHINED DIAMETERS .010 FIR			TOLERANCES		
DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING			ANGLES 90°		
IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY			3 PLACE DECIMALS ± 0.01		
INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100			2 PLACE DECIMALS ± 0.2		
HOLE TOLERANCE			MATERIAL		
.013 ± .004 THRU .125 - .001			303 STAINLESS STEEL		
.125 ± .005 THRU .500 - .001			NEXT ASSY. USED ON		
.501 ± .008 THRU 1.000 - .010			APPLICATION		
1.001 ± .010 THRU 2.000 - .011			DESIGN ACTIVITY RELEASE		
2.001 ± .011 THRU 3.000 - .011			DATE		
			APPROVED		
			CONTR NO		
			SIZE CODE IDENT NO DRAWING NO		
			D 96214 343717		
			SCALE A 1/2"		
			SHEET		

TEXAS INSTRUMENTS  
INCORPORATED  
Equipment Group Dallas Texas

ELECTRONIC SCHEMATIC DIAGRAM  
MEMORY INTERCONNECT, RIGHT



# USER'S RESPONSE SHEET

Manual Title: Model 960B Computer Maintenance Manual:  
Electrical Drawings (942773-9705)

Manual Date: 1 February 1977 Date of This Letter: \_\_\_\_\_

User's Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Company: \_\_\_\_\_ Office/Department: \_\_\_\_\_

Street Address: \_\_\_\_\_

City/State/Zip Code: \_\_\_\_\_

Please list any discrepancy found in this manual by page, paragraph, figure, or table number in the following space. If there are any other suggestions that you wish to make, feel free to include them. Thank you.

CUT ALONG LINE

Location in Manual	Comment/Suggestion
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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FOLD



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NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 7284 DALLAS, TX

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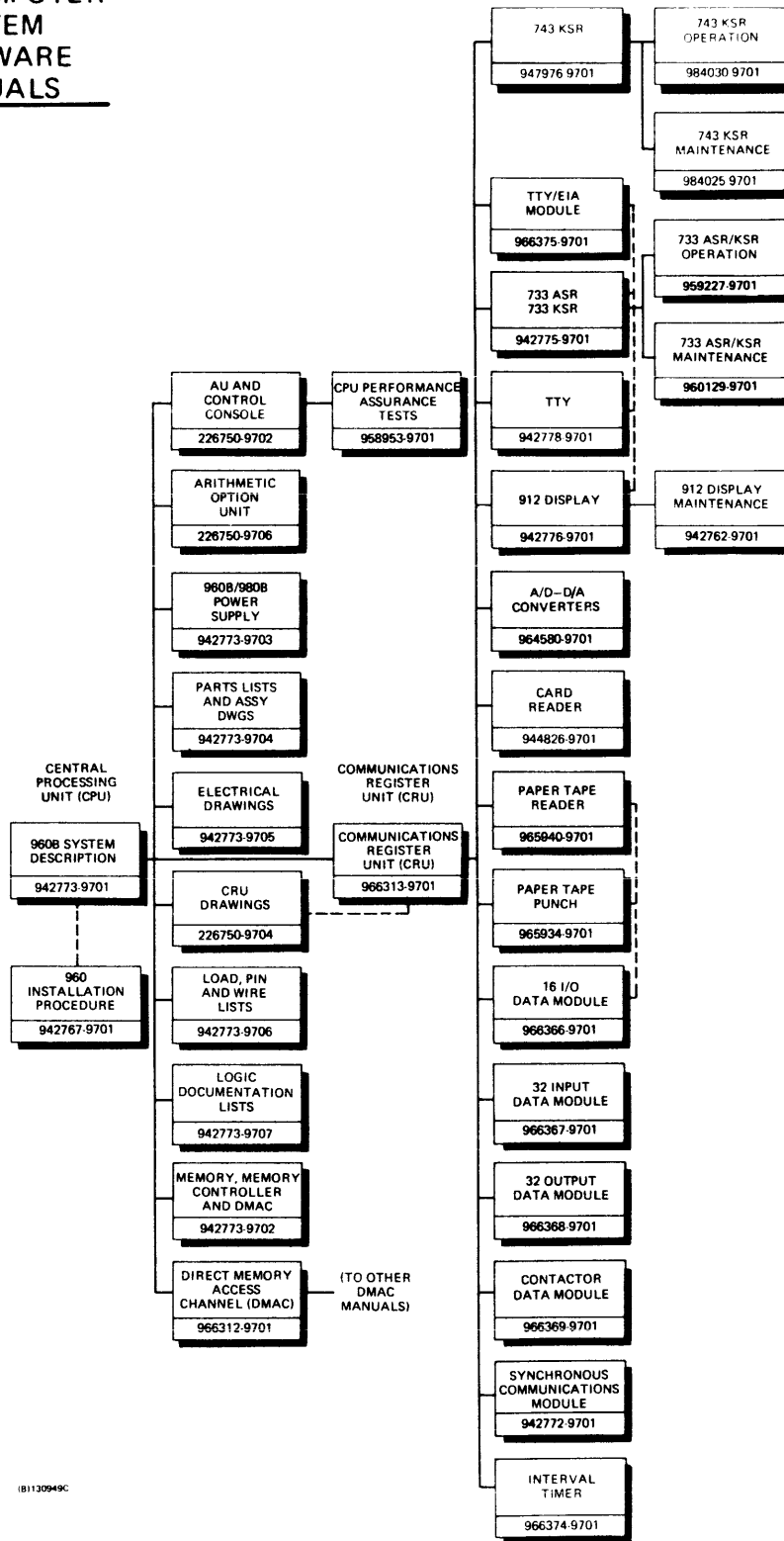
**TEXAS INSTRUMENTS INCORPORATED**  
DIGITAL SYSTEMS GROUP

ATTN: TECHNICAL PUBLICATIONS  
P.O. Box 2909 M/S 2146  
Austin, Texas 78769



FOLD

**960B COMPUTER  
SYSTEM  
HARDWARE  
MANUALS**



181130949C



**TEXAS INSTRUMENTS**  
INCORPORATED  
DIGITAL SYSTEMS DIVISION

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