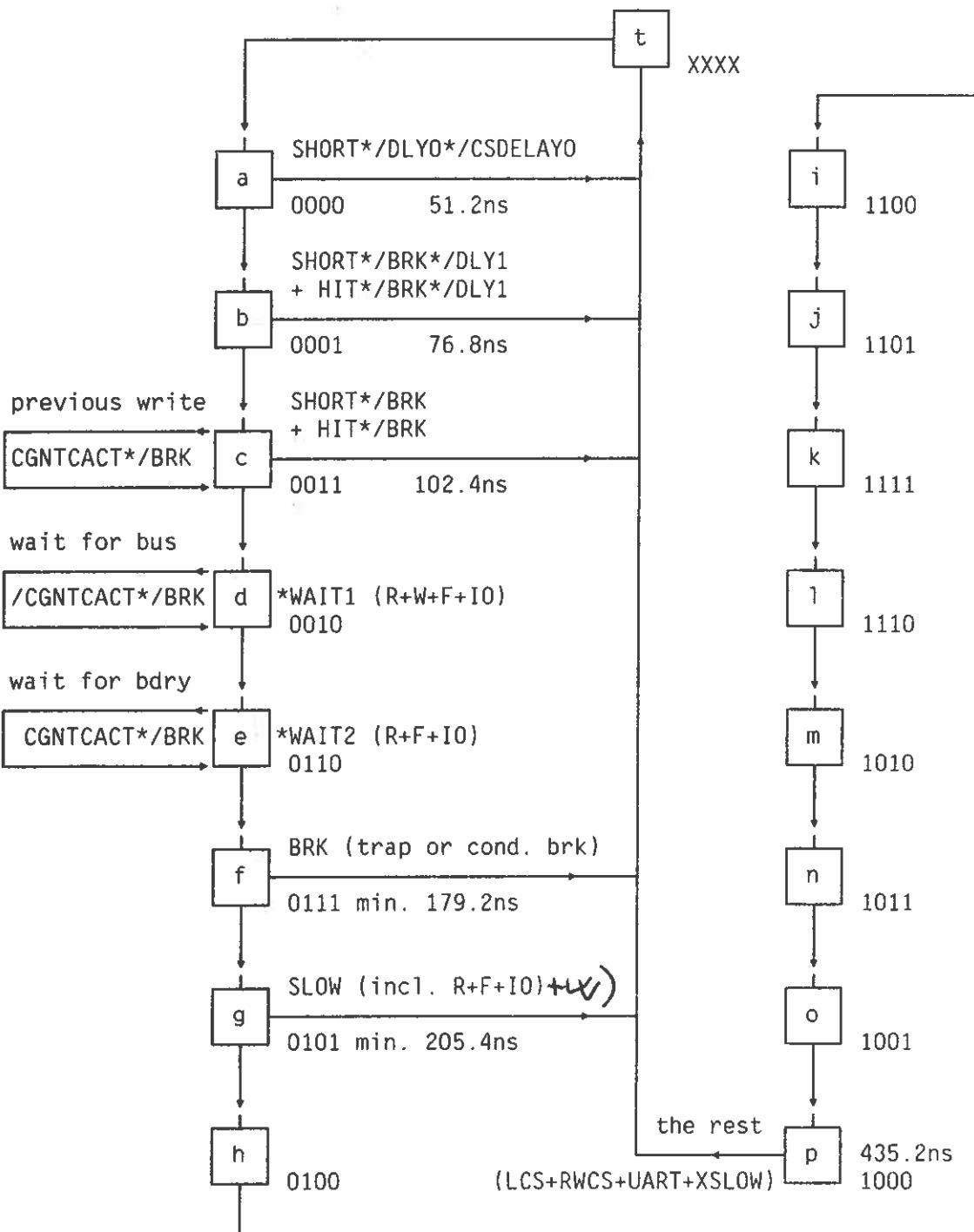
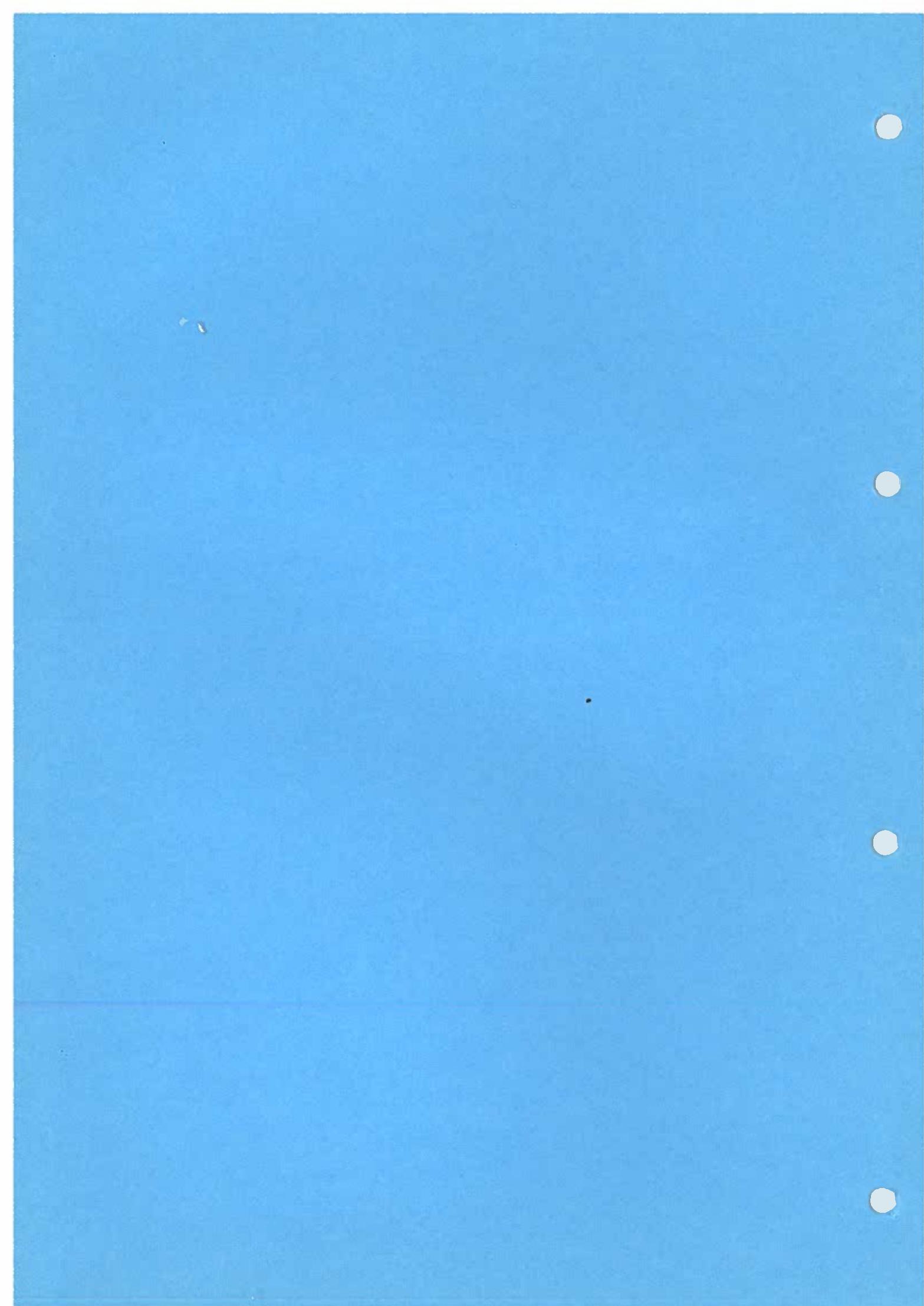


DELILAH CYCLE CONTROL STATE DIAGRAM.





CC
C
C SIGLISTE EXTRACTOR VERS. 870225
C
C USER: /D1/USER/DELI/M3202B
C OPTION:4 DATE: 05-JUN-1987 10:32
C REGISTERED 927 DIFFERENT SIGNALS
C 1 ERRORS, 0 WARNINGS DETECTED,
C 3 SIGNALS NOT PROCESSED. TOO MANY ENTRIES
CC

END:

ERROR. 3 OVERFLOWS IN SIGNAL CONNECTIONS

PG NO: PAGE: BLK NO: BLOCK:

1	1.DRAW	1	-
2	2.DRAW	1	-
3	3.DRAW	1	-
4	4.DRAW	1	-
5	1.DRAW	2	-/BIF
6	1.DRAW	3	-/BIF/BCTL
7	1.DRAW	4	-/BIF/BCTL/BDRV
8	1.DRAW	5	-/BIF/BCTL/SYNC
9	1.DRAW	6	-/BIF/DPATH
10	1.DRAW	7	-/BIF/DPATH/BDLBD
11	1.DRAW	8	-/BIF/DPATH/CDLBD
12	1.DRAW	9	-/BIF/DPATH/LBDCTL
13	1.DRAW	10	-/BIF/DPATH/PESPEA
14	1.DRAW	11	-/BIF/DPATH/PPNLBD
15	1.DRAW	12	-/CPU
16	1.DRAW	13	-/CPU/CS
17	1.DRAW	14	-/CPU/CS/ACAL
18	1.DRAW	15	-/CPU/CS/CTL
19	1.DRAW	16	-/CPU/CS/PROM
20	1.DRAW	17	-/CPU/CS/TCV
21	1.DRAW	18	-/CPU/CS/WCS
22	2.DRAW	18	-/CPU/CS/WCS
23	1.DRAW	19	-/CPU/LAPA
24	1.DRAW	20	-/CPU/MMU
25	1.DRAW	21	-/CPU/MMU/CACHE
26	1.DRAW	22	-/CPU/MMU/CSR
27	1.DRAW	23	-/CPU/MMU/HIT
28	1.DRAW	24	-/CPU/MMU/PPNX
29	1.DRAW	25	-/CPU/MMU/PT
30	1.DRAW	26	-/CPU/MMU/PTIDB
31	1.DRAW	27	-/CPU/MMU/WCA
32	1.DRAW	28	-/CPU/PROC
33	1.DRAW	29	-/CPU/PROC/CGA
34	1.DRAW	30	-/CPU/PROC/CMDDEC
35	1.DRAW	31	-/CPU/STOC
36	1.DRAW	32	-/CYC
37	1.DRAW	33	-/IO
38	1.DRAW	34	-/IO/DCD
39	1.DRAW	35	-/IO/DCD/DGA
40	1.DRAW	36	-/IO/PANCAL
41	1.DRAW	37	-/IO/REG

42	1.DRAW	38	- / IO/UART
43	1.DRAW	39	- / MEM
44	1.DRAW	40	- / MEM/ADDR
45	1.DRAW	41	- / MEM/ADEC
46	1.DRAW	42	- / MEM/DATA
47	1.DRAW	43	- / MEM/ERROR
48	1.DRAW	44	- / MEM/LBDIF
49	1.DRAW	45	- / MEM/RAM
50	1.DRAW	46	- / MEM/RAMC

C ***** SIGNAL NAME INFO *****

SIGNAL	E's	SIGTYPE	DIRECT:PAGE+QUADR/COMP-PIN/TYPE
12V	13	B:2F1/A-C31/! O:42E2/34H-11/VP12/12!	B:2F2/RN2-1/4610X_101_102!
		B:2F2/RN2-1/4610X_101_102!	B:2F2/RN2-1/4610X_101_102!
		B:2G2/RN2-1/4610X_101_102!	B:2G2/RN2-1/4610X_101_102!
		B:2G2/RN2-1/4610X_101_102!	O:42E2/34H-11/VP12/12! O:42E2/34H-14!
		B:42F1/C9-1/2.2uF!	I:42E4/35G-8/75150P B:42E5/R9-1/2.2KOHM!
		B:42E5/R10-1/2.2KOHM!	
12VN	6	O:2D5/A-A8/! O:42E2/34H-2/VP12/12!	
		O:42E2/34H-23/VP12/12!	B:42F2/C10-2/2.2uF! I:42E4/35G-5/75150P
		B:42F4/R8-2/1.5KOHM!	
5VSTBY	69	\$\$/OVERFLOW\$\$	B:2E2/RN1-1/4610X_101_102!
		B:2E2/RN1-1/4610X_101_102!	B:2E2/RN1-1/4610X_101_102!
		B:2E2/RN1-1/4610X_101_102!	B:2D2/RN1-1/4610X_101_102!
		B:2D2/RN1-1/4610X_101_102!	B:2B2/A-C24/! I:3A7/R4-1/1KOHM B:4G2
		B:4G2/C-B30/!	B:32H2/RN10-1/4610X_101_102!
		B:32H2/RN10-1/4610X_101_102!	B:32H2/RN10-1/4610X_101_102!
		B:32H2/RN10-1/4610X_101_102!	B:32H2/RN10-1/4610X_101_102!
		B:32H2/RN10-1/4610X_101_102!	B:32H2/RN10-1/4610X_101_102!
		B:32H2/RN11-1/4610X_101_102!	B:32H4/RN11-1/4610X_101_102!
		B:32H4/RN11-1/4610X_101_102!	B:32H4/RN11-1/4610X_101_102!
		B:32H4/RN11-1/4610X_101_102!	B:32H4/RN11-1/4610X_101_102!
		B:32H4/RN11-1/4610X_101_102!	B:38A3/D1-2/3.3V_ZENER!
		I:39A4/RN17-1/4610X_101_103	I:39A4/RN17-1/4610X_101_103
		I:39A4/RN17-1/4610X_101_103	I:39A4/RN17-1/4610X_101_103
		I:39A1/RN15-1/4610X_101_103	I:39A1/RN15-1/4610X_101_103
		I:39B1/RN15-1/4610X_101_103	I:39C7/34D-1/ND_DELDGA I:39C7/34D-C
		I:39A3/RN16-1/4610X_101_103	I:39A3/RN16-1/4610X_101_103
		I:39A3/RN16-1/4610X_101_103	I:39A3/RN16-1/4610X_101_103
A0	E44 2	I:44D6/RN5-1/4610X_102_330	B:44D4/5H-23/74FCT861B!
A1	E44 2	I:44E6/RN5-3/4610X_102_330	B:44D4/5H-22/74FCT861B!
A2	E44 2	I:44E6/RN5-5/4610X_102_330	B:44D4/5H-21/74FCT861B!
A3	E44 2	I:44E6/RN5-7/4610X_102_330	B:44D4/5H-20/74FCT861B!
A4	E44 2	I:44E6/RN5-9/4610X_102_330	B:44D4/5H-19/74FCT861B!
A5	E44 2	I:44E6/RN6-1/4610X_102_330	B:44D4/5H-18/74FCT861B!
A6	E44 2	I:44E6/RN6-3/4610X_102_330	B:44D4/5H-17/74FCT861B!
A7	E44 2	I:44F6/RN6-5/4610X_102_330	B:44D4/5H-16/74FCT861B!
A8	E44 2	I:44F6/RN6-7/4610X_102_330	B:44D4/5H-15/74FCT861B!
A9	E44 2	I:44F6/RN6-9/4610X_102_330	B:44D4/5H-14/74FCT861B!
AA0	7	O:44D6/RN5-2/4610X_102_330!	I:49C3/15H-4/SIP1M9
		I:49C5/15J-4/SIP1M9	I:49E3/15K-4/SIP1M9 I:49E5/15L-4/SIP1M9
		I:49G5/15N-4/SIP1M9	I:49G3/15M-4/SIP1M9

AA1	7	O:44E6/RN5-4/4610X_102_330! I:49C3/15H-5/SIP1M9 I:49C5/15J-5/SIP1M9 I:49E3/15K-5/SIP1M9 I:49E5/15L-5/SIP1M9 I:49G5/15N-5/SIP1M9 I:49G3/15M-5/SIP1M9
AA2	7	O:44E6/RN5-6/4610X_102_330! I:49C3/15H-7/SIP1M9 I:49C5/15J-7/SIP1M9 I:49E3/15K-7/SIP1M9 I:49E5/15L-7/SIP1M9 I:49G5/15N-7/SIP1M9 I:49G3/15M-7/SIP1M9
AA3	7	O:44E6/RN5-8/4610X_102_330! I:49C3/15H-8/SIP1M9 I:49C5/15J-8/SIP1M9 I:49E3/15K-8/SIP1M9 I:49E5/15L-8/SIP1M9 I:49G5/15N-8/SIP1M9 I:49G3/15M-8/SIP1M9
AA4	7	O:44E6/RN5-10/4610X_102_330! I:49C3/15H-11/SIP1M9 I:49C5/15J-11/SIP1M9 I:49E3/15K-11/SIP1M9 I:49E5/15L-11/SIP1M9 I:49G5/15N-11/SIP1M9 I:49G3/15M-11/SIP1M9
AA5	7	O:44E6/RN6-2/4610X_102_330! I:49C3/15H-12/SIP1M9 I:49C5/15J-12/SIP1M9 I:49E3/15K-12/SIP1M9 I:49E5/15L-12/SIP1M9 I:49G5/15N-12/SIP1M9 I:49G3/15M-12/SIP1M9
AA6	7	O:44E6/RN6-4/4610X_102_330! I:49C3/15H-14/SIP1M9 I:49C5/15J-14/SIP1M9 I:49E3/15K-14/SIP1M9 I:49E5/15L-14/SIP1M9 I:49G5/15N-14/SIP1M9 I:49G3/15M-14/SIP1M9
AA7	7	O:44F6/RN6-6/4610X_102_330! I:49C3/15H-15/SIP1M9 I:49C5/15J-15/SIP1M9 I:49E3/15K-15/SIP1M9 I:49E5/15L-15/SIP1M9 I:49G5/15N-15/SIP1M9 I:49G3/15M-15/SIP1M9
AA8	7	O:44F6/RN6-8/4610X_102_330! I:49C3/15H-17/SIP1M9 I:49C5/15J-17/SIP1M9 I:49E3/15K-17/SIP1M9 I:49E5/15L-17/SIP1M9 I:49G5/15N-17/SIP1M9 I:49G3/15M-17/SIP1M9
AA9	7	O:44F6/RN6-10/4610X_102_330! I:49C3/15H-18/SIP1M9 I:49C5/15J-18/SIP1M9 I:49E3/15K-18/SIP1M9 I:49E5/15L-18/SIP1M9 I:49G5/15N-18/SIP1M9 I:49G3/15M-18/SIP1M9
ABIT	£45	T:45E2/7G-19/PAL16R8B! I:45F2/8H-7/74LS248
ACOND~	2	O:33B7/28F-J2/ND_DELILAH! I:36B5/14D-6/PAL16R4D
ACT~	£6	T:6D2/10D-18/PAL16R8D!
ALUCLK	3	I:33B7/28F-B9/ND_DELILAH I:33A5/7F-5/74F14 O:36F2/9D-1/74F02!
AOK	£45	B:45C6/6G-19/PAL16R4D! I:45E7/2D-2/74F74
APR~	2	B:6D4/5D-19/PAL16R4D! I:7D7/7A-11/7407
BACT~	£12	I:12E4/2C-11/PAL16L8D B:12D6/1C-18/PAL16L8D!
BANK0	5	T:45C6/6G-15/PAL16R4D! T:45C4/9G-15/PAL16R4D! O:45E3/RN18-4/4610X_101_102! I:49B6/9H-2/74F00 I:49B7/9H-4/74F0
BANK1	5	T:45C6/6G-16/PAL16R4D! T:45C4/9G-16/PAL16R4D! O:45D3/RN18-3/4610X_101_102! I:49D6/9H-10/74F00 I:49D7/9H-12/74
BANK2	5	T:45C6/6G-17/PAL16R4D! T:45C4/9G-17/PAL16R4D! O:45D3/RN18-2/4610X_101_102! I:49F6/8G-10/74F00 I:49F7/8G-12/74
BAPR~	3	I:4C6/5C-17/74F244 B:4A6/C-A20!! O:7D7/7A-10/7407!
BBIT	£45	T:45E2/7G-18/PAL16R8B! I:45F2/8H-1/74LS248
BCGNT25	2	I:48C4/13F-11/AM29C821 T:50B6/5F-12/PAL16R8D!
BCGNT50	4	I:44B5/4H-13/AM29821 I:44B2/3H-13/AM29821 I:47D7/4F-3/PAL16L8B O:48C4/13F-14/AM29C821!
BCGNT50R~	2	I:46C5/2F-9/PAL16L8B O:48E4/3F-19/PAL16L8D!
BDAP25~	£8	O:8C3/3D-15/AM29C821! I:8E3/4D-10/AM29C821
BDAP50~	4	O:8E3/4D-15/AM29C821! I:12D6/1C-5/PAL16L8D O:48C4/13F-20/AM29C821! I:50E6/6F-5/PAL16R8D
BDAP~	3	I:4C6/5C-13/74F244 B:4A6/C-C18!! O:7D4/2A-3/7438!
BDRY25~	5	I:6D2/10D-7/PAL16R8D I:7D3/2B-1/74F00 O:8C3/3D-18/AM29C821! I:8E3/4D-7/AM29C821 I:12D2/11D-4/PAL16L8D
BDRY50~	9	I:6D6/8D-1/PAL16L8B I:GD4/5D-5/PAL16R4D I:7D3/2B-2/74F00 I:7D4/2A-2/7438 I:8E3/4D-8/AM29C821 O:8E3/4D- I:12D2/11D-5/PAL16L8D I:39C7/34D-B11/ND_DELDGA I:50E6/6F-9/PAL16
BDRY75~	2	I:6D6/8D-2/PAL16L8B O:8E3/4D-17/AM29C821!
BDRY~	4	I:4C6/5C-15/74F244 B:4A6/C-A19!! T:7D2/3A-3/74F241! O:48F4/7A-12/7407!
BD~0	3	B:4A5/C-C3!! B:10D6/6A-11/74AS648!

		I:13E5/8A-18/74PCT534
BD~1	3	B:4A5/C-A3// B:10D6/6A-10/74AS648! I:13E5/8A-17/74PCT534
BD~10	3	B:4A3/C-C8// B:10D4/5A-9/74AS648! I:13E3/9A-14/74PCT534
BD~11	3	B:4A3/C-A8// B:10D4/5A-8/74AS648! I:13E3/9A-13/74PCT534
BD~12	3	B:4A3/C-C9// B:10D4/5A-7/74AS648! I:13E3/9A-8/74PCT534
BD~13	3	B:4A3/C-A9// B:10D4/5A-6/74AS648! I:13E3/9A-7/74PCT534
BD~14	3	B:4A2/C-C10// B:10D4/5A-5/74AS648! I:13E3/9A-4/74PCT534
BD~15	3	B:4A2/C-A10// B:10D4/5A-4/74AS648! I:13E3/9A-3/74PCT534
BD~16	4	B:4A2/C-B3// B:10D2/4A-11/74AS648! I:13C5/10A-18/74PCT534 I:13C3/12A-18/74PCT534
BD~17	4	B:4A2/C-B4// B:10D2/4A-10/74AS648! I:13C5/10A-17/74PCT534 I:13C3/12A-17/74PCT534
BD~18	4	B:4A2/C-B5// B:10D2/4A-9/74AS648! I:13C5/10A-14/74PCT534 I:13C3/12A-14/74PCT534
BD~19	5	B:4A2/C-B6// B:10D2/4A-8/74AS648! I:13C5/10A-13/74PCT534 I:13C3/12A-13/74PCT534 B:45C6/6G-12/PAL1
BD~2	3	B:4A5/C-C4// B:10D6/6A-9/74AS648! I:13E5/8A-14/74PCT534
BD~20	5	B:4A1/C-B7// B:10D2/4A-7/74AS648! I:13C5/10A-8/74PCT534 I:13C3/12A-8/74PCT534 I:45C6/6G-6/PAL16R4D
BD~21	5	B:4A1/C-B8// B:10D2/4A-6/74AS648! I:13C5/10A-7/74PCT534 I:13C3/12A-7/74PCT534 I:45C6/6G-7/PAL16R4D
BD~22	4	B:4A1/C-B9// B:10D2/4A-5/74AS648! I:13C5/10A-4/74PCT534 I:45C6/6G-8/PAL16R4D
BD~23	4	B:4A1/C-B10// B:10D2/4A-4/74AS648! I:13C5/10A-3/74PCT534 I:45C6/6G-9/PAL16R4D
BD~3	3	B:4A5/C-A4// B:10D6/6A-8/74AS648! I:13E5/8A-13/74PCT534
BD~4	3	B:4A4/C-C5// B:10D6/6A-7/74AS648! I:13E5/8A-8/74PCT534
BD~5	3	B:4A4/C-A5// B:10D6/6A-6/74AS648! I:13E5/8A-7/74PCT534
BD~6	3	B:4A4/C-C6// B:10D6/6A-5/74AS648! I:13E5/8A-4/74PCT534
BD~7	3	B:4A4/C-A6// B:10D6/6A-4/74AS648! I:13E5/8A-3/74PCT534
BD~8	3	B:4A4/C-C7// B:10D4/5A-11/74AS648! I:13E3/9A-18/74PCT534
BD~9	3	B:4A3/C-A7// B:10D4/5A-10/74AS648! I:13E3/9A-17/74PCT534
BERROR~	3	I:4F4/C-B21/ I:7D2/3A-17/74F241 T:7D2/3A-5/74F241!
BGNT25~	3	I:48C4/13F-9/AM29C821 O:48C4/13F-17/AM29C821! I:50E6/6F-7/PAL16R8D
BGNT50~	4	I:12D6/1C-3/PAL16L8D I:48E4/3F-7/PAL16L8D I:48C4/13F-10/AM29C821 O:48C4/13F-16/AM29C821!
BGNT75~	2	I:48E4/3F-8/PAL16L8D O:48C4/13F-15/AM29C821!
BGNTCACT~	4	I:10D6/6A-22/74AS648 I:10D4/5A-22/74AS648 I:10D2/4A-22/74AS648 O:12D2/11D-19/PAL16L8D!
BGNT~	13	I:3A4/16A-6/74LS244 I:10D6/6A-23/74AS648 I:10D4/5A-23/74AS648 I:10D2/4A-23/74AS648 I:12D2/11D-11/PAL16L8 I:12D6/1C-2/PAL16L8D I:45C6/6G-11/PAL16R4D I:45E7/2D-1/74F74 I:48E4/3F-2/PAL16L8D I:48C4/13F-8/AM29C821 T:50B6/5F-17/PAL16R8D I:50E6/6F-4/PAL16R8D I:50E3/12G-9/74LS123
BINACK~	2	I:4F4/C-B19/ T:7D2/3A-14/74F241!
BINPUT25~	2	O:8C3/3D-20/AM29C821! I:8E3/4D-5/AM29C821
BINPUT50~	3	I:8E3/4D-11/AM29C821 O:8E3/4D-20/AM29C821! I:12E4/2C-4/PAL16L8D
BINPUT75~	2	I:7D2/3A-6/74F241 O:8E3/4D-14/AM29C821!
BINPUT~	3	I:4C6/5C-6/74F244 B:4A6/C-A18// O:7D6/7A-6/7407!

BINT~10	4	B:4D1/RN3-9/4610X_101_102! I:4C6/5C-2/74F244 O:4C3/C-A15!! O:41F5/14A-8/74LS38!
BINT~11	3	B:4D1/RN3-8/4610X_101_102! I:4E3/33C-17/74F244 O:4C3/C-C15!!
BINT~12	4	B:4D1/RN3-7/4610X_101_102! I:4E3/33C-15/74F244 O:4C3/C-A16!! O:41F4/14A-3/74LS38!
BINT~13	4	B:4D1/RN3-6/4610X_101_102! I:4E3/33C-13/74F244 O:4C3/C-C16!! O:41F5/14A-6/74LS38!
BINT~15	3	B:4D1/RN3-5/4610X_101_102! I:4E3/33C-11/74F244 O:4C3/C-C17!!
BIOXE~	3	I:4F5/C-C19/ T:7D2/3A-16/74F241! B:48E4/3F-14/PAL16L8D!
BIOXL~	2	I:46C5/2F-7/PAL16L8B B:48E4/3F-17/PAL16L8D!
BLOCK25~	2	I:6D6/8D-3/PAL16L8B O:8C3/3D-14/AM29C821!
BLOCKL25~	2	I:47D7/4F-2/PAL16L8B O:48C7/14F-23/AM29C821!
BLOCKL~	2	B:47D7/4F-16/PAL16L8B! I:48C7/14F-2/AM29C821
BLOCK~	2	B:6D6/8D-18/PAL16L8B! I:8C3/3D-11/AM29C821
BLRQ50~	2	O:48C4/13F-22/AM29C821! I:50B6/5F-6/PAL16R8D
BLRQ~	2	O:45E7/2D-6/74F74! I:48C4/13F-2/AM29C821
BMCL~	2	O:4F6/35A-2/7406! I:4F6/C-B20/
BMEM~	3	I:4F5/C-C20/ O:7D4/2A-6/7438! I:45C6/6G-5/PAL16R4D
BMINH~	2	O:4F7/7A-4/7407! I:4F7/C-B23/
BPERR25~	£8	O:8C3/3D-19/AM29C821! I:8E3/4D-6/AM29C821
BPERR50~	2	I:6D6/8D-4/PAL16L8B O:8E3/4D-19/AM29C821!
BPERR~	2	I:4C6/5C-8/74F244 O:4A6/C-B18!!
BREF~	2	I:4F4/C-A12/ O:7D6/7A-8/7407!
LREQ25~	£8	O:8C3/3D-16/AM29C821! I:8E3/4D-9/AM29C821
BREQ50~	2	I:6D2/10D-5/PAL16R8D O:8E3/4D-16/AM29C821!
BREQ~	2	I:4E3/33C-4/74F244 O:4C2/C-C12!!
BRK~	7	I:18B2/15F-9/PAL16L8D I:25E6/17F-9/74F10 O:34E3/29H-8/74F32! I:36E5/13D-7/PAL16L8D I:36D4/12D-9/PAL16R6D I:39C7/34D-F2/ND_DELDGA O:39A4/RN17-2/4610X_101_103!
BSEM~	£50	I:50B6/5F-13/PAL16R8D!
CA0	9	I:3F4/15C-17/74LS244 I:14D6/6C-18/74PCT374 I:24A2/21G-1/PAL16L8D I:25D6/24F-8/TMM2018D_25 I:25B6/20F-8/TMM I:25B3/16F-8/TMM2018D_25 I:25G3/21F-21/AM9150_20 I:25D3/23F-8/TM O:32D3/25F-23/AM29C821!
CA1	8	I:3F4/15C-15/74LS244 I:14D6/6C-17/74PCT374 I:25D6/24F-7/TMM2018D_25 I:25B6/20F-7/TMM2018D_25 I:25B3/16F-7/ I:25G3/21F-22/AM9150_20 I:25D3/23F-7/TMM2018D_25 O:32D3/25F-22/A
CA10	5	I:25D6/24F-19/TMM2018D_25 I:25B6/20F-19/TMM2018D_25 I:25B3/16F-19/TMM2018D_25 I:25D3/23F-19/TMM2018D_25 O:39C7/34D-
CA2	8	I:3F4/15C-13/74LS244 I:14D6/6C-14/74PCT374 I:25D6/24F-6/TMM2018D_25 I:25B6/20F-6/TMM2018D_25 I:25B3/16F-6/ I:25G3/21F-23/AM9150_20 I:25D3/23F-6/TMM2018D_25 O:32D3/25F-21/A
CA3	8	I:3F4/15C-11/74LS244 I:14D6/6C-13/74PCT374 I:25D6/24F-5/TMM2018D_25 I:25B6/20F-5/TMM2018D_25 I:25B3/16F-5/ I:25G3/21F-1/AM9150_20 I:25D3/23F-5/TMM2018D_25 O:32D3/25F-20/AM
CA4	8	I:3F4/15C-8/74LS244 I:14D6/6C-8/74PCT374 I:25D6/24F-4/TMM2018D_25 I:25B6/20F-4/TMM2018D_25 I:25B3/16F-4/ I:25G3/21F-2/AM9150_20 I:25D3/23F-4/TMM2018D_25 O:32D3/25F-19/AM
CA5	8	I:3F4/15C-6/74LS244 I:14D6/6C-7/74PCT374 I:25D6/24F-3/TMM2018D_25 I:25B6/20F-3/TMM2018D_25 I:25B3/16F-3/ I:25G3/21F-3/AM9150_20 I:25D3/23F-3/TMM2018D_25 O:32D3/25F-18/AM
CA6	8	I:3F4/15C-4/74LS244 I:14D6/6C-4/74PCT374 I:25D6/24F-2/TMM2018D_25 I:25B6/20F-2/TMM2018D_25 I:25B3/16F-2/ I:25G3/21F-4/AM9150_20 I:25D3/23F-2/TMM2018D_25 O:32D3/25F-17/AM
CA7	8	I:3F4/15C-2/74LS244 I:14D6/6C-3/74PCT374 I:25D6/24F-1/TMM2018D_25 I:25B6/20F-1/TMM2018D_25 I:25B3/16F-1/

		I:25G3/21F-5/AM9150_20	I:25D3/23F-1/TMM2018D_25	O:32D3/25F-16/AM	
CA8	8	I:3F3/16G-17/74LS244	I:14D5/4B-18/74PCT374		
		I:25D6/24F-23/TMM2018D_25	I:25B6/20F-23/TMM2018D_25		
		I:25B3/16F-23/TMM2018D_25	I:25G3/21F-6/AM9150_20	I:25D3/23F-23/T	
		O:32D3/25F-15/AM29C821!			
CA9	8	I:3F3/16G-15/74LS244	I:14D5/4B-17/74PCT374		
		I:25D6/24F-22/TMM2018D_25	I:25B6/20F-22/TMM2018D_25		
		I:25B3/16F-22/TMM2018D_25	I:25G3/21F-7/AM9150_20	I:25D3/23F-22/T	
		O:32D3/25F-14/AM29C821!			
CACT25~	2	I:6D4/5D-4/PAL16R4D	O:8C3/3D-17/AM29C821!		
CACT~	6	T:6D2/10D-12/PAL16R8D!	I:6D4/5D-3/PAL16R4D		
		I:7D7/9D-9/74F02	I:8C3/3D-8/AM29C821	I:12D2/11D-8/PAL16L8D	
		I:12E4/2C-1/PAL16L8D			
CAS	4	I:49B7/9H-5/74F00	I:49D7/9H-13/74F00	I:49F7/8G-13/74F00	
		T:50E6/6F-14/PAL16R8D!			
CAS~0	£49	5	I:49C3/15H-28/SIP1M9	I:49C3/15H-2/SIP1M9	
		I:49C5/15J-28/SIP1M9	I:49C5/15J-2/SIP1M9	O:49B7/9H-6/74F00!	
CAS~1	£49	5	I:49E3/15K-28/SIP1M9	I:49E3/15K-2/SIP1M9	
		I:49E5/15L-28/SIP1M9	I:49E5/15L-2/SIP1M9	O:49D7/9H-11/74F00!	
CAS~2	£49	5	I:49G5/15N-28/SIP1M9	I:49G5/15N-2/SIP1M9	
		I:49G3/15M-28/SIP1M9	I:49G3/15M-2/SIP1M9	O:49F7/8G-11/74F00!	
CBIT	£45	2	T:45E2/7G-17/PAL16R8B!	I:45F2/8H-2/74LS248	
CBWRITE~		3	I:7E7/2A-9/7438	I:7D6/7A-5/7407	B:12E4/2C-18/PAL16L8D!
CCLR~		2	I:25G3/21F-20/AM9150_20	O:39C7/34D-J1/ND_DELDGA!	
CC~0	£36	2	I:36E5/13D-2/PAL16L8D	T:36D4/12D-16/PAL16R6D!	
CC~1		3	I:18B2/15F-2/PAL16L8D	I:36E5/13D-3/PAL16L8D	
		T:36D4/12D-15/PAL16R6D!			
CC~2		6	I:6D4/5D-2/PAL16R4D	I:12D2/11D-3/PAL16L8D	
		I:18B2/15F-3/PAL16L8D	I:24A2/21G-8/PAL16L8D	I:36E5/13D-4/PAL16L	
		T:36D4/12D-14/PAL16R6D!			
CC~3		3	I:18B2/15F-4/PAL16L8D	I:36E5/13D-5/PAL16L8D	
		T:36D4/12D-13/PAL16R6D!			
CD0		6	I:3D6/20A-17/74LS244	B:11D5/6B-13/74AS646!	
		O:11G2/RN20-9/4610X_101_102!	B:25D6/24F-17/TMM2018D_25!		
		I:33B7/28F-D17/ND_DELILAH	O:35D5/15B-3/74PCT244!		
CD1		6	I:3D6/20A-15/74LS244	B:11D5/6B-14/74AS646!	
		O:11G2/RN20-8/4610X_101_102!	B:25D6/24F-16/TMM2018D_25!		
		I:33B7/28F-G16/ND_DELILAH	O:35D5/15B-5/74PCT244!		
CD10		6	I:3D4/18A-13/74LS244	O:11E2/RN19-7/4610X_101_102!	
		B:11D4/7B-15/74AS646!	B:25D3/23F-15/TMM2018D_25!	I:33B7/28F-C16	
		O:35D3/14B-7/74PCT244!			
CD11		6	I:3D4/18A-11/74LS244	O:11E2/RN19-6/4610X_101_102!	
		B:11D4/7B-16/74AS646!	B:25D3/23F-14/TMM2018D_25!	I:33B7/28F-E14	
		O:35D3/14B-9/74PCT244!			
CD12		6	I:3D4/18A-8/74LS244	O:11E2/RN19-5/4610X_101_102!	
		B:11D4/7B-17/74AS646!	B:25D3/23F-13/TMM2018D_25!	I:33B7/28F-A17	
		O:35D3/14B-12/74PCT244!			
CD13		6	I:3D4/18A-6/74LS244	O:11E2/RN19-4/4610X_101_102!	
		B:11D4/7B-18/74AS646!	B:25D3/23F-11/TMM2018D_25!	I:33B7/28F-D15	
		O:35D3/14B-14/74PCT244!			
CD14		6	I:3D4/18A-4/74LS244	O:11E2/RN19-3/4610X_101_102!	
		B:11D4/7B-19/74AS646!	B:25D3/23F-10/TMM2018D_25!	I:33B7/28F-D14	
		O:35D3/14B-16/74PCT244!			
CD15		6	I:3D4/18A-2/74LS244	O:11E2/RN19-2/4610X_101_102!	
		B:11D4/7B-20/74AS646!	B:25D3/23F-9/TMM2018D_25!	I:33B7/28F-A16/	
		O:35D3/14B-18/74PCT244!			
CD2		6	I:3D6/20A-13/74LS244	B:11D5/6B-15/74AS646!	
		O:11G2/RN20-7/4610X_101_102!	B:25D6/24F-15/TMM2018D_25!		
		I:33B7/28F-C17/ND_DELILAH	O:35D5/15B-7/74PCT244!		
CD3		6	I:3D6/20A-11/74LS244	B:11D5/6B-16/74AS646!	

			O:11G2/RN20-6/4610X_101_102! B:25D6/24F-14/TMM2018D_25!
			I:33B7/28F-F15/ND DELILAH O:35D5/15B-9/74PCT244!
CD4	6		I:3D6/20A-8/74LS244 B:11D5/6B-17/74AS646!
			O:11G2/RN20-5/4610X_101_102! B:25D6/24F-13/TMM2018D_25!
			I:33B7/28F-D16/ND DELILAH O:35D5/15B-12/74PCT244!
CD5	6		I:3D6/20A-6/74LS244 B:11D5/6B-18/74AS646!
			O:11G2/RN20-4/4610X_101_102! B:25D6/24F-11/TMM2018D_25!
			I:33B7/28F-G14/ND DELILAH O:35D5/15B-14/74PCT244!
CD6	6		I:3D6/20A-4/74LS244 B:11D5/6B-19/74AS646!
			O:11F2/RN20-3/4610X_101_102! B:25D6/24F-10/TMM2018D_25!
			I:33B7/28F-F14/ND DELILAH O:35D5/15B-16/74PCT244!
CD7	6		I:3D6/20A-2/74LS244 B:11D5/6B-20/74AS646!
			O:11F2/RN20-2/4610X_101_102! B:25D6/24F-9/TMM2018D_25!
			I:33B7/28F-E16/ND DELILAH O:35D5/15B-18/74PCT244!
CD8	6		I:3D4/18A-17/74LS244 O:11F2/RN19-9/4610X_101_102!
			B:11D4/7B-13/74AS646! B:25D3/23F-17/TMM2018D_25! I:33B7/28F-B17
			O:35D3/14B-3/74PCT244!
CD9	6		I:3D4/18A-15/74LS244 O:11E2/RN19-8/4610X_101_102!
			B:11D4/7B-14/74AS646! B:25D3/23F-16/TMM2018D_25! I:33B7/28F-E15
			O:35D3/14B-5/74PCT244!
CEUART~	2		O:39C7/34D-N10/ND DELDGA! I:42B3/32H-11/SC2661
CGABRK~	2		O:33B7/28F-R10/ND DELILAH! I:34E3/29H-9/74F32
CGNT25~	3		I:48C4/13F-7/AM29C821 O:48C4/13F-19/AM29C821!
			I:50E6/6F-8/PAL16R8D
CGNT50~	4		I:6D4/5D-7/PAL16R4D I:12D2/11D-7/PAL16L8D
			I:48E4/3F-5/PAL16L8D O:48C4/13F-18/AM29C821!
CGNTCACT~	2		O:12D2/11D-12/PAL16L8D! I:36D4/12D-7/PAL16R6D
CGNT~	11		I:3A4/16A-8/74LS244 I:6D4/5D-6/PAL16R4D
			I:12D2/11D-6/PAL16L8D I:12E4/2C-2/PAL16L8D I:12D6/1C-1/PAL16L8D
			I:45C4/9G-11/PAL16R4D I:48E4/3F-3/PAL16L8D I:48C4/13F-6/AM29C821
			T:50B6/5F-18/PAL16R8D! I:50E6/6F-3/PAL16R8D I:50D3/12G-1/74LS123
CLEAR25~	E8	2	O:8C3/3D-23/AM29C821! I:8E3/4D-2/AM29C821
CLEAR~	5		I:4F7/7A-3/7407 I:8C3/3D-2/AM29C821
			O:39C7/34D-F11/ND DELDGA! I:40D7/35C-2/MC68705U3 I:41E4/28A-1/7
CLK	11		I:3A4/16A-4/74LS244 I:3A7/21A-11/74LS374
			I:17E7/31G-13/AM29841 I:34D3/19F-1/PAL16R4D I:34D4/22F-1/PAL16R
			I:36B5/14D-1/PAL16R4D I:36B3/15D-1/PAL16R4D O:36F2/14C-3/74F00!
			O:39A1/RN15-2/4610X_101_103! I:39C7/34D-D1/ND DELDGA I:42C6/33G-
CLOSC	4		I:38D1/13C-2/74LS393 I:38E2/13C-12/74LS393
			O:38B3/12F-8/74S132! I:39C7/34D-A9/ND DELDGA
CLRERR~	E46	3	B:46C5/2F-17/PAL16L8B! I:46D2/1H-11/AM29C833
			I:46D4/2H-11/AM29C833
CLRQ~	2		B:45C4/9G-18/PAL16R4D! I:50B6/5F-5/PAL16R8D
CMWRITE~	E12	1	B:12E4/2C-17/PAL16L8D!
CON	5		I:25E6/17F-10/74F10 B:25F7/SW1-3/SECME090320102!
			B:25F7/LED1-2/RED! I:26D4/27H-11/74PCT244 I:26D4/27H-13/74PCT24
CONSOLE~	5		B:2E2/RN1-9/4610X_101_102! O:2D5/A-C21/! O:2D5/A-C30/!
			O:41G3/2A-11/7438! I:42C6/33G-6/AM29C821
CONTINUE~	3		B:4D1/RN3-4/4610X_101_102! I:4E3/33C-6/74F244
			O:4C2/C-B15/!
CON~	4		B:25F7/SW1-1/SECME090320102!
			B:25F6/RN14-3/4610X_101_102! I:26D4/27H-15/74PCT244 I:27D6/19G-
CORR~	8		I:47C2/7C-14/74PCT374 B:47B1/RN4-2/4610X_101_222!
			O:49C3/15H-24/SIP1M9! O:49C5/15J-24/SIP1M9! O:49E3/15K-24/SIP1M
			O:49E5/15L-24/SIP1M9! O:49G5/15N-24/SIP1M9! O:49G3/15M-24/SIP1M9
CPN10	3		B:25B6/20F-17/TMM2018D_25! I:27D6/19G-18/74F521
			O:31D5/10G-3/74PCT244!
CPN11	3		B:25B6/20F-16/TMM2018D_25! I:27D6/19G-16/74F521
			O:31D5/10G-5/74PCT244!
CPN12	3		B:25B6/20F-15/TMM2018D_25! I:27D6/19G-14/74F521

		O:31D5/10G-7/74PCT244!
CPN13	3	B:25B6/20F-14/TMM2018D_25! I:27D6/19G-12/74F521
		O:31D5/10G-9/74PCT244!
CPN14	3	B:25B6/20F-13/TMM2018D_25! I:27D6/19G-9/74F521
		O:31D5/10G-12/74PCT244!
CPN15	3	B:25B6/20F-11/TMM2018D_25! I:27D6/19G-7/74F521
		O:31D5/10G-14/74PCT244!
CPN16	3	B:25B6/20F-10/TMM2018D_25! I:27D6/19G-5/74F521
		O:31D5/10G-16/74PCT244!
CPN17	3	B:25B6/20F-9/TMM2018D_25! I:27D6/19G-3/74F521
		O:31D5/10G-18/74PCT244!
CPN18	3	B:25B3/16F-17/TMM2018D_25! I:27D3/18G-18/74F521
		O:31D3/11G-3/74PCT244!
CPN19	3	B:25B3/16F-16/TMM2018D_25! I:27D3/18G-16/74F521
		O:31D3/11G-5/74PCT244!
CPN20	3	B:25B3/16F-15/TMM2018D_25! I:27D3/18G-14/74F521
		O:31D3/11G-7/74PCT244!
CPN21	3	B:25B3/16F-14/TMM2018D_25! I:27D3/18G-12/74F521
		O:31D3/11G-9/74PCT244!
CPN22	3	B:25B3/16F-13/TMM2018D_25! I:27D3/18G-9/74F521
		O:31D3/11G-12/74PCT244!
CPN23	3	B:25B3/16F-11/TMM2018D_25! I:27D3/18G-7/74F521
		O:31D3/11G-14/74PCT244!
CRQ~	2	I:6D2/10D-2/PAL16R8D B:45C4/9G-13/PAL16R4D!
CSA0	3	I:17E4/31F-11/AM29841 I:17E5/32G-11/AM29841
		O:33B7/28F-L3/ND DELILAH!
CSA1	3	I:17E4/31F-10/AM29841 I:17E5/32G-10/AM29841
		O:33B7/28F-P1/ND DELILAH!
CSA10	3	I:17D2/29H-4/74F32 I:17E2/30H-7/74F373
		O:33B7/28F-Q2/ND DELILAH!
CSA11	3	I:17D1/29H-1/74F32 I:17E2/30H-4/74F373
		O:33B7/28F-N4/ND DELILAH!
CSA12	2	I:17E2/30H-3/74F373 O:33B7/28F-S1/ND DELILAH!
CSA2	3	I:17E4/31F-9/AM29841 I:17E5/32G-9/AM29841
		O:33B7/28F-L2/ND DELILAH!
CSA3	3	I:17E4/31F-8/AM29841 I:17E5/32G-8/AM29841
		O:33B7/28F-Q1/ND DELILAH!
CSA4	3	I:17E4/31F-7/AM29841 I:17E5/32G-7/AM29841
		O:33B7/28F-M4/ND DELILAH!
CSA5	3	I:17E4/31F-6/AM29841 I:17E5/32G-6/AM29841
		O:33B7/28F-L4/ND DELILAH!
CSA6	3	I:17E4/31F-5/AM29841 I:17E5/32G-5/AM29841
		O:33B7/28F-P2/ND DELILAH!
CSA7	3	I:17E4/31F-4/AM29841 I:17E5/32G-4/AM29841
		O:33B7/28F-N2/ND DELILAH!
CSA8	3	I:17E4/31F-3/AM29841 I:17E5/32G-3/AM29841
		O:33B7/28F-R1/ND DELILAH!
CSA9	3	I:17E4/31F-2/AM29841 I:17E5/32G-2/AM29841
		O:33B7/28F-N3/ND DELILAH!
CSALUI0	4	B:20C3/19B-2/74LS245! B:21B6/18D-15/TMM2068D_25!
		B:22B6/18C-15/TMM2068D_25! I:33B7/28F-C1/ND DELILAH
CSALUI1	4	B:20B3/16B-9/74LS245! B:21B4/17D-12/TMM2068D_25!
		B:22B4/17C-12/TMM2068D_25! I:33B7/28F-D4/ND DELILAH
CSALUI2	4	B:20B3/16B-8/74LS245! B:21B4/17D-13/TMM2068D_25!
		B:22B4/17C-13/TMM2068D_25! I:33B7/28F-D2/ND DELILAH
CSALUI3	4	B:20B3/16B-7/74LS245! B:21B4/17D-14/TMM2068D_25!
		B:22B4/17C-14/TMM2068D_25! I:33B7/28F-D3/ND DELILAH
CSALUI4	4	B:20B3/16B-6/74LS245! B:21B4/17D-15/TMM2068D_25!
		B:22B4/17C-15/TMM2068D_25! I:33B7/28F-F4/ND DELILAH
CSALUI5	4	B:20B3/16B-5/74LS245! B:21B2/16D-12/TMM2068D_25!

		B:22B2/16C-12/TMM2068D_25!	I:33B7/28F-G4/ND_DELILAH
CSALU16	4	B:20B3/16B-4/74LS245!	B:21B2/16D-13/TMM2068D_25!
		B:22B2/16C-13/TMM2068D_25!	I:33B7/28F-D1/ND_DELILAH
CSALU17	5	B:20B3/16B-3/74LS245!	B:21B2/16D-14/TMM2068D_25!
		B:22B2/16C-14/TMM2068D_25!	I:33B7/28F-E4/ND_DELILAH
CSALU18	5	B:20B3/16B-2/74LS245!	B:21B2/16D-15/TMM2068D_25!
		B:22B2/16C-15/TMM2068D_25!	I:33B7/28F-A1/ND_DELILAH
CSALUM0	5	B:20B4/20B-5/74LS245!	B:21C2/20D-12/TMM2068D_25!
		B:22C2/20C-12/TMM2068D_25!	I:33B7/28F-C2/ND_DELILAH
CSALUM1	5	B:20B4/20B-4/74LS245!	B:21C2/20D-13/TMM2068D_25!
		B:22C2/20C-13/TMM2068D_25!	I:33B7/28F-C3/ND_DELILAH
CSBIT0	4	B:20C7/29B-9/74LS245!	B:21F7/31D-12/TMM2068D_25!
		B:22F7/31C-12/TMM2068D_25!	I:33B7/28F-B6/ND_DELILAH
CSBIT1	4	B:20C7/29B-8/74LS245!	B:21F7/31D-13/TMM2068D_25!
		B:22F7/31C-13/TMM2068D_25!	I:33B7/28F-D8/ND_DELILAH
CSBIT10	4	B:20B7/28B-7/74LS245!	B:21F4/29D-14/TMM2068D_25!
		B:22F4/29C-14/TMM2068D_25!	I:33B7/28F-A3/ND_DELILAH
CSBIT11	4	B:20B7/28B-6/74LS245!	B:21F4/29D-15/TMM2068D_25!
		B:22F4/29C-15/TMM2068D_25!	I:33B7/28F-C6/ND_DELILAH
CSBIT12	4	B:20B7/28B-5/74LS245!	B:21F2/28D-12/TMM2068D_25!
		B:22F2/28C-12/TMM2068D_25!	I:33B7/28F-B3/ND_DELILAH
CSBIT13	4	B:20B7/28B-4/74LS245!	B:21F2/28D-13/TMM2068D_25!
		B:22F2/28C-13/TMM2068D_25!	I:33B7/28F-C5/ND_DELILAH
CSBIT14	4	B:20B7/28B-3/74LS245!	B:21F2/28D-14/TMM2068D_25!
		B:22F2/28C-14/TMM2068D_25!	I:33B7/28F-A2/ND_DELILAH
CSBIT15	4	B:20B7/28B-2/74LS245!	B:21F2/28D-15/TMM2068D_25!
		B:22F2/28C-15/TMM2068D_25!	I:33B7/28F-B4/ND_DELILAH
CSBIT2	4	B:20C7/29B-7/74LS245!	B:21F7/31D-14/TMM2068D_25!
		B:22F7/31C-14/TMM2068D_25!	I:33B7/28F-A5/ND_DELILAH
CSBIT20	4	B:20C6/27B-5/74LS245!	B:21D6/26D-12/TMM2068D_25!
		B:22D6/26C-12/TMM2068D_25!	I:33B7/28F-P4/ND_DELILAH
CSBIT3	4	B:20C7/29B-6/74LS245!	B:21F7/31D-15/TMM2068D_25!
		B:22F7/31C-15/TMM2068D_25!	I:33B7/28F-B7/ND_DELILAH
CSBIT4	4	B:20C7/29B-5/74LS245!	B:21F6/30D-12/TMM2068D_25!
		B:22F6/30C-12/TMM2068D_25!	I:33B7/28F-B5/ND_DELILAH
CSBITS5	4	B:20C7/29B-4/74LS245!	B:21F6/30D-13/TMM2068D_25!
		B:22F6/30C-13/TMM2068D_25!	I:33B7/28F-C7/ND_DELILAH
CSBIT6	4	B:20C7/29B-3/74LS245!	B:21F6/30D-14/TMM2068D_25!
		B:22F6/30C-14/TMM2068D_25!	I:33B7/28F-A4/ND_DELILAH
CSBIT7	4	B:20C7/29B-2/74LS245!	B:21F6/30D-15/TMM2068D_25!
		B:22F6/30C-15/TMM2068D_25!	I:33B7/28F-D7/ND_DELILAH
CSBIT8	4	B:20B7/28B-9/74LS245!	B:21F4/29D-12/TMM2068D_25!
		B:22F4/29C-12/TMM2068D_25!	I:33B7/28F-D6/ND_DELILAH
CSBIT9	4	B:20B7/28B-8/74LS245!	B:21F4/29D-13/TMM2068D_25!
		B:22F4/29C-13/TMM2068D_25!	I:33B7/28F-E7/ND_DELILAH
CSCA0	3	I:17E7/31G-11/AM29841	I:32D3/25F-2/AM29C821
		O:33B7/28F-P14/ND_DELILAH!	
CSCA1	3	I:17E7/31G-10/AM29841	I:32D3/25F-3/AM29C821
		O:33B7/28F-P16/ND_DELILAH!	
CSCA2	3	I:17E7/31G-9/AM29841	I:32D3/25F-4/AM29C821
		O:33B7/28F-P15/ND_DELILAH!	
CSCA3	3	I:17E7/31G-8/AM29841	I:32D3/25F-5/AM29C821
		O:33B7/28F-P17/ND_DELILAH!	
CSCA4	3	I:17E7/31G-7/AM29841	I:32D3/25F-6/AM29C821
		O:33B7/28F-L14/ND_DELILAH!	
CSCA5	3	I:17E7/31G-6/AM29841	I:32D3/25F-7/AM29C821
		O:33B7/28F-M14/ND_DELILAH!	
CSCA6	3	I:17E7/31G-5/AM29841	I:32D3/25F-8/AM29C821
		O:33B7/28F-N17/ND_DELILAH!	
CSCA7	3	I:17E7/31G-4/AM29841	I:32D3/25F-9/AM29C821

		O:33B7/28F-N15/ND DELILAH!
CSCA8	3	I:17E7/31G-3/AM29841 I:32D3/25F-10/AM29C821 O:33B7/28F-M16/ND DELILAH!
CSCA9	3	I:17E7/31G-2/AM29841 I:32D3/25F-11/AM29C821 O:33B7/28F-N16/ND DELILAH!
CSCISELO	4	B:20B4/20B-3/74LS245! B:21C2/20D-14/TMM2068D_25! B:22C2/20C-14/TMM2068D_25! I:33B7/28F-B11/ND DELILAH
CSCISEL1	4	B:20B4/20B-2/74LS245! B:21C2/20D-15/TMM2068D_25! B:22C2/20C-15/TMM2068D_25! I:33B7/28F-A10/ND DELILAH
CSCOMMO	8	I:3A7/21A-13/74LS374 B:20C4/21B-9/74LS245! B:21C7/23D-12/TMM2068D_25! B:22C7/23C-12/TMM2068D_25! I:33B7/28F-G17/ND DELILAH I:34D4/22F-6/PAL16R4D I:39C7/34D-L5/ND O:39A3/RN16-2/4610X_101_103!
CSCCOMM1	8	I:3A7/21A-8/74LS374 B:20C4/21B-8/74LS245! B:21C7/23D-13/TMM2068D_25! B:22C7/23C-13/TMM2068D_25! I:33B7/28F-H15/ND DELILAH I:34D4/22F-5/PAL16R4D O:39B1/RN15-10/4 I:39C7/34D-M4/ND DELDGA
CSCCOMM2	8	I:3A7/21A-7/74LS374 B:20C4/21B-7/74LS245! B:21C7/23D-14/TMM2068D_25! B:22C7/23C-14/TMM2068D_25! I:33B7/28F-F17/ND DELILAH I:34D4/22F-4/PAL16R4D O:39A1/RN15-9/46 I:39C7/34D-N3/ND DELDGA
CSCCOMM3	8	I:3A7/21A-4/74LS374 B:20C4/21B-6/74LS245! B:21C7/23D-15/TMM2068D_25! B:22C7/23C-15/TMM2068D_25! I:33B7/28F-H14/ND DELILAH I:34D4/22F-3/PAL16R4D O:39A1/RN15-8/46 I:39C7/34D-M3/ND DELDGA
CSCCOMM4	8	I:3A7/21A-3/74LS374 B:20C4/21B-5/74LS245! B:21C6/22D-12/TMM2068D_25! B:22C6/22C-12/TMM2068D_25! I:33B7/28F-E17/ND DELILAH I:34D4/22F-2/PAL16R4D O:39A1/RN15-7/46 I:39C7/34D-L4/ND DELDGA
CSDELAY0	5	B:20B6/24B-7/74LS245! B:21D4/25D-14/TMM2068D_25! B:22D4/25C-14/TMM2068D_25! I:36B5/14D-2/PAL16R4D I:36D4/12D-4/P
CSDELAY1	4	B:20B6/24B-6/74LS245! B:21D4/25D-15/TMM2068D_25! B:22D4/25C-15/TMM2068D_25! I:36B3/15D-2/PAL16R4D
CSDLY	4	B:20C6/27B-4/74LS245! B:21D6/26D-13/TMM2068D_25! B:22D6/26C-13/TMM2068D_25! I:36B5/14D-3/PAL16R4D
CSECOND	5	B:20C6/27B-2/74LS245! B:21D6/26D-15/TMM2068D_25! B:22D6/26C-15/TMM2068D_25! I:33B7/28F-G3/ND DELILAH I:36B5/14D-
CSEM~	£50	T:50B6/5F-14/PAL16R8D!
CSIDBS0	7	B:20C4/21B-4/74LS245! B:21C6/22D-13/TMM2068D_25! B:22C6/22C-13/TMM2068D_25! I:33B7/28F-E1/ND DELILAH I:34D3/19F- I:39C7/34D-C2/ND DELDGA O:39A3/RN16-9/4610X_101_103!
CSIDBS1	7	B:20C4/21B-3/74LS245! B:21C6/22D-14/TMM2068D_25! B:22C6/22C-14/TMM2068D_25! I:33B7/28F-E3/ND DELILAH I:34D3/19F- I:39C7/34D-D3/ND DELDGA O:39A3/RN16-8/4610X_101_103!
CSIDBS2	7	B:20C4/21B-2/74LS245! B:21C6/22D-15/TMM2068D_25! B:22C6/22C-15/TMM2068D_25! I:33B7/28F-F2/ND DELILAH I:34D3/19F- I:39C7/34D-C4/ND DELDGA O:39A3/RN16-7/4610X_101_103!
CSIDBS3	7	B:20B4/20B-9/74LS245! B:21C4/21D-12/TMM2068D_25! B:22C4/21C-12/TMM2068D_25! I:33B7/28F-E2/ND DELILAH I:34D3/19F- I:39C7/34D-A2/ND DELDGA O:39A3/RN16-6/4610X_101_103!
CSIDBS4	7	B:20B4/20B-8/74LS245! B:21C4/21D-13/TMM2068D_25! B:22C4/21C-13/TMM2068D_25! I:33B7/28F-F1/ND DELILAH I:34D3/19F- I:39C7/34D-A3/ND DELDGA O:39A3/RN16-5/4610X_101_103!
CSLOOP	5	B:20C6/27B-3/74LS245! B:21D6/26D-14/TMM2068D_25! B:22D6/26C-14/TMM2068D_25! I:33B7/28F-G1/ND DELILAH I:36B5/14D-
CSMIS0	8	I:3A7/21A-17/74LS374 B:20B4/20B-7/74LS245! B:21C4/21D-14/TMM2068D_25! B:22C4/21C-14/TMM2068D_25! I:33B7/28F-H13/ND DELILAH I:34D4/22F-8/PAL16R4D I:39C7/34D-N2/ND O:39A3/RN16-4/4610X_101_103!
CSMIS1	8	I:3A7/21A-14/74LS374 B:20B4/20B-6/74LS245!

		B:21C4/21D-15/TMM2068D_25!	B:22C4/21C-15/TMM2068D_25!	
		I:33B7/28F-F16/ND_DELILAH	I:34D4/22F-7/PAL16R4D	I:39C7/34D-K3/ND
		O:39A3/RN16-3/4610X_101_103!		
CSRASELO	4	B:20C3/19B-6/74LS245!	B:21B7/19D-15/TMM2068D_25!	
		B:22B7/19C-15/TMM2068D_25!	I:33B7/28F-H2/ND_DELILAH	
CSRASEL1	4	B:20C3/19B-5/74LS245!	B:21B6/18D-12/TMM2068D_25!	
		B:22B6/18C-12/TMM2068D_25!	I:33B7/28F-G2/ND_DELILAH	
CSRBO	4	B:20C6/27B-9/74LS245!	B:21D7/27D-12/TMM2068D_25!	
		B:22D7/27C-12/TMM2068D_25!	I:33B7/28F-H1/ND_DELILAH	
CSRB1	4	B:20C6/27B-8/74LS245!	B:21D7/27D-13/TMM2068D_25!	
		B:22D7/27C-13/TMM2068D_25!	I:33B7/28F-H4/ND_DELILAH	
CSRB2	4	B:20C6/27B-7/74LS245!	B:21D7/27D-14/TMM2068D_25!	
		B:22D7/27C-14/TMM2068D_25!	I:33B7/28F-J1/ND_DELILAH	
CSRB3	4	B:20C6/27B-6/74LS245!	B:21D7/27D-15/TMM2068D_25!	
		B:22D7/27C-15/TMM2068D_25!	I:33B7/28F-H3/ND_DELILAH	
CSRBSELO	4	B:20C3/19B-9/74LS245!	B:21B7/19D-12/TMM2068D_25!	
		B:22B7/19C-12/TMM2068D_25!	I:33B7/28F-S2/ND_DELILAH	
CSRBSEL1	4	B:20C3/19B-8/74LS245!	B:21B7/19D-13/TMM2068D_25!	
		B:22B7/19C-13/TMM2068D_25!	I:33B7/28F-Q3/ND_DELILAH	
CSSCOND	4	B:20B6/24B-9/74LS245!	B:21D4/25D-12/TMM2068D_25!	
		B:22D4/25C-12/TMM2068D_25!	I:33B7/28F-S3/ND_DELILAH	
CSSST0	4	B:20C3/19B-4/74LS245!	B:21B6/18D-13/TMM2068D_25!	
		B:22B6/18C-13/TMM2068D_25!	I:33B7/28F-D10/ND_DELILAH	
CSSST1	4	B:20C3/19B-3/74LS245!	B:21B6/18D-14/TMM2068D_25!	
		B:22B6/18C-14/TMM2068D_25!	I:33B7/28F-A9/ND_DELILAH	
CSTS3	4	B:20B6/24B-5/74LS245!	B:21D2/24D-12/TMM2068D_25!	
		B:22D2/24C-12/TMM2068D_25!	I:33B7/28F-R4/ND_DELILAH	
CSTS4	4	B:20B6/24B-4/74LS245!	B:21D2/24D-13/TMM2068D_25!	
		B:22D2/24C-13/TMM2068D_25!	I:33B7/28F-S4/ND_DELILAH	
CSTS5	4	B:20B6/24B-3/74LS245!	B:21D2/24D-14/TMM2068D_25!	
		B:22D2/24C-14/TMM2068D_25!	I:33B7/28F-P5/ND_DELILAH	
CSTS6	4	B:20B6/24B-2/74LS245!	B:21D2/24D-15/TMM2068D_25!	
		B:22D2/24C-15/TMM2068D_25!	I:33B7/28F-P6/ND_DELILAH	
CSVECT	4	B:20B6/24B-8/74LS245!	B:21D4/25D-13/TMM2068D_25!	
		B:22D4/25C-13/TMM2068D_25!	I:33B7/28F-N7/ND_DELILAH	
CSXRF	4	B:20C3/19B-7/74LS245!	B:21B7/19D-14/TMM2068D_25!	
		B:22B7/19C-14/TMM2068D_25!	I:33B7/28F-R5/ND_DELILAH	
CX~	2	T:36D4/12D-18/PAL16R6D!	I:41C5/25A-2/74PCT244	
CYD~	2	I:25F5/18F-6/PAL16R4D	B:36E5/13D-17/PAL16L8D!	
DAP~	4	B:6D4/5D-18/PAL16R4D!	I:7D4/1F-11/74F04	
		I:39C7/34D-M5/ND_DELDGA	O:39A4/RN17-5/4610X_101_103!	
DA~	4	I:41F4/11B-5/74LS04	O:42B3/32H-14/SC2661!	
		O:42C5/RNT-3/4610X_101_103!	I:42C6/33G-3/AM29C821	
DBAPR	7	I:6D6/8D-5/PAL16L8B	I:10D6/6A-1/74AS648	
		I:10D4/5A-1/74AS648	I:10D2/4A-1/74AS648	
		O:12D6/1C-19/PAL16L8D!	O:12D6/1C-19/PAL16L8D!	
		I:45C6/6G-1/PAL16R4D	I:45C6/6G-2/PAL16R4D	
DBIT	E45	2	T:45E2/7G-16/PAL16R8B!	I:45F2/8H-6/74LS248
DD0		5	B:46D2/1H-23/AM29C833!	O:46E1/RN21-2/4610X_101_103!
			B:49C3/15H-3/SIP1M9!	B:49E3/15K-3/SIP1M9!
			B:49G3/15M-3/SIP1M9!	
DD1		5	B:46D2/1H-22/AM29C833!	O:46E1/RN21-3/4610X_101_103!
			B:49C3/15H-6/SIP1M9!	B:49E3/15K-6/SIP1M9!
			B:49G3/15M-6/SIP1M9!	
DD10		5	B:46D4/2H-22/AM29C833!	O:46E2/RN22-3/4610X_101_103!
			B:49C5/15J-6/SIP1M9!	B:49E5/15L-6/SIP1M9!
			B:49G5/15N-6/SIP1M9!	
DD11		5	B:46D4/2H-21/AM29C833!	O:46E2/RN22-4/4610X_101_103!
			B:49C5/15J-10/SIP1M9!	B:49E5/15L-10/SIP1M9!
			B:49G5/15N-10/SIP1M9!	
DD12		5	B:46D4/2H-20/AM29C833!	O:46F2/RN22-5/4610X_101_103!
			B:49C5/15J-13/SIP1M9!	B:49E5/15L-13/SIP1M9!
			B:49G5/15N-13/SIP1M9!	
DD13		5	B:46D4/2H-19/AM29C833!	O:46F2/RN22-6/4610X_101_103!
			B:49C5/15J-16/SIP1M9!	B:49E5/15L-16/SIP1M9!
			B:49G5/15N-16/SIP1M9!	
DD14		5	B:46D4/2H-18/AM29C833!	O:46F2/RN22-7/4610X_101_103!

		B:49C5/15J~20/SIP1M9!	B:49E5/15L~20/SIP1M9!	B:49G5/15N~20/SIP1M
DD15	5	B:46D4/2H~17/AM29C833!	O:46F2/RN22~8/4610X_101_103!	
		B:49C5/15J~23/SIP1M9!	B:49E5/15L~23/SIP1M9!	B:49G5/15N~23/SIP1M
DD16	5	B:46D4/2H~16/AM29C833!	O:46F2/RN22~9/4610X_101_103!	
		B:49C5/15J~25/SIP1M9!	B:49E5/15L~25/SIP1M9!	B:49G5/15N~25/SIP1M
DD17	8	B:46D4/2H~15/AM29C833!	O:46F2/RN22~10/4610X_101_103!	
		I:49C5/15J~29/SIP1M9	O:49C5/15J~26/SIP1M9!	I:49E5/15L~29/SIP1M9
		O:49E5/15L~26/SIP1M9!	I:49G5/15N~29/SIP1M9	O:49G5/15N~26/SIP1M9!
DD2	5	B:46D2/1H~21/AM29C833!	O:46E1/RN21~4/4610X_101_103!	
		B:49C3/15H~10/SIP1M9!	B:49E3/15K~10/SIP1M9!	B:49G3/15M~10/SIP1M
DD3	5	B:46D2/1H~20/AM29C833!	O:46F1/RN21~5/4610X_101_103!	
		B:49C3/15H~13/SIP1M9!	B:49E3/15K~13/SIP1M9!	B:49G3/15M~13/SIP1M
DD4	5	B:46D2/1H~19/AM29C833!	O:46F1/RN21~6/4610X_101_103!	
		B:49C3/15H~16/SIP1M9!	B:49E3/15K~16/SIP1M9!	B:49G3/15M~16/SIP1M
DD5	5	B:46D2/1H~18/AM29C833!	O:46F1/RN21~7/4610X_101_103!	
		B:49C3/15H~20/SIP1M9!	B:49E3/15K~20/SIP1M9!	B:49G3/15M~20/SIP1M
DD6	5	B:46D2/1H~17/AM29C833!	O:46F1/RN21~8/4610X_101_103!	
		B:49C3/15H~23/SIP1M9!	B:49E3/15K~23/SIP1M9!	B:49G3/15M~23/SIP1M
DD7	5	B:46D2/1H~16/AM29C833!	O:46F1/RN21~9/4610X_101_103!	
		B:49C3/15H~25/SIP1M9!	B:49E3/15K~25/SIP1M9!	B:49G3/15M~25/SIP1M
DD8	8	B:46D2/1H~15/AM29C833!	O:46F1/RN21~10/4610X_101_103!	
		I:49C3/15H~29/SIP1M9	O:49C3/15H~26/SIP1M9!	I:49E3/15K~29/SIP1M9
		O:49E3/15K~26/SIP1M9!	I:49G3/15M~29/SIP1M9	O:49G3/15M~26/SIP1M9!
DD9	5	B:46D4/2H~23/AM29C833!	O:46E2/RN22~2/4610X_101_103!	
		B:49C5/15J~3/SIP1M9!	B:49E5/15L~3/SIP1M9!	B:49G5/15N~3/SIP1M9!
DDBAPR	£45	2	B:45C6/6G~18/PAL16R4D!	I:45E7/2D~3/74F74
DISB~	£46	1	B:46C5/2F~16/PAL16L8B!	
DISP1	£40	2	B:40D7/35C~12/MC68705U3!	I:40E3/35A~13/7406
DISP2	£40	2	B:40D7/35C~13/MC68705U3!	I:40E2/35A~11/7406
DISP3	£40	2	B:40D7/35C~14/MC68705U3!	I:40E2/35A~9/7406
DISP4	£40	2	B:40D7/35C~15/MC68705U3!	I:40E2/35A~5/7406
DISP5	£40	2	B:40D7/35C~16/MC68705U3!	I:40E1/35A~3/7406
DIS~	£46	3	O:46C5/2F~19/PAL16L8B!	I:46D5/14G~13/74F08
		B:46D5/LED5~2/RED!		
DLY0~	£36	2	B:36B5/14D~19/PAL16R4D!	I:36D4/12D~3/PAL16R6D
DLY1~	£36	2	B:36B3/15D~12/PAL16R4D!	I:36D4/12D~2/PAL16R6D
DMA12~	£36	1	T:36B5/14D~15/PAL16R4D!	
DMAP~	£36	1	T:36B5/14D~14/PAL16R4D!	
Doref~	£6	1	T:6D2/10D~17/PAL16R8D!	
DOUBLE		2	I:24A2/21G~6/PAL16L8D	O:33B7/28F~A7/ND DELILAH!
DP~1		3	B:2F2/RN2~2/4610X_101_102!	I:2H3/A-C25/
			O:40E3/35A~12/7406!	
DP~2		3	B:2F2/RN2~3/4610X_101_102!	I:2H4/A-C26/
			O:40E2/35A~10/7406!	
DP~3		3	B:2F2/RN2~4/4610X_101_102!	I:2H4/A-C27/
			O:40E2/35A~8/7406!	
DP~4		3	B:2G2/RN2~5/4610X_101_102!	I:2H4/A-C28/
			O:40E2/35A~6/7406!	
DP~5		3	B:2G2/RN2~6/4610X_101_102!	I:2H4/A-C29/
			O:40E1/35A~4/7406!	
DSR~		4	B:2D3/A-C11//	B:2G3/A-A12//
			B:2G2/RN2~7/4610X_101_102!	
			B:2G3/A-C9//	
DSTB~		5	I:11D5/6B~1/74AS646	I:11D5/6B~2/74AS646
			I:11D4/7B~1/74AS646	I:11D4/7B~2/74AS646
			B:12D2/11D~17/PAL16L8D!	
DT~		2	I:25F5/18F~2/PAL16R4D	O:39C7/34D-K1/ND DELDGA!
DVACC~		2	I:24A2/21G~3/PAL16L8D	O:39C7/34D-G1/ND DELDGA!
EADR~		5	B:6D4/5D~12/PAL16R4D!	I:12E4/2C~3/PAL16L8D
			I:14D6/6C~1/74PCT374	I:14D5/4B~1/74PCT374
			I:14D3/3B~1/74PCT374	
EAUTO~		3	B:2E2/RN1~7/4610X_101_102!	O:2D4/A-C19//
			I:42C6/33G~4/AM29C821	

EBADR	4	I:10D6/6A-2/74AS648 I:10D4/5A-2/74AS648 I:10D2/4A-2/74AS648 B:12D6/1C-17/PAL16L8D!
EBD~	4	I:10D6/6A-21/74AS648 I:10D4/5A-21/74AS648 I:10D2/4A-21/74AS648 B:12D6/1C-13/PAL16L8D!
EBUS	3	I:3F5/7F-1/74F14 O:3E5/B-B3/! O:3F5/RN13-2/4610X_101_102!
EBUS~	2	O:3F5/7F-2/74F14! I:12D6/1C-6/PAL16L8D
ECCR	3	O:33B7/28F-Q14/ND_DELILAH! I:46C5/2F-8/PAL16L8B I:48E4/3F-6/PAL16L8D
ECD~	3	O:24A2/21G-19/PAL16L8D! I:25D6/24F-18/TMM2018D_25 I:25D3/23F-18/TMM2018D_25
ECREQ	8	I:11D5/6B-23/74AS646 I:11D4/7B-23/74AS646 I:14D6/6C-11/74PCT374 I:14D5/4B-11/74PCT374 I:14D3/3B-11/74PCT3 O:39C7/34D-F1/ND_DELDGA! B:45C4/9G-12/PAL16R4D! I:45C4/9G-1/PAL1
ECSD~	E18 2	I:18D2/30B-1/74F139 O:18C1/29A-3/74F08!
ECSL~	5	B:18B2/15F-18/PAL16L8D! I:20E6/8C-11/74PCT373 I:20E6/8C-1/74PCT373 I:20E5/9C-11/74PCT373 I:20E5/9C-1/74PCT373
ECSR~	2	I:26D4/27H-19/74PCT244 O:39C7/34D-BG/ND_DELDGA!
EDO~	4	I:32F2/32F-1/74PCT245 I:32F3/33F-1/74PCT245 I:33B7/28F-B10/ND_DELILAH O:39C7/34D-A8/ND_DELDGA!
EHISEG~	E45 2	T:45E2/7G-12/PAL1GR8B! I:45G3/8K-1/HP5082_7433
EIOD~	2	B:6D4/5D-13/PAL16R4D! I:7D2/3A-1/74F241
EIOR~	2	O:39C7/34D-A6/ND_DELDGA! I:42C6/33G-1/AM29C821
EIPL~	2	B:24A2/21G-16/PAL16L8D! I:28E5/9B-19/74PCT245
EIPUR~	3	B:24A2/21G-18/PAL16L8D! I:28B7/8B-1/74LS244 I:28B7/8B-19/74LS244
EIPU~	2	B:24A2/21G-17/PAL16L8D! I:28E3/10B-19/74PCT245
ELOWSEG~	E45 2	T:45E2/7G-14/PAL16R8B! I:45G3/8K-7/HP5082_7433
ELOW~	17	B:18B2/15F-15/PAL16L8D! I:22B7/19C-9/TMM2068D_25 I:22B6/18C-9/TMM2068D_25 I:22B4/17C-9/TMM2068D_25 I:22B2/16C-9/ I:22C6/22C-9/TMM2068D_25 I:22C7/23C-9/TMM2068D_25 I:22C4/21C-9/T I:22C2/20C-9/TMM2068D_25 I:22D6/26C-9/TMM2068D_25 I:22D7/27C-9/T I:22D4/25C-9/TMM2068D_25 I:22D2/24C-9/TMM2068D_25 I:22F6/30C-9/T I:22F7/31C-9/TMM2068D_25 I:22F4/29C-9/TMM2068D_25 I:22F2/28C-9/T
EMCL~	3	I:24A2/21G-7/PAL16L8D O:41E4/28A-6/74LS273! B:41E2/LED2-2/RED!
EMD~	3	I:11D5/6B-21/74AS646 I:11D4/7B-21/74AS646 B:12D2/11D-18/PAL16L8D!
EMIDSEG~	E45 2	T:45E2/7G-13/PAL16R8B! I:45G3/8K-4/HP5082_7433
EMPID~	2	I:33B7/28F-R11/ND_DELILAH O:39C7/34D-J3/ND_DELDGA!
EMP~	2	O:39C7/34D-J11/ND_DELDGA! I:40D7/35C-17/MC68705U3
EORF~	4	I:24A3/32C-10/74F32 B:36E5/13D-16/PAL16L8D! O:39A4/RN17-4/4610X_101_103! I:39C7/34D-N4/ND_DELDGA
EPANS~	4	O:39C7/34D-C5/ND_DELDGA! I:40G4/32B-1/74LS374 I:40G6/33B-1/74LS244 I:40G6/33B-19/74LS244
EPEAL~	E47 3	B:47D7/4F-17/PAL16L8B! I:47E2/4C-1/74PCT374 I:47E4/6D-1/74PCT374
EPEA~	4	I:6D6/8D-11/PAL16L8B O:6C7/12C-6/74F32! I:13E5/8A-1/74PCT534 I:13E3/9A-1/74PCT534
EPESL~	E47 3	B:47D7/4F-18/PAL16L8B! I:47C4/3C-1/74PCT374 I:47C2/7C-1/74PCT374
EPES~	4	I:6D6/8D-9/PAL16L8B O:6C7/12C-3/74F32! I:13C5/10A-1/74PCT534 I:13C3/12A-1/74PCT534
EPMAP~	3	B:24A2/21G-14/PAL16L8D! I:29B3/22G-18/TMM2018D_25 I:29B6/23G-18/TMM2018D_25
EPTI~	3	B:24A2/21G-15/PAL16L8D! I:30D3/17B-19/74PCT245 I:30D5/18B-19/74PCT245
EPT~	3	B:24A2/21G-13/PAL16L8D! I:29D3/24G-18/TMM2018D_25 I:29D6/25G-18/TMM2018D_25
ERF~	3	I:32F5/34F-18/TMM2018D_25 I:32F7/35F-18/TMM2018D_25

B:34D3/19F-19/PAL16R4D!

ESTOF~ 5 I:28E3/10B-1/74PCT245 I:28E5/9B-1/74PCT245
I:32F2/32F-19/74PCT245 I:32F3/33F-19/74PCT245 O:39C7/34D-N9/ND

ETRAP~ 2 I:33B7/28F-Q6/ND_DELILAH B:36E5/13D-14/PAL16L8D!

EUPP~ 17 B:18B2/15F-16/PAL16L8D! I:21B7/19D-9/TMM2068D_25
I:21B6/18D-9/TMM2068D_25 I:21B4/17D-9/TMM2068D_25 I:21B2/16D-9/
I:21C6/22D-9/TMM2068D_25 I:21C7/23D-9/TMM2068D_25 I:21C4/21D-9/T
I:21C2/20D-9/TMM2068D_25 I:21D6/26D-9/TMM2068D_25 I:21D7/27D-9/T
I:21D4/25D-9/TMM2068D_25 I:21D2/24D-9/TMM2068D_25 I:21F6/30D-9/T
I:21F7/31D-9/TMM2068D_25 I:21F4/29D-9/TMM2068D_25 I:21F2/28D-9/T

EWCA~ 3 B:18B2/15F-17/PAL16L8D! I:18C1/29A-2/74F08
I:33B7/28F-Q4/ND_DELILAH

EW~0 3 O:18D2/30B-4/74F139! I:20B7/28B-19/74LS245
I:20C7/29B-19/74LS245

EW~1 3 O:18D2/30B-5/74F139! I:20B6/24B-19/74LS245
I:20C6/27B-19/74LS245

EW~2 3 O:18D2/30B-6/74F139! I:20B4/20B-19/74LS245
I:20C4/21B-19/74LS245

EW~3 3 O:18D2/30B-7/74F139! I:20B3/16B-19/74LS245
I:20C3/19B-19/74LS245

FAPR E12 1 B:12D6/1C-16/PAL16L8D!

FATAL E47 2 I:47C2/7C-7/74PCT374 B:47B1/RN4-5/4610X_101_222!
I:13C3/12A-3/74PCT534 I:18B2/15F-8/PAL16L8D

FETCH 4 O:39C7/34D-M6/ND_DELDGA! I:47C2/7C-3/74PCT374

FIDB0 2 B:32F2/32F-18/74PCT245! B:33B7/28F-C15/ND_DELILAH!

FIDB1 2 B:32F2/32F-17/74PCT245! B:33B7/28F-A15/ND_DELILAH!

FIDB10 2 B:32F3/33F-16/74PCT245! B:33B7/28F-B12/ND_DELILAH!

FIDB11 2 B:32F3/33F-15/74PCT245! B:33B7/28F-C12/ND_DELILAH!

FIDB12 2 B:32F3/33F-14/74PCT245! B:33B7/28F-A12/ND_DELILAH!

FIDB13 2 B:32F3/33F-13/74PCT245! B:33B7/28F-D11/ND_DELILAH!

FIDB14 2 B:32F3/33F-12/74PCT245! B:33B7/28F-A11/ND_DELILAH!

FIDB15 2 B:32F3/33F-11/74PCT245! B:33B7/28F-C11/ND_DELILAH!

FIDB2 2 B:32F2/32F-16/74PCT245! B:33B7/28F-B14/ND_DELILAH!

FIDB3 2 B:32F2/32F-15/74PCT245! B:33B7/28F-A14/ND_DELILAH!

FIDB4 2 B:32F2/32F-14/74PCT245! B:33B7/28F-D13/ND_DELILAH!

FIDB5 2 B:32F2/32F-13/74PCT245! B:33B7/28F-D12/ND_DELILAH!

FIDB6 2 B:32F2/32F-12/74PCT245! B:33B7/28F-E11/ND_DELILAH!

FIDB7 2 B:32F2/32F-11/74PCT245! B:33B7/28F-B13/ND_DELILAH!

FIDB8 2 B:32F3/33F-18/74PCT245! B:33B7/28F-A13/ND_DELILAH!

FIDB9 2 B:32F3/33F-17/74PCT245! B:33B7/28F-C13/ND_DELILAH!

FMISS 2 I:27D3/18G-1/74F521 O:39C7/34D-L8/ND_DELDGA!

FORM~ 3 I:18B2/15F-1/PAL16L8D I:36E5/13D-6/PAL16L8D
O:39C7/34D-M8/ND_DELDGA!

FUL~ 2 O:39C7/34D-K12/ND_DELDGA! I:40G6/33B-15/74LS244

GND 190 \$\$OVERFLOW\$\$ B:2B3/A-A17// B:2B3/A-A18// B:2B3/A-A19//
B:2B4/A-A20// B:2B4/A-A21// B:2B4/A-A22// B:2B4/A-A23// B:2B4/
B:2B5/A-A25// B:2B5/A-A26// B:2B5/A-A27// B:2B5/A-A28// B:2B5/
B:2B5/A-A32// B:2B6/A-B32// B:2B6/A-C32// B:3H2/B-C1// B:3H3/B
B:3H3/B-B32// B:3H3/B-C32// I:3F2/17G-1/74LS244 I:3F2/17G-19/7
I:3F3/16G-1/74LS244 I:3F3/16G-19/74LS244 I:3F4/15C-1/74LS244
I:3F4/15C-19/74LS244 I:3A2/23A-1/74LS244 I:3A2/23A-19/74LS244
I:3A3/22A-1/74LS244 I:3A3/22A-19/74LS244 I:3A4/16A-1/74LS244
I:3A4/16A-19/74LS244 I:3A7/21A-1/74LS244 B:3C2/STR1-1/STR1! B:3
B:3H2/B-B1// B:4D4/C1-2/10nFL B:4G3/C-A1// B:4G4/C-B1// I:4C6/
I:4C6/5C-19/74F244 B:4G4/C-C1// I:4E3/33C-1/74F244 I:4E3/33C-19
B:4G4/C-B32// B:4G4/C-C32// B:4G4/C-A32// I:6D2/10D-11/PAL16R8D
I:6D4/5D-11/PAL16R4D I:7D2/3A-15/74F241 I:8C3/3D-1/AM29C821
I:8E3/4D-1/AM29C821 I:17E4/31F-1/AM29841 I:17E2/30H-1/74F373
I:25F5/18F-11/PAL16R4D I:25D6/24F-20/TMM2018D_25 I:25B6/20F-18/T
I:25B6/20F-20/TMM2018D_25 B:25F7/SW1-2/SECME090320102! I:25G6/21

I:25G6/21H-13/74S260 I:25B3/16F-18/TMM2018D_25 I:25B3/16F-20/TMM
 I:25G3/21F-17/AM9150_20 I:25G3/21F-19/AM9150_20 I:25D3/23F-20/TM
 I:27D3/18G-2/74F521 I:27D3/18G-3/74F521
GNT 3 O:13B3/11B-12/74LS04! I:13C3/12A-4/74PCT534
 I:47C2/7C-4/74PCT374
GNT25~ 2 I:7E3/1F-9/74F04 O:48C7/14F-15/AM29C821!
GNT~ 4 T:6D2/10D-13/PAL16R8D! I:12D6/1C-8/PAL16L8D
 I:13B3/11B-13/74LS04 I:48C7/14F-10/AM29C821
Hien~ 4 I:44B5/4H-1/AM29821 I:46C5/2F-11/PAL16L8B
 I:48E4/3F-1/PAL16L8D T:50E6/6F-12/PAL16R8D!
HIT 3 O:25G6/21H-5/74S260! I:36D4/12D-8/PAL16R6D
 I:39A5/13G-1/74F04
HIT~ £39 3 O:39A4/RN17-8/4610X_101_103! O:39A5/13G-2/74F04!
 I:39C7/34D-E1/ND_DELDGA
HIT~0 3 I:25F5/18F-7/PAL16R4D I:25G6/21H-3/74S260
 O:27D6/19G-19/74F521!
HIT~1 3 I:25F5/18F-8/PAL16R4D I:25G6/21H-2/74S260
 O:27D3/18G-19/74F521!
I1P 4 O:2D5/A-A7!! B:42E5/R9-2/2.2KOHM! B:42E5/R10-2/2.2KOHM!
 B:42E5/R2-2/5.6KOHM!
IBAPR~ 2 O:4C6/5C-3/74F244! I:12D6/1C-7/PAL16L8D
IBDAP~ 4 O:4C6/5C-7/74F244! I:8C3/3D-10/AM29C821
 I:48E4/3F-9/PAL16L8D I:48C4/13F-4/AM29C821
IBDRY~ 3 O:4C6/5C-5/74F244! I:7D4/2A-4/7438 I:8C3/3D-7/AM29C821
IBINPUT~ 3 O:4C6/5C-14/74F244! I:8C3/3D-5/AM29C821
 I:45C6/6G-4/PAL16R4D
IBINT~10 2 O:4C6/5C-18/74F244! I:33A4/34G-18/74PCT374
IBINT~11 2 O:4E3/33C-3/74F244! I:33A4/34G-17/74PCT374
IBINT~12 2 O:4E3/33C-5/74F244! I:33A4/34G-14/74PCT374
IBINT~13 2 O:4E3/33C-7/74F244! I:33A4/34G-13/74PCT374
IBINT~15 2 O:4E3/33C-9/74F244! I:33A4/34G-8/74PCT374
IBPERR~ 2 O:4C6/5C-12/74F244! I:8C3/3D-6/AM29C821
IBREQ~ 3 O:4E3/33C-16/74F244! I:7C4/1F-13/74F04
 I:8C3/3D-9/AM29C821
ICONTIN~ 2 O:4E3/33C-14/74F244! I:39C7/34D-B10/ND_DELDGA
IDBO 26 I:3D3/19A-17/74LS244 T:13C5/10A-19/74PCT534!
 T:13E5/8A-19/74PCT534! O:19C4/23B-11/27256! I:20E6/8C-18/74PCT3
 T:20E6/8C-19/74PCT373! B:20C7/29B-11/74LS245! B:20C6/27B-11/74LS
 B:20C4/21B-11/74LS245! B:20C3/19B-11/74L5245! O:26D4/27H-9/74PC1
 B:28E5/9B-11/74PCT245! B:30D5/18B-9/74PCT245! B:32F5/34F-9/TMM20
 B:32F2/32F-2/74PCT245! B:32H2/RN10-2/4610X_101_102! I:35D5/15B-
 B:39C7/34D-G13/ND_DELDGA! T:40G4/32B-2/74LS374! I:41E4/28A-18/74
 O:41C7/24A-3/74PCT244! O:41C5/25A-3/74PCT244! B:42B3/32H-27/SC26
 O:42C6/33G-14/AM29C821! T:47C4/3C-19/74PCT374! T:47E4/6D-19/74PC
IDB1 26 I:3D3/19A-15/74LS244 T:13C5/10A-16/74PCT534!
 T:13E5/8A-16/74PCT534! O:19C4/23B-12/27256! I:20E6/8C-17/74PCT3
 T:20E6/8C-16/74PCT373! B:20C7/29B-12/74LS245! B:20C6/27B-12/74LS
 B:20C4/21B-12/74LS245! B:20C3/19B-12/74LS245! O:26D4/27H-7/74PCT
 B:28E5/9B-12/74PCT245! B:30D5/18B-8/74PCT245! B:32F5/34F-10/TMM2
 B:32F2/32F-3/74PCT245! B:32H2/RN10-3/4610X_101_102! I:35D5/15B-
 B:39C7/34D-G11/ND_DELDGA! T:40G4/32B-5/74LS374! I:41E4/28A-17/74
 O:41C7/24A-5/74PCT244! O:41C5/25A-5/74PCT244! B:42B3/32H-28/SC26
 O:42C6/33G-15/AM29C821! T:47C4/3C-16/74PCT374! T:47E4/6D-16/74PC
IDB10 20 I:3D2/17A-13/74LS244 T:13E3/9A-15/74PCT534!
 T:13C3/12A-15/74PCT534! O:19C6/26B-13/27256! I:20E5/9C-14/74PCT
 T:20E5/9C-15/74PCT373! B:20B7/28B-13/74LS245! B:20B6/24B-13/74LS
 B:20B4/20B-13/74LS245! B:20B3/16B-13/74LS245! B:28E3/10B-13/74PC
 B:30D3/17B-7/74PCT245! B:32F7/35F-11/TMM2018D_25! B:32F3/33F-4/7
 B:32H4/RN11-3/4610X_101_102! I:35D3/14B-13/74PCT244 O:40G6/33B-
 O:41C2/27A-7/74PCT244! T:47C2/7C-15/74PCT374! T:47E2/4C-15/74PCT

IDB11 21 I:3D2/17A-11/74LS244 T:13E3/9A-12/74PCT534!
 T:13C3/12A-12/74PCT534! O:19C6/26B-15/27256! I:20E5/9C-13/74PCT
 T:20E5/9C-12/74PCT373! B:20B7/28B-14/74LS245! B:20B6/24B-14/74LS
 B:20B4/20B-14/74LS245! B:20B3/16B-14/74LS245! B:28E3/10B-14/74PC
 B:30D3/17B-6/74PCT245! B:32F7/35F-13/TMM2018D_25! B:32F3/33F-5/7
 B:32H4/RN11-4/4610X_101_102! I:35D3/14B-11/74PCT244 O:40G6/33B-
 O:41C2/27A-9/74PCT244! O:42C6/33G-19/AM29C821! T:47C2/7C-12/74PC
 T:47E2/4C-12/74PCT374!

IDB12 21 I:3D2/17A-8/74LS244 T:13E3/9A-9/74PCT534!
 T:13C3/12A-9/74PCT534! O:19C6/26B-16/27256! I:20E5/9C-8/74PCT37
 T:20E5/9C-9/74PCT373! B:20B7/28B-15/74LS245! B:20B6/24B-15/74LS2
 B:20B4/20B-15/74LS245! B:20B3/16B-15/74LS245! B:28E3/10B-15/74PC
 B:30D3/17B-5/74PCT245! B:32F7/35F-14/TMM2018D_25! B:32F3/33F-6/7
 B:32H4/RN11-5/4610X_101_102! I:35D3/14B-8/74PCT244 O:40G6/33B-9
 O:41C2/27A-12/74PCT244! O:42C6/33G-20/AM29C821! T:47C2/7C-9/74PC
 T:47E2/4C-9/74PCT374!

IDB13 21 I:3D2/17A-6/74LS244 T:13E3/9A-6/74PCT534!
 T:13C3/12A-6/74PCT534! O:19C6/26B-17/27256! I:20E5/9C-7/74PCT37
 T:20E5/9C-6/74PCT373! B:20B7/28B-16/74LS245! B:20B6/24B-16/74LS2
 B:20B4/20B-16/74LS245! B:20B3/16B-16/74LS245! B:28E3/10B-16/74PC
 B:30D3/17B-4/74PCT245! B:32F7/35F-15/TMM2018D_25! B:32F3/33F-7/7
 B:32H4/RN11-6/4610X_101_102! I:35D3/14B-6/74PCT244 O:40G6/33B-7
 O:41C2/27A-14/74PCT244! O:42C6/33G-21/AM29C821! T:47C2/7C-6/74PC
 T:47E2/4C-6/74PCT374!

IDB14 21 I:3D2/17A-4/74LS244 T:13E3/9A-5/74PCT534!
 T:13C3/12A-5/74PCT534! O:19C6/26B-18/27256! I:20E5/9C-4/74PCT37
 T:20E5/9C-5/74PCT373! B:20B7/28B-17/74LS245! B:20B6/24B-17/74LS2
 B:20B4/20B-17/74LS245! B:20B3/16B-17/74LS245! B:28E3/10B-17/74PC
 B:30D3/17B-3/74PCT245! B:32F7/35F-16/TMM2018D_25! B:32F3/33F-8/7
 B:32H4/RN11-7/4610X_101_102! I:35D3/14B-4/74PCT244 O:40G6/33B-5
 O:41C2/27A-16/74PCT244! O:42C6/33G-22/AM29C821! T:47C2/7C-5/74PC
 T:47E2/4C-5/74PCT374!

IDB15 21 I:3D2/17A-2/74LS244 T:13E3/9A-2/74PCT534!
 T:13C3/12A-2/74PCT534! O:19C6/26B-19/27256! I:20E5/9C-3/74PCT37
 T:20E5/9C-2/74PCT373! B:20B7/28B-18/74LS245! B:20B6/24B-18/74LS2
 B:20B4/20B-18/74LS245! B:20B3/16B-18/74LS245! B:28E3/10B-18/74PC
 B:30D3/17B-2/74PCT245! B:32F7/35F-17/TMM2018D_25! B:32F3/33F-9/7
 B:32H4/RN11-8/4610X_101_102! I:35D3/14B-2/74PCT244 O:40G6/33B-3
 O:41C2/27A-18/74PCT244! O:42C6/33G-23/AM29C821! T:47C2/7C-2/74PC
 T:47E2/4C-2/74PCT374!

IDB2 27 I:3D3/19A-13/74LS244 T:13C5/10A-15/74PCT534!
 T:13E5/8A-15/74PCT534! O:19C4/23B-13/27256! I:20E6/8C-14/74PCT3
 T:20E6/8C-15/74PCT373! B:20C7/29B-13/74LS245! B:20C6/27B-13/74LS
 B:20C4/21B-13/74LS245! B:20C3/19B-13/74LS245! O:26D4/27H-5/74PCT
 B:28E5/9B-13/74PCT245! B:30D5/18B-7/74PCT245! B:32F5/34F-11/TMM2
 B:32F2/32F-4/74PCT245! B:32H2/RN10-4/4610X_101_102! B:34D4/22F-
 I:35D5/15B-13/74PCT244 B:39C7/34D-H13/ND_DELDGA! T:40G4/32B-6/74
 I:41E4/28A-14/74LS273 O:41C7/24A-7/74PCT244! O:41C5/25A-7/74PCT2
 B:42B3/32H-1/SC266! O:42C6/33G-16/AM29C821! T:47C4/3C-15/74PCT3
 T:47E4/6D-15/74PCT374!

IDB3 25 I:3D3/19A-11/74LS244 T:13C5/10A-12/74PCT534!
 T:13E5/8A-12/74PCT534! O:19C4/23B-15/27256! I:20E6/8C-13/74PCT3
 T:20E6/8C-12/74PCT373! B:20C7/29B-14/74LS245! B:20C6/27B-14/74LS
 B:20C4/21B-14/74LS245! B:20C3/19B-14/74LS245! B:28E5/9B-14/74PCT
 B:30D5/18B-6/74PCT245! B:32F5/34F-13/TMM2018D_25! B:32F2/32F-5/7
 B:32H2/RN10-5/4610X_101_102! I:35D5/15B-11/74PCT244
 B:39C7/34D-H12/ND_DELDGA! T:40G4/32B-9/74LS374! I:41E4/28A-13/74
 O:41C7/24A-9/74PCT244! O:41C5/25A-9/74PCT244! B:42B3/32H-2/SC266
 O:42C6/33G-17/AM29C821! T:47C4/3C-12/74PCT374! T:47E4/6D-12/74PC

IDB4 26 I:3D3/19A-8/74LS244 T:13C5/10A-9/74PCT534!

T:13E5/8A-9/74PCT534! O:19C4/23B-16/27256! I:20E6/8C-8/74PCT373
 T:20E6/8C-9/74PCT373! B:20C7/29B-15/74LS245! B:20C6/27B-15/74LS2
 B:20C4/21B-15/74LS245! B:20C3/19B-15/74LS245! O:26D4/27H-3/74PCT
 B:28E5/9B-15/74PCT245! B:30D5/18B-5/74PCT245! B:32F5/34F-14/TMM2
 B:32F2/32F-6/74PCT245! B:32H2/RN10-6/4610X_101_102! I:35D5/15B-
 I:39C7/34D-H11/ND_DELDGA T:40G4/32B-12/74LS374! I:41E4/28A-8/74L
 O:41C7/24A-12/74PCT244! O:41C5/25A-12/74PCT244! B:42B3/32H-5/SC2
 O:42C6/33G-18/AM29C821! T:47C4/3C-9/74PCT374! T:47E4/6D-9/74PCT3

IDB5 24 I:3D3/19A-6/74LS244 T:13C5/10A-6/74PCT534!
 T:13E5/8A-6/74PCT534! O:19C4/23B-17/27256! I:20E6/8C-7/74PCT373
 T:20E6/8C-6/74PCT373! B:20C7/29B-16/74LS245! B:20C6/27B-16/74LS2
 B:20C4/21B-16/74LS245! B:20C3/19B-16/74LS245! B:28E5/9B-16/74PCT
 B:30D5/18B-4/74PCT245! B:32F5/34F-15/TMM2018D_25! B:32F2/32F-7/7
 B:32H2/RN10-7/4610X_101_102! I:35D5/15B-6/74PCT244 I:39C7/34D-J
 T:40G4/32B-15/74LS374! I:41E4/28A-7/74LS273 O:41C7/24A-14/74PCT2
 O:41C5/25A-14/74PCT244! B:42B3/32H-6/SC2661! T:47C4/3C-6/74PCT37
 T:47E4/6D-6/74PCT374!

IDB6 24 I:3D3/19A-4/74LS244 T:13C5/10A-5/74PCT534!
 T:13E5/8A-5/74PCT534! O:19C4/23B-18/27256! I:20E6/8C-4/74PCT373
 T:20E6/8C-5/74PCT373! B:20C7/29B-17/74LS245! B:20C6/27B-17/74LS2
 B:20C4/21B-17/74LS245! B:20C3/19B-17/74LS245! B:28E5/9B-17/74PCT
 B:30D5/18B-3/74PCT245! B:32F5/34F-16/TMM2018D_25! B:32F2/32F-8/7
 B:32H2/RN10-8/4610X_101_102! I:35D5/15B-4/74PCT244 I:39C7/34D-J
 T:40G4/32B-16/74LS374! I:41E4/28A-4/74LS273 O:41C7/24A-16/74PCT2
 O:41C5/25A-16/74PCT244! B:42B3/32H-7/SC2661! T:47C4/3C-5/74PCT37
 T:47E4/6D-5/74PCT374!

IDB7 24 I:3D3/19A-2/74LS244 T:13C5/10A-2/74PCT534!
 T:13E5/8A-2/74PCT534! O:19C4/23B-19/27256! I:20E6/8C-3/74PCT373
 T:20E6/8C-2/74PCT373! B:20C7/29B-18/74LS245! B:20C6/27B-18/74LS2
 B:20C4/21B-18/74LS245! B:20C3/19B-18/74LS245! B:28E5/9B-18/74PCT
 B:30D5/18B-2/74PCT245! B:32F5/34F-17/TMM2018D_25! B:32F2/32F-9/7
 B:32H2/RN10-9/4610X_101_102! I:35D5/15B-2/74PCT244 I:39C7/34D-K
 T:40G4/32B-19/74LS374! I:41E4/28A-3/74LS273 O:41C7/24A-18/74PCT2
 O:41C5/25A-18/74PCT244! B:42B3/32H-8/SC2661! T:47C4/3C-2/74PCT37
 T:47E4/6D-2/74PCT374!

IDB8 21 I:3D2/17A-17/74LS244 T:13E3/9A-19/74PCT534!
 T:13C3/12A-19/74PCT534! O:19C6/26B-11/27256! I:20E5/9C-18/74PCT
 T:20E5/9C-19/74PCT373! B:20B7/28B-11/74LS245! B:20B6/24B-11/74LS
 B:20B4/20B-11/74LS245! B:20B3/16B-11/74LS245! B:28E3/10B-11/74PC
 I:28B7/8B-17/74LS244 B:30D3/17B-9/74PCT245! B:32F7/35F-9/TMM2018
 B:32F3/33F-2/74PCT245! B:32H2/RN10-10/4610X_101_102! I:35D3/14B
 O:40G6/33B-18/74LS244! O:41C2/27A-3/74PCT244! T:47C2/7C-19/74PCT
 T:47E2/4C-19/74PCT374!

IDB9 20 I:3D2/17A-15/74LS244 T:13E3/9A-16/74PCT534!
 T:13C3/12A-16/74PCT534! O:19C6/26B-12/27256! I:20E5/9C-17/74PCT
 T:20E5/9C-16/74PCT373! B:20B7/28B-12/74LS245! B:20B6/24B-12/74LS
 B:20B4/20B-12/74LS245! B:20B3/16B-12/74LS245! B:28E3/10B-12/74PC
 B:30D3/17B-8/74PCT245! B:32F7/35F-10/TMM2018D_25! B:32F3/33F-3/7
 B:32H4/RN11-2/4610X_101_102! I:35D3/14B-15/74PCT244 O:40G6/33B-
 O:41C2/27A-5/74PCT244! T:47C2/7C-16/74PCT374! T:47E2/4C-16/74PCT

IHIT E25 1 T:25F5/18F-14/PAL16R4D!
ILOAD 2 O:4E3/33C-18/74F244! I:39C7/34D-C10/ND_DELDGA
INR0 2 O:3G6/B-B6!! I:41C7/24A-17/74PCT244
INR1 2 O:3G6/B-B13!! I:41C7/24A-15/74PCT244
INR2 2 O:3G6/B-B7!! I:41C7/24A-13/74PCT244
INR3 2 O:3G5/B-B8!! I:41C7/24A-11/74PCT244
INR4 2 O:3G5/B-B17!! I:41C7/24A-8/74PCT244
INR5 2 O:3G5/B-B5!! I:41C7/24A-6/74PCT244
INR6 2 O:3G5/B-B4!! I:41C7/24A-4/74PCT244
INR7 2 O:3G5/B-B15!! I:41C7/24A-2/74PCT244

INTRQ~	£33	2	B:33E5/TP1-1/TESTPOINT! O:33B7/28F-S11/ND_DELILAH!
IOC0	£41	2	O:41E4/28A-19/74LS273! I:41F5/14A-5/74LS38
IOC1	£41	2	O:41E4/28A-16/74LS273! I:41F4/29A-5/74F08
IOC2	£41	2	O:41E4/28A-15/74LS273! I:41F5/14A-9/74LS38
IOC3	£41	2	O:41E4/28A-12/74LS273! I:41F5/14A-4/74LS38
IOD~	4	T:6D2/10D-14/PAL16R8D! I:7D2/3A-11/74F241 I:7C5/8G-2/74F00 I:12E4/2C-6/PAL16L8D	
IONI	2	O:33B7/28F-A6/ND_DELILAH! I:40D7/35C-21/MC68705U3	
IORQ~	7	I:6D2/10D-3/PAL16R8D I:6D4/5D-9/PAL16R4D B:12D2/11D-14/PAL16L8D! I:36B6/25H-5/74F00 I:36B6/25H-9/74F00 O:39C7/34D-L6/ND_DELDGA! I:45C4/9G-3/PAL16R4D	
IOXERR~	3	T:7D2/3A-9/74F241! O:7E1/RN13-6/4610X_101_102! I:33B7/28F-R13/ND_DELILAH	
ISEMREQ~	2	O:4C6/5C-16/74F244! I:8C3/3D-4/AM29C821	
ISTOP~	2	O:4E3/33C-12/74F244! I:39C7/34D-A12/ND_DELDGA	
LA10	7	I:3F3/16G-13/74LS244 I:23D5/23H-17/74PCT244 I:29B3/22G-8/TMM2018D_25 I:29D3/24G-8/TMM2018D_25 I:29B6/23G-8/ I:29D6/25G-8/TMM2018D_25 O:33B7/28F-M17/ND_DELILAH!	
LA11	7	I:3F3/16G-11/74LS244 I:23D5/23H-15/74PCT244 I:29B3/22G-7/TMM2018D_25 I:29D3/24G-7/TMM2018D_25 I:29B6/23G-7/ I:29D6/25G-7/TMM2018D_25 O:33B7/28F-M15/ND_DELILAH!	
LA12	7	I:3F3/16G-8/74LS244 I:23D5/23H-13/74PCT244 I:29B3/22G-6/TMM2018D_25 I:29D3/24G-6/TMM2018D_25 I:29B6/23G-6/ I:29D6/25G-6/TMM2018D_25 O:33B7/28F-M13/ND_DELILAH!	
LA13	7	I:3F3/16G-6/74LS244 I:23D5/23H-11/74PCT244 I:29B3/22G-5/TMM2018D_25 I:29D3/24G-5/TMM2018D_25 I:29B6/23G-5/ I:29D6/25G-5/TMM2018D_25 O:33B7/28F-L15/ND_DELILAH!	
LA14	7	I:3F3/16G-4/74LS244 I:23D5/23H-8/74PCT244 I:29B3/22G-4/TMM2018D_25 I:29D3/24G-4/TMM2018D_25 I:29B6/23G-4/ I:29D6/25G-4/TMM2018D_25 O:33B7/28F-K16/ND_DELILAH!	
LA15	7	I:3F3/16G-2/74LS244 I:23D5/23H-6/74PCT244 I:29B3/22G-3/TMM2018D_25 I:29D3/24G-3/TMM2018D_25 I:29B6/23G-3/ I:29D6/25G-3/TMM2018D_25 O:33B7/28F-K17/ND_DELILAH!	
LA16	7	I:3F2/17G-17/74LS244 I:23D5/23H-4/74PCT244 I:29B3/22G-2/TMM2018D_25 I:29D3/24G-2/TMM2018D_25 I:29B6/23G-2/ I:29D6/25G-2/TMM2018D_25 O:33B7/28F-K14/ND_DELILAH!	
LA17	7	I:3F2/17G-15/74LS244 I:23D5/23H-2/74PCT244 I:29B3/22G-1/TMM2018D_25 I:29D3/24G-1/TMM2018D_25 I:29B6/23G-1/ I:29D6/25G-1/TMM2018D_25 O:33B7/28F-J17/ND_DELILAH!	
LA18	7	I:3F2/17G-13/74LS244 I:23D3/15G-17/74PCT244 I:29B3/22G-23/TMM2018D_25 I:29D3/24G-23/TMM2018D_25 I:29B6/23G-23/TMM2018D_25 I:29D6/25G-23/TMM2018D_25 O:33B7/28F-K15/ND_DELILAH!	
LA19	7	I:3F2/17G-11/74LS244 I:23D3/15G-15/74PCT244 I:29B3/22G-22/TMM2018D_25 I:29D3/24G-22/TMM2018D_25 I:29B6/23G-22/TMM2018D_25 I:29D6/25G-22/TMM2018D_25 O:33B7/28F-J16/ND_DELILAH!	
LA20	7	I:3F2/17G-8/74LS244 I:23D3/15G-13/74PCT244 I:29B3/22G-19/TMM2018D_25 I:29D3/24G-19/TMM2018D_25 I:29B6/23G-19/TMM2018D_25 I:29D6/25G-19/TMM2018D_25 O:33B7/28F-H17/ND_DELILAH!	
LA21	3	I:3F2/17G-6/74LS244 I:23D3/15G-11/74PCT244 O:33B7/28F-J14/ND_DELILAH!	
LA22	3	I:3F2/17G-4/74LS244 I:23D3/15G-8/74PCT244 O:33B7/28F-H16/ND_DELILAH!	
LA23	3	I:3F2/17G-2/74LS244 I:23D3/15G-6/74PCT244 O:33B7/28F-J15/ND_DELILAH!	
LAA0	3	I:32F5/34F-8/TMM2018D_25 I:32F7/35F-8/TMM2018D_25 O:33B7/28F-K1/ND_DELILAH!	
LAA1	3	I:32F5/34F-7/TMM2018D_25 I:32F7/35F-7/TMM2018D_25	

		0:33B7/28F-J4/ND _DELILAH!
LAA2	3	I:32F5/34F-6/TMM2018D_25 I:32F7/35F-6/TMM2018D_25
		0:33B7/28F-K2/ND _DELILAH!
LAA3	3	I:32F5/34F-5/TMM2018D_25 I:32F7/35F-5/TMM2018D_25
		0:33B7/28F-J3/ND _DELILAH!
LAPA~	5	I:23D3/15G-1/74PCT244 I:23D3/15G-19/74PCT244
		I:23D5/23H-1/74PCT244 I:23D5/23H-19/74PCT244 O:24A2/21G-12/PAL1
LBA0	4	I:32F5/34F-4/TMM2018D_25 I:32F7/35F-4/TMM2018D_25
		O:33B7/28F-L1/ND _DELILAH! I:36B3/15D-9/PAL16R4D
LBA1	4	I:32F5/34F-3/TMM2018D_25 I:32F7/35F-3/TMM2018D_25
		O:33B7/28F-M1/ND _DELILAH! I:36B3/15D-8/PAL16R4D
LBA2	3	I:32F5/34F-2/TMM2018D_25 I:32F7/35F-2/TMM2018D_25
		O:33B7/28F-K4/ND _DELILAH!
LBA3	4	I:32F5/34F-1/TMM2018D_25 I:32F7/35F-1/TMM2018D_25
		O:33B7/28F-N1/ND _DELILAH! I:36B3/15D-7/PAL16R4D
LBD0	9	I:3E7/4G-17/74F244 B:10D6/6A-13/74AS648!
		B:11D5/6B-11/74AS646! T:14D6/6C-19/74PCT374! I:44B2/3H-2/AM2982
		I:46C5/2F-3/PAL16L8B B:46D2/1H-2/AM29C833! I:47E4/6D-18/74PCT374
		O:47A5/RN25-2/4610X_101_102!
LBD1	9	I:3E7/4G-15/74F244 B:10D6/6A-14/74AS648!
		B:11D5/6B-10/74AS646! T:14D6/6C-16/74PCT374! I:44B2/3H-3/AM2982
		I:46C5/2F-4/PAL16L8B B:46D2/1H-3/AM29C833! I:47E4/6D-17/74PCT374
		O:47A5/RN25-3/4610X_101_102!
LBD10	8	I:3D7/5G-13/74F244 B:10D4/5A-15/74AS648!
		B:11D4/7B-9/74AS646! T:14D5/4B-15/74PCT374! I:44B5/4H-3/AM29821
		B:46D4/2H-4/AM29C833! I:47E2/4C-14/74PCT374 O:47A4/RN24-4/4610X_
LBD11	8	I:3D7/5G-11/74F244 B:10D4/5A-16/74AS648!
		B:11D4/7B-8/74AS646! T:14D5/4B-12/74PCT374! I:44B5/4H-4/AM29821
		B:46D4/2H-5/AM29C833! I:47E2/4C-13/74PCT374 O:47B4/RN24-5/4610X_
LBD12	8	I:3D7/5G-8/74F244 B:10D4/5A-17/74AS648!
		B:11D4/7B-7/74AS646! T:14D5/4B-9/74PCT374! I:44B5/4H-5/AM29821
		B:46D4/2H-6/AM29C833! I:47E2/4C-8/74PCT374 O:47B4/RN24-6/4610X_1
LBD13	8	I:3D7/5G-6/74F244 B:10D4/5A-18/74AS648!
		B:11D4/7B-6/74AS646! T:14D5/4B-6/74PCT374! I:44B5/4H-6/AM29821
		B:46D4/2H-7/AM29C833! I:47E2/4C-7/74PCT374 O:47B4/RN24-7/4610X_1
LBD14	8	I:3D7/5G-4/74F244 B:10D4/5A-19/74AS648!
		B:11D4/7B-5/74AS646! T:14D5/4B-5/74PCT374! I:44B5/4H-7/AM29821
		B:46D4/2H-8/AM29C833! I:47E2/4C-4/74PCT374 O:47B4/RN24-8/4610X_1
LBD15	8	I:3D7/5G-2/74F244 B:10D4/5A-20/74AS648!
		B:11D4/7B-4/74AS646! T:14D5/4B-2/74PCT374! I:44B5/4H-8/AM29821
		B:46D4/2H-9/AM29C833! I:47E2/4C-3/74PCT374 O:47B4/RN24-9/4610X_1
LBD16	5	B:10D2/4A-13/74AS648! T:14D3/3B-19/74PCT374!
		I:44B5/4H-9/AM29821 I:47C4/3C-18/74PCT374 O:47A3/RN23-2/4610X_1
LBD17	5	B:10D2/4A-14/74AS648! T:14D3/3B-16/74PCT374!
		I:44B5/4H-10/AM29821 I:47C4/3C-17/74PCT374 O:47A3/RN23-3/4610X_
LBD18	5	B:10D2/4A-15/74AS648! T:14D3/3B-15/74PCT374!
		I:44B2/3H-11/AM29821 I:47C4/3C-14/74PCT374 O:47A3/RN23-4/4610X_
LBD19	5	B:10D2/4A-16/74AS648! T:14D3/3B-12/74PCT374!
		I:44B5/4H-11/AM29821 I:47C4/3C-13/74PCT374 O:47B3/RN23-5/4610X_
LBD2	8	I:3E7/4G-13/74F244 B:10D6/6A-15/74AS648!
		B:11D5/6B-9/74AS646! T:14D6/6C-15/74PCT374! I:44B2/3H-4/AM29821
		B:46D2/1H-4/AM29C833! I:47E4/6D-14/74PCT374 O:47A5/RN25-4/4610X_
LBD20	4	B:10D2/4A-17/74AS648! T:14D3/3B-9/74PCT374!
		I:47C4/3C-8/74PCT374 O:47B3/RN23-6/4610X_101_102!
LBD21	4	B:10D2/4A-18/74AS648! T:14D3/3B-6/74PCT374!
		I:47C4/3C-7/74PCT374 O:47B3/RN23-7/4610X_101_102!
LBD22	4	B:10D2/4A-19/74AS648! T:14D3/3B-5/74PCT374!
		I:47C4/3C-4/74PCT374 O:47B3/RN23-8/4610X_101_102!
LBD23	4	B:10D2/4A-20/74AS648! T:14D3/3B-2/74PCT374!
		I:47C4/3C-3/74PCT374 O:47B3/RN23-9/4610X_101_102!

LBD3 9 I:3E7/4G-11/74F244 B:10D6/6A-16/74AS648!
 B:11D5/6B-8/74AS646! T:14D6/6C-12/74PCT374! I:44B2/3H-5/AM29821
 I:46C5/2F-5/PAL16L8B B:46D2/1H-5/AM29C833! I:47E4/6D-13/74PCT374
 O:47B5/RN25-5/4610X_101_102!

LBD4 9 I:3E7/4G-8/74F244 B:10D6/6A-17/74AS648!
 B:11D5/6B-7/74AS646! T:14D6/6C-9/74PCT374! I:44B2/3H-6/AM29821
 I:46C5/2F-6/PAL16L8B B:46D2/1H-6/AM29C833! I:47E4/6D-8/74PCT374
 O:47B5/RN25-6/4610X_101_102!

LBD5 8 I:3E7/4G-6/74F244 B:10D6/6A-18/74AS648!
 B:11D5/6B-6/74AS646! T:14D6/6C-6/74PCT374! I:44B2/3H-7/AM29821
 B:46D2/1H-7/AM29C833! I:47E4/6D-7/74PCT374 O:47B5/RN25-7/4610X_1

LBD6 8 I:3E7/4G-4/74F244 B:10D6/6A-19/74AS648!
 B:11D5/6B-5/74AS646! T:14D6/6C-5/74PCT374! I:44B2/3H-8/AM29821
 B:46D2/1H-8/AM29C833! I:47E4/6D-4/74PCT374 O:47B5/RN25-8/4610X_1

LBD7 8 I:3E7/4G-2/74F244 B:10D6/6A-20/74AS648!
 B:11D5/6B-4/74AS646! T:14D6/6C-2/74PCT374! I:44B2/3H-9/AM29821
 B:46D2/1H-9/AM29C833! I:47E4/6D-3/74PCT374 O:47B5/RN25-9/4610X_1

LBD8 8 I:3D7/5G-17/74F244 B:10D4/5A-13/74AS648!
 B:11D4/7B-11/74AS646! T:14D5/4B-19/74PCT374! I:44B2/3H-10/AM298
 B:46D4/2H-2/AM29C833! I:47E2/4C-18/74PCT374 O:47A4/RN24-2/4610X_

LBD9 8 I:3D7/5G-15/74F244 B:10D4/5A-14/74AS648!
 B:11D4/7B-10/74AS646! T:14D5/4B-16/74PCT374! I:44B5/4H-2/AM2982
 B:46D4/2H-3/AM29C833! I:47E2/4C-17/74PCT374 O:47A4/RN24-3/4610X_

LCS~ 16 I:3A4/16A-11/74LS244 I:18B2/15F-5/PAL16L8D
 I:18C1/29A-1/74F08 I:19C6/26B-20/27256 I:19C6/26B-22/27256
 I:19C4/23B-20/27256 I:19C4/23B-22/27256 I:33B7/28F-P10/ND_DELILA
 I:34D3/19F-8/PAL16R4D I:34D4/22F-9/PAL16R4D T:36B5/14D-17/PAL16R
 I:36F2/9D-5/74F02 I:36F2/9D-6/74F02 O:39A4/RN17-7/4610X_101_103!
 I:39C7/34D-E3/ND_DELDGA I:42A1/11B-1/74LS04

LDEXM~ £34 1 T:34D4/22F-17/PAL16R4D!

LDR~ £50 1 T:50B6/5F-15/PAL16R8D!

LERR~ 7 B:6D6/8D-13/PAL16L8B! T:46D2/1H-10/AM29C833!
 T:46D4/2H-10/AM29C833! I:46E5/8J-1/74LS112 I:46E7/8J-13/74LS112
 O:46F3/R21-2/3300HMI I:47D7/4F-8/PAL16L8B

LEVO 2 O:34D6/26H-12/PAL16L8B! I:40D7/35C-19/MC68705U3

LHIT 2 O:39C7/34D-M9/ND_DELDGA! I:40D7/35C-20/MC68705U3

LOAD~ 4 O:2D4/A-C15/! B:4D1/RN3-2/4610X_101_102!
 I:4E3/33C-2/74F244 O:4C2/C-B12/!

LOCK~ 3 B:2E2/RN1-8/4610X_101_102! O:2D4/A-C20/!
 I:42C6/33G-5/AM29C821

LOEN25~ £50 1 T:50B6/5F-16/PAL16R8D!

LOEN~ 4 I:44B2/3H-1/AM29821 I:48E4/3F-4/PAL16L8D
 I:50B6/5F-2/PAL16R8D T:50E6/6F-13/PAL16R8D!

LPERR~ 2 I:6D6/8D-7/PAL16L8B O:46E7/8J-7/74LS112!

LSHADOW 10 I:3A4/16A-15/74LS244 I:24A2/21G-11/PAL16L8D
 I:24A3/17F-3/74F10 I:25F5/18F-1/PAL16R4D I:27D3/18G-4/74F521
 O:33B7/28F-Q16/ND_DELILAH! I:36B6/32C-4/74F32 I:36B6/32C-2/74F32
 I:39C7/34D-F3/ND_DELDGA O:39A4/RN17-6/4610X_101_103!

LUA0 20 I:3A3/22A-11/74LS244 O:17E4/31F-14/AM29841!
 I:19C6/26B-8/27256 I:19C4/23B-8/27256 I:22B7/19C-16/TMM2068D_25
 I:22B6/18C-16/TMM2068D_25 I:22B4/17C-16/TMM2068D_25 I:22B2/16C-1
 I:22C6/22C-16/TMM2068D_25 I:22C7/23C-16/TMM2068D_25
 I:22C4/21C-16/TMM2068D_25 I:22C2/20C-16/TMM2068D_25 I:22D6/26C-1
 I:22D7/27C-16/TMM2068D_25 I:22D4/25C-16/TMM2068D_25
 I:22D2/24C-16/TMM2068D_25 I:22F6/30C-16/TMM2068D_25 I:22F7/31C-1
 I:22F4/29C-16/TMM2068D_25 I:22F2/28C-16/TMM2068D_25

LUA1 20 I:3A3/22A-8/74LS244 O:17E4/31F-15/AM29841!
 I:19C6/26B-7/27256 I:19C4/23B-7/27256 I:22B7/19C-17/TMM2068D_25
 I:22B6/18C-17/TMM2068D_25 I:22B4/17C-17/TMM2068D_25 I:22B2/16C-1
 I:22C6/22C-17/TMM2068D_25 I:22C7/23C-17/TMM2068D_25

LUA10 20 I:22C4/21C-17/TMM2068D_25 I:22C2/20C-17/TMM2068D_25 I:22D6/26C-1
 I:22D7/27C-17/TMM2068D_25 I:22D4/25C-17/TMM2068D_25
 I:22D2/24C-17/TMM2068D_25 I:22F6/30C-17/TMM2068D_25 I:22F7/31C-1
 I:22F4/29C-17/TMM2068D_25 I:22F2/28C-17/TMM2068D_25

LUA11 20 I:3A2/23A-6/74LS244 T:17E2/30H-6/74F373!
 I:19C6/26B-2/27256 I:19C4/23B-2/27256 I:22B7/19C-7/TMM2068D_25
 I:22B6/18C-7/TMM2068D_25 I:22B4/17C-7/TMM2068D_25 I:22B2/16C-7/T
 I:22C6/22C-7/TMM2068D_25 I:22C7/23C-7/TMM2068D_25 I:22C4/21C-7/T
 I:22C2/20C-7/TMM2068D_25 I:22D6/26C-7/TMM2068D_25 I:22D7/27C-7/T
 I:22D4/25C-7/TMM2068D_25 I:22D2/24C-7/TMM2068D_25 I:22F6/30C-7/T
 I:22F7/31C-7/TMM2068D_25 I:22F4/29C-7/TMM2068D_25 I:22F2/28C-7/T

LUA12 9 I:3A2/23A-4/74LS244 T:17E2/30H-5/74F373!
 I:19C6/26B-26/27256 I:19C4/23B-26/27256 I:22B7/19C-8/TMM2068D_2
 I:22B6/18C-8/TMM2068D_25 I:22B4/17C-8/TMM2068D_25 I:22B2/16C-8/T
 I:22C6/22C-8/TMM2068D_25 I:22C7/23C-8/TMM2068D_25 I:22C4/21C-8/T
 I:22C2/20C-8/TMM2068D_25 I:22D6/26C-8/TMM2068D_25 I:22D7/27C-8/T
 I:22D4/25C-8/TMM2068D_25 I:22D2/24C-8/TMM2068D_25 I:22F6/30C-8/T
 I:22F7/31C-8/TMM2068D_25 I:22F4/29C-8/TMM2068D_25 I:22F2/28C-8/T

LUA2 20 I:3A3/22A-6/74LS244 O:17E4/31F-16/AM29841!
 I:19C6/26B-6/27256 I:19C4/23B-6/27256 I:22B7/19C-18/TMM2068D_25
 I:22B6/18C-18/TMM2068D_25 I:22B4/17C-18/TMM2068D_25 I:22B2/16C-1
 I:22C6/22C-18/TMM2068D_25 I:22C7/23C-18/TMM2068D_25
 I:22C4/21C-18/TMM2068D_25 I:22C2/20C-18/TMM2068D_25 I:22D6/26C-1
 I:22D7/27C-18/TMM2068D_25 I:22D4/25C-18/TMM2068D_25
 I:22D2/24C-18/TMM2068D_25 I:22F6/30C-18/TMM2068D_25 I:22F7/31C-1
 I:22F4/29C-18/TMM2068D_25 I:22F2/28C-18/TMM2068D_25

LUA3 20 I:3A3/22A-4/74LS244 O:17E4/31F-17/AM29841!
 I:19C6/26B-5/27256 I:19C4/23B-5/27256 I:22B7/19C-19/TMM2068D_25
 I:22B6/18C-19/TMM2068D_25 I:22B4/17C-19/TMM2068D_25 I:22B2/16C-1
 I:22C6/22C-19/TMM2068D_25 I:22C7/23C-19/TMM2068D_25
 I:22C4/21C-19/TMM2068D_25 I:22C2/20C-19/TMM2068D_25 I:22D6/26C-1
 I:22D7/27C-19/TMM2068D_25 I:22D4/25C-19/TMM2068D_25
 I:22D2/24C-19/TMM2068D_25 I:22F6/30C-19/TMM2068D_25 I:22F7/31C-1
 I:22F4/29C-19/TMM2068D_25 I:22F2/28C-19/TMM2068D_25

LUA4 20 I:3A3/22A-2/74LS244 O:17E4/31F-18/AM29841!
 I:19C6/26B-4/27256 I:19C4/23B-4/27256 I:22B7/19C-1/TMM2068D_25
 I:22B6/18C-1/TMM2068D_25 I:22B4/17C-1/TMM2068D_25 I:22B2/16C-1/T
 I:22C6/22C-1/TMM2068D_25 I:22C7/23C-1/TMM2068D_25 I:22C4/21C-1/T
 I:22C2/20C-1/TMM2068D_25 I:22D6/26C-1/TMM2068D_25 I:22D7/27C-1/T
 I:22D4/25C-1/TMM2068D_25 I:22D2/24C-1/TMM2068D_25 I:22F6/30C-1/T
 I:22F7/31C-1/TMM2068D_25 I:22F4/29C-1/TMM2068D_25 I:22F2/28C-1/T

LUA5 20 I:3A2/23A-17/74LS244 O:17E4/31F-19/AM29841!
 I:19C6/26B-3/27256 I:19C4/23B-3/27256 I:22B7/19C-2/TMM2068D_25
 I:22B6/18C-2/TMM2068D_25 I:22B4/17C-2/TMM2068D_25 I:22B2/16C-2/T
 I:22C6/22C-2/TMM2068D_25 I:22C7/23C-2/TMM2068D_25 I:22C4/21C-2/T
 I:22C2/20C-2/TMM2068D_25 I:22D6/26C-2/TMM2068D_25 I:22D7/27C-2/T
 I:22D4/25C-2/TMM2068D_25 I:22D2/24C-2/TMM2068D_25 I:22F6/30C-2/T
 I:22F7/31C-2/TMM2068D_25 I:22F4/29C-2/TMM2068D_25 I:22F2/28C-2/T

LUA6 20 I:3A2/23A-15/74LS244 O:17E4/31F-20/AM29841!
 I:19C6/26B-25/27256 I:19C4/23B-25/27256 I:22B7/19C-3/TMM2068D_2
 I:22B6/18C-3/TMM2068D_25 I:22B4/17C-3/TMM2068D_25 I:22B2/16C-3/T
 I:22C6/22C-3/TMM2068D_25 I:22C7/23C-3/TMM2068D_25 I:22C4/21C-3/T
 I:22C2/20C-3/TMM2068D_25 I:22D6/26C-3/TMM2068D_25 I:22D7/27C-3/T
 I:22D4/25C-3/TMM2068D_25 I:22D2/24C-3/TMM2068D_25 I:22F6/30C-3/T
 I:22F7/31C-3/TMM2068D_25 I:22F4/29C-3/TMM2068D_25 I:22F2/28C-3/T

LUA7 20 I:3A2/23A-13/74LS244 O:17E4/31F-21/AM29841!

		I:19C6/26B-24/27256 I:19C4/23B-24/27256 I:22B7/19C-4/TMM2068D_2 I:22B6/18C-4/TMM2068D_25 I:22B4/17C-4/TMM2068D_25 I:22B2/16C-4/T I:22C6/22C-4/TMM2068D_25 I:22C7/23C-4/TMM2068D_25 I:22C4/21C-4/T I:22C2/20C-4/TMM2068D_25 I:22D6/26C-4/TMM2068D_25 I:22D7/27C-4/T I:22D4/25C-4/TMM2068D_25 I:22D2/24C-4/TMM2068D_25 I:22F6/30C-4/ I:22F7/31C-4/TMM2068D_25 I:22F4/29C-4/TMM2068D_25 I:22F2/28C-4/T
LUA8	20	I:3A2/23A-11/74LS244 O:17E4/31F-22/AM29841! I:19C6/26B-21/27256 I:19C4/23B-21/27256 I:22B7/19C-5/TMM2068D_2 I:22B6/18C-5/TMM2068D_25 I:22B4/17C-5/TMM2068D_25 I:22B2/16C-5/T I:22C6/22C-5/TMM2068D_25 I:22C7/23C-5/TMM2068D_25 I:22C4/21C-5/T I:22C2/20C-5/TMM2068D_25 I:22D6/26C-5/TMM2068D_25 I:22D7/27C-5/T I:22D4/25C-5/TMM2068D_25 I:22D2/24C-5/TMM2068D_25 I:22F6/30C-5/ I:22F7/31C-5/TMM2068D_25 I:22F4/29C-5/TMM2068D_25 I:22F2/28C-5/T
LUA9	20	I:3A2/23A-8/74LS244 O:17E4/31F-23/AM29841! I:19C6/26B-23/27256 I:19C4/23B-23/27256 I:22B7/19C-6/TMM2068D_2 I:22B6/18C-6/TMM2068D_25 I:22B4/17C-6/TMM2068D_25 I:22B2/16C-6/T I:22C6/22C-6/TMM2068D_25 I:22C7/23C-6/TMM2068D_25 I:22C4/21C-6/T I:22C2/20C-6/TMM2068D_25 I:22D6/26C-6/TMM2068D_25 I:22D7/27C-6/T I:22D4/25C-6/TMM2068D_25 I:22D2/24C-6/TMM2068D_25 I:22F6/30C-6/ I:22F7/31C-6/TMM2068D_25 I:22F4/29C-6/TMM2068D_25 I:22F2/28C-6/T
MACLK	4	I:17E4/31F-13/AM29841 I:17E5/32G-13/AM29841 I:17E2/30H-11/74F373 O:36F4/14C-11/74F00!
MAP~	3	I:33B7/28F-S5/ND_DELILAH B:36E5/13D-13/PAL16R4D! I:36B5/14D-9/PAL16R4D
MCL	2	I:4F6/35A-1/7406 O:39C7/34D-F12/ND_DELDGA!
MCLK	3	I:32D3/25F-13/AM29C821 I:33B7/28F-S10/ND_DELILAH O:36F3/14C-8/74F00!
MDLY~	£36	I:36B5/14D-16/PAL16R4D!
MEM~	3	T:6D2/10D-16/PAL16R8D! I:7D2/3A-13/74F241 I:7D5/8G-5/74F00
MISO	6	T:3A7/21A-16/74LS374! I:3C6/B-A1-1/ I:7D2/3A-2/74F241 I:7C1/1F-5/74F04 I:12E4/2C-5/PAL16L8D I:42B3/32H-12/SC2661
MIS1	3	T:3A7/21A-15/74LS374! I:3C6/B-C14/ I:42B3/32H-10/SC2661
MOFF~	£45	I:45C6/6G-3/PAL16R4D I:45C4/9G-4/PAL16R4D I:45E2/7G-4/PAL16R8B B:45A5/SW2-3/SECME090320102! B:45A5/RN18-8/4610X_101_102!
MOR25~	2	I:6D6/8D-6/PAL16L8B O:48C7/14F-16/AM29C821!
MOR~	5	I:3A4/16A-13/74LS244 T:7D2/3A-7/74F241! O:7E1/RN13-7/4610X_101_102! I:33B7/28F-Q11/ND_DELILAH I:48C7/14
MREQ~	2	I:36B6/32C-1/74F32 O:39C7/34D-N7/ND_DELDGA!
MR~	13	I:6D2/10D-4/PAL16R8D I:6D6/8D-8/PAL16L8B O:8E3/4D-23/AM29C821! I:33B7/28F-F3/ND_DELILAH I:36B5/14D-7/PAL I:36C6/14G-4/74F08 B:46C5/2F-13/PAL16L8B! I:46D5/14G-12/74F08 I:46D7/14G-10/74F08 I:47D7/4F-11/PAL16L8B I:48E4/3F-11/PAL16L8D I:50B6/5F-4/PAL16R8D I:50E6/6F-6/PAL16R8D
MSIZE0~	£45	I:45C4/9G-19/PAL16R4D! I:45E2/7G-2/PAL16R8B
MSIZE1~	£45	I:45C6/6G-13/PAL16R4D! I:45E2/7G-3/PAL16R8B
MWRITE50~	8	B:48E4/3F-13/PAL16L8D! O:48C7/14F-21/AM29C821! I:49C3/15H-21/SIP1M9 I:49C5/15J-21/SIP1M9 I:49E3/15K-21/SIP1M9 I:49E5/15L-21/SIP1M9 I:49G5/15N-21/SIP1M9 I:49G3/15M-21/SIP1M9
MWRITE~	6	I:12D6/1C-4/PAL16L8D T:45C6/6G-14/PAL16R4D! T:45C4/9G-14/PAL16R4D! O:45E3/RN18-5/4610X_101_102! I:46C5/2F-1 I:48C7/14F-3/AM29C821
NC	2	O:3A4/16A-3/74LS244! I:3C4/B-B22!
NOWRIT~	£36	I:36B3/15D-17/PAL16R4D!
NUBD	£25	T:25F5/18F-16/PAL16R4D! I:25G3/21F-9/AM9150_20
NUBI	£25	T:25F5/18F-17/PAL16R4D! I:25G3/21F-8/AM9150_20
O1P	4	I:2H4/A-A9/ B:42F3/D4-2/1N4148! B:42F3/R6-1/1KOHM! B:42F2/R5-1/1KOHM!

O2N	4	I:2H5/A-A10! O:42E4/35G-6/75150P! B:42F3/R7-2/2200HM! B:42F4/R8-1/1.5KOHM!
OC0	5	B:2D2/RN1-3/4610X_101_102! O:2D3/A-C6//! I:38B1/10F-13/74F10 I:38B2/7F-9/74F14 B:38A1/STR19-2/STR2!
OC1	4	B:2D2/RN1-4/4610X_101_102! O:2D3/A-A6//! I:38B1/10F-2/74F10 I:38B2/12F-1/74S132
OER~	E46 3	O:46C5/2F-12/PAL16L8B! I:46D2/1H-1/AM29C833 I:46D4/2H-1/AM29C833
OET~	E46 3	B:46C5/2F-18/PAL16L8B! I:46D2/1H-14/AM29C833 I:46D4/2H-14/AM29C833
OPCLCS	2	T:34D4/22F-15/PAL16R4D! I:38C4/32C-13/74F32
OSC	10	I:6D2/10D-1/PAL16R8D I:6D4/5D-1/PAL16R4D I:8C3/3D-13/AM29C821 I:8E3/4D-13/AM29C821 I:36D4/12D-1/PAL16R6D O:38C1/11F-3/74S37! I:48C4/13F-13/AM29C821 I:48C7/14F-13/AM29C82 I:50B6/5F-1/PAL16R8D I:50E6/6F-1/PAL16R8D
OSCCL~	3	B:2D2/RN1-2/4610X_101_102! O:2D2/A-B3//! I:38B3/12F-9/74S132
OUBD	E25 2	B:25F5/18F-13/PAL16R4D! O:25G3/21F-11/AM9150_20!
OUBI	E25 2	B:25F5/18F-12/PAL16R4D! O:25G3/21F-10/AM9150_20!
OUTGRANT~	2	I:4F5/C-C23/ O:7E3/2B-8/74F00!
OUTIDENT~	3	I:4F5/C-C22/ O:7E1/RN3-10/4610X_101_102! T:7D2/3A-18/74F241!
PA0	4	T:39C7/34D-L13/ND_DELDGA! O:40C4/34A-7/MM58274! I:40G4/32B-3/74LS374 B:40D7/35C-33/MC68705U3!
PA1	4	T:39C7/34D-L12/ND_DELDGA! O:40C4/34A-6/MM58274! I:40G4/32B-4/74LS374 B:40D7/35C-34/MC68705U3!
PA2	4	T:39C7/34D-K11/ND_DELDGA! O:40C4/34A-5/MM58274! I:40G4/32B-7/74LS374 B:40D7/35C-35/MC68705U3!
PA3	4	T:39C7/34D-M13/ND_DELDGA! O:40C4/34A-4/MM58274! I:40G4/32B-8/74LS374 B:40D7/35C-36/MC68705U3!
PA4	4	T:39C7/34D-L10/ND_DELDGA! I:40C4/34A-12/MM58274 I:40G4/32B-13/74LS374 B:40D7/35C-37/MC68705U3!
PA5	4	T:39C7/34D-N12/ND_DELDGA! I:40C4/34A-11/MM58274 I:40G4/32B-14/74LS374 B:40D7/35C-38/MC68705U3!
PA6	4	T:39C7/34D-N11/ND_DELDGA! I:40C4/34A-10/MM58274 I:40G4/32B-17/74LS374 B:40D7/35C-39/MC68705U3!
PA7	4	T:39C7/34D-M10/ND_DELDGA! I:40C4/34A-9/MM58274 I:40G4/32B-18/74LS374 B:40D7/35C-40/MC68705U3!
PANOSC	2	O:39C7/34D-E11/ND_DELDGA! I:40D7/35C-8/MC68705U3
PAN~	2	I:33B7/28F-R9/ND_DELILAH O:39C7/34D-F13/ND_DELDGA!
PARERR~	2	B:6D6/8D-17/PAL16L8B! I:33B7/28F-S14/ND_DELILAH
PA~	4	I:6C7/12C-4/74F32 O:39C7/34D-A4/ND_DELDGA! I:46D7/14G-9/74F08 I:47D7/4F-6/PAL16L8B
PCR0	2	O:33B7/28F-Q15/ND_DELILAH! I:40D7/35C-24/MC68705U3
PCR1	2	O:33B7/28F-Q17/ND_DELILAH! I:40D7/35C-23/MC68705U3
PILO	3	I:3A4/16A-2/74LS244 O:33B7/28F-A8/ND_DELILAH! I:34D6/26H-2/PAL16L8B
PIL1	3	I:3A3/22A-17/74LS244 O:33B7/28F-D9/ND_DELILAH! I:34D6/26H-3/PAL16L8B
PIL2	3	I:3A3/22A-15/74LS244 O:33B7/28F-B8/ND_DELILAH! I:34D6/26H-4/PAL16L8B
PIL3	3	I:3A3/22A-13/74LS244 O:33B7/28F-C9/ND_DELILAH! I:34D6/26H-5/PAL16L8B
PONI	4	O:33B7/28F-C8/ND_DELILAH! O:39A4/RN17-3/4610X_101_103! I:39C7/34D-E2/ND_DELDGA I:40D7/35C-22/MC68705U3
POWFAIL~	2	I:33B7/28F-P11/ND_DELILAH O:39C7/34D-E12/ND_DELDGA!
POWSENSE	2	O:38C6/7F-10/74F14! I:39C7/34D-A10/ND_DELDGA
POWSENSE~	5	B:4D4/C1-1/10nF! O:4C4/C-A29// O:4C4/C-B29// O:4C4/C-C29// I:38C6/7F-11/74F14
PPN10	7	I:14D5/4B-14/74PCT374 O:23D5/23H-3/74PCT244!

I:27D6/19G-17/74F521 B:28E5/9B-9/74PCT245! I:29F4/20G-7/IMS1400
 B:29B6/23G-17/TMM2018D_25! I:31D5/10G-17/74PCT244!

PPN11 7 I:14D5/4B-13/74PCT374 O:23D5/23H-5/74PCT244!
 I:27D6/19G-15/74F521 B:28E5/9B-8/74PCT245! I:29F4/20G-6/IMS1400
 B:29B6/23G-16/TMM2018D_25! I:31D5/10G-15/74PCT244

PPN12 7 I:14D5/4B-8/74PCT374 O:23D5/23H-7/74PCT244!
 I:27D6/19G-13/74F521 B:28E5/9B-7/74PCT245! I:29F4/20G-5/IMS1400
 B:29B6/23G-15/TMM2018D_25! I:31D5/10G-13/74PCT244

PPN13 7 I:14D5/4B-7/74PCT374 O:23D5/23H-9/74PCT244!
 I:27D6/19G-11/74F521 B:28E5/9B-6/74PCT245! I:29F4/20G-4/IMS1400
 B:29B6/23G-14/TMM2018D_25! I:31D5/10G-11/74PCT244

PPN14 7 I:14D5/4B-4/74PCT374 O:23D5/23H-12/74PCT244!
 I:27D6/19G-8/74F521 B:28E5/9B-5/74PCT245! I:29F4/20G-3/IMS1400
 B:29B6/23G-13/TMM2018D_25! I:31D5/10G-8/74PCT244

PPN15 7 I:14D5/4B-3/74PCT374 O:23D5/23H-14/74PCT244!
 I:27D6/19G-6/74F521 B:28E5/9B-4/74PCT245! I:29F4/20G-19/IMS1400
 B:29B6/23G-11/TMM2018D_25! I:31D5/10G-6/74PCT244

PPN16 7 I:14D3/3B-18/74PCT374 O:23D5/23H-16/74PCT244!
 I:27D6/19G-4/74F521 B:28E5/9B-3/74PCT245! I:29F4/20G-2/IMS1400
 B:29B6/23G-10/TMM2018D_25! I:31D5/10G-4/74PCT244

PPN17 7 I:14D3/3B-17/74PCT374 O:23D5/23H-18/74PCT244!
 I:27D6/19G-2/74F521 B:28E5/9B-2/74PCT245! I:29F4/20G-1/IMS1400
 B:29B6/23G-9/TMM2018D_25! I:31D5/10G-2/74PCT244

PPN18 8 I:14D3/3B-14/74PCT374 O:23D3/15G-3/74PCT244!
 I:27D3/18G-17/74F521 B:28E3/10B-9/74PCT245! O:28B7/8B-3/74LS244
 B:29B3/22G-17/TMM2018D_25! I:29F4/20G-18/IMS1400_25 I:31D3/11G-1

PPN19 9 I:14D3/3B-13/74PCT374 O:23D3/15G-5/74PCT244!
 I:27D3/18G-15/74F521 B:28E3/10B-8/74PCT245! O:28B7/8B-5/74LS244
 B:29B3/22G-16/TMM2018D_25! I:29F4/20G-17/IMS1400_25 I:31D3/11G-1
 I:45C4/9G-5/PAL16R4D

PPN20 9 I:14D3/3B-8/74PCT374 O:23D3/15G-7/74PCT244!
 I:27D3/18G-13/74F521 B:28E3/10B-7/74PCT245! O:28B7/8B-7/74LS244
 B:29B3/22G-15/TMM2018D_25! I:29F4/20G-16/IMS1400_25 I:31D3/11G-1
 I:45C4/9G-6/PAL16R4D

PPN21 9 I:14D3/3B-7/74PCT374 O:23D3/15G-9/74PCT244!
 I:27D3/18G-11/74F521 B:28E3/10B-6/74PCT245! O:28B7/8B-9/74LS244
 B:29B3/22G-14/TMM2018D_25! I:29F4/20G-15/IMS1400_25 I:31D3/11G-1
 I:45C4/9G-7/PAL16R4D

PPN22 9 I:14D3/3B-4/74PCT374 O:23D3/15G-12/74PCT244!
 I:27D3/18G-8/74F521 B:28E3/10B-5/74PCT245! O:28B7/8B-12/74LS244
 B:29B3/22G-13/TMM2018D_25! I:29F4/20G-13/IMS1400_25 I:31D3/11G-8
 I:45C4/9G-8/PAL16R4D

PPN23 9 I:14D3/3B-3/74PCT374 O:23D3/15G-14/74PCT244!
 I:27D3/18G-6/74F521 B:28E3/10B-4/74PCT245! O:28B7/8B-14/74LS244
 B:29B3/22G-11/TMM2018D_25! I:29F4/20G-14/IMS1400_25 I:31D3/11G-6
 I:45C4/9G-9/PAL16R4D

PPN24 3 B:28E3/10B-3/74PCT245! O:28B7/8B-16/74LS244!
 B:29B3/22G-10/TMM2018D_25!

PPN25 4 B:28E3/10B-2/74PCT245! O:28B7/8B-18/74LS244!
 B:29B3/22G-9/TMM2018D_25! I:29F4/20G-12/IMS1400_25

PPOS C 2 O:38D1/13C-5/74LS393! I:42B3/32H-20/SC2GG1

PRES £40 2 I:40G6/33B-17/74LS244 O:40F7/13G-4/74F04!

PS^ 3 I:6C7/12C-1/74F32 O:39C7/34D-A7/ND_DELDGA!
 I:47D7/4F-4/PAL16L8B

PT0 2 B:29D6/25G-17/TMM2018D_25! B:30D5/18B-11/74PCT245!

PT1 2 B:29D6/25G-16/TMM2018D_25! B:30D5/18B-12/74PCT245!

PT10 3 B:29D3/24G-15/TMM2018D_25! B:30D3/17B-13/74PCT245!
 I:33B7/28F-Q7/ND_DELILAH

PT11 3 B:29D3/24G-14/TMM2018D_25! B:30D3/17B-14/74PCT245!
 I:33B7/28F-R8/ND_DELILAH

PT12	3	B:29D3/24G-13/TMM2018D_25! I:33B7/28F-R7/ND _— DELILAH	B:30D3/17B-15/74PCT245!
PT13	3	B:29D3/24G-11/TMM2018D_25! I:33B7/28F-S8/ND _— DELILAH	B:30D3/17B-16/74PCT245!
PT14	3	B:29D3/24G-10/TMM2018D_25! I:33B7/28F-P8/ND _— DELILAH	B:30D3/17B-17/74PCT245!
PT15	3	B:29D3/24G-9/TMM2018D_25! I:33B7/28F-S9/ND _— DELILAH	B:30D3/17B-18/74PCT245!
PT2	2	B:29D6/25G-15/TMM2018D_25! T:50E6/6F-19/PAL16R8D!	B:30D5/18B-13/74PCT245!
PT3	2	B:29D6/25G-14/TMM2018D_25! T:50E6/6F-18/PAL16R8D!	B:30D5/18B-14/74PCT245!
PT4	2	B:29D6/25G-13/TMM2018D_25! T:50E6/6F-17/PAL16R8D!	B:30D5/18B-15/74PCT245!
PT5	2	B:29D6/25G-11/TMM2018D_25! T:50E6/6F-16/PAL16R8D!	B:30D5/18B-16/74PCT245!
PT6	2	B:29D6/25G-10/TMM2018D_25! T:50E6/6F-15/PAL16R8D!	B:30D5/18B-17/74PCT245!
PT7	2	B:29D6/25G-9/TMM2018D_25! T:50E6/6F-14/PAL16R8D!	B:30D5/18B-18/74PCT245!
PT8	2	B:29D3/24G-17/TMM2018D_25! T:50E6/6F-13/PAL16R8D!	B:30D3/17B-11/74PCT245!
PT9	3	B:29D3/24G-16/TMM2018D_25! I:33B7/28F-S7/ND _— DELILAH	B:30D3/17B-12/74PCT245!
PWCL	2	O:38C4/32C-11/74F32! I:39C7/34D-A11/ND _— DELDGA	
QA~	£50	I:50E6/6F-19/PAL16R8D!	
QB~	£50	I:50E6/6F-18/PAL16R8D!	
QC~	£50	I:50E6/6F-17/PAL16R8D!	
QD~	£50	I:50E6/6F-16/PAL16R8D!	
Q~0	2	T:6D4/5D-17/PAL16R4D! I:12D2/11D-1/PAL16L8D	
Q~1	£6	I:6D4/5D-16/PAL16R4D!	
Q~2	2	T:6D4/5D-15/PAL16R4D! I:12D2/11D-2/PAL16L8D	
RAS	4	I:49B6/9H-1/74F00 O:49D6/9H-9/74F00 I:49F6/8G-9/74F00 T:50E6/6F-15/PAL16R8D!	
RAS~0	£49	O:49B6/9H-3/74F00! I:49C3/15H-27/S1P1M9 I:49C5/15J-27/S1P1M9	
RAS~1	£49	I:49E3/15K-27/S1P1M9 I:49E5/15L-27/S1P1M9 O:49D6/9H-8/74F00!	
RAS~2	£49	I:49G5/15N-27/S1P1M9 I:49G3/15M-27/S1P1M9 O:49F6/8G-8/74F00!	
RD	£42	I:42B3/32H-3/SC2661 O:42F6/7F-4/74F14!	
RDATA	4	I:46D2/1H-13/AM29C833 I:46D4/2H-13/AM29C833 I:47D7/4F-1/PAL16L8B O:48E4/3F-12/PAL16L8D!	
READ	£40	I:40G6/33B-13/74LS244 B:40D7/35C-31/MC68705U3!	
REF100~	£48	B:48E4/3F-15/PAL16L8D! O:48C7/14F-17/AM29C821!	
REFRQ25~	£8	O:8C3/3D-22/AM29C821! I:8E3/4D-3/AM29C821	
REFRQ50~	2	I:6D2/10D-6/PAL16R8D O:8E3/4D-22/AM29C821!	
REFRQ~	3	I:8C3/3D-3/AM29C821 O:39C7/34D-C13/ND _— DELDGA! I:45C2/2D-11/74F74	
REF~	4	T:6D2/10D-15/PAL16R8D! I:7D6/7A-9/7407 I:39C7/34D-C9/ND _— DELDGA I:48C7/14F-5/AM29C821	
RERR~	4	B:6D6/8D-16/PAL16L8B! I:6C7/12C-2/74F32 I:6C7/12C-5/74F32 I:47D7/4F-5/PAL16L8B	
RESET	£41	O:41E4/28A-2/74LS273!	
RESTART~	2	B:4D1/RN3-3/4610X_101_102! O:4C2/C-B13!	
RFO	7	I:18D2/30B-2/74F139 I:18D2/30B-14/74F139 I:19C6/26B-10/27256 I:19C4/23B-10/27256 I:32F5/34F-23/TMM2018D_25 I:32F7/35F-23/TMM2018D_25 O:33B7/28F-K5/ND _— DELILAH!	
RF1	7	I:18D2/30B-3/74F139 I:18D2/30B-13/74F139 I:19C6/26B-9/27256 I:19C4/23B-9/27256 I:32F5/34F-22/TMM2018D_25 I:32F7/35F-22/TMM2018D_25 O:33B7/28F-M2/ND _— DELILAH!	
RGNT~	4	I:45C2/2D-13/74F74 B:48E4/3F-16/PAL16L8D! T:50B6/5F-19/PAL16R8D! I:50E6/6F-2/PAL16R8D	
RINR~	3	O:39C7/34D-B5/ND _— DELDGA! I:41C7/24A-1/74PCT244 I:41C7/24A-19/74PCT244	
RLRQ~	2	O:45C2/2D-8/74F74! I:50B6/5F-3/PAL16R8D	
RMM~	3	O:39A1/RN15-4/4610X_101_103! I:39C7/34D-L9/ND _— DELDGA	

		B:40D7/35C-28/MC68705U3!
ROCLK~	£40	2 I:40C4/34A-2/MM58274 B:40D7/35C-27/MC68705U3!
RRF~	£34	1 T:34D3/19F-17/PAL16R4D!
RTOSC		2 O:38E2/13C-8/74LS393! I:39C7/34D-C8/ND _— DELDGA
RT~	5	B:12D2/11D-13/PAL16L8D! I:24A2/21G-4/PAL16L8D I:25F5/18F-3/PAL16R4D I:36B6/32C-5/74F32 O:39C7/34D-J2/ND _— DELDG
RUART~	2	O:39C7/34D-B8/ND _— DELDGA! I:42B3/32H-13/SC2661
RUN~	3	I:2H3/A-C18/ O:4F7/7A-2/7407! I:4F7/C-B14/
RWCS~	3	I:18B2/15F-6/PAL16L8D I:36E5/13D-8/PAL16L8D O:39C7/34D-N8/ND _— DELDGA!
RXD		2 O:2D3/A-C8/! B:42E6/R3-2/2.2KOHM!
SAPR	£12	1 B:12D6/1C-15/PAL16L8D!
SCONS~	£41	3 O:41E4/28A-5/74LS273! I:41F4/29A-4/74F08 I:41G3/11B-3/74LS04
SEL5MS~		3 O:3A7/B-B14/! O:3A7/R4-2/1KOHM! I:39C7/34D-B9/ND _— DELDGA
SEMRQ25~	£8	2 O:8C3/3D-21/AM29C821! I:8E3/4D-4/AM29C821
SEMRQ50~		3 I:6D2/10D-8/PAL16R8D O:8E3/4D-21/AM29C821! I:50B6/5F-8/PAL16R8D
SEMRQ~	3	I:4C6/5C-4/74F244 B:4A5/C-A17/! O:7E7/2A-8/7438!
SEM~	2	T:6D2/10D-19/PAL16R8D! I:7E3/2B-5/74F00
SHORT~	2	B:36D4/12D-12/PAL16R6D! O:39C7/34D-H3/ND _— DELDGA!
SIOC~	2	O:39C7/34D-K2/ND _— DELDGA! I:41E4/28A-11/74LS273
SLOW~	2	B:36D4/12D-19/PAL16R6D! O:39C7/34D-H2/ND _— DELDGA!
SO	£42	4 O:42B3/32H-19/SC2661! I:42E4/35G-2/75150P I:42E4/35G-3/75150P I:42E4/35G-1/75150P
SPEA		4 O:6D6/8D-19/PAL16L8B! I:13C5/10A-11/74PCT534 I:13E5/8A-11/74PCT534 I:13E3/9A-11/74PCT534
SPEAL	£47	4 O:47D7/4F-12/PAL16L8B! I:47C4/3C-11/74PCT374 I:47E2/4C-11/74PCT374 I:47E4/6D-11/74PCT374
SPES		2 O:6D6/8D-12/PAL16L8B! I:13C3/12A-11/74PCT534
SPESL	£47	2 O:47D7/4F-19/PAL16L8B! I:47C2/7C-11/74PCT374
SSEMA~		3 I:7D7/9D-8/74F02 O:39C7/34D-M1/ND _— DELDGA! I:50B6/5F-7/PAL16R8D
STAT0	£40	2 I:40G6/33B-2/74LS244 B:40D7/35C-9/MC68705U3!
STAT1	£40	2 I:40G6/33B-4/74LS244 B:40D7/35C-10/MC68705U3!
STAT2	£40	2 I:40G6/33B-6/74LS244 B:40D7/35C-11/MC68705U3!
STAT3		4 O:39A1/RN15-6/4610X_101_103! I:39C7/34D-D2/ND _— DELDGA! I:40G6/33B-8/74LS244 B:40D7/35C-29/MC68705U3!
STAT4		3 O:39A1/RN15-5/4610X_101_103! I:39C7/34D-C1/ND _— DELDGA! B:40D7/35C-30/MC68705U3!
STAT7	£40	3 B:40D7/35C-32/MC68705U3! I:40F7/13G-3/74F04 O:40E7/RN8-10/4610X_101_103!
STOC~		5 I:35D3/14B-1/74PCT244 I:35D3/14B-19/74PCT244 I:35D5/15B-1/74PCT244 I:35D5/15B-19/74PCT244 O:39C7/34D-H1/ND _— D
STOP~	4	B:2E2/RN1-10/4610X_101_102! O:2D4/A-C17/! I:4E3/33C-8/74F244 O:4C2/C-B16/!
STP		3 I:4F7/7A-1/7407 I:33B7/28F-R6/ND _— DELILAH O:39C7/34D-E13/ND _— DELDGA!
SWDIS~	£46	3 I:46C5/2F-2/PAL16L8B B:46A4/SW4-3/SECME_SPDT! O:46A4/RN14-6/4610X_101_102!
SWLD		2 O:2G3/R1-2/1KOHM! I:2H3/A-A15/
SWMCL~		4 O:2D4/A-C16/! B:2E2/RN1-6/4610X_101_102! B:2E6/SW3-1/SECME436231205! I:38B4/12F-13/74S132
TBMT~	4	I:41F5/11B-9/74LS04 O:42B3/32H-15/SC2661! O:42B5/RN7-2/4610X_101_103! I:42C6/33G-2/AM29C821
TERM~	13	I:6D4/5D-8/PAL16R4D I:12D2/11D-9/PAL16L8D I:18B2/15F-11/PAL16L8D I:24A3/17F-5/74F10 I:25F5/18F-5/PAL16R4D I:32E7/17F-13/74F10 I:36E5/13D-1/PAL16L8D T:36D4/12D-17/PAL16R6D I:36F2/14C-2/74F00 I:36F2/9D-2/74F02 I:36F5/14G-1/74F08 I:36F3/

		I:36F4/14C-12/74F00
TEST0	£33	2 B:33E6/TP6-1/TESTPOINT! O:33B7/28F-N11/ND DELILAH!
TEST1	£33	2 B:33E5/TP5-1/TESTPOINT! O:33B7/28F-P12/ND DELILAH!
TEST2	£33	2 B:33E5/TP4-1/TESTPOINT! O:33B7/28F-Q12/ND DELILAH!
TEST3	£33	2 B:33D5/TP3-1/TESTPOINT! O:33B7/28F-R15/ND DELILAH!
TEST4	£33	2 B:33D5/TP2-1/TESTPOINT! O:33B7/28F-Q13/ND DELILAH!
TOUT		2 I:7D2/3A-19/74F241 O:39C7/34D-D12/ND DELDGA!
TRAALD~		5 O:39C7/34D-C6/ND DELDGA! I:41C2/27A-1/74PCT244
		I:41C2/27A-19/74PCT244 I:41C5/25A-1/74PCT244 I:41C5/25A-19/74PC
TRAP~		2 O:33B7/28F-Q9/ND DELILAH! I:36E5/13D-9/PAL16L8D
TST~	£46	1 B:46C5/2F-15/PAL16L8B!
TWRF~	£32	3 I:32F5/34F-21/TMM2018D_25 I:32F7/35F-21/TMM2018D_25 O:32E7/17F-12/74F10!
TXD		3 I:2H2/A-C7! O:42E4/35G-7/75150P! B:42G4/C8-1/1000pF!
UCLK		6 I:25F5/18F-1/PAL16R4D I:26C5/24H-3/74F74 I:33B7/28F-Q8/ND DELILAH O:36F5/14G-3/74F08! O:39A1/RN15-3/4610 I:39C7/34D-N5/ND DELDGA
USED~	£25	2 B:25F5/18F-19/PAL16R4D! I:25G6/21H-1/74S260
UUAO		18 O:17E5/32G-14/AM29841! O:17E7/31G-14/AM29841! I:21B7/19D-16/TMM2068D_25 I:21B6/18D-16/TMM2068D_25 I:21B4/17D-16/TMM2068D_25 I:21B2/16D-16/TMM2068D_25 I:21C6/22D-1 I:21C7/23D-16/TMM2068D_25 I:21C4/21D-16/TMM2068D_25 I:21C2/20D-16/TMM2068D_25 I:21D6/26D-16/TMM2068D_25 I:21D7/27D-1 I:21D4/25D-16/TMM2068D_25 I:21D2/24D-16/TMM2068D_25 I:21F6/30D-16/TMM2068D_25 I:21F7/31D-16/TMM2068D_25 I:21F4/29D-1 I:21F2/28D-16/TMM2068D_25
UUA1		18 O:17E5/32G-15/AM29841! O:17E7/31G-15/AM29841! I:21B7/19D-17/TMM2068D_25 I:21B6/18D-17/TMM2068D_25 I:21B4/17D-17/TMM2068D_25 I:21B2/16D-17/TMM2068D_25 I:21C6/22D-1 I:21C7/23D-17/TMM2068D_25 I:21C4/21D-17/TMM2068D_25 I:21C2/20D-17/TMM2068D_25 I:21D6/26D-17/TMM2068D_25 I:21D7/27D-1 I:21D4/25D-17/TMM2068D_25 I:21D2/24D-17/TMM2068D_25 I:21F6/30D-17/TMM2068D_25 I:21F7/31D-17/TMM2068D_25 I:21F4/29D-1 I:21F2/28D-17/TMM2068D_25
UUA10		17 T:17E2/30H-16/74F373! I:21B7/19D-7/TMM2068D_25 I:21B6/18D-7/TMM2068D_25 I:21B4/17D-7/TMM2068D_25 I:21B2/16D-7/ I:21C6/22D-7/TMM2068D_25 I:21C7/23D-7/TMM2068D_25 I:21C4/21D-7/T I:21C2/20D-7/TMM2068D_25 I:21D6/26D-7/TMM2068D_25 I:21D7/27D-7/T I:21D4/25D-7/TMM2068D_25 I:21D2/24D-7/TMM2068D_25 I:21F6/30D-7/T I:21F7/31D-7/TMM2068D_25 I:21F4/29D-7/TMM2068D_25 I:21F2/28D-7/
UUA11		17 T:17E2/30H-15/74F373! I:21B7/19D-8/TMM2068D_25 I:21B6/18D-8/TMM2068D_25 I:21B4/17D-8/TMM2068D_25 I:21B2/16D-8/ I:21C6/22D-8/TMM2068D_25 I:21C7/23D-8/TMM2068D_25 I:21C4/21D-8/T I:21C2/20D-8/TMM2068D_25 I:21D6/26D-8/TMM2068D_25 I:21D7/27D-8/T I:21D4/25D-8/TMM2068D_25 I:21D2/24D-8/TMM2068D_25 I:21F6/30D-8/T I:21F7/31D-8/TMM2068D_25 I:21F4/29D-8/TMM2068D_25 I:21F2/28D-8/
UUA2		18 O:17E5/32G-16/AM29841! O:17E7/31G-16/AM29841! I:21B7/19D-18/TMM2068D_25 I:21B6/18D-18/TMM2068D_25 I:21B4/17D-18/TMM2068D_25 I:21B2/16D-18/TMM2068D_25 I:21C6/22D-1 I:21C7/23D-18/TMM2068D_25 I:21C4/21D-18/TMM2068D_25 I:21C2/20D-18/TMM2068D_25 I:21D6/26D-18/TMM2068D_25 I:21D7/27D-1 I:21D4/25D-18/TMM2068D_25 I:21D2/24D-18/TMM2068D_25 I:21F6/30D-18/TMM2068D_25 I:21F7/31D-18/TMM2068D_25 I:21F4/29D-1 I:21F2/28D-18/TMM2068D_25
UUA3		18 O:17E5/32G-17/AM29841! O:17E7/31G-17/AM29841! I:21B7/19D-19/TMM2068D_25 I:21B6/18D-19/TMM2068D_25 I:21B4/17D-19/TMM2068D_25 I:21B2/16D-19/TMM2068D_25 I:21C6/22D-1 I:21C7/23D-19/TMM2068D_25 I:21C4/21D-19/TMM2068D_25 I:21C2/20D-19/TMM2068D_25 I:21D6/26D-19/TMM2068D_25 I:21D7/27D-1 I:21D4/25D-19/TMM2068D_25 I:21D2/24D-19/TMM2068D_25

		I:21F6/30D-19/TMM2068D_25 I:21F7/31D-19/TMM2068D_25 I:21F4/29D-1 I:21F2/28D-19/TMM2068D_25
UU4	18	O:17E5/32G-18/AM29841! O:17E7/31G-18/AM29841! I:21B7/19D-1/TMM2068D_25 I:21B6/18D-1/TMM2068D_25 I:21B4/17D-1/ I:21B2/16D-1/TMM2068D_25 I:21C6/22D-1/TMM2068D_25 I:21C7/23D-1/T I:21C4/21D-1/TMM2068D_25 I:21C2/20D-1/TMM2068D_25 I:21D6/26D-1/T I:21D7/27D-1/TMM2068D_25 I:21D4/25D-1/TMM2068D_25 I:21D2/24D-1/T I:21F6/30D-1/TMM2068D_25 I:21F7/31D-1/TMM2068D_25 I:21F4/29D-1/ I:21F2/28D-1/TMM2068D_25
UU5	18	O:17E5/32G-19/AM29841! O:17E7/31G-19/AM29841! I:21B7/19D-2/TMM2068D_25 I:21B6/18D-2/TMM2068D_25 I:21B4/17D-2/ I:21B2/16D-2/TMM2068D_25 I:21C6/22D-2/TMM2068D_25 I:21C7/23D-2/T I:21C4/21D-2/TMM2068D_25 I:21C2/20D-2/TMM2068D_25 I:21D6/26D-2/T I:21D7/27D-2/TMM2068D_25 I:21D4/25D-2/TMM2068D_25 I:21D2/24D-2/T I:21F6/30D-2/TMM2068D_25 I:21F7/31D-2/TMM2068D_25 I:21F4/29D-2/ I:21F2/28D-2/TMM2068D_25
UU6	18	O:17E5/32G-20/AM29841! O:17E7/31G-20/AM29841! I:21B7/19D-3/TMM2068D_25 I:21B6/18D-3/TMM2068D_25 I:21B4/17D-3/ I:21B2/16D-3/TMM2068D_25 I:21C6/22D-3/TMM2068D_25 I:21C7/23D-3/T I:21C4/21D-3/TMM2068D_25 I:21C2/20D-3/TMM2068D_25 I:21D6/26D-3/T I:21D7/27D-3/TMM2068D_25 I:21D4/25D-3/TMM2068D_25 I:21D2/24D-3/T I:21F6/30D-3/TMM2068D_25 I:21F7/31D-3/TMM2068D_25 I:21F4/29D-3/ I:21F2/28D-3/TMM2068D_25
UU7	18	O:17E5/32G-21/AM29841! O:17E7/31G-21/AM29841! I:21B7/19D-4/TMM2068D_25 I:21B6/18D-4/TMM2068D_25 I:21B4/17D-4/ I:21B2/16D-4/TMM2068D_25 I:21C6/22D-4/TMM2068D_25 I:21C7/23D-4/T I:21C4/21D-4/TMM2068D_25 I:21C2/20D-4/TMM2068D_25 I:21D6/26D-4/T I:21D7/27D-4/TMM2068D_25 I:21D4/25D-4/TMM2068D_25 I:21D2/24D-4/T I:21F6/30D-4/TMM2068D_25 I:21F7/31D-4/TMM2068D_25 I:21F4/29D-4/ I:21F2/28D-4/TMM2068D_25
UU8	18	O:17E5/32G-22/AM29841! O:17E7/31G-22/AM29841! I:21B7/19D-5/TMM2068D_25 I:21B6/18D-5/TMM2068D_25 I:21B4/17D-5/ I:21B2/16D-5/TMM2068D_25 I:21C6/22D-5/TMM2068D_25 I:21C7/23D-5/T I:21C4/21D-5/TMM2068D_25 I:21C2/20D-5/TMM2068D_25 I:21D6/26D-5/T I:21D7/27D-5/TMM2068D_25 I:21D4/25D-5/TMM2068D_25 I:21D2/24D-5/T I:21F6/30D-5/TMM2068D_25 I:21F7/31D-5/TMM2068D_25 I:21F4/29D-5/ I:21F2/28D-5/TMM2068D_25
UU9	18	O:17E5/32G-23/AM29841! O:17E7/31G-23/AM29841! I:21B7/19D-6/TMM2068D_25 I:21B6/18D-6/TMM2068D_25 I:21B4/17D-6/ I:21B2/16D-6/TMM2068D_25 I:21C6/22D-6/TMM2068D_25 I:21C7/23D-6/T I:21C4/21D-6/TMM2068D_25 I:21C2/20D-6/TMM2068D_25 I:21D6/26D-6/T I:21D7/27D-6/TMM2068D_25 I:21D4/25D-6/TMM2068D_25 I:21D2/24D-6/T I:21F6/30D-6/TMM2068D_25 I:21F7/31D-6/TMM2068D_25 I:21F4/29D-6/ I:21F2/28D-6/TMM2068D_25
VAL	2	O:39C7/34D-B4/ND_DELDGA! I:40G6/33B-11/74LS244
VCC	158	\$\$OVERFLOW\$\$ I:3C4/RN13-1/4610X_101_102 I:3C6/RN13-1/4610X_101_102 B:3H1/B-A2/! B:3H1/B-B2/! B:3H1/B-C2 I:3F5/RN13-1/4610X_101_102 B:3H1/B-A31/! B:3H2/B-B31/! B:3H2/B- B:4G3/C-A31/! B:4G3/C-B31/! B:4G3/C-C31/! B:4D1/RN3-1/4610X_101 B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4G2/C-A2/! B:4G2/C-B2/! B:4G3/C-C2 I:7E1/RN3-1/4610X_101_102 I:7E1/RN13-1/4610X_101_102 I:7E1/RN13-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102 I:11D5/6 I:11E2/RN19-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102 I:11F2/RN19-1/4610X_101_102 I:11D4/7B-22/74ASG46 I:11F2/RN20-1/4 I:11G2/RN20-1/4610X_101_102 I:11G2/RN20-1/4610X_101_102

		I:11G2/RN20-1/4610X_101_102	I:11G2/RN20-1/4610X_101_102
		I:11G2/RN20-1/4610X_101_102	I:11G2/RN20-1/4610X_101_102
		I:11F2/RN20-1/4610X_101_102	I:19C6/26B-1/27256 I:19C4/23B-1/2725
		B:25F6/RN14-1/4610X_101_102!	B:25F6/RN14-1/4610X_101_102!
		I:26B4/RN9-1/4610X_101_102	I:26C4/RN9-1/4610X_101_102
		I:33B7/28F-B2/ND_DELILAH	I:33B7/28F-R2/ND_DELILAH I:33B7/28F-K3
VEX	3	T:34D4/22E-16/PAL16R4D!	I:34E3/29H-10/74F32
		I:36E5/13D-11/PAL16L8D	
WAIT1	£36	2	I:36D4/12D-5/PAL16R6D O:36C6/14G-6/74F08!
WAIT2	£36	2	I:36D4/12D-6/PAL16R6D O:36B6/25H-8/74F00!
WBD~		4	I:10D6/6A-3/74AS648 I:10D4/5A-3/74AS648
		I:10D2/4A-3/74AS648 O:12E4/2C-19/PAL16L8D!	
WCA~		12	B:18B2/15F-14/PAL16L8D! I:24A2/21G-9/PAL16L8D
			B:25F5/18F-18/PAL16R4D! I:25D6/24F-21/TMM2018D_25 I:25B6/20F-21
			I:25B3/16F-21/TMM2018D_25 I:25G3/21F-18/AM9150_20 I:25D3/23F-21/
			I:31D3/11G-1/74PCT244 I:31D3/11G-19/74PCT244 I:31D5/10G-1/74PCT2
			I:31D5/10G-19/74PCT244
WCHIM~		3	I:24A2/21G-5/PAL16L8D I:24A3/32C-9/74F32
			O:39C7/34D-L1/ND_DELDGA!
WCINH~		3	I:25E6/17F-11/74F10 I:26C5/24H-2/74F74
			O:29F4/20G-8/IMS1400_25!
WCLIM~		2	O:24A3/32C-8/74F32! I:29F4/20G-9/IMS1400_25
WCSTB~	£18	2	O:18B2/15F-12/PAL16L8D! I:18D2/30B-15/74F139
WCS~		10	I:18B2/15F-7/PAL16L8D I:20B7/28B-1/74LS245
			I:20B6/24B-1/74LS245 I:20B4/20B-1/74LS245 I:20B3/16B-1/74LS245
			I:20C7/29B-1/74LS245 I:20C6/27B-1/74LS245 I:20C4/21B-1/74LS245
			I:20C3/19B-1/74LS245 O:33B7/28F-P3/ND_DELILAH!
WICA~	£18	5	O:18B2/15F-19/PAL16L8D! I:18E2/29J-2/74F08
			I:18E2/29J-5/74F08 I:18E3/29J-10/74F08 I:18E3/29J-13/74F08
WLBD~		3	I:11D5/6B-3/74AS646 I:11D4/7B-3/74AS646
			O:12E4/2C-12/PAL16L8D!
WMAP~		5	O:24A3/17F-6/74F10! I:29B3/22G-21/TMM2018D_25
			I:29D3/24G-21/TMM2018D_25 I:29B6/23G-21/TMM2018D_25
			I:29D6/25G-21/TMM2018D_25
WMM~	£40	2	I:40G4/32B-11/74LS374 B:40D7/35C-25/MC68705U3!
WRCLK~	£40	2	I:40C4/34A-3/MM58274 B:40D7/35C-26/MC68705U3!
WRFSTB~		2	I:32E7/17F-2/74F10 B:36E5/13D-18/PAL16L8D!
WRITE		7	I:12E4/2C-7/PAL16L8D I:24A2/21G-2/PAL16L8D
			I:24A3/17F-4/74F10 I:30D3/17B-1/74PCT245 I:30D5/18B-1/74PCT245
			O:39C7/34D-N6/ND_DELDGA! I:45C4/9G-2/PAL16R4D
WRTRF		5	I:32F5/34F-20/TMM2018D_25 I:32F7/35F-20/TMM2018D_25
			I:32E7/17F-1/74F10 O:33B7/28F-D5/ND_DELILAH! I:34D3/19F-7/PAL16
WU~0		5	O:18E2/29J-3/74F08! I:21F6/30D-11/TMM2068D_25
			I:21F7/31D-11/TMM2068D_25 I:21F4/29D-11/TMM2068D_25
			I:21F2/28D-11/TMM2068D_25
WU~1		5	O:18E2/29J-6/74F08! I:21D6/26D-11/TMM2068D_25
			I:21D7/27D-11/TMM2068D_25 I:21D4/25D-11/TMM2068D_25
			I:21D2/24D-11/TMM2068D_25
WU~2		5	O:18E3/29J-8/74F08! I:21C6/22D-11/TMM2068D_25
			I:21C7/23D-11/TMM2068D_25 I:21C4/21D-11/TMM2068D_25
			I:21C2/20D-11/TMM2068D_25
WU~3		5	O:18E3/29J-11/74F08! I:21B7/19D-11/TMM2068D_25
			I:21B6/18D-11/TMM2068D_25 I:21B4/17D-11/TMM2068D_25
			I:21B2/16D-11/TMM2068D_25
WW~0		6	O:18D2/30B-12/74F139! I:18E2/29J-1/74F08
			I:22F6/30C-11/TMM2068D_25 I:22F7/31C-11/TMM2068D_25
			I:22F4/29C-11/TMM2068D_25 I:22F2/28C-11/TMM2068D_25
WW~1		6	O:18D2/30B-11/74F139! I:18E2/29J-4/74F08
			I:22D6/26C-11/TMM2068D_25 I:22D7/27C-11/TMM2068D_25
			I:22D4/25C-11/TMM2068D_25 I:22D2/24C-11/TMM2068D_25

WW~2	6	O:18D2/30B-10/74F139! I:18E3/29J-9/74F08 I:22C6/22C-11/TMM2068D_25 I:22C7/23C-11/TMM2068D_25 I:22C4/21C-11/TMM2068D_25 I:22C2/20C-11/TMM2068D_25
WW~3	6	O:18D2/30B-9/74F139! I:18E3/29J-12/74F08 I:22B7/19C-11/TMM2068D_25 I:22B6/18C-11/TMM2068D_25 I:22B4/17C-11/TMM2068D_25 I:22B2/16C-11/TMM2068D_25
XBGNT~	2	O:3A4/16A-14/74LS244! I:3B4/B-A10/ I:3G4/B-A26/ O:3F4/15C-3/74LS244!
XCA0	2	I:3G4/B-C26/ O:3F4/15C-5/74LS244!
XCA1	2	I:3G4/B-A25/ O:3F4/15C-7/74LS244!
XCA2	2	I:3G4/B-C25/ O:3F4/15C-9/74LS244!
XCA3	2	I:3G4/B-A24/ O:3F4/15C-12/74LS244!
XCA4	2	I:3G4/B-C24/ O:3F4/15C-14/74LS244!
XCA5	2	I:3G4/B-A23/ O:3F4/15C-16/74LS244!
XCA6	2	I:3G3/B-C23/ O:3F4/15C-18/74LS244!
XCA7	2	I:3G3/B-A30/ O:3F3/16G-3/74LS244!
XCA8	2	I:3G3/B-C30/ O:3F3/16G-5/74LS244!
XCA9	2	I:3G4/B-C30/ O:3F3/16G-7/74LS244!
XCGNT~	2	O:3A4/16A-12/74LS244! I:3C4/B-B16/ O:3A4/16A-16/74LS244! I:3C3/B-C10/
XCLK	2	T:3A7/21A-12/74LS374! I:3B6/B-A13/ T:3A7/21A-9/74LS374! I:3C6/B-C12/
XCOMM0	2	T:3A7/21A-6/74LS374! I:3B6/B-A11/ T:3A7/21A-5/74LS374! I:3C6/B-C11/
XCOMM1	2	T:3A7/21A-2/74LS374! I:3B6/B-C13/
XCOMM2	2	O:3D3/19A-3/74LS244! O:3D6/20A-3/74LS244! O:3E7/4G-3/74F244! I:3E3/B-A17/
XCOMM3	2	O:3D3/19A-5/74LS244! O:3D6/20A-5/74LS244! O:3E7/4G-5/74F244! I:3E3/B-C17/
XIDB0	4	O:3D2/17A-7/74LS244! O:3D4/18A-7/74LS244! O:3D7/5G-7/74F244! I:3E1/B-A21/
XIDB1	4	O:3D2/17A-9/74LS244! O:3D4/18A-9/74LS244! O:3D7/5G-9/74F244! I:3E1/B-C21/
XIDB10	4	O:3D2/17A-12/74LS244! O:3D4/18A-12/74LS244! O:3D7/5G-12/74F244! I:3E1/B-A19/
XIDB11	4	O:3D2/17A-14/74LS244! O:3D4/18A-14/74LS244! O:3D7/5G-14/74F244! I:3E1/B-C19/
XIDB12	4	O:3D2/17A-16/74LS244! O:3D4/18A-16/74LS244! O:3D7/5G-16/74F244! I:3E1/B-A19/
XIDB13	4	O:3D2/17A-18/74LS244! O:3D4/18A-18/74LS244! O:3D7/5G-18/74F244! I:3E1/B-C22/
XIDB14	4	O:3D2/17A-20/74LS244! O:3D4/18A-20/74LS244! O:3D7/5G-20/74F244! I:3E1/B-A22/
XIDB15	4	O:3D2/17A-18/74LS244! O:3D4/18A-18/74LS244! O:3D7/5G-18/74F244! I:3E1/B-C22/
XIDB2	4	O:3D3/19A-7/74LS244! O:3D6/20A-7/74LS244! O:3E7/4G-7/74F244! I:3E3/B-A18/
XIDB3	4	O:3D3/19A-9/74LS244! O:3D6/20A-9/74LS244! O:3E7/4G-9/74F244! I:3E3/B-C18/
XIDB4	4	O:3D3/19A-12/74LS244! O:3D6/20A-12/74LS244! O:3E7/4G-12/74F244! I:3E2/B-C16/
XIDB5	4	O:3D3/19A-14/74LS244! O:3D6/20A-14/74LS244! O:3E7/4G-14/74F244! I:3E2/B-A16/
XIDB6	4	O:3D3/19A-16/74LS244! O:3D6/20A-16/74LS244! O:3E7/4G-16/74F244! I:3E2/B-C15/
XIDB7	4	O:3D3/19A-18/74LS244! O:3D6/20A-18/74LS244! O:3E7/4G-18/74F244! I:3E2/B-A15/
XIDB8	4	O:3D2/17A-3/74LS244! O:3D4/18A-3/74LS244! O:3D7/5G-3/74F244! I:3E2/B-C20/
XIDB9	4	O:3D2/17A-5/74LS244! O:3D4/18A-5/74LS244! O:3D7/5G-5/74F244! I:3E2/B-A20/
XLA10	2	I:3G3/B-A29/ O:3F3/16G-7/74LS244!
XLA11	2	I:3G3/B-C29/ O:3F3/16G-9/74LS244!
XLA12	2	I:3G2/B-A28/ O:3F3/16G-12/74LS244!
XLA13	2	I:3G2/B-C28/ O:3F3/16G-14/74LS244!

XLA14		2	I:3G2/B-A27/ O:3F3/16G-16/74LS244!
XLA15		2	I:3G2/B-C27/ O:3F3/16G-18/74LS244!
XLA16		2	I:3G2/B-B27/ O:3F2/17G-3/74LS244!
XLA17		2	I:3G2/B-B26/ O:3F2/17G-5/74LS244!
XLA18		2	I:3G1/B-B23/ O:3F2/17G-7/74LS244!
XLA19		2	I:3G1/B-B24/ O:3F2/17G-9/74LS244!
XLA20		2	I:3G1/B-B25/ O:3F2/17G-12/74LS244!
XLA21		2	I:3G1/B-B30/ O:3F2/17G-14/74LS244!
XLA22		2	I:3G1/B-B28/ O:3F2/17G-16/74LS244!
XLA23		2	I:3G1/B-B29/ O:3F2/17G-18/74LS244!
XLCS~		2	O:3A4/16A-9/74LS244! I:3B4/B-A12/
XLShadow		2	O:3A4/16A-5/74LS244! I:3B4/B-B21/
XLUA0		2	O:3A3/22A-9/74LS244! I:3B3/B-C8/
XLUA1		2	O:3A3/22A-12/74LS244! I:3C2/B-A9/
XLUA10		2	O:3A2/23A-14/74LS244! I:3B1/B-CS/
XLUA11		2	O:3A2/23A-16/74LS244! I:3C1/B-A6/
XLUA12		2	O:3A2/23A-18/74LS244! I:3B1/B-A8/
XLUA2		2	O:3A3/22A-14/74LS244! I:3B2/B-C7/
XLUA3		2	O:3A3/22A-16/74LS244! I:3C2/B-A7/
XLUA4		2	O:3A3/22A-18/74LS244! I:3B2/B-A3/
XLUA5		2	O:3A2/23A-3/74LS244! I:3C2/B-C3/
XLUA6		2	O:3A2/23A-5/74LS244! I:3B1/B-A4/
XLUA7		2	O:3A2/23A-7/74LS244! I:3C1/B-C4/
XLUA8		2	O:3A2/23A-9/74LS244! I:3B1/B-A5/
XLUA9		2	O:3A2/23A-12/74LS244! I:3C1/B-CG/
XMOR~		2	O:3A4/16A-7/74LS244! I:3C4/B-B18/
XPIL0		2	O:3A4/16A-18/74LS244! I:3B3/B-B9/
XPIL1		2	O:3A3/22A-3/74LS244! I:3C3/B-B10/
XPIL2		2	O:3A3/22A-5/74LS244! I:3B3/B-B12/
XPIL3		2	O:3A3/22A-7/74LS244! I:3C3/B-B11/
XS11E41	£41	2	B:41C5/TH1-4/217057GF! O:41C5/RN9-3/4610X_101_102!
XS116E41	£41	3	I:41C2/27A-2/74PCT244 B:41A1/STR2-2/STR2! B:41A1/RN8-2/4610X_101_103!
XS117E36	£36	2	O:36B6/25H-6/74F00! I:36C6/14G-5/74F08
XS117E41	£41	3	I:41C2/27A-4/74PCT244 B:41A2/STR3-2/STR2! B:41B1/RN8-3/4610X_101_103!
XS118E41	£41	3	I:41C2/27A-6/74PCT244 B:41A2/STR4-2/STR2! B:41B1/RN8-4/4610X_101_103!
XS119E41	£41	3	I:41C2/27A-8/74PCT244 B:41A2/STR5-2/STR2! B:41B1/RN8-5/4610X_101_103!
XS120E41	£41	3	I:41C2/27A-11/74PCT244 B:41A2/STR6-2/STR2! B:41B1/RN8-6/4610X_101_103!
XS120E42	£42	2	B:42F3/R7-1/2200HM! B:42F3/D4-1/1N4148!
XS121E41	£41	3	I:41C2/27A-13/74PCT244 B:41A2/STR7-2/STR2! B:41B1/RN8-7/4610X_101_103!
XS122E41	£41	3	I:41C2/27A-15/74PCT244 B:41A3/STR8-2/STR2! B:41B1/RN8-8/4610X_101_103!
XS123E41	£41	3	I:41C2/27A-17/74PCT244 B:41A3/STR9-2/STR2! B:41B1/RN8-9/4610X_101_103!
XS124E36	£36	2	B:36E5/13D-15/PAL16L8D! I:36F5/14G-2/74F08
XS124E41	£41	3	B:41A4/STR10-2/STR2! I:41C5/25A-4/74PCT244 B:41A4/RN7-5/4610X_101_103!
XS125E36	£36	2	I:36F2/14C-1/74F00 B:36E1/R18-2/2.2KOHM!
XS125E41	£41	3	I:41C5/25A-6/74PCT244 B:41A4/STR11-2/STR2! B:41A4/RN7-6/4610X_101_103!
XS126E41	£41	3	I:41C5/25A-8/74PCT244 B:41A4/STR12-2/STR2! B:41A4/RN7-7/4610X_101_103!
XS127E25	£25	2	I:25F5/18F-9/PAL16R4D O:25E6/17F-8/74F10!
XS130E42	£42	4	B:42E5/R2-1/5.6KOHM! B:42E5/D5-1/1N4148! B:42E6/R3-1/2.2KOHM! I:42F6/7F-3/74F14

XS14£38	£38	2	O:38D1/13C-6/74LS393! I:38E2/13C-13/74LS393
XS147£40	£40	5	B:40B1/T2-3/2N2907! B:40D2/C4-1/100nF! I:40C4/34A-16/MM58274 B:40C1/D2-2/1N4148! O:40C1/R16-2/10KOHM!
XS148£25	£25	2	B:25F6/RN14-2/4610X_101_102! B:25F7/LED1-1/RED!
XS156£50	£50	2	B:50D2/R22-2/3300HM! B:50D2/LED6-1/GREEN!
XS157£50	£50	2	B:50E2/LED7-1/YELLOW! B:50E2/R23-2/3300HM!
XS16£26	£26	2	O:26B4/RN9-6/4610X_101_102! I:26C5/24H-1/74F74
XS166£50	£50	2	B:50D2/LED6-2/GREEN! O:50D3/12G-4/74LS123!
XS167£50	£50	2	B:50E2/LED7-2/YELLOW! O:50E3/12G-12/74LS123!
XS168£40	£40	2	I:40C4/34A-1/MM58274 B:40B3/T1-3/2N2222!
XS174£40	£40	3	I:40A2/T3-2/2N2907 B:40A3/D3-2/4.3V_ZENER! O:40A2/R13-2/4.7KOHM!
XS175£40	£40	2	B:40A3/D3-1/4.3V_ZENER! I:40A3/R14-1/2.2KOHM
XS176£50	£50	3	I:50D3/12G-15/74LS123 O:50D2/R24-2/180KOHM! B:50D2/C13-1/2.2uF!
XS178£40	£40	2	B:40A2/T3-3/2N2907! I:40B3/R12-1/10KOHM
XS179£50	£50	3	I:50E3/12G-7/74LS123 B:50E2/C14-1/2.2uF! O:50E2/R25-2/180KOHM!
XS18£26	£26	2	O:26C4/RN9-7/4610X_101_102! I:26C5/24H-4/74F74
XS18£36	£36	2	O:36E5/13D-19/PAL16L8D! I:36F3/14C-10/74F00
XS184£40	£40	2	O:40B3/R12-2/10KOHM! I:40B3/T1-2/2N2222
XS19£36	£36	2	O:36E5/13D-12/PAL16L8D! I:36F4/14C-13/74F00
XS195£40	£40	2	I:40C2/BATT1-2/BATT1 B:40C1/D2-1/1N4148!
XS197£40	£40	2	I:40B1/T2-2/2N2907 I:40C1/R16-1/10KOHM
XS2£7	£7	2	I:7D2/3A-4/74F241 O:7C1/1F-6/74F04!
XS200£40	£40	2	B:40E4/TP7-1/TESTPOINT! O:40C4/34A-13/MM58274!
XS21£7	£7	2	I:7D4/2A-5/7438 O:7D5/8G-6/74F00!
XS26£38	£38	2	O:38B2/12F-6/74S132! I:38C1/11F-2/74S37
XS268£33	£33	3	I:33B7/28F-S17/ND_DELILAH B:33A5/RN12-4/4610X_101_103! B:33A6/STR15-2/STR2!
XS269£33	£33	3	I:33B7/28F-R14/ND_DELILAH B:33A5/RN12-3/4610X_101_103! B:33A6/STR14-2/STR2!
XS27£7	£7	2	O:7D4/1F-10/74F04! I:7D4/2A-1/7438
XS270£33	£33	3	B:33A6/STR13-2/STR2! I:33B7/28F-S16/ND_DELILAH B:33A5/RN12-2/4610X_101_103!
XS277£33	£33	2	I:33B7/28F-P7/ND_DELILAH B:33A6/RN12-5/4610X_101_103!
XS278£33	£33	2	I:33B7/28F-S6/ND_DELILAH B:33A6/RN12-6/4610X_101_103!
XS281£33	£33	2	I:33B7/28F-P13/ND_DELILAH B:33A7/RN12-9/4610X_101_103!
XS295£33	£33	2	I:33B7/28F-Q5/ND_DELILAH B:33A7/RN12-8/4610X_101_103!
XS3£33	£33	2	T:33A4/34G-9/74PCT374! I:33B7/28F-S13/ND_DELILAH
XS3£42	£42	2	B:42B7/TH2-6/217057GF! I:42C6/33G-11/AM29C821
XS30£38	£38	5	I:38B3/12F-10/74S132 B:38A3/D1-1/3.3V_ZENER! I:38A4/R11-1/1KOHM B:38A4/C3-1/10nF! I:38B4/12F-12/74S132
XS310£48	£48	2	B:48E4/3F-18/PAL16L8D! I:48F4/7A-13/7407
XS32£40	£40	3	I:40C4/34A-15/MM58274 B:40C3/X2-1/32.768KHZ! B:40D3/C5-1/22pF!
XS321£48	£48	2	I:48C7/14F-4/AM29C821 O:48C7/14F-22/AM29C821!
XS322£48	£48	2	I:48C4/13F-3/AM29C821 O:48C4/13F-23/AM29C821!
XS323£48	£48	2	I:48C4/13F-5/AM29C821 O:48C4/13F-21/AM29C821!
XS327£48	£48	2	I:48C7/14F-6/AM29C821 O:48C7/14F-20/AM29C821!
XS328£48	£48	2	I:48C7/14F-7/AM29C821 O:48C7/14F-19/AM29C821!
XS329£48	£48	2	I:48C7/14F-8/AM29C821 O:48C7/14F-18/AM29C821!
XS33£40	£40	3	O:40C4/34A-14/MM58274! B:40C3/X2-2/32.768KHZ! B:40D3/C6-1/22pF!
XS340£45	£45	2	I:45E2/7G-1/PAL16R8B O:45C2/2D-9/74F74!
XS360£3	£3	6	I:3D6/20A-1/74LS244 I:3D6/20A-19/74LS244 I:3D4/18A-1/74LS244 I:3D4/18A-19/74LS244 B:3C5/STR17-1/STR1! O:3C4/RN13-4/4610X_101_102!
XS372£3	£3	6	I:3D7/5G-1/74F244 I:3D7/5G-19/74F244 I:3E7/4G-1/74F244 I:3E7/4G-19/74F244 B:3C7/STR18-1/STR1! O:3C6/RN13-5/4610X_101_101!

XS374E45	£45	3	0:45C1/RN18-7/4610X_101_102! I:45C2/2D-12/74F74 I:45C2/2D-10/74F74
XS375E45	£45	2	I:45E7/2D-4/74F74 O:45E6/RN18-6/4610X_101_102! I:7E7/2A-10/7438 O:7D7/9D-10/74F02!
XS38E7	£7	2	I:45G3/8K-10/HP5082_7433 O:45F2/8H-13/74LS248! I:45G3/8K-8/HP5082_7433 O:45F2/8H-12/74LS248!
XS382E45	£45	2	I:45G3/8K-5/HP5082_7433 O:45F2/8H-11/74LS248! I:45G3/8K-3/HP5082_7433 O:45F2/8H-10/74LS248!
XS384E45	£45	2	I:45G3/8K-2/HP5082_7433 O:45F2/8H-9/74LS248! I:45G3/8K-11/HP5082_7433 O:45F2/8H-15/74LS248!
XS386E45	£45	2	I:45G3/8K-9/HP5082_7433 O:45F2/8H-14/74LS248! I:26D4/27H-17/74PCT244 O:26C5/24H-6/74F74!
XS4E26	£26	2	T:33A4/34G-12/74PCT374! I:33B7/28F-R12/ND_DELILAH B:42B7/TH2-2/217057GF! I:42C6/33G-10/AM29C821
XS4E33	£33	2	I:47C2/7C-8/74PCT374 B:47B1/RN4-4/4610X_101_222! I:47C2/7C-13/74PCT374 B:47B1/RN4-3/4610X_101_222!
XS428E47	£47	2	B:41E2/LED2-1/RED! O:41E2/RN14-4/4610X_101_102! B:41E2/LED3-1/GREEN! O:41E2/RN14-5/4610X_101_102!
XS429E47	£47	2	I:3D2/17A-1/74LS244 I:3D2/17A-19/74LS244 I:3D3/19A-1/74LS244 I:3D3/19A-19/74LS244 B:3C2/STR16-1/STR1! O:3C2/RN13-3/4610X_101_102!
XS44E41	£41	2	O:41F4/29A-6/74F08! I:41F4/14A-1/74LS38
XS48E7	£7	2	O:7D3/2B-3/74F00! I:7E3/2B-4/74F00
XS5E33	£33	2	T:33A4/34G-15/74PCT374! I:33B7/28F-N10/ND_DELILAH
XS5E38	£38	2	O:38B2/12F-3/74S132! I:38B2/12F-5/74S132
XS5E42	£42	2	B:42B7/TH2-5/217057GF! I:42C6/33G-9/AM29C821
XS51E7	£7	2	I:7E3/2B-9/74F00 O:7E3/2B-6/74F00!
XS52E7	£7	2	I:7E3/2B-10/74F00 O:7E3/1F-8/74F04!
XS56E7	£7	2	I:7D5/8G-4/74F00 O:7C5/8G-3/74F00!
XS57E7	£7	2	I:7C5/8G-1/74F00 O:7C4/1F-12/74F04!
XS58E41	£41	2	O:41E4/28A-9/74LS273! B:41E2/LED3-2/GREEN!
XS6E33	£33	2	T:33A4/34G-16/74PCT374! I:33B7/28F-S12/ND_DELILAH
XS6E38	£38	2	O:38B2/7F-8/74F14! I:38B2/12F-4/74S132
XS6E41	£41	2	B:41C5/TH1-3/217057GF! I:41C5/25A-11/74PCT244
XS6E42	£42	2	B:42B7/TH2-3/217057GF! I:42C6/33G-8/AM29C821
XS611E44	£44	3	O:44B5/4H-14/AM29821! O:44B2/3H-14/AM29821! B:44D4/5H-11/74FCT861B!
XS612E44	£44	3	O:44B5/4H-15/AM29821! O:44B2/3H-15/AM29821! B:44D4/5H-10/74FCT861B!
XS613E44	£44	3	O:44B5/4H-16/AM29821! O:44B2/3H-16/AM29821! B:44D4/5H-9/74FCT861B!
XS614E44	£44	3	O:44B5/4H-17/AM29821! O:44B2/3H-17/AM29821! B:44D4/5H-8/74FCT861B!
XS615E44	£44	3	O:44B5/4H-18/AM29821! O:44B2/3H-18/AM29821! B:44D4/5H-7/74FCT861B!
XS616E44	£44	3	O:44B5/4H-19/AM29821! O:44B2/3H-19/AM29821! B:44D4/5H-6/74FCT861B!
XS617E44	£44	3	O:44B5/4H-20/AM29821! O:44B2/3H-20/AM29821! B:44D4/5H-5/74FCT861B!
XS618E44	£44	3	O:44B5/4H-21/AM29821! O:44B2/3H-21/AM29821! B:44D4/5H-4/74FCT861B!
XS619E44	£44	3	O:44B5/4H-22/AM29821! O:44B2/3H-22/AM29821! B:44D4/5H-3/74FCT861B!
XS62E40	£40	2	B:40D7/X3-2/4MHZ! I:40D7/35C-6/MC68705U3
XS620E44	£44	3	O:44B5/4H-23/AM29821! O:44B2/3H-23/AM29821! B:44D4/5H-2/74FCT861B!
XS622E44	£44	2	I:44D4/5H-1/74FCT861B B:44D2/R15-2/2.2KOHM!
XS63E40	£40	3	B:40D7/X3-1/4MHZ! B:40D7/C7-1/22pF! I:40D7/35C-5/MC68705U3
XS65E41	£41	2	I:41F4/14A-2/74LS38 O:41F4/11B-6/74LS04!

XS69E41	£41	2	I:41F5/14A-10/74LS38 O:41F5/11B-8/74LS04! T:33A4/34G-19/74PCT374! I:33B7/28F-Q10/ND_DELILAH
XS7E33	£33	2	B:41C5/TH1-5/217057GF! I:41C5/25A-13/74PCT244
XS7E41	£41	2	O:38B4/12F-11/74S132! I:38C4/32C-12/74F32
XS73E38	£38	2	I:36B6/25H-10/74F00 O:36B6/32C-6/74F32!
XS76E36	£36	2	I:46E5/8J-15/74LS112 O:46D5/14G-11/74F08!
XS77E36	£36	2	I:36B6/25H-4/74F00 O:36B6/32C-3/74F32!
XS78E46	£46	2	I:46E7/8J-14/74LS112 O:46D7/14G-8/74F08!
XS790E46	£46	5	I:46E5/8J-3/74LS112 I:46E5/8J-4/74LS112 I:46E7/8J-11/74LS112 I:46E7/8J-10/74LS112 O:46E4/RN14-8/4610X_1
XS792E46	£46	2	O:46E5/8J-6/74LS112! B:46F5/LED4-2/RED!
XS793E46	£46	2	B:46D5/LED5-1/RED! O:46D5/RN14-7/4610X_101_102!
XS795E46	£46	2	B:46F5/LED4-1/RED! O:46F4/RN14-9/4610X_101_102!
XS8E33	£33	2	I:33A4/34G-11/74PCT374 O:33A5/7F-6/74F14!
XS8E38	£38	2	O:38B1/10F-12/74F10! I:38C1/11F-1/74S37
XS8E41	£41	2	B:41C5/TH1-2/217057GF! I:41C5/25A-15/74PCT244
XS80E42	£42	2	B:42B7/TH2-4/217057GF! O:42B6/RN9-2/4610X_101_102!
XS83E17	£17	4	I:17E5/32G-1/AM29841 I:17D2/29H-5/74F32 I:17D1/29H-2/74F32 O:17D6/11F-11/74S37!
XS85E42	£42	2	O:42C5/RN7-4/4610X_101_103! I:42C6/33G-7/AM29C821
XS87E17	£17	2	O:17D1/29H-3/74F32! I:17E2/30H-14/74F373
XS88E17	£17	2	O:17D2/29H-6/74F32! I:17E2/30H-17/74F373
XS9E41	£41	2	B:41C5/TH1-6/217057GF! I:41C5/25A-17/74PCT244
XS91E42	£42	2	I:42B3/32H-21/SC2661 O:42A1/11B-2/74LS04!
XS92E41	£41	3	O:41G3/11B-4/74LS04! I:41G3/2A-12/7438 I:41G3/2A-13/7438
XS93E36	£36	2	O:36F2/9D-4/74F02! I:36F2/9D-3/74F02
XTAL1	£38	3	I:38D1/13C-1/74LS393 O:38A1/X4-3/39.3216MHZ! I:38B1/10F-1/74F10
XTAL2	£38	2	O:38A2/X1-3/35MHZ! I:38B2/12F-2/74S132
XTR	5		B:2E2/RN1-5/4610X_101_102! O:2D3/A-B4/! O:2D3/A-C23/! B:42B3/32H-25/SC2661! B:42B3/32H-9/SC2661!

SIGNAL TYPE: " " HIERARCHICAL BETWEEN BLOCKS
 ----- "+n" INTERPAGE ONLY ON BLOCK NO. n
 "Em" INTRAPAGE ONLY ON PAGE NO. m

\$FORMAT_CARD\$
16A 100C
\$END\$

CSBITS CSALUI(8:0),CSSST(1:0),CSRASEL(1:0),&
CSBITS CSXRF,CSRSEL(1:0),CSCISEL(1:0),CSALUM(1:0),CSMIS(1:0),&
CSBITS CSIDBS(4:0),CSCOMM(4:0),CSTS(6:3),CSDELAY(1:0),CSVECT,&
CSBITS CSSCOND,CSECOND,CSLOOP,CSDLY,CSBIT20,CSRB(3:0),CSBIT(15:0)

TOPCSB CSALUI(8:7),CSALUM(1:0),CSMIS(1:0),CSIDBS(4:0),CSCOMM(4:0),&
TOPCSB CSDELAY(1:0),CSECOND,CSLOOP,CSDLY

CYCCSB CSALUI(8:7),CSALUM(1:0),CSDELAY(1:0),CSECOND,CSLOOP,CSDLY

IOCSB CSMIS(1:0),CSIDBS(4:0),CSCOMM(4:0)

PLUGCSB CSMIS(1:0),CSCOMM(4:0)

TIMING ALUCLK,CC~(3:1),CLK,CYD~,EORF~,ETRAP~,MACLK,MAP~,MCLK,OSC,TERM~,UCLK,WRF

CPUTIM ALUCLK,CC~(3:1),CLK,CYD~,EORF~,ETRAP~,MACLK,MAP~,MCLK,TERM~,UCLK,WRFSTB
CSTIM CC~(3:1),CLK,MACLK,TERM~
PROCTIM ALUCLK,CLK,ETRAP~,MAP~,MCLK,TERM~,UCLK,WRFSTB
MMUTIM CC~2,CYD~,EORF~,TERM~,UCLK

CYCTIM ALUCLK,CC~(3:1),CLK,CYD~,EORF~,ETRAP~,MACLK,MAP~,MCLK,TERM~,UCLK,WRFSTB

IOTIM CLK,EORF~,UCLK

BIFTIM CC~2,OSC,TERM~

CNTL ACOND~,BDRY50~,BGNT~,BGNT50~,BRK~,CA10,CCLR~,CGNT~,&
CNTL CGNTCACT~,CGNT50~,CLEAR~,CRQ~,CX~,DAP~,DT~,&
CNTL DVACC~,ECCR,ECREQ,ECSR~,EDO~,EMCL~,&
CNTL EMPID~,ESTOF~,FETCH,FMISS,FORM~,&
CNTL GNT,HIT,IONI,IORQ~,LCS~,LERR~,LEVO,LPPER~,LSHADOW,&
CNTL MCL,MR~,MREQ~,MWRITE~,OPCLCS,PA~,PCR(1:0),&
CNTL PIL(3:0),PONI,PS~,REF~,REFRQ~,RERR~,&
CNTL RT~,RWCS~,SEMRQ50~,SHORT~,SLOW~,&
CNTL SSEMA~,STOC~,STP,TOUT,TRAP~,VEX,WCHIM~,WRITE

CPUCNTL ACOND~,BRK~,CA10,CCLR~,DOUBLE,DT~,DVACC~,ECCR,ECSR~,EDO~,&
CPUCNTL EMCL~,EMPID~,ESTOF~,FETCH,FMISS,FORM~,HIT,IONI,LCS~,LEVO,&
CPUCNTL LSHADOW,MR~,OPCLCS,PCR(1:0),PIL(3:0),PONI,RT~,RWCS~,STOC~,STP,&
CPUCNTL TRAP~,VEX,WCHIM~,WRITE

CPUCNTLI CA10,CCLR~,DT~,DVACC~,ECSR~,EDO~,&
CPUCNTLI EMCL~,EMPID~,ESTOF~,FETCH,FMISS,FORM~,LCS~,&
CPUCNTLI MR~,RT~,RWCS~,STOC~,STP,&
CPUCNTLI WCHIM~,WRITE

CPUCNTLO ACOND~,BRK~,ECCR,&
CPUCNTLO HIT,IONI,LEVO,&

CPUCNTLO	LSHADOW,OPCLCS,PCR(1:0),PIL(3:0),PONI,& TRAP~,VEX
PROCNTLI	EDO~,&
PROCNTLI	EMPID~,ESTOF~,LCS~,&
PROCNTLI	MR~,STP
PROCNTLO	ACOND~,BRK~,DOUBLE,ECCR,&
PROCNTLO	IONI,LEVO,&
PROCNTLO	LSHADOW,OPCLCS,PCR(1:0),PIL(3:0),PONI,&
PROCNTLO	TRAP~,VEX
CSCNTL	BRK~,FETCH,FORM~,LCS~,RWCS~
MMUCNTL	BRK~,CA10,CCLR~,DOUBLE,DT~,DVACC~,ECSR~,&
MMUCNTL	EMCL~,ESTOF~,FMISS,&
MMUCNTL	LSHADOW,RT~,&
MMUCNTL	WCHIM~,WRITE
CYCCNTL	ACOND~,BRK~,CGNTCACT~,FORM~,HIT,IORQ~,LSHADOW,MR~,MREQ~,RT~,RWCS~,&
CYCCNTL	SHORT~,SLOW~,TRAP~,VEX
IOCNTL	BDRY50~,BRK~,CA10,CCLR~,CLEAR~,CX~,DAP~,&
IOCNTL	DT~,DVACC~,ECREQ,ECSR~,EDO~,EMCL~,&
IOCNTL	EMPID~,ESTOF~,FETCH,FMISS,FORM~,HIT,IONI,IORQ~,LCS~,LEVO,LSHADOW,&
IOCNTL	MCL,MREQ~,OPCLCS,PA~,PCR(1:0),PONI,PS~,REF~,REFRQ~,RT~,RWCS~,SHORT~,SLOW~&
IOCNTL	SSEMA~,STOC~,STP,TOUT,WCHIM~,WRITE
IOCNTLI	BDRY50~,BRK~,CX~,DAP~,&
IOCNTLI	HIT,IONI,LCS~,LEVO,LSHADOW,&
IOCNTLI	OPCLCS,PCR(1:0),PONI,REF~
IOCNTLO	CA10,CCLR~,CLEAR~,&
IOCNTLO	DT~,DVACC~,ECREQ,ECSR~,EDO~,EMCL~,&
IOCNTLO	EMPID~,ESTOF~,FETCH,FMISS,FORM~,IORQ~,&
IOCNTLO	MCL,MREQ~,PA~,PS~,REFRQ~,RT~,RWCS~,SHORT~,SLOW~,&
IOCNTLO	SSEMA~,STOC~,STP,TOUT,WCHIM~,WRITE
DCDCNTLI	BDRY50~,BRK~,DAP~,&
DCDCNTLI	HIT,LCS~,LSHADOW,&
DCDCNTLI	OPCLCS,PONI,REF~
DGACNTLI	BDRY50~,BRK~,DAP~,&
DGACNTLI	HIT,LCS~,LSHADOW,&
DGACNTLI	PONI,REF~
DCDCNTLO	CA10,CCLR~,CLEAR~,DT~,DVACC~,ECREQ,ECSR~,EDO~,&
DCDCNTLO	EMPID~,ESTOF~,FETCH,FMISS,FORM~,IORQ~,&
DCDCNTLO	MCL,MREQ~,PA~,PS~,REFRQ~,RT~,RWCS~,SHORT~,SLOW~,&
DCDCNTLO	SSEMA~,STOC~,STP,TOUT,WCHIM~,WRITE
PANCALCNTL	CLEAR~,IONI,LEVO,PCR(1:0),PONI
REGCNTL	CLEAR~,CX~
BIFCNTLI	BGNT~,BGNT50~,CGNT~,CGNT50~,CLEAR~,CRQ~,ECREQ,&
BIFCNTLI	FETCH,GNT25~,IORQ~,LERR~,LPERR~,MOR25~,MWRITE~,PA~,&
BIFCNTLI	PS~,REFRQ~,RT~,SSEMA~,TOUT,WRITE
BIFCNTLO	BDRY50~,CGNTCACT~,DAP~,DBAPR,&

BIFCNTLO	GNT, GNT~, MR~, &
BIFCNTLO	REF~, RERR~, SEMRQ50~
MEMCNTLI	BDRY50~, DBAPR, ECCR, ECREQ, FETCH, GNT, GNT~, IORQ~, &
MEMCNTLI	MR~, PA~, PS~, REF~, &
MEMCNTLI	REFRQ~, RERR~, SEMRQ50~, SSEMA~, WRITE
MEMCNTLO	BGNT~, BGNT50~, CGNT~, CGNT50~, CRQ~, GNT25~, &
MEMCNTLO	LERR~, LPERR~, MOR25~, MWRITE~
PLUGCNTL	BGNT~, CGNT~, CLEAR~, LCS~, LSHADOW, MCL, PIL(3:0), STP

ABPLUG	CONSOLE~, DP~(5:1), EAUTO~, EBUS~, I1P, INR(7:0), LOCK~, &
ABPLUG	MIS(1:0), OC(1:0), O1P, O2N, OSCCL~, &
ABPLUG	RXD, SEL5MS~, SWMCL~, TXD, XTR

ABPLUGI	CONSOLE~, EAUTO~, EBUS~, I1P, INR(7:0), LOCK~, &
ABPLUGI	MIS(1:0), OC(1:0), OSCCL~, &
ABPLUGI	RXD, SEL5MS~, SWMCL~, XTR

ABPLUGO	DP~(5:1), &
ABPLUGO	O1P, O2N, &
ABPLUGO	TXD

IOABPI	CONSOLE~, EAUTO~, I1P, INR(7:0), LOCK~, MIS(1:0), &
IOABPI	OC(1:0), OSCCL~, &
IOABPI	RXD, SEL5MS~, SWMCL~, XTR

IOABPO	DP~(5:1), O1P, O2N, TXD
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DCDABP	OC(1:0), OSCCL~, SEL5MS~, SWMCL~
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UARTABPI	EAUTO~, I1P, LOCK~, MIS(1:0), RXD, XTR
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UARTABPO	O1P, O2N, TXD
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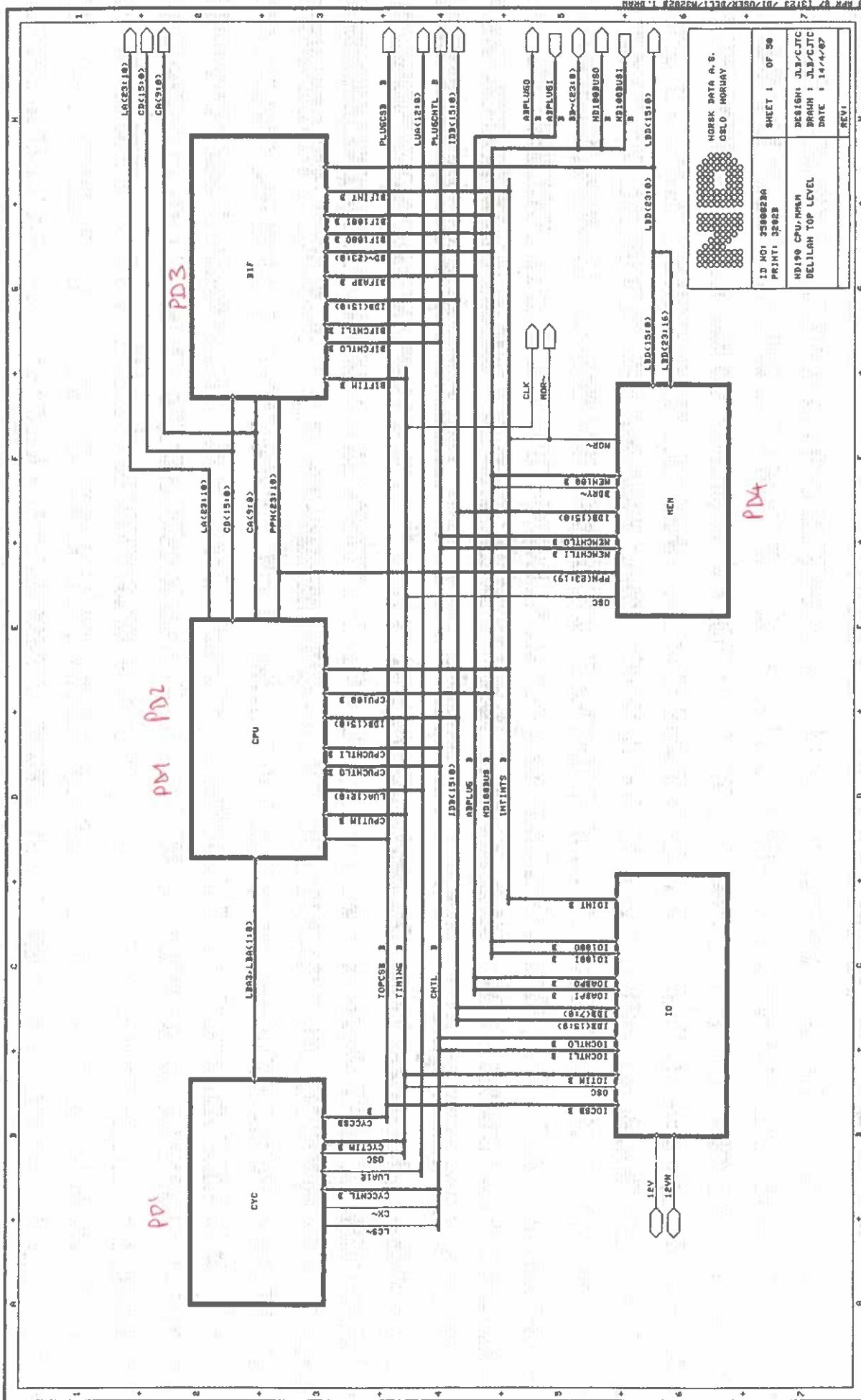
BIFABP	EBUS~, MISO
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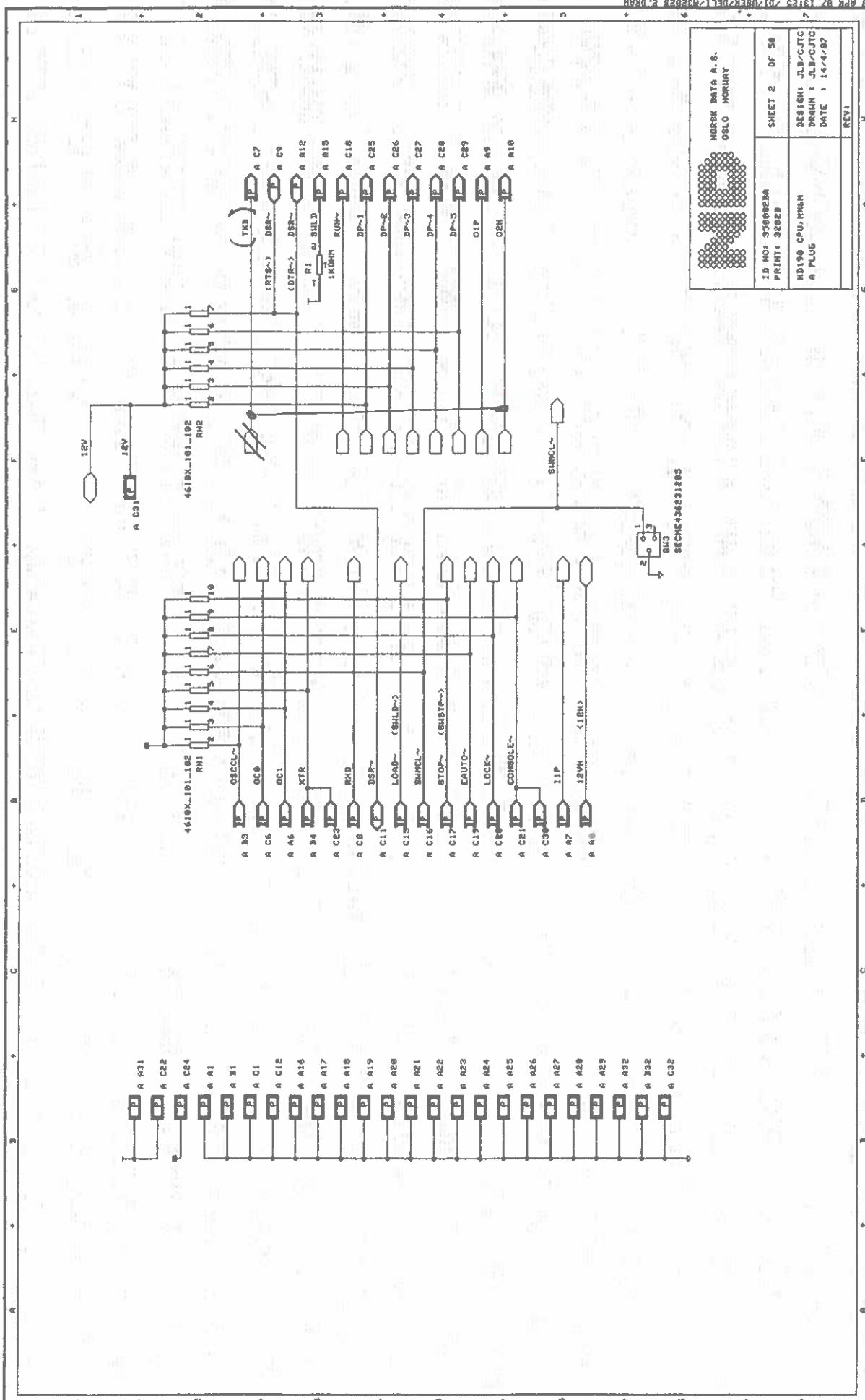
ND100BUS	BAPR~, BDAP~, BDRY~, BERROR~, BINACK~, &
ND100BUS	BINPUT~, BINT~(13:12), BINT~10, BIOXE~, BMEM~, &
ND100BUS	BREF~, &
ND100BUS	IBAPR~, IBdap~, IBDry~, IBINput~, IBint~15, IBint~(13:10), IBPerr~, &
ND100BUS	IBreq~, ICONTIN~, ILOAD~, ISEMRQ~, ISTOP~, &
ND100BUS	OUTGRANT~, OUTIDENT~, POWSENSE~, &
ND100BUS	SEMRQ~

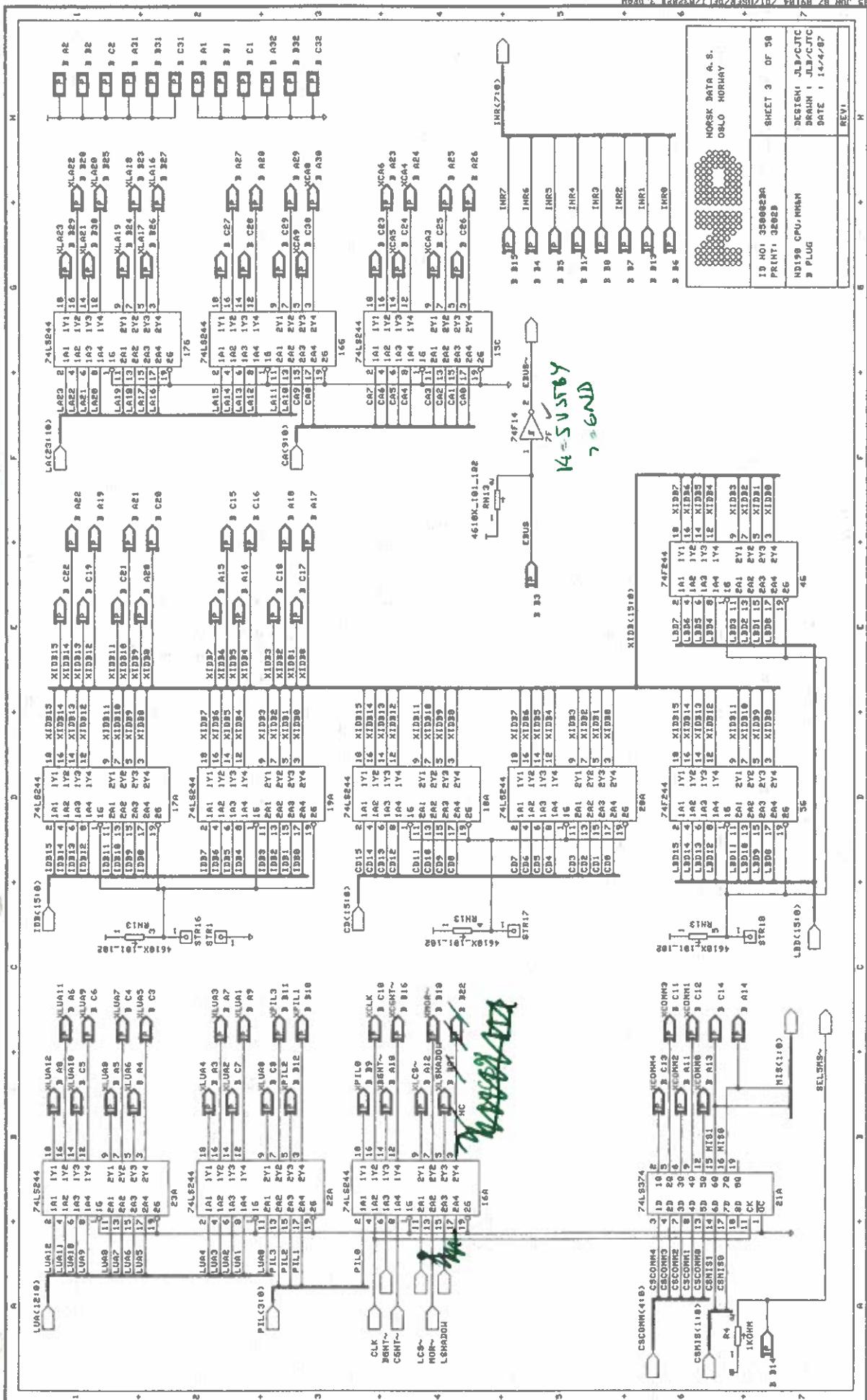
ND100BUSI	IBAPR~, IBdap~, IBDry~, IBINput~, IBint~15, IBint~(13:10), IBPerr~, &
ND100BUSI	IBreq~, ICONTIN~, ILOAD~, ISEMRQ~, ISTOP~, POWSENSE~

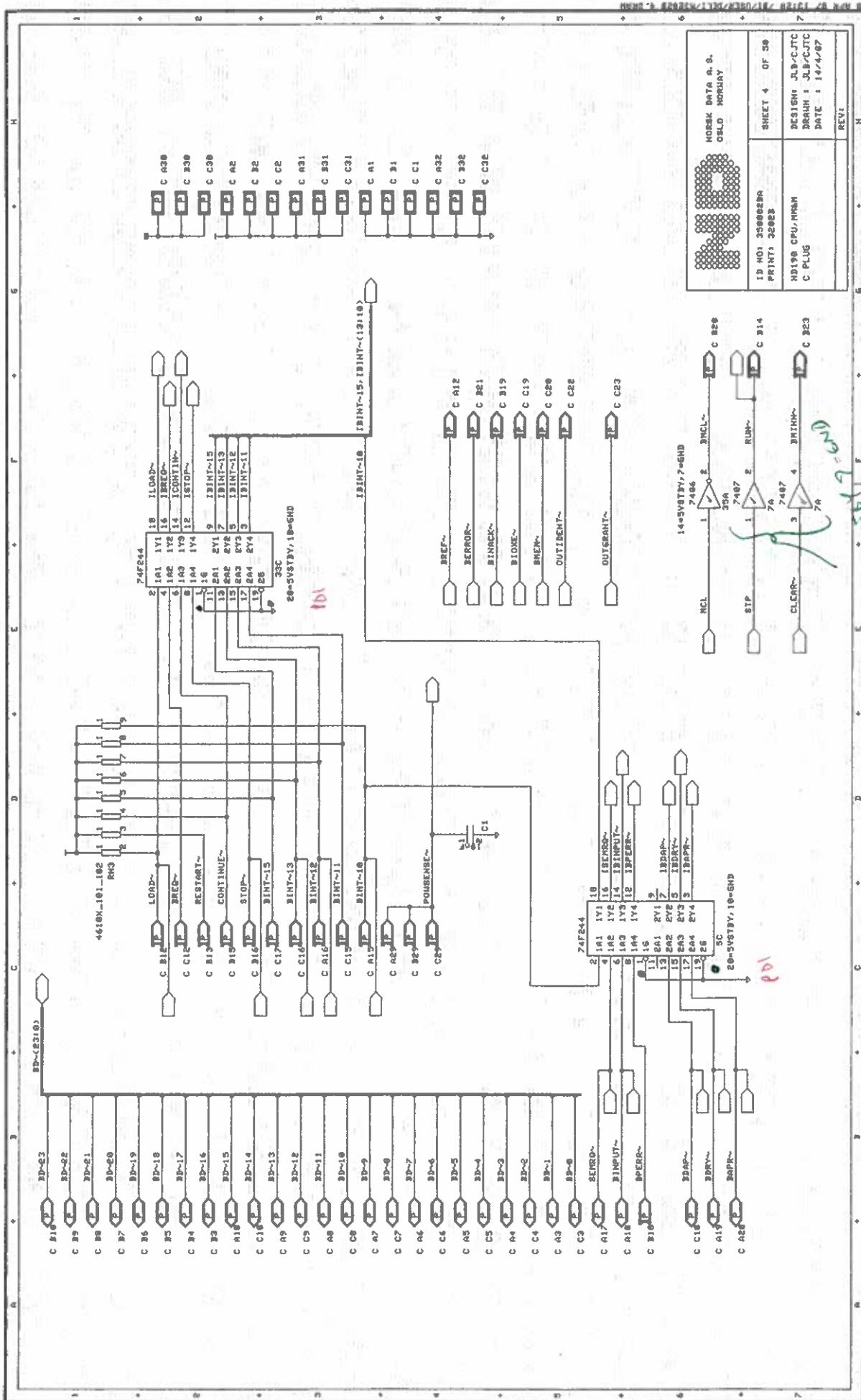
ND100BUSO	BAPR~, BDAP~, BDRY~, BERROR~, BINACK~, &
ND100BUSO	BINPUT~, BINT~(13:12), BINT~10, BIOXE~, BMEM~, &
ND100BUSO	BREF~, &
ND100BUSO	OUTGRANT~, OUTIDENT~, &
ND100BUSO	SEMRQ~

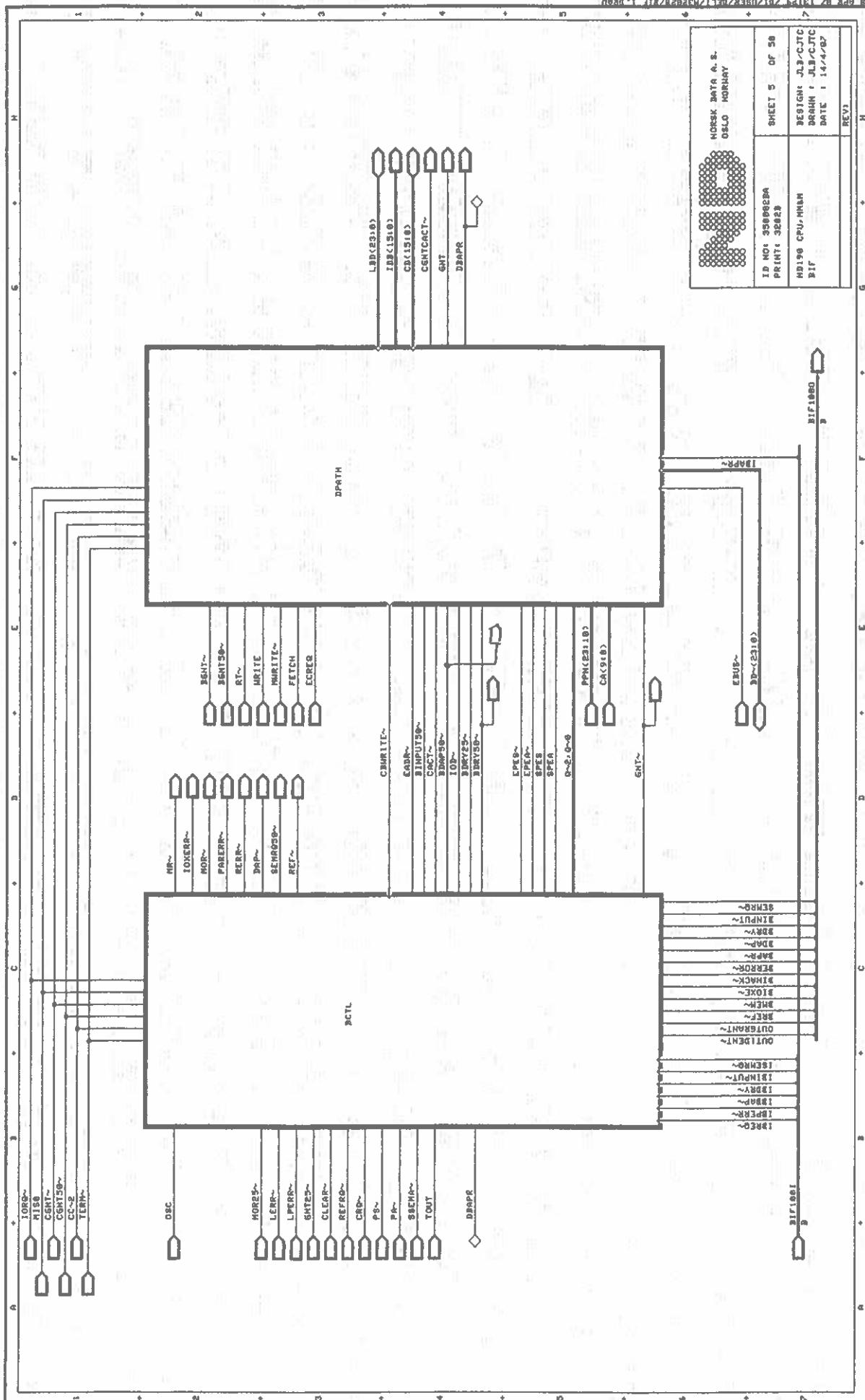
CPU100	IBINT~15, IBINT~(13:10)
IO100I	ICONTIN~, ILOAD~, POWSENSE~, ISTOP~
IO1000	BINT~(13:12), BINT~10
DGA100	ICONTIN~, ILOAD~, ISTOP~
 BIF100I	 IBAPR~, IBDAP~, IBDRY~, IBINPUT~, IBPERR~, IBREQ~, &
BIF100I	ISEMREQ~
 BIF1000	 BAPR~, BDAP~, BDRY~, BERROR~, BINACK~, BINPUT~, BIOXE~, BMEM~, &
BIF1000	BREF~, &
BIF1000	OUTGRANT~, OUTIDENT~, SEMREQ~
 MEM100	 IBDAP~, BD~(23:19), IBINPUT~, BIOXE~, BMEM~
 INTINTS	 MOR~, IOXERR~, PAN~, PARERR~, POWFAIL~
BIFINT	IOXERR~, MOR~, PARERR~
IOINT	PAN~, POWFAIL~
 DCDPANCALO	 EMP~, EPANS~, FUL~, LHIT, PANOSC, PA(7:0), VAL
DCDPANCALI	RMM~, STAT(4:3)
 DGAIP	 CLK, UCLK, CLOSC, RTOSC, POWSENSE, PWCL, REF~, SELSMS~, BDRY50~, &
DGAIP	ISTOP~, ILOAD~, ICONTIN~, RMM~, STAT(4:3), CSCOMM(4:0), &
DGAIP	CSMIS(1:0), CSIDBS(4:0), BRK~, PONI, EORF~, &
DGAIP	DAP~, LSHADOW, LCS~

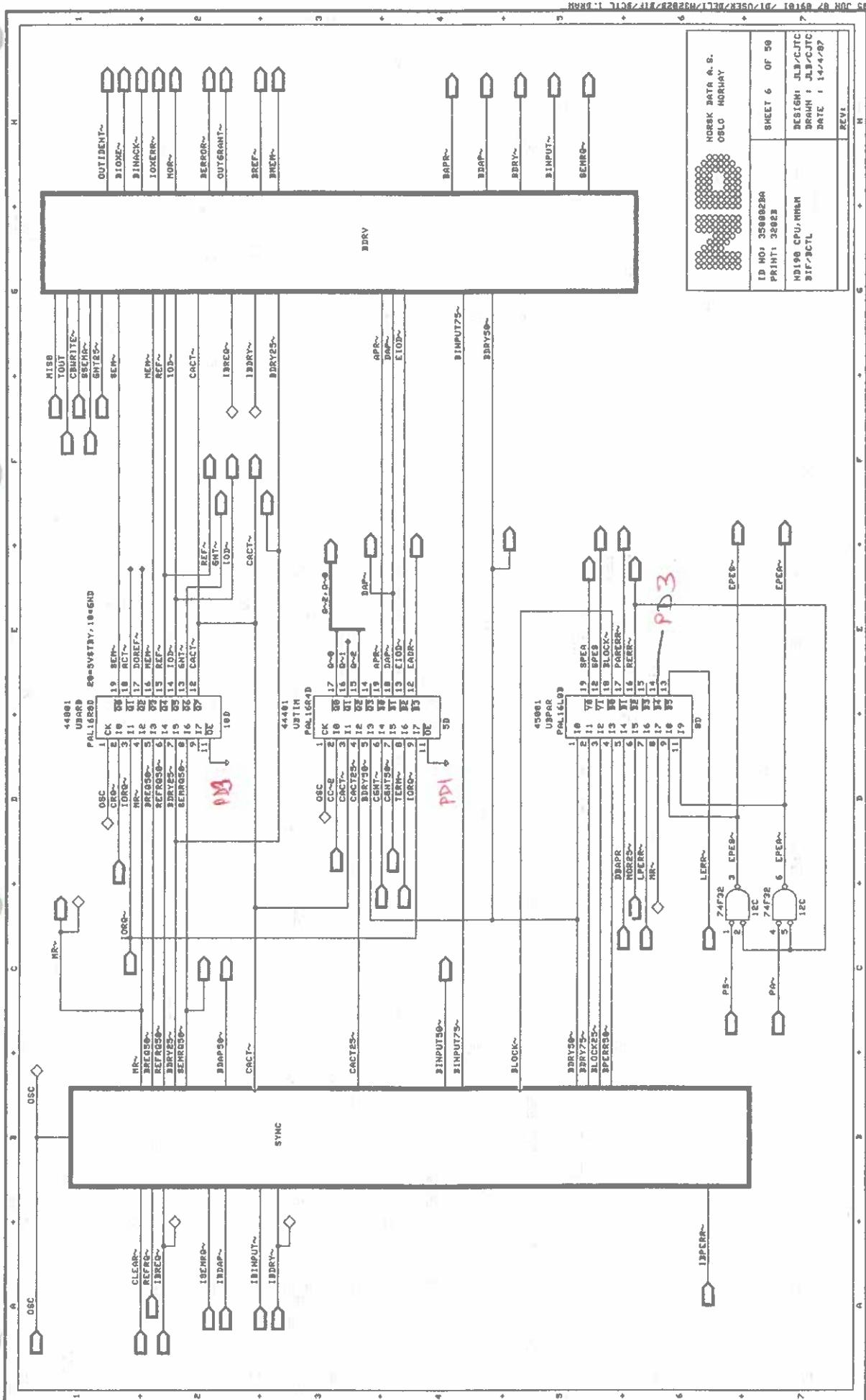


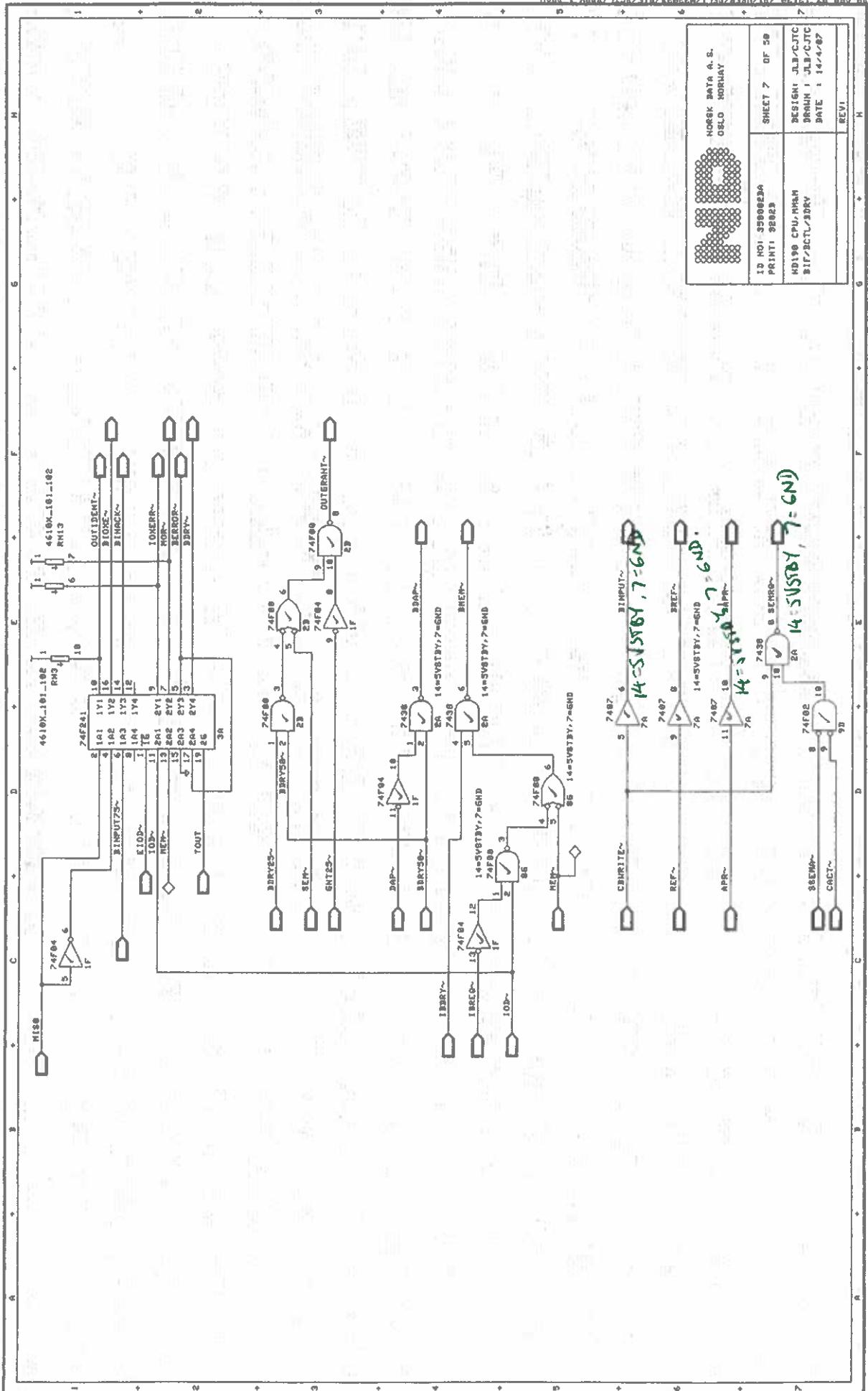


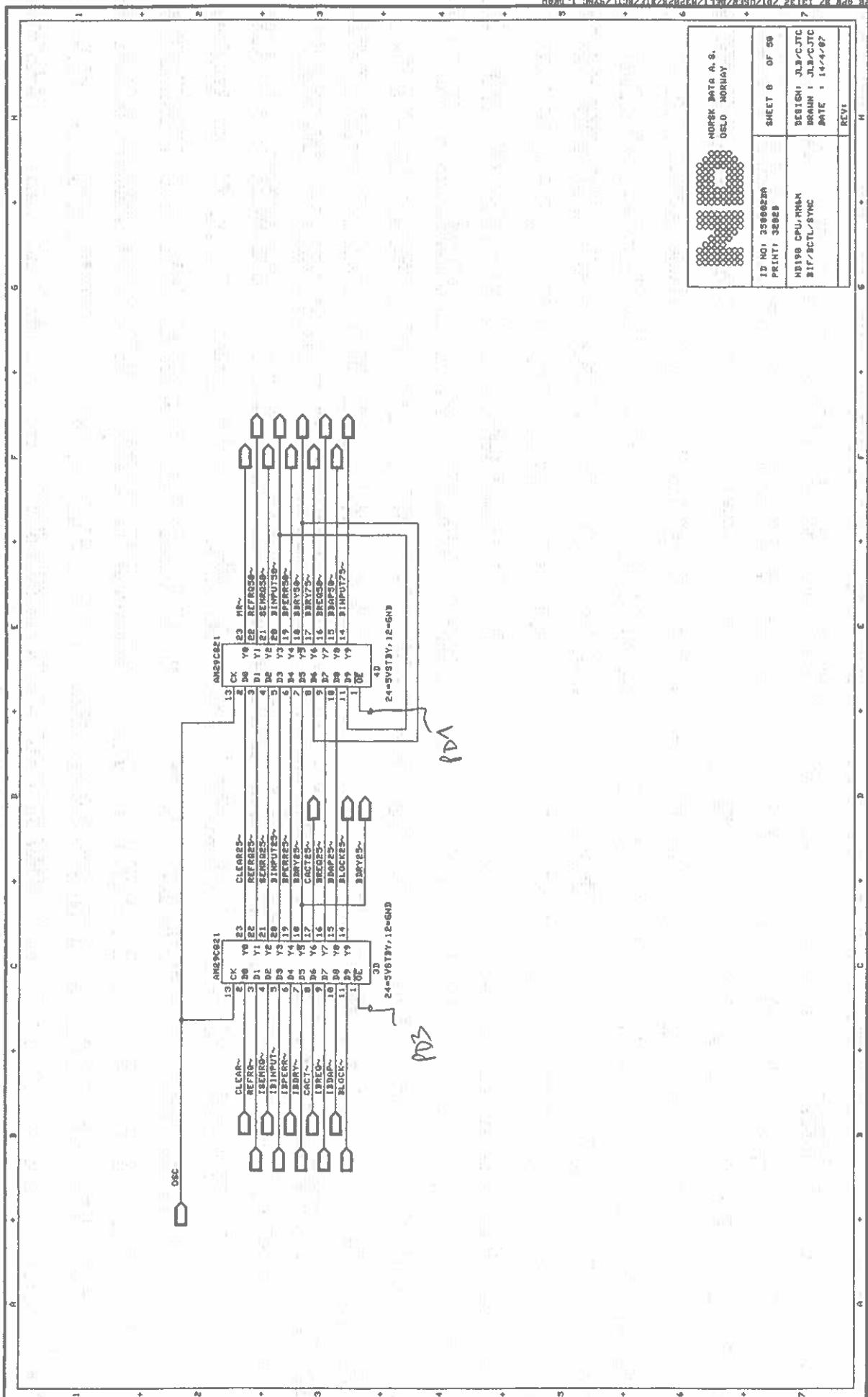


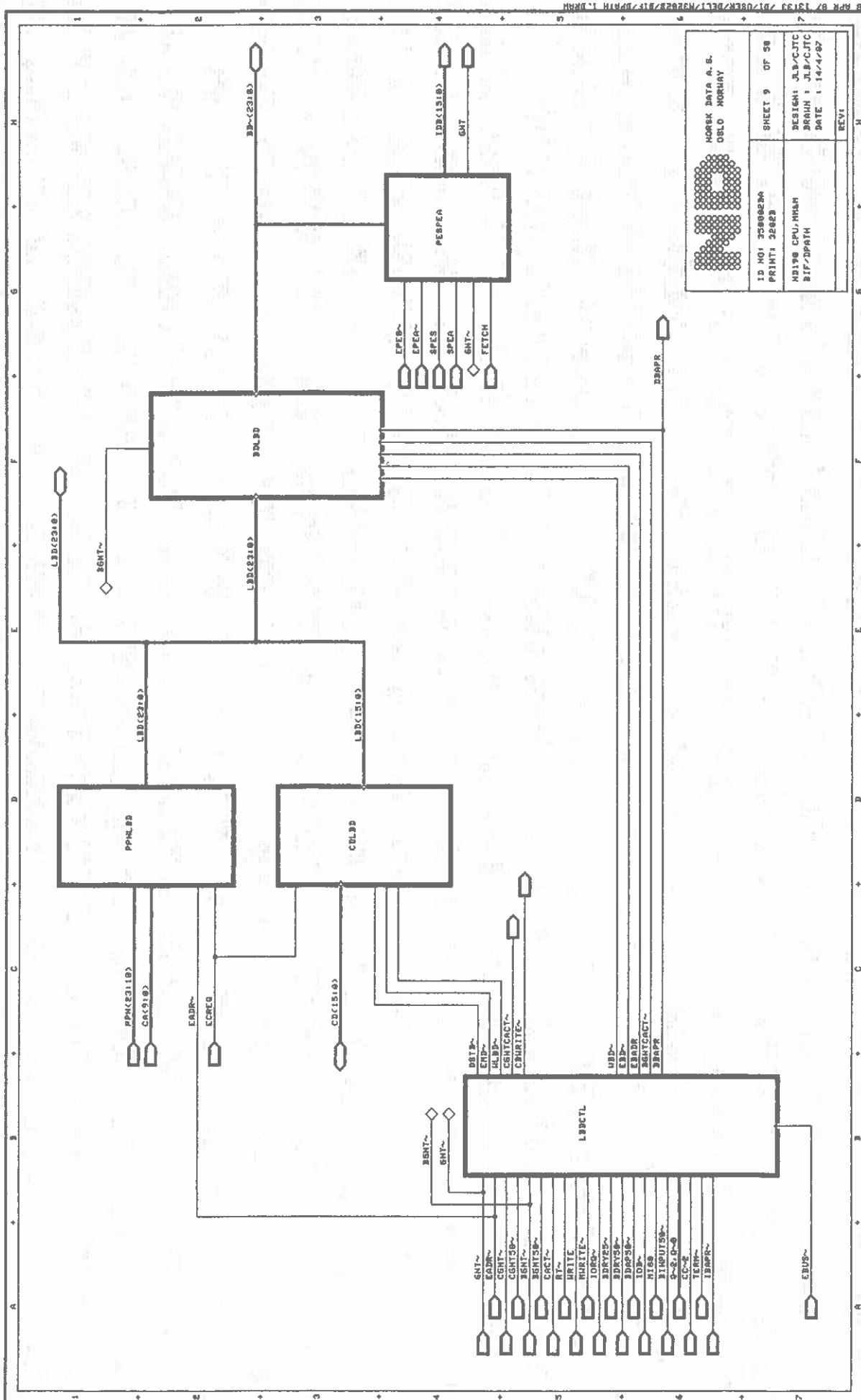


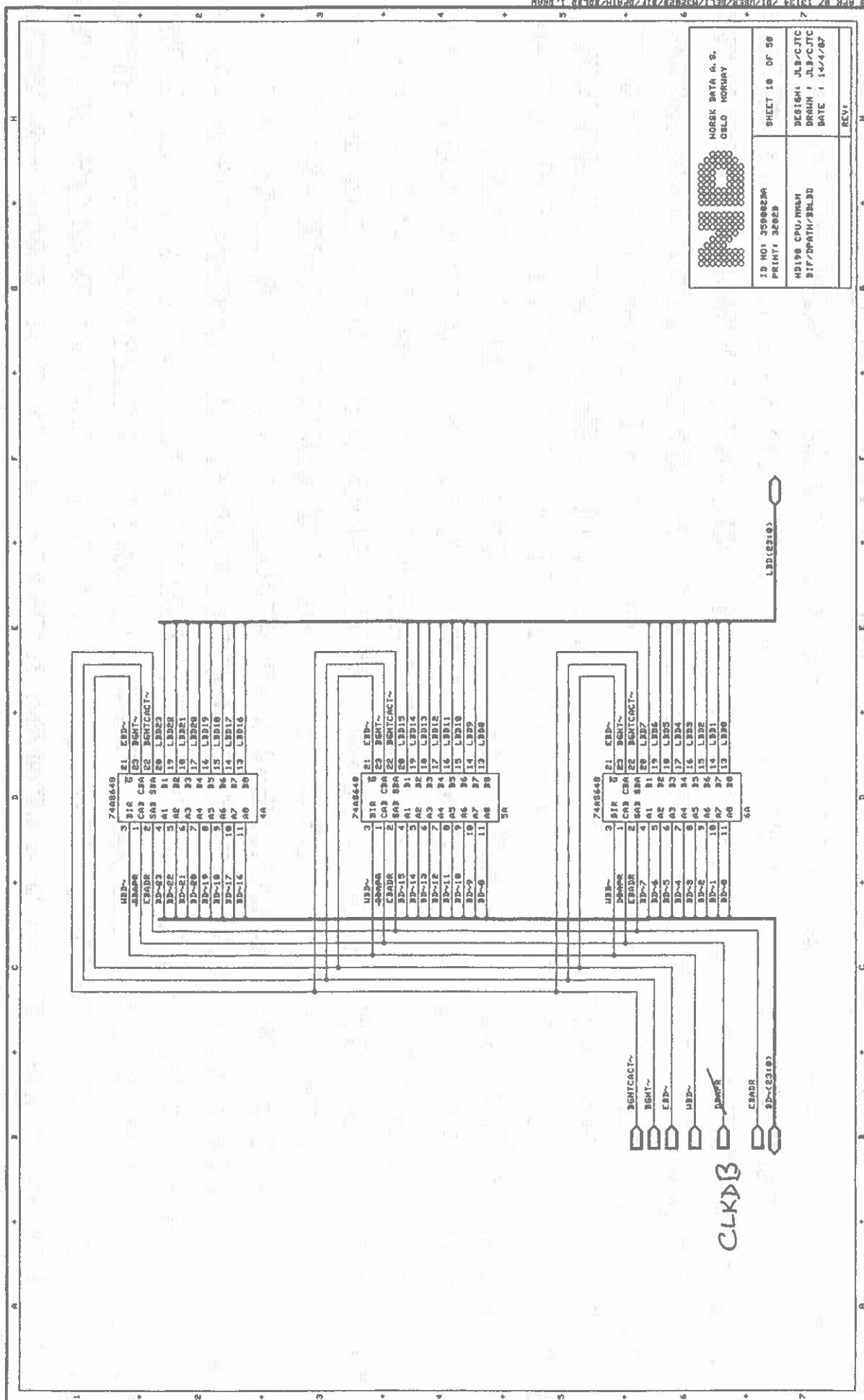


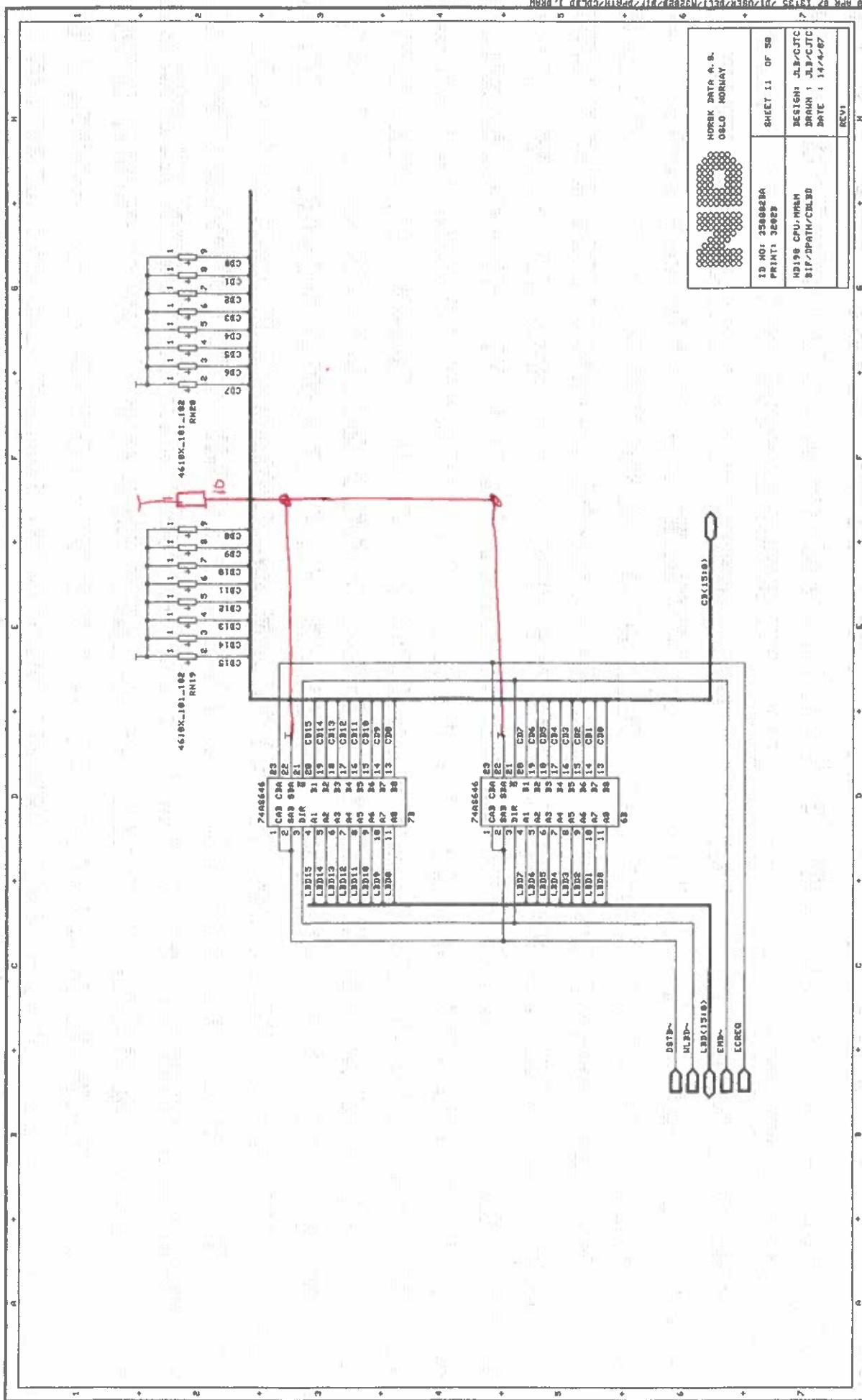


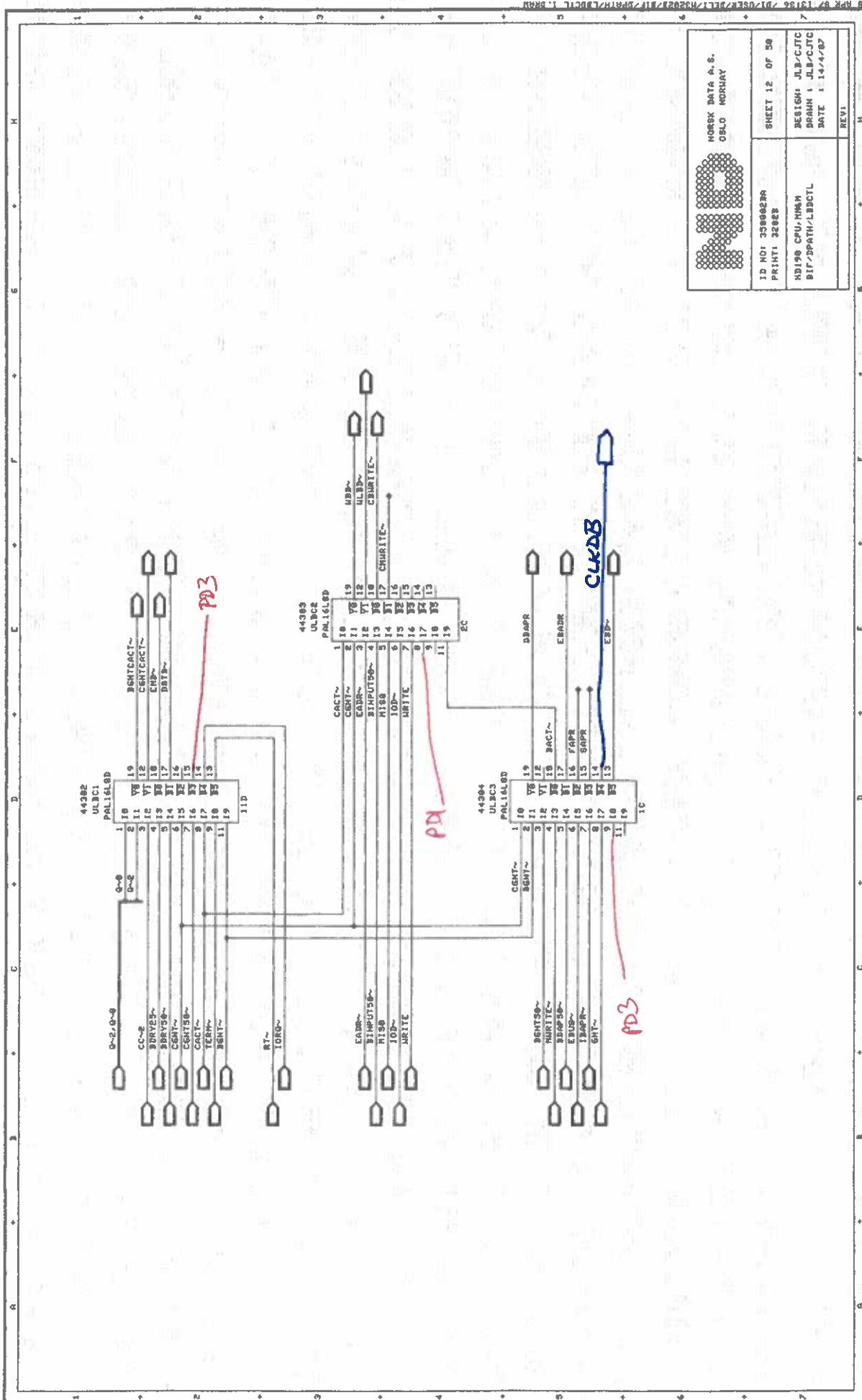


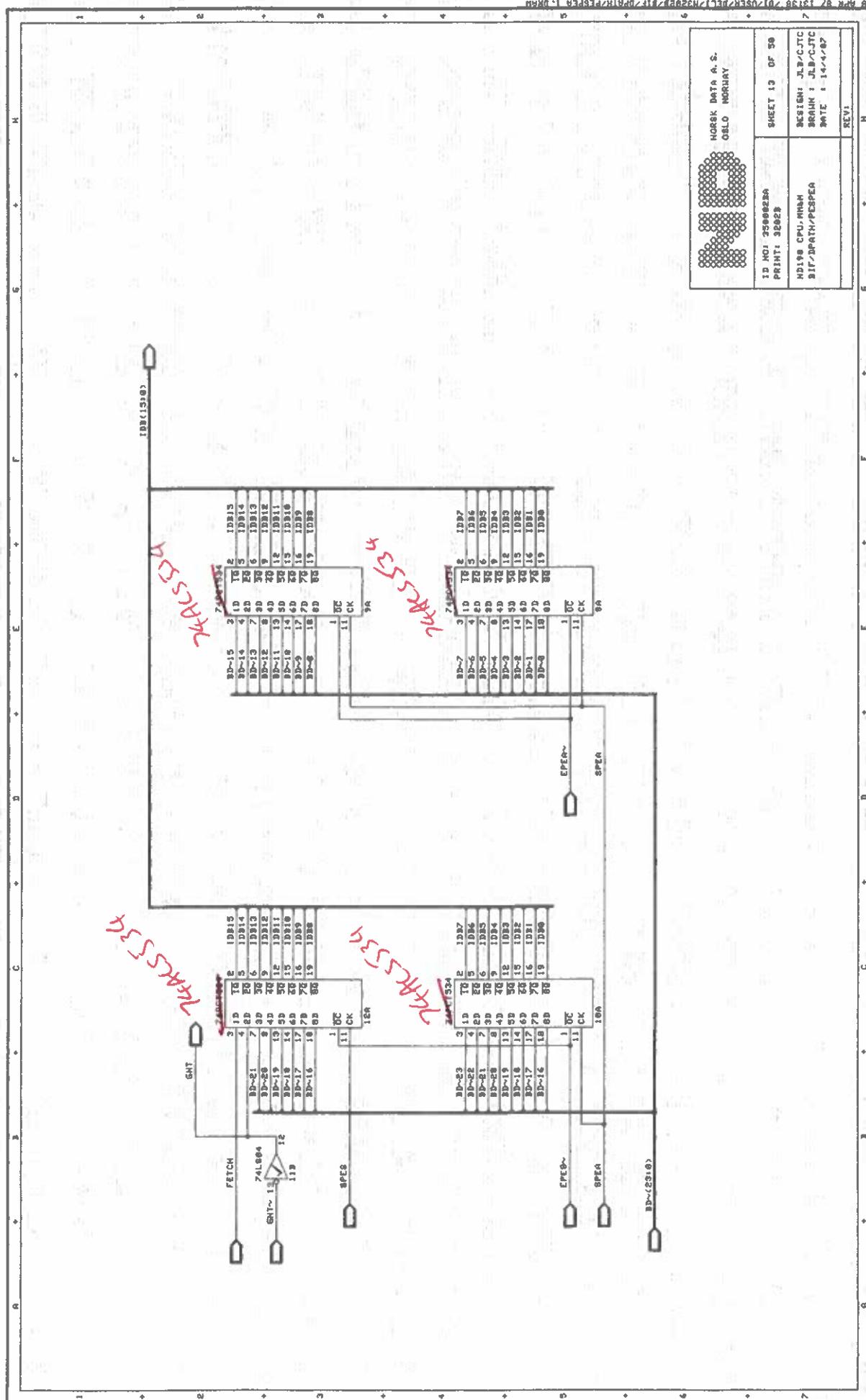


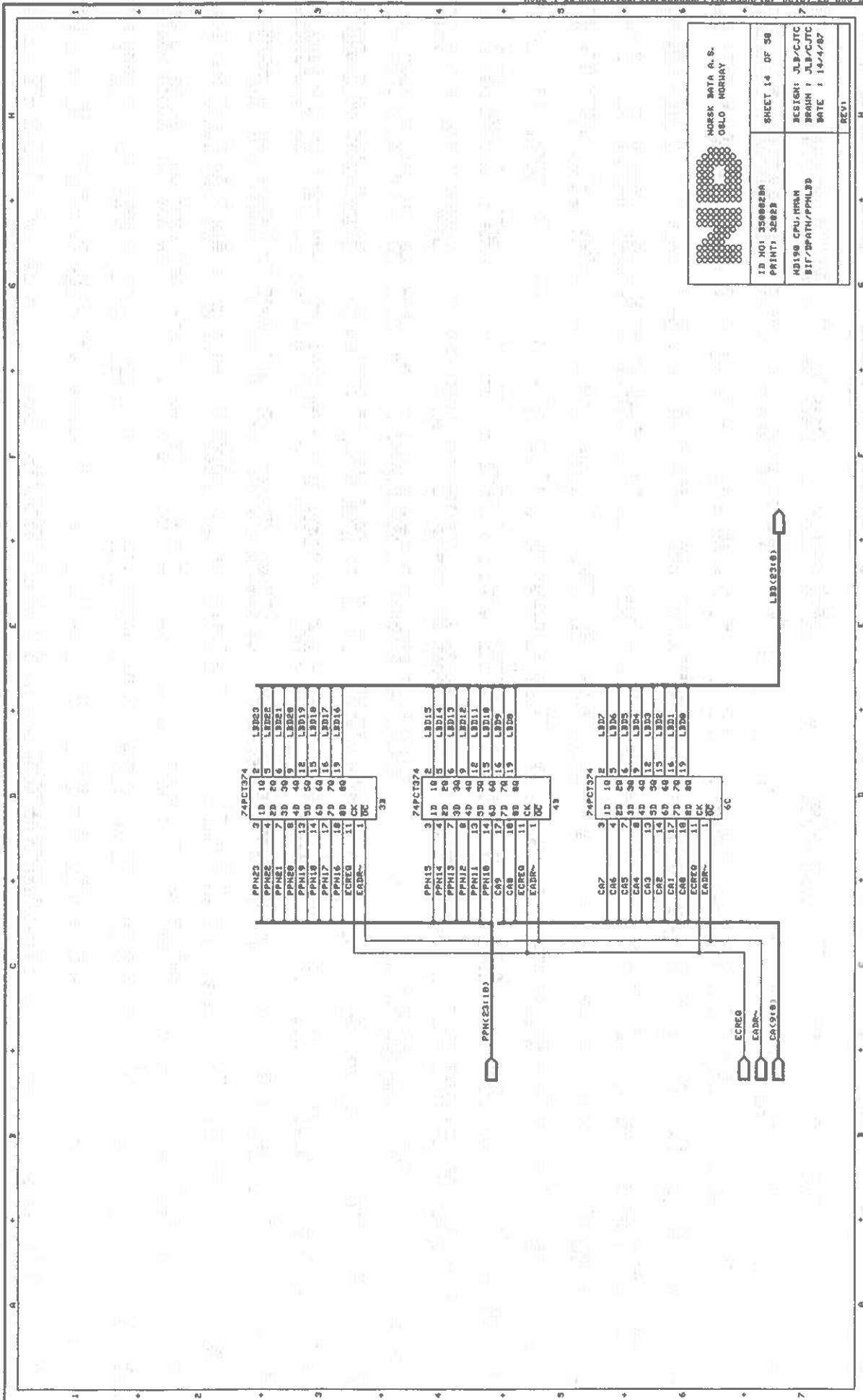


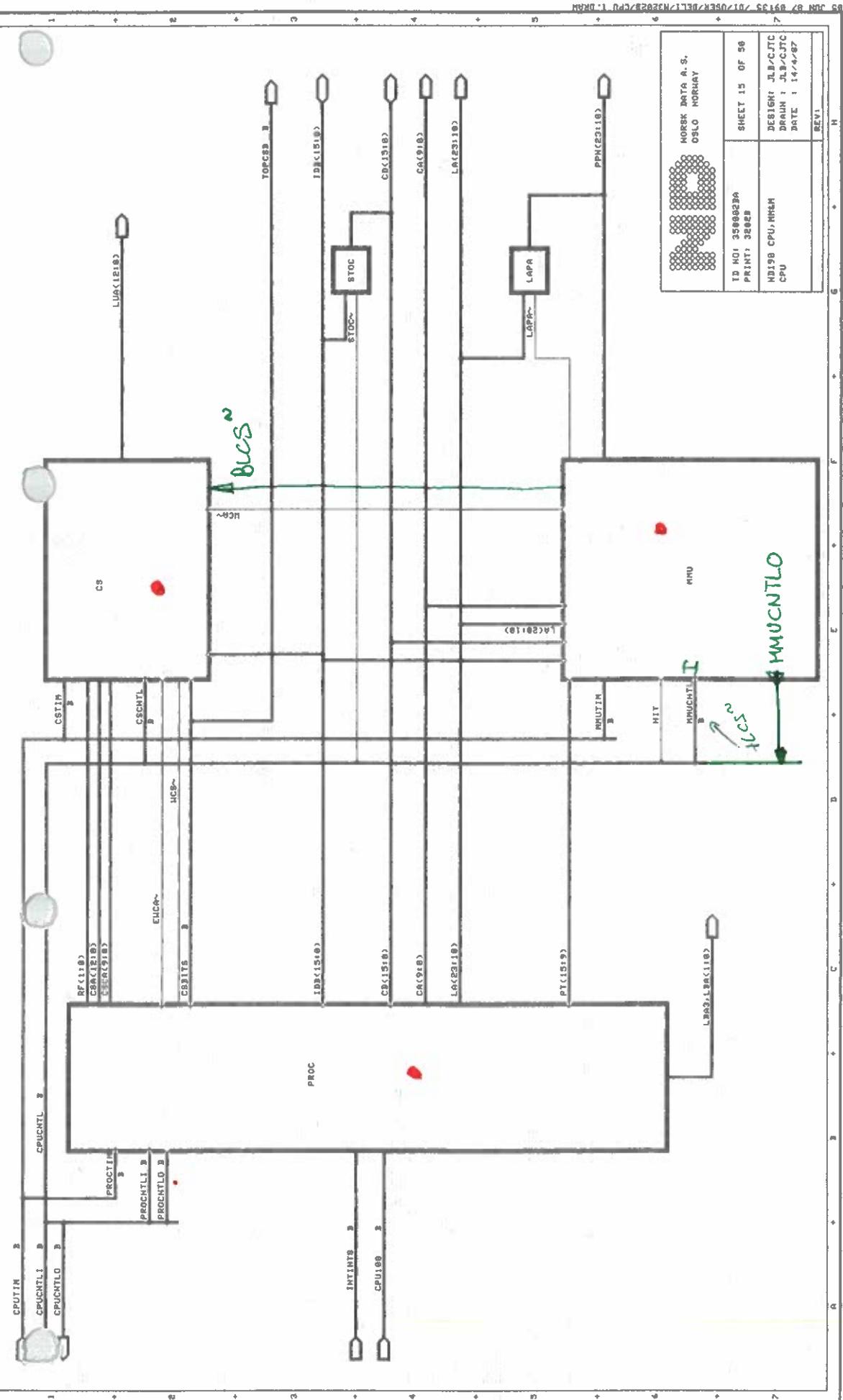


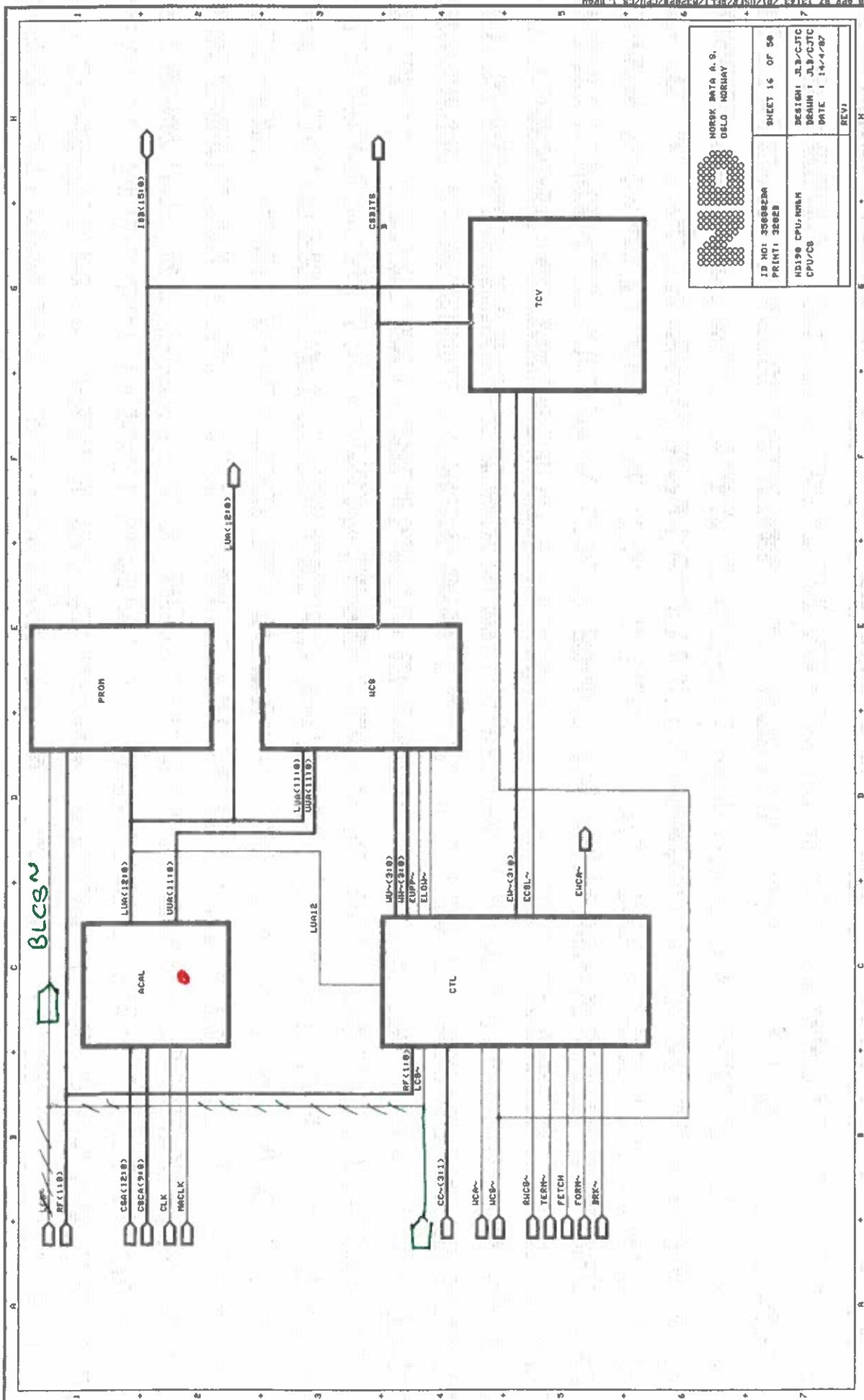


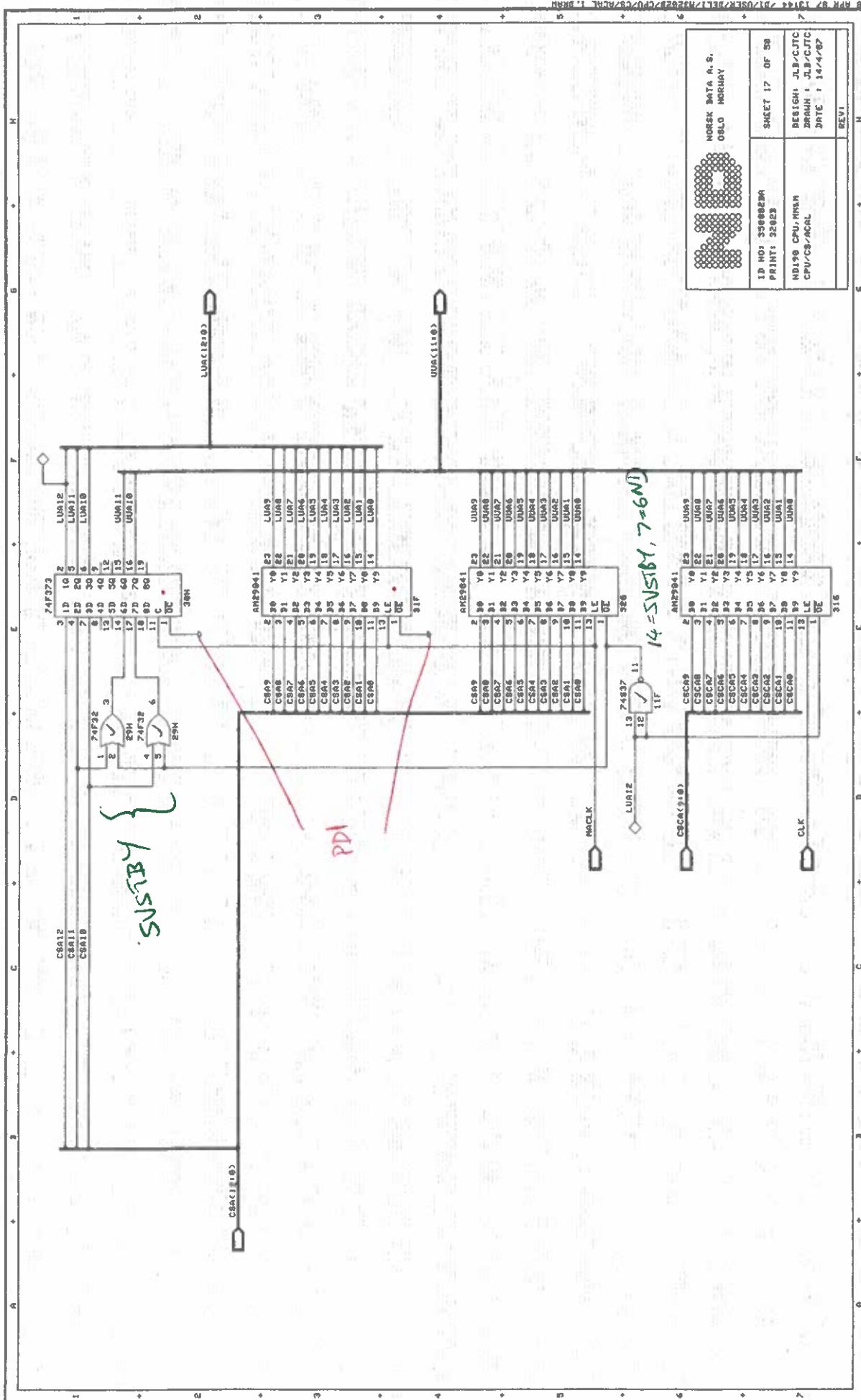


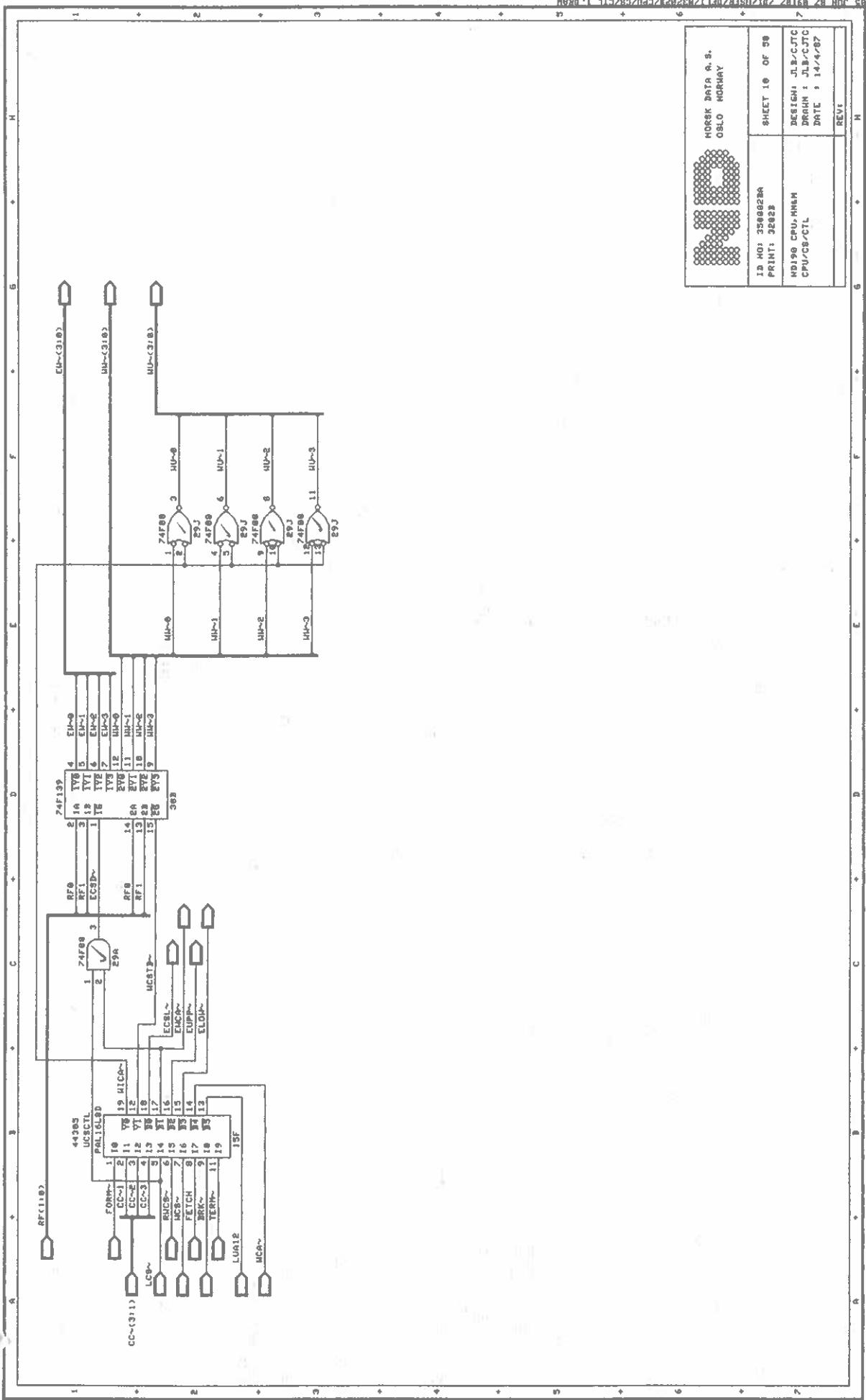


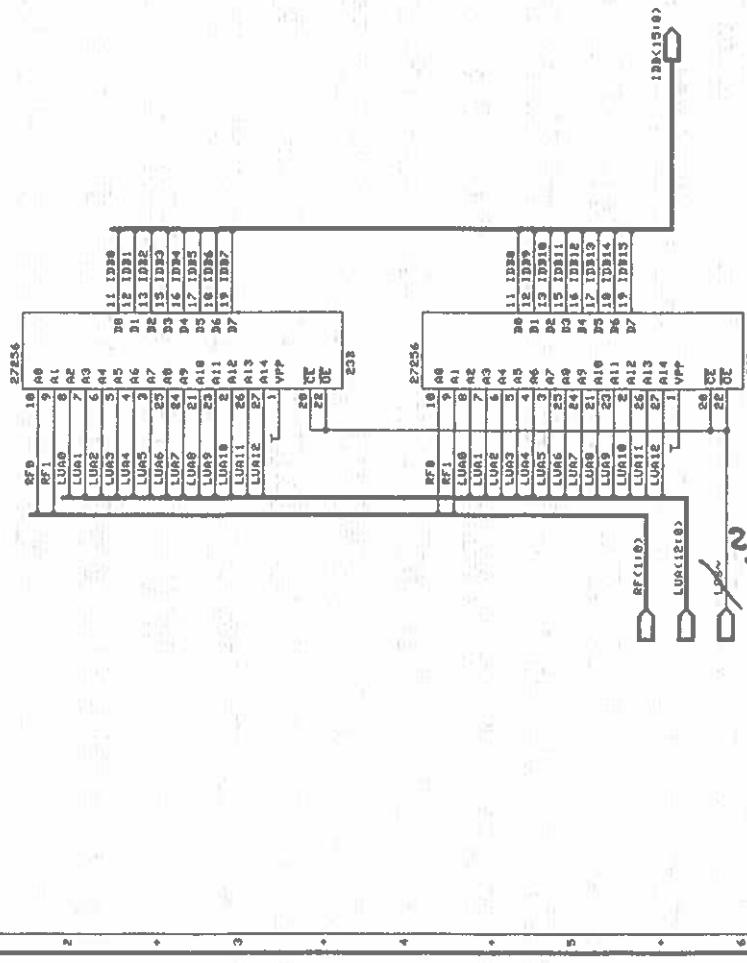
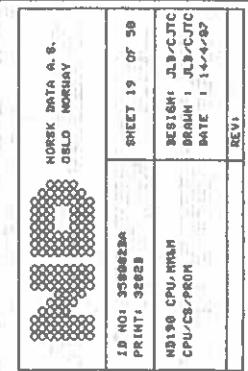


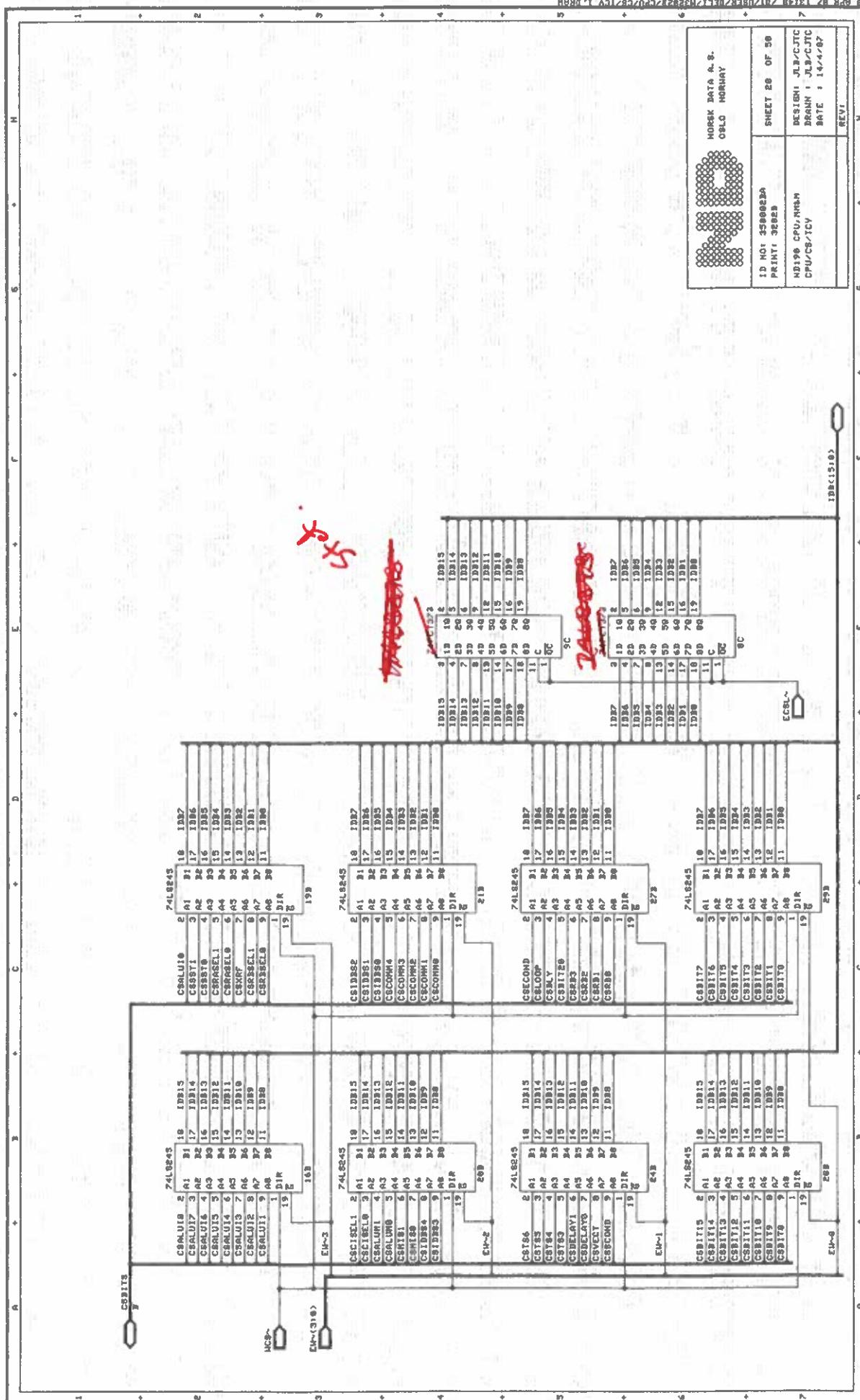




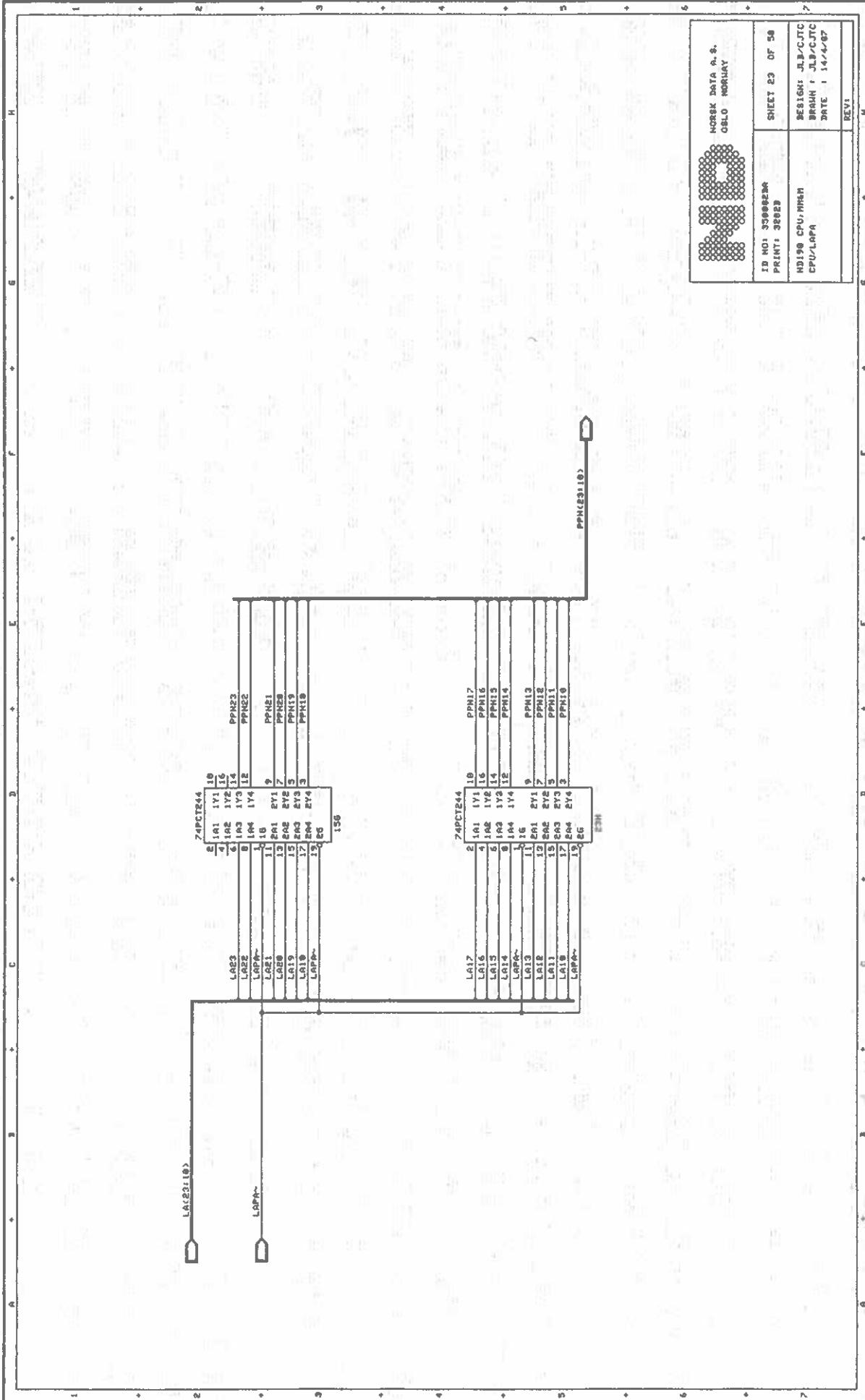


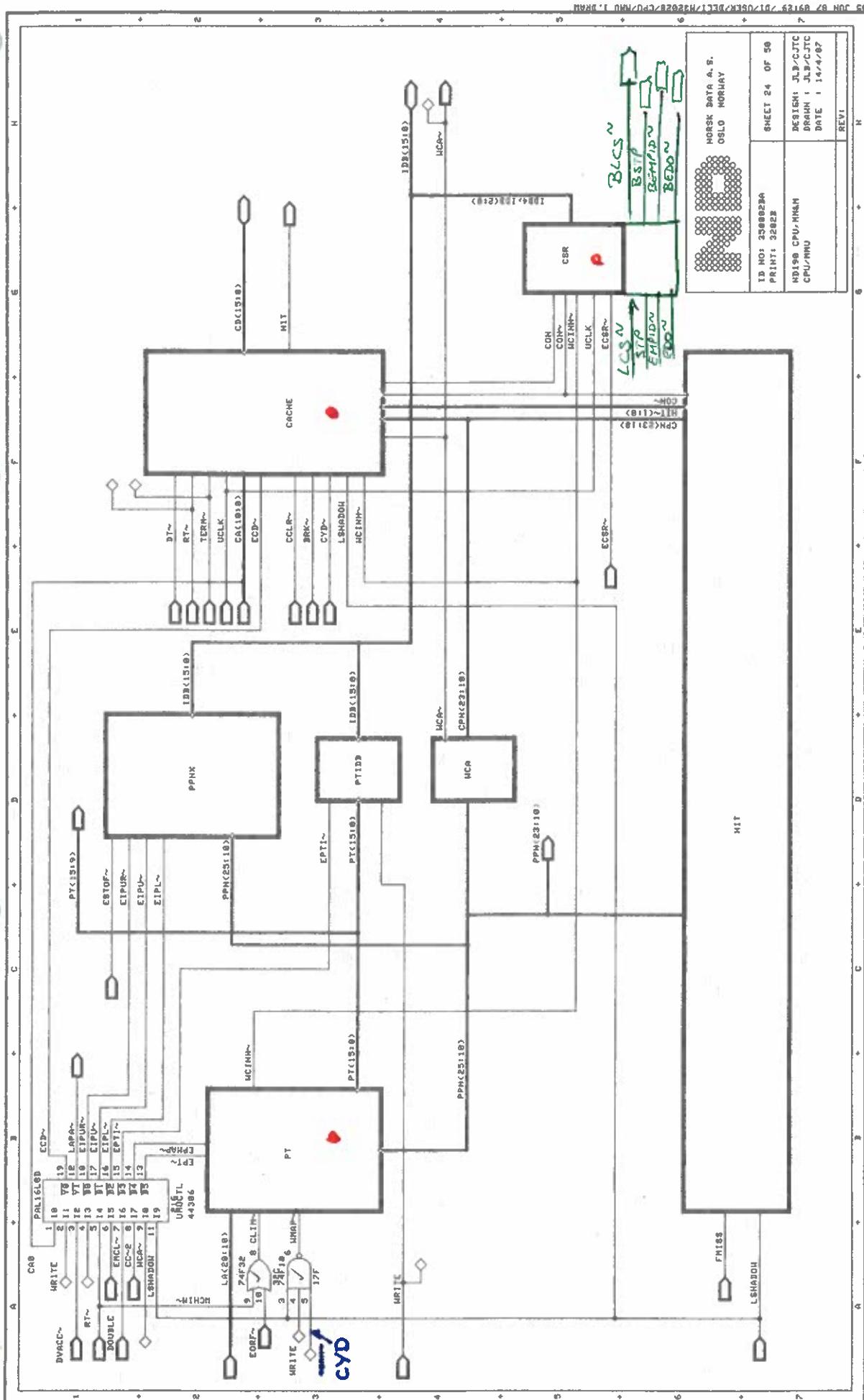


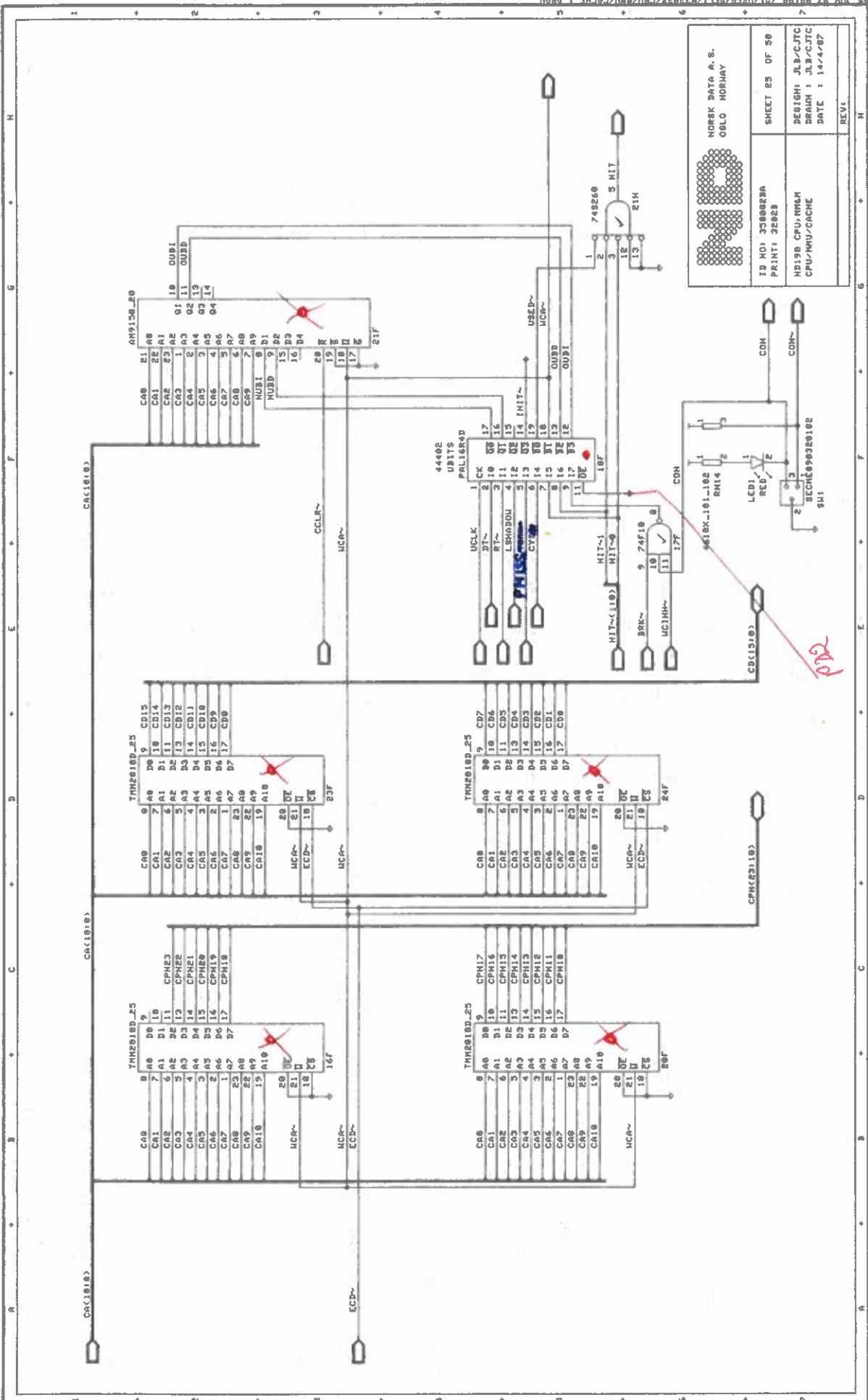


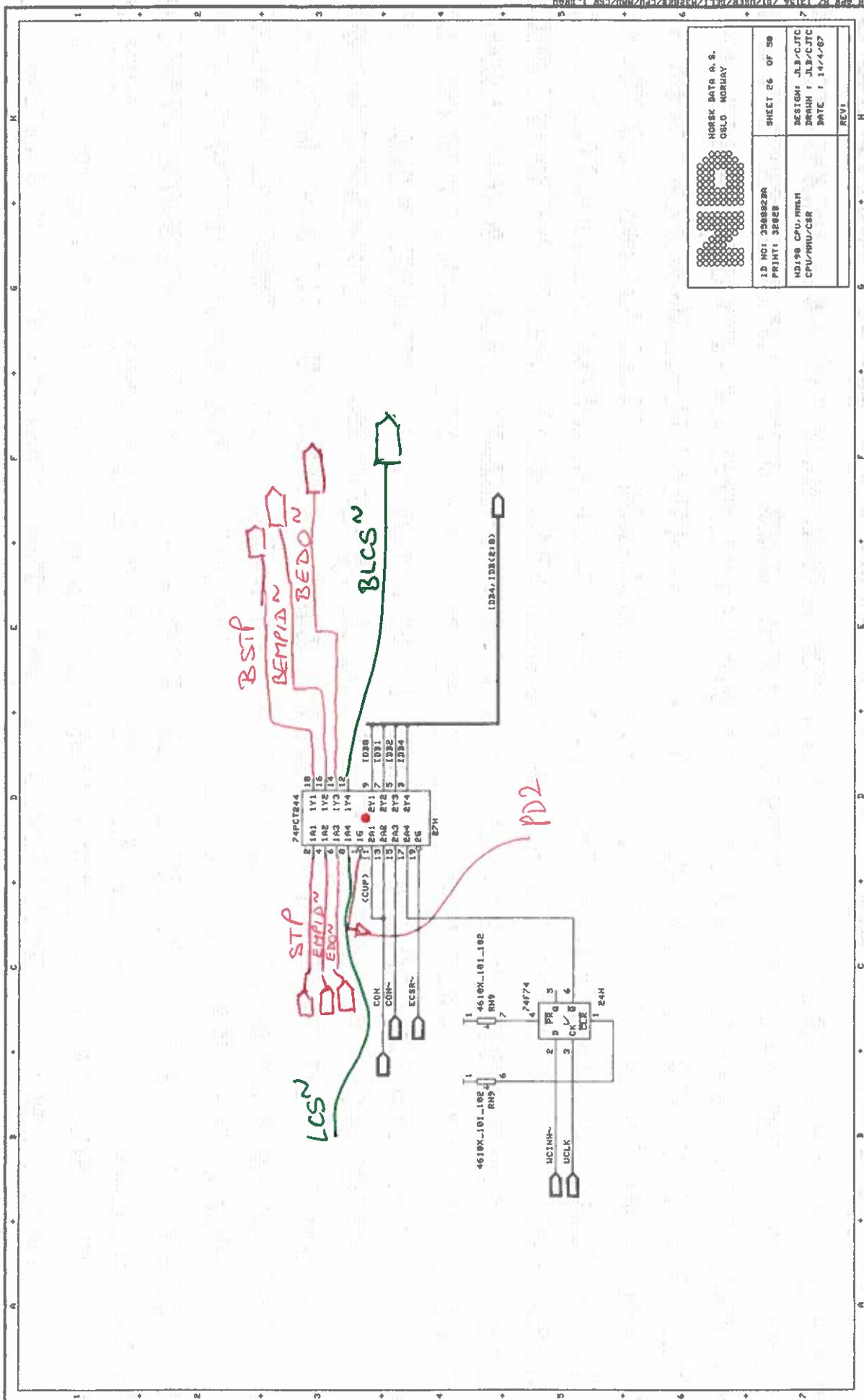


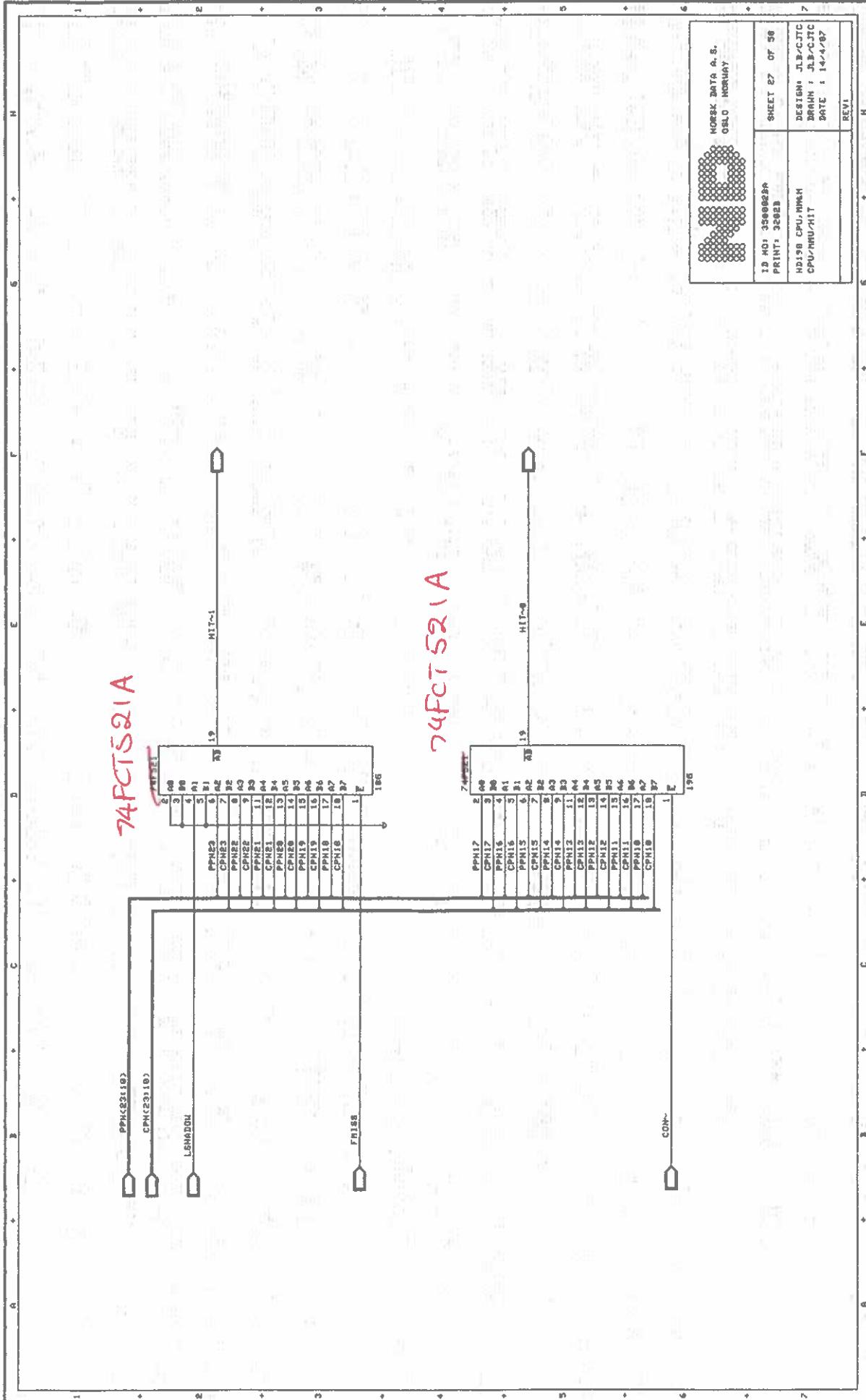
8 APR 8 / 18149 / J17USCR/DELL/H38825/CPU/C8/MCG_1.DWMM

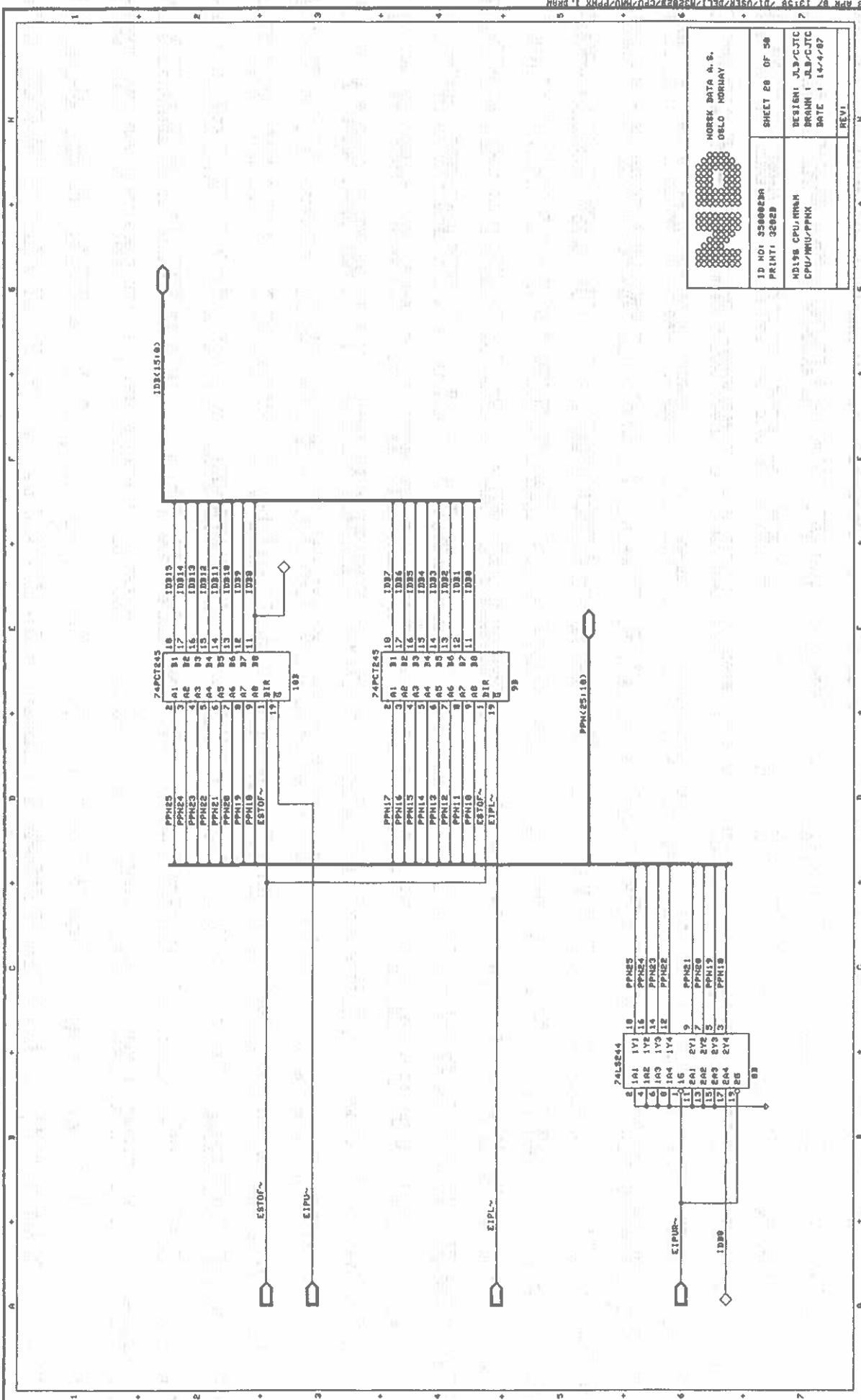


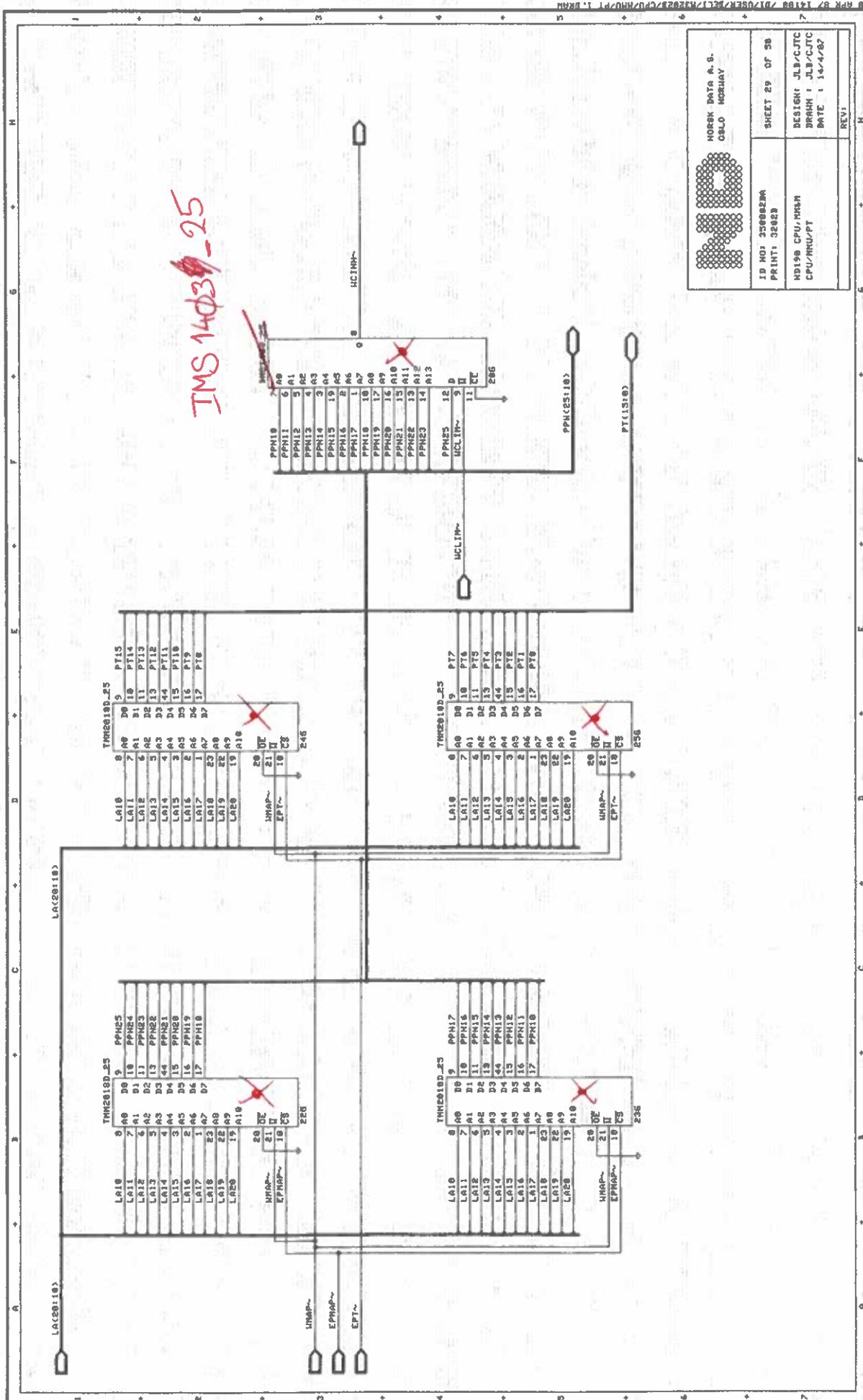


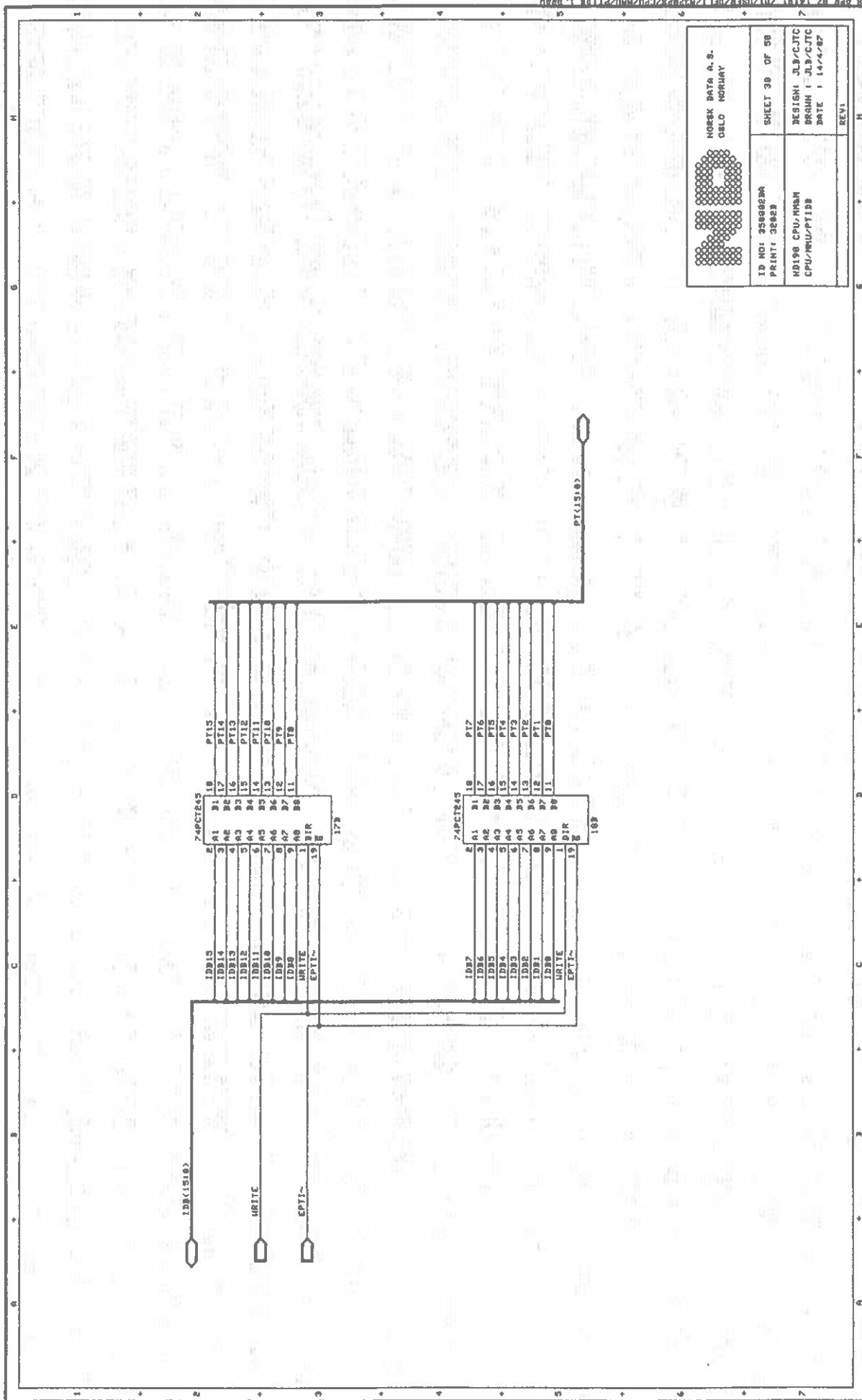


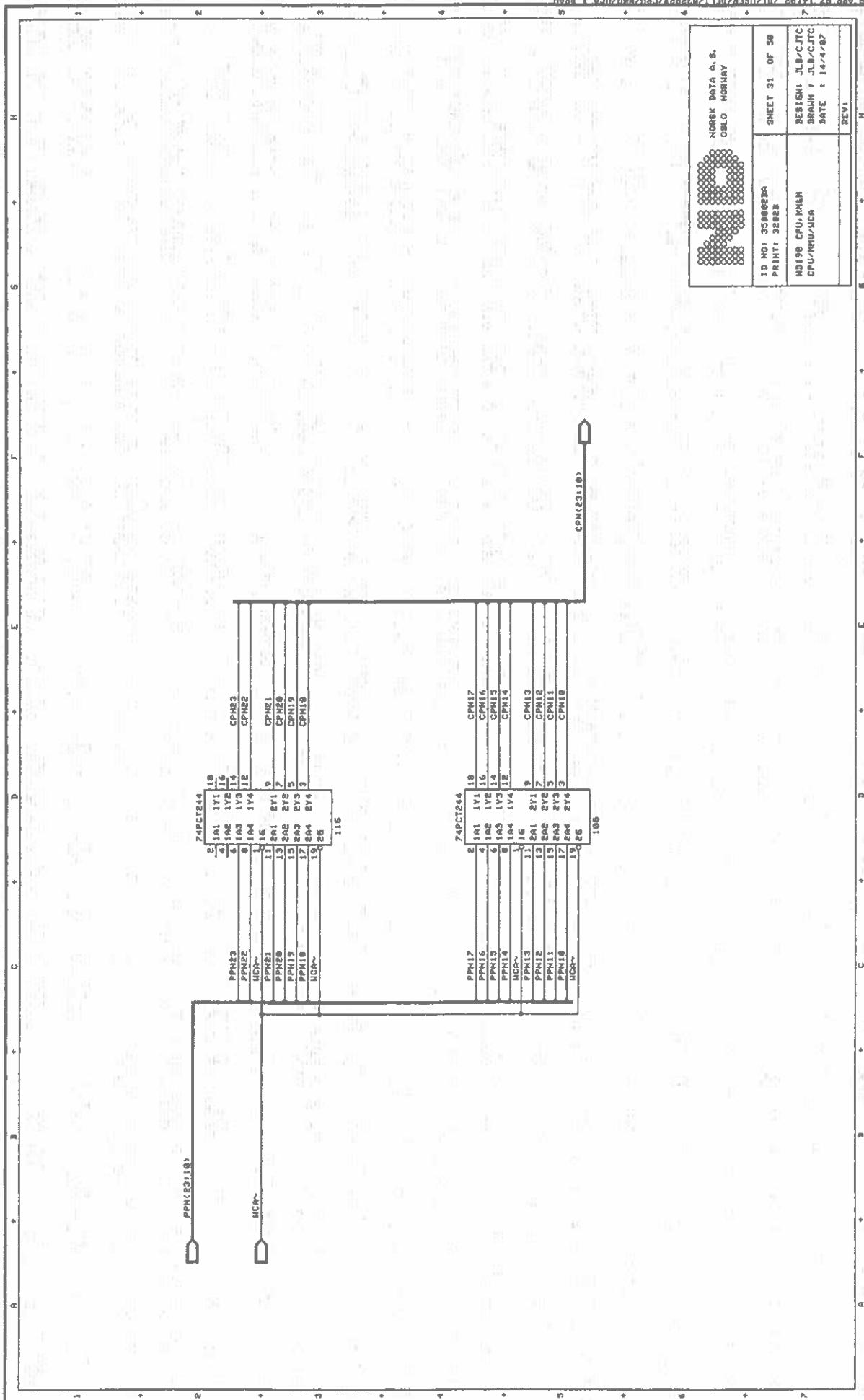


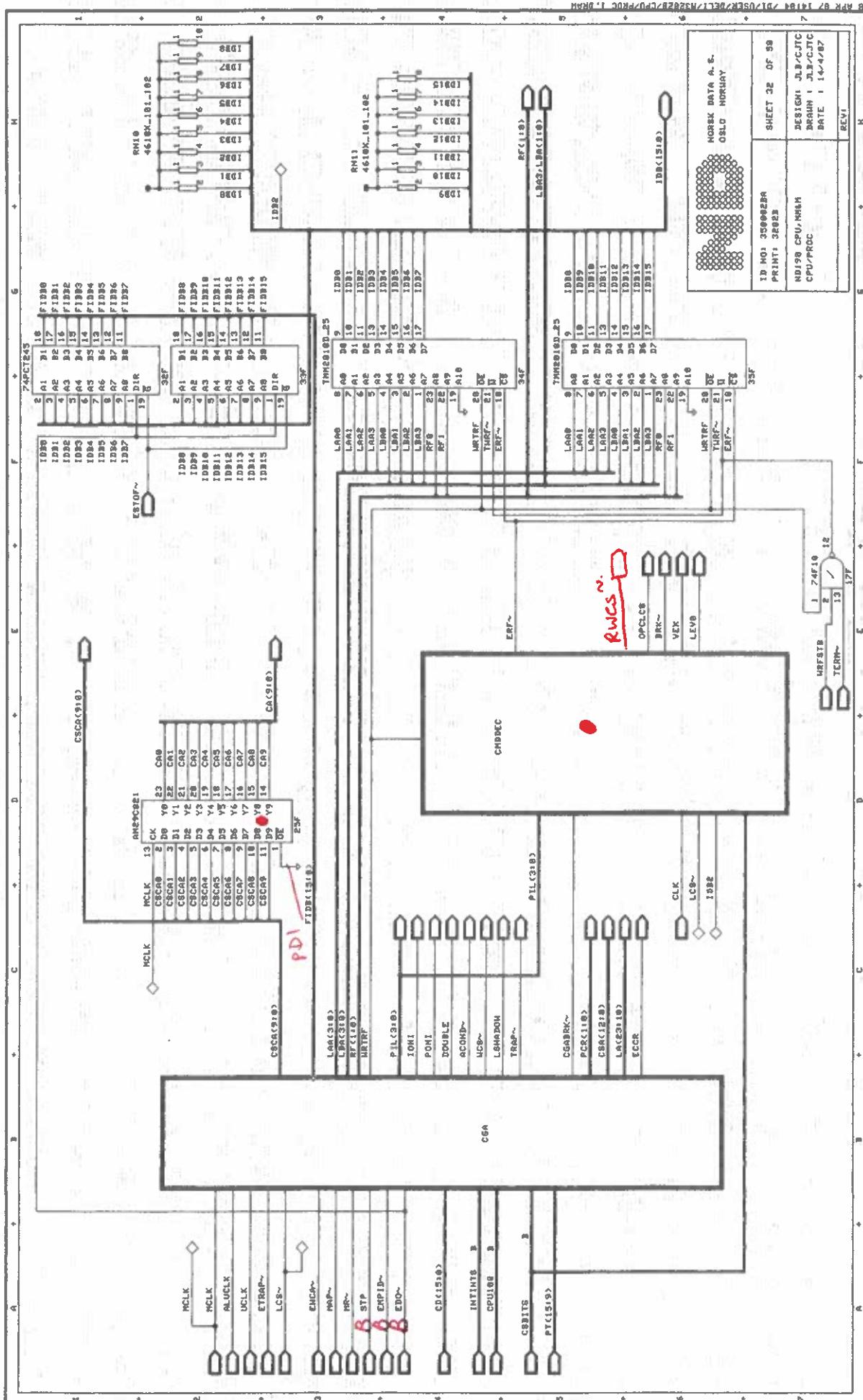


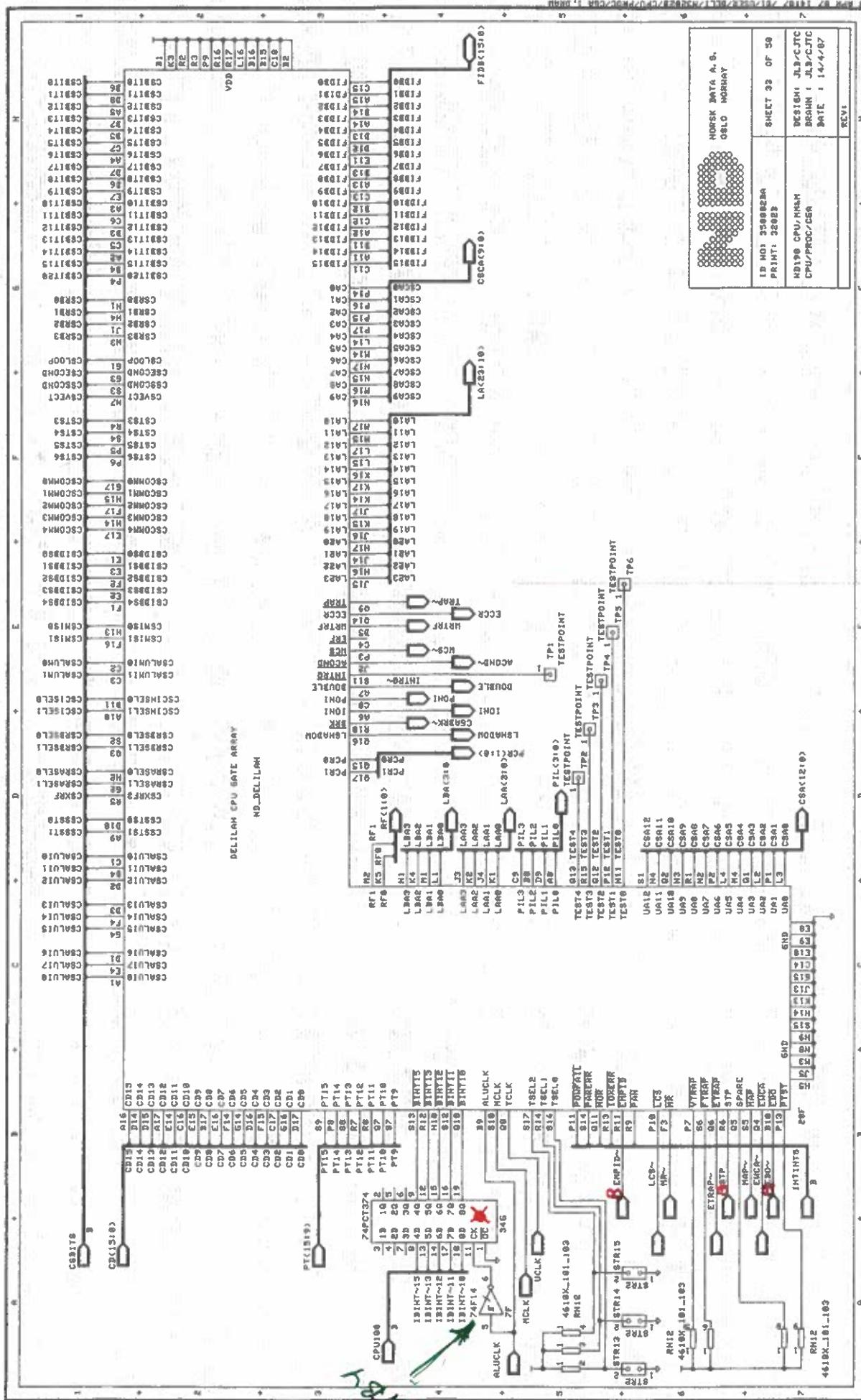


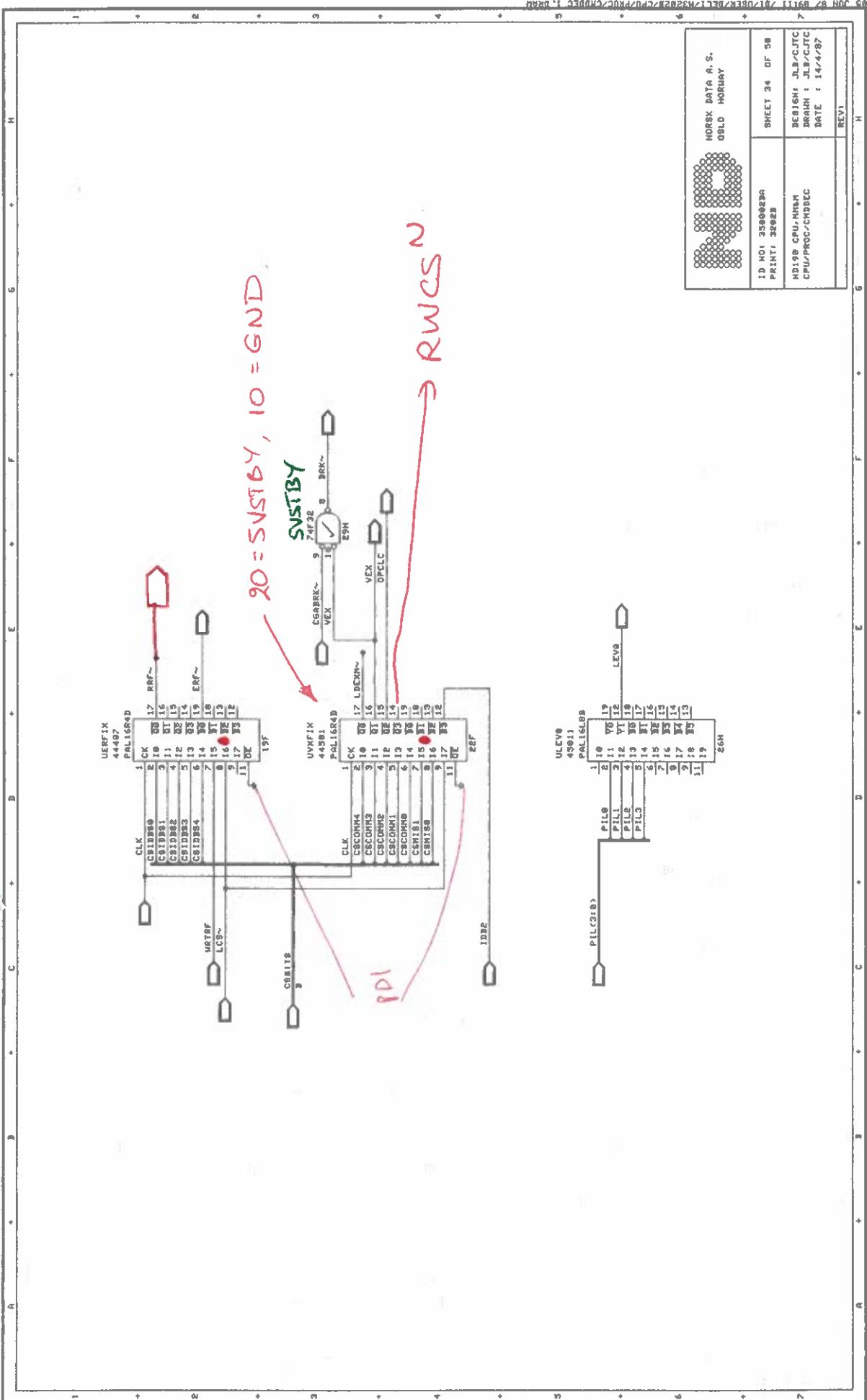


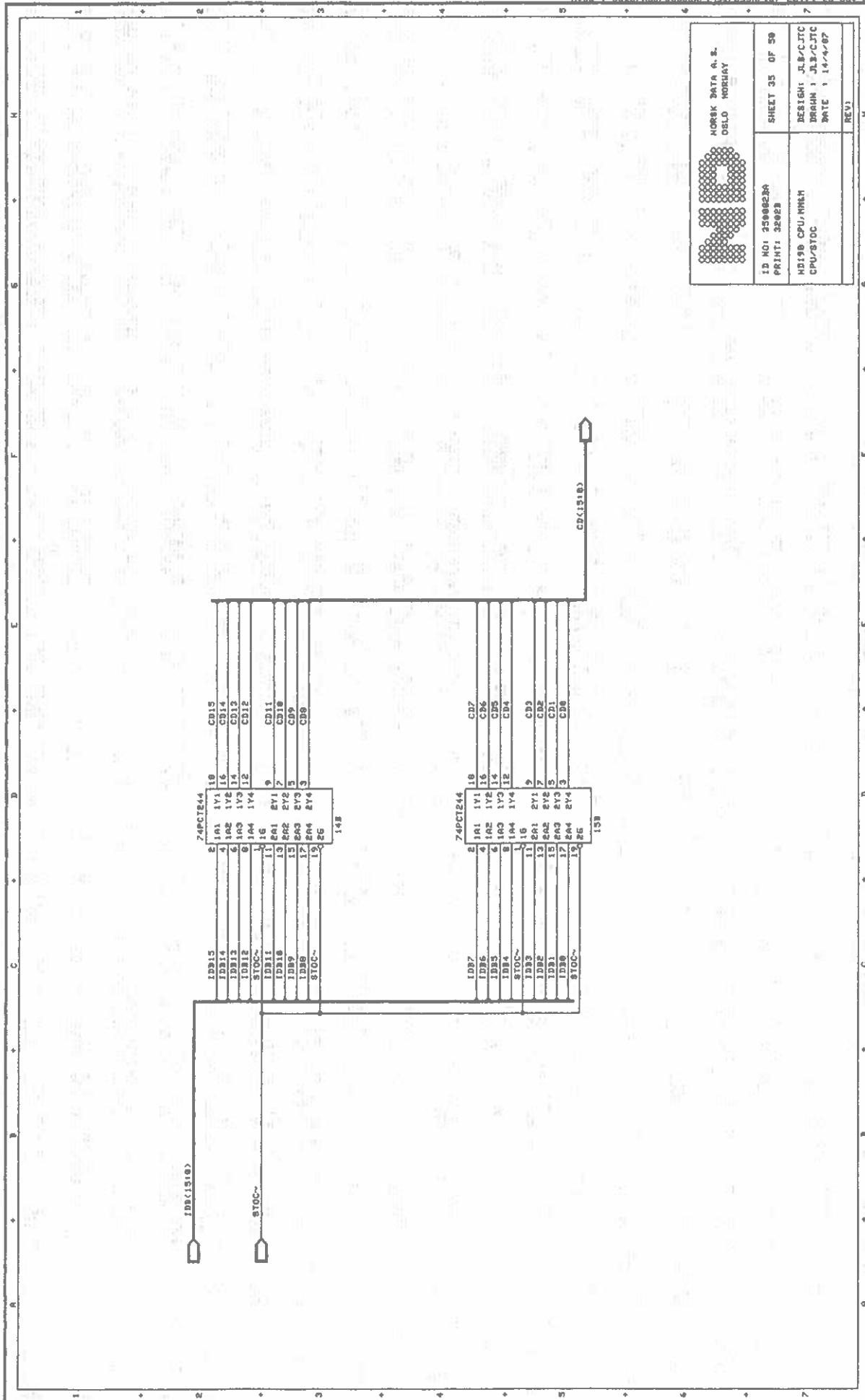


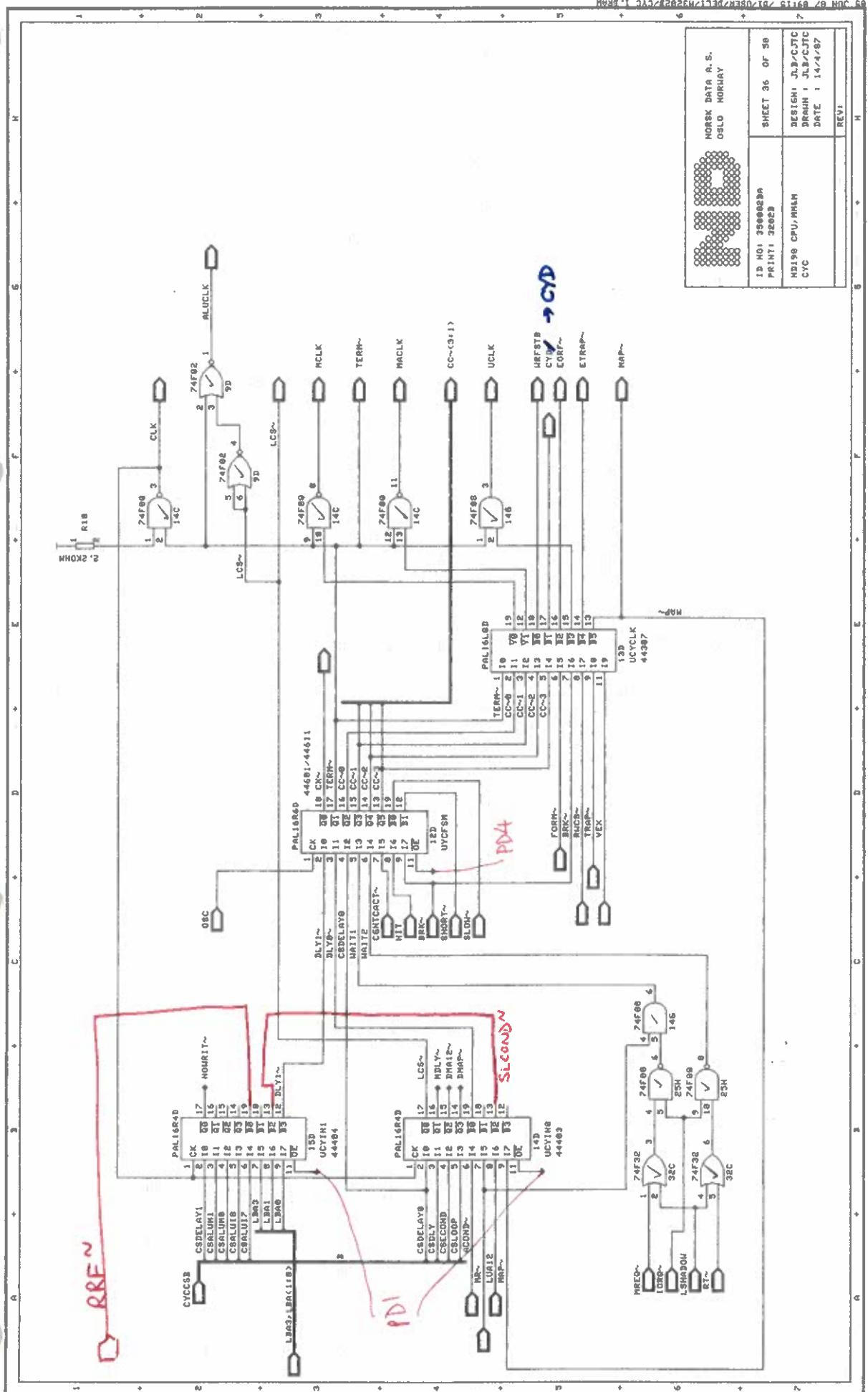


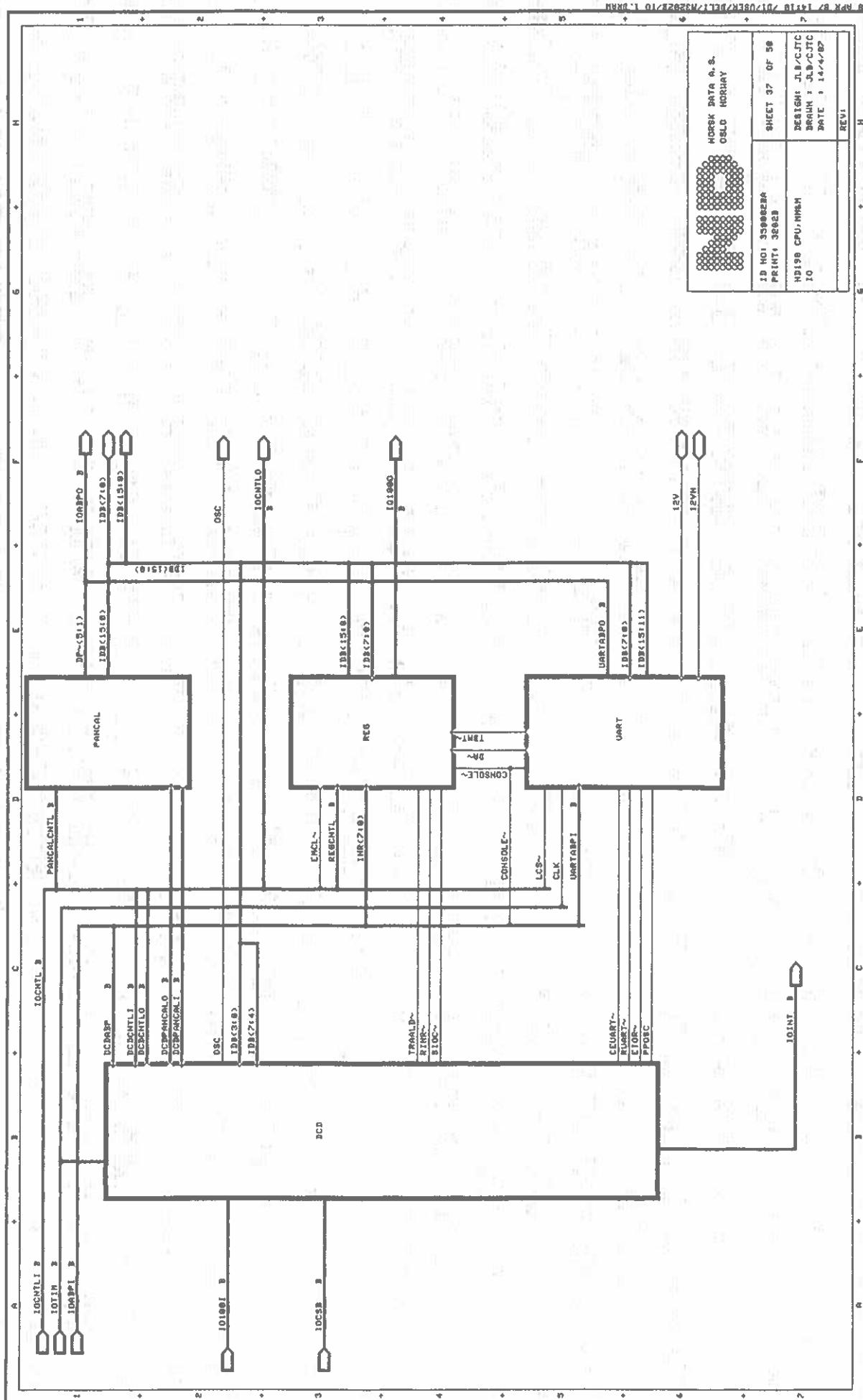


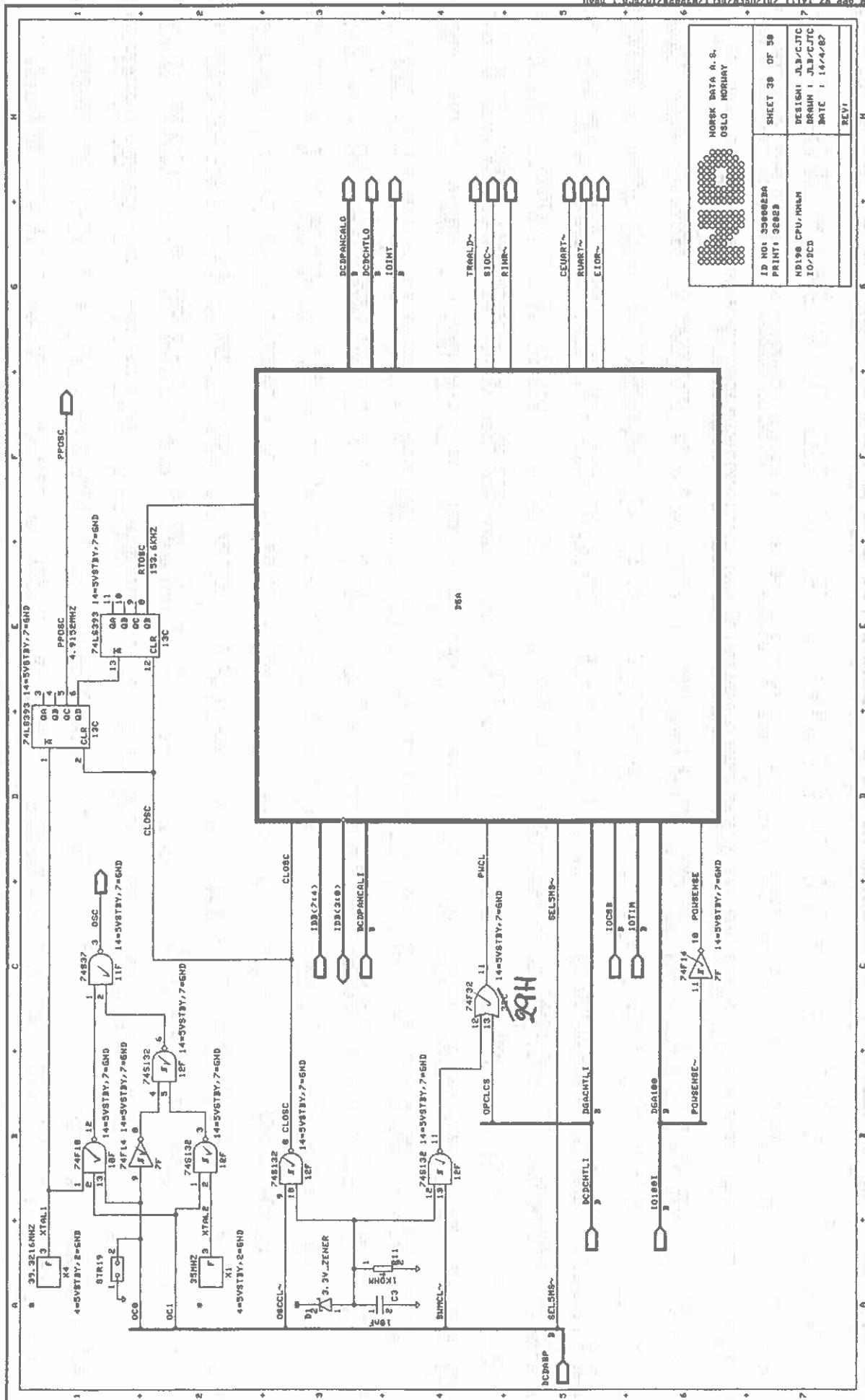




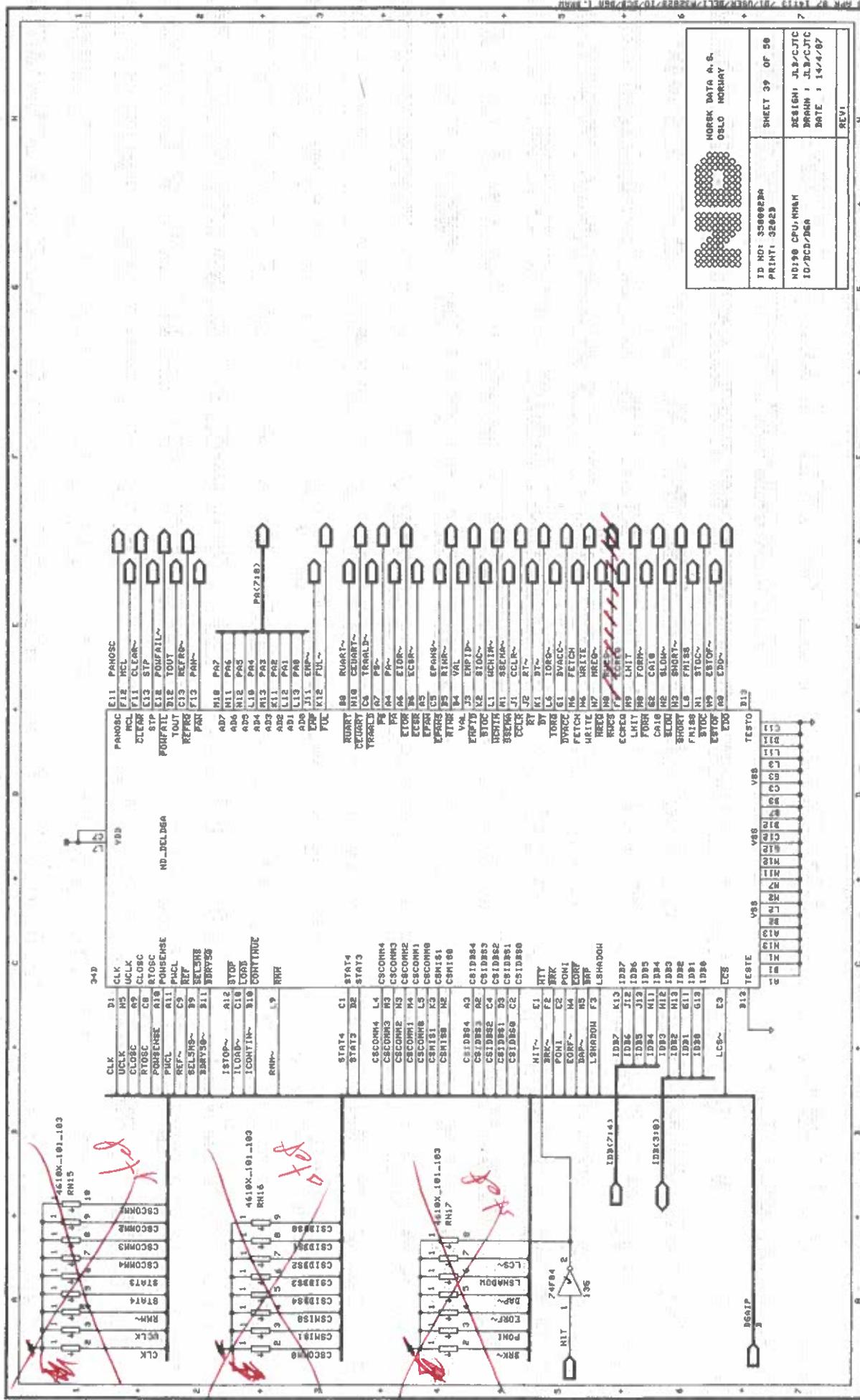


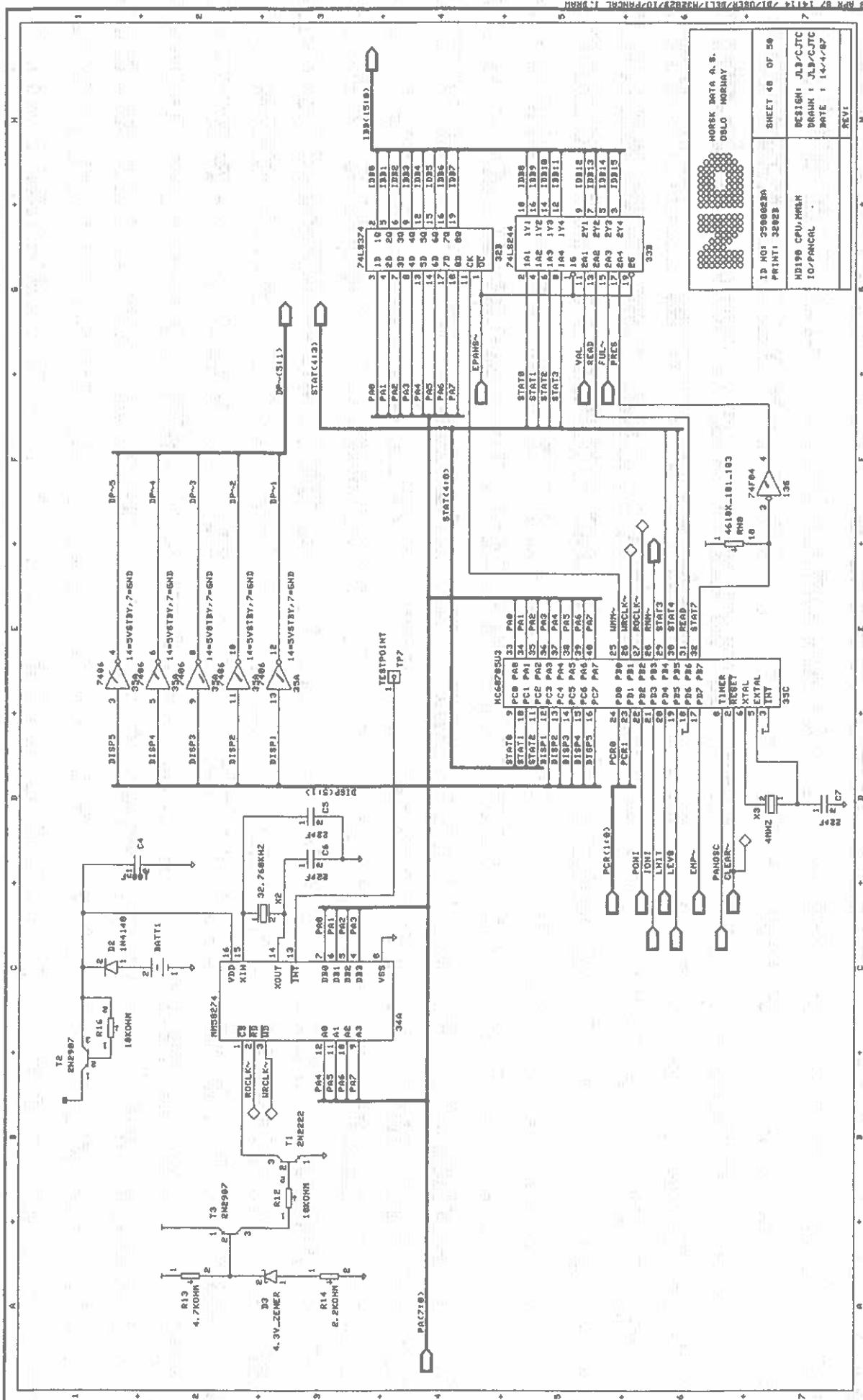


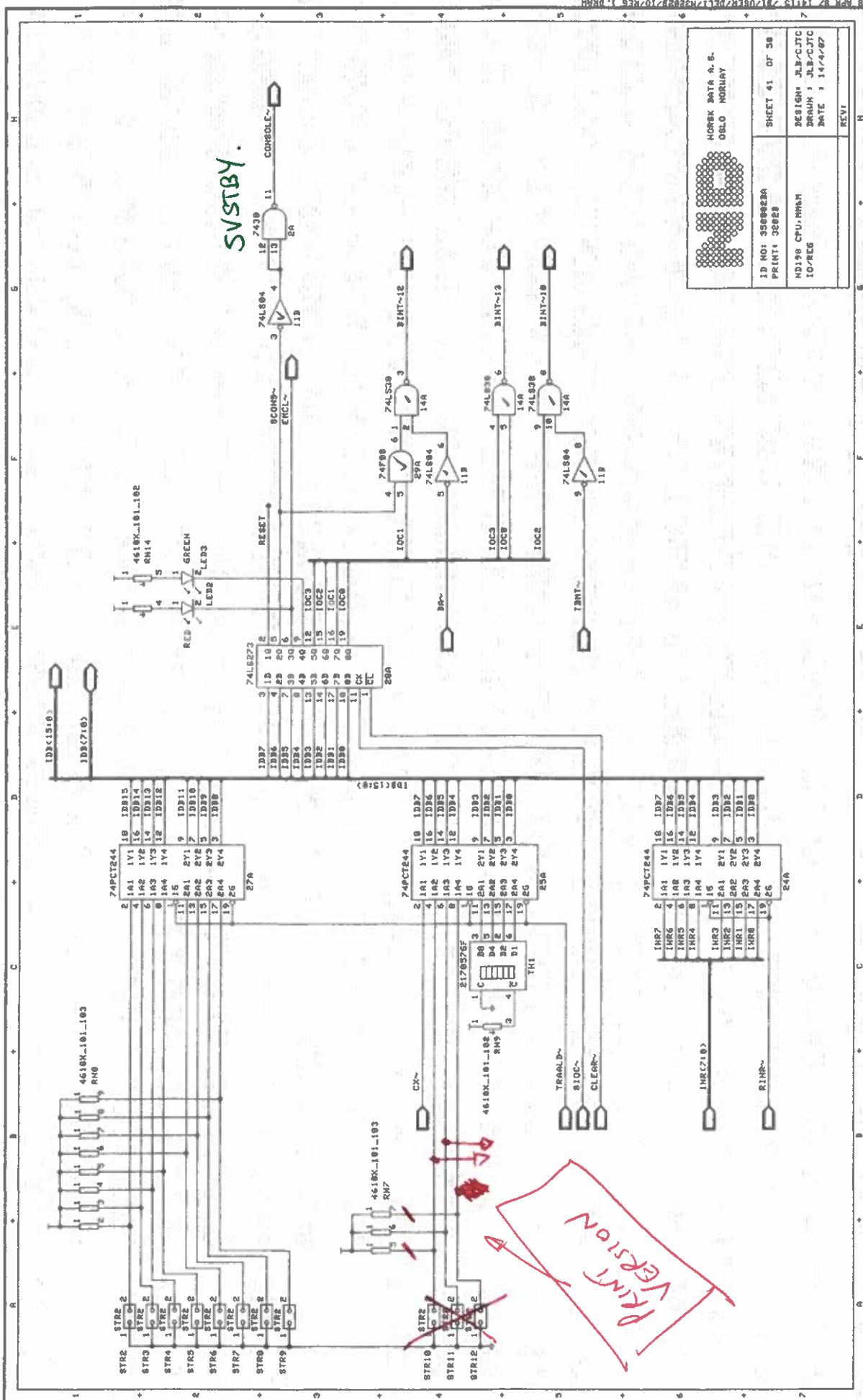


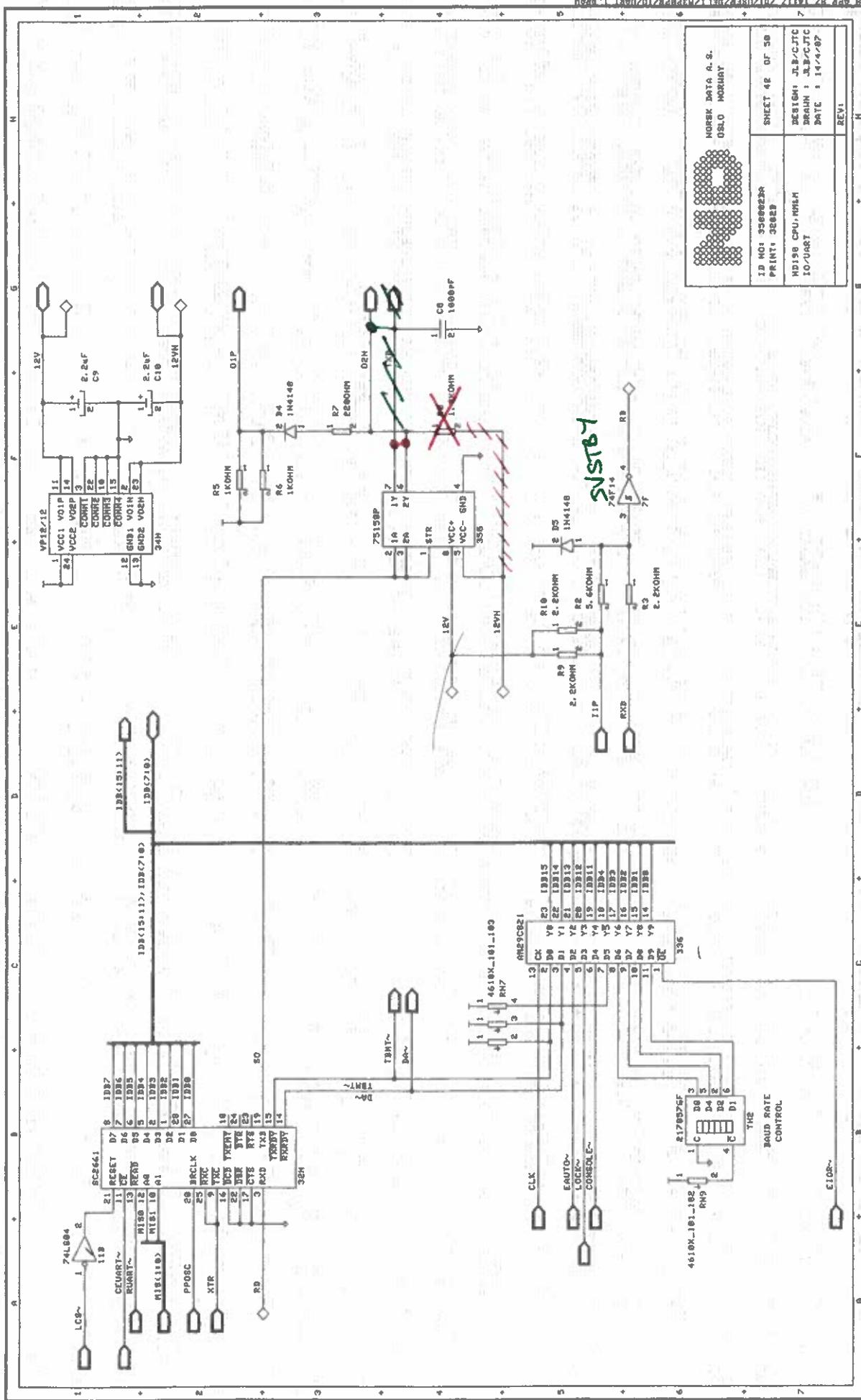


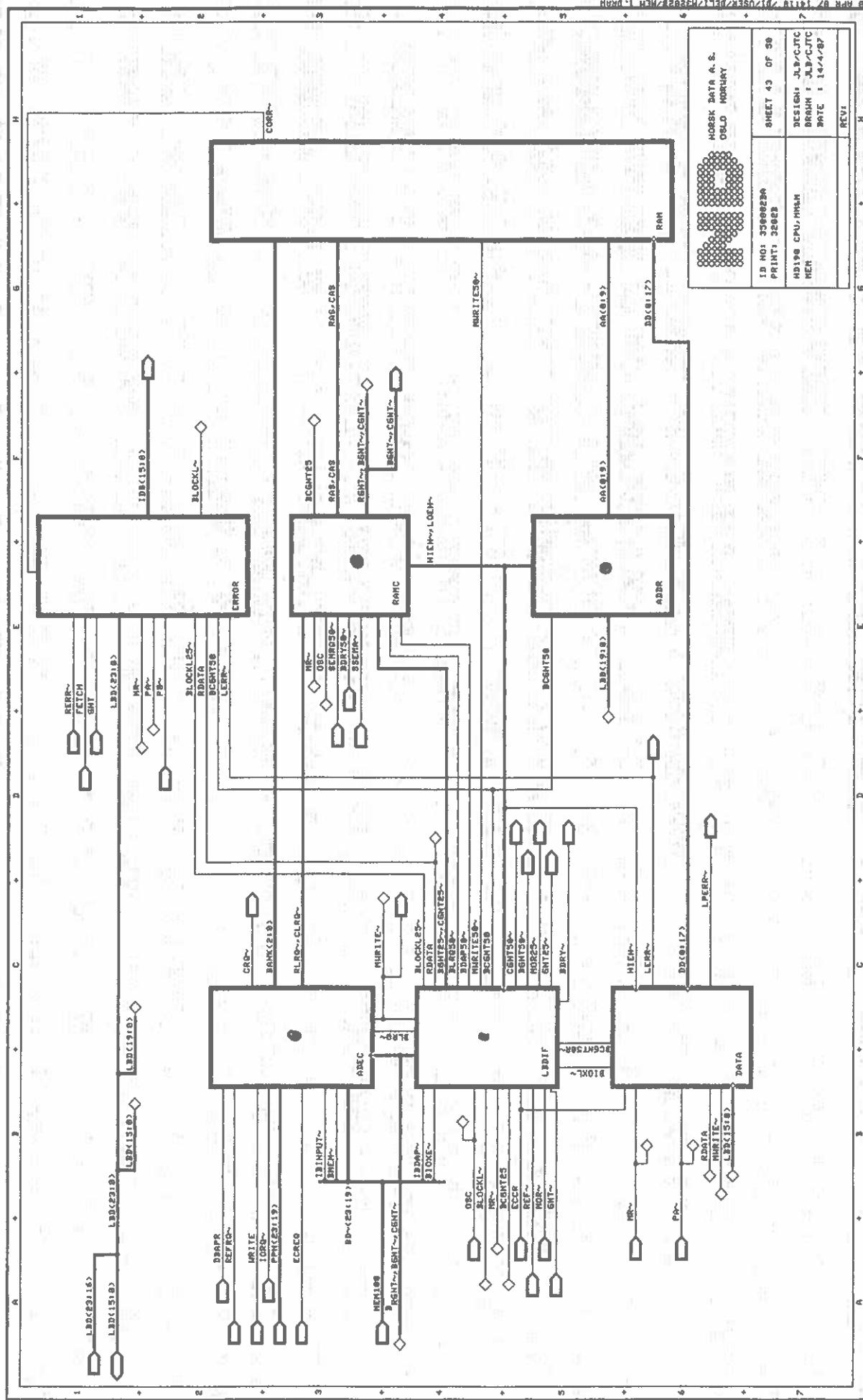
ID NO: 3598983A	SHEET 38 OF 59
PRINT# 32829	DESIGN: J.B.C.JTC
HB198 CPU: MARX	DRAIN: 1.0>DCN

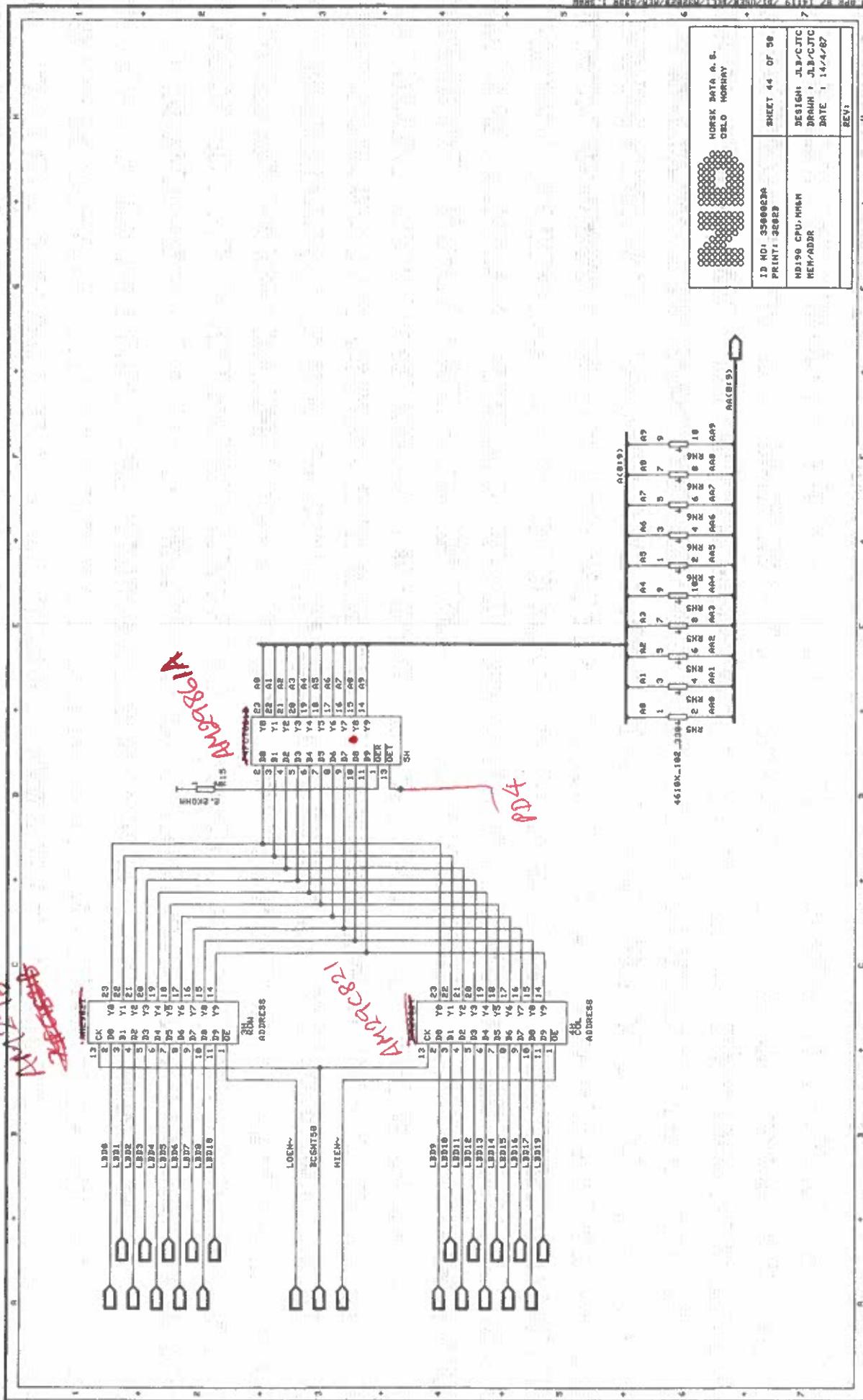


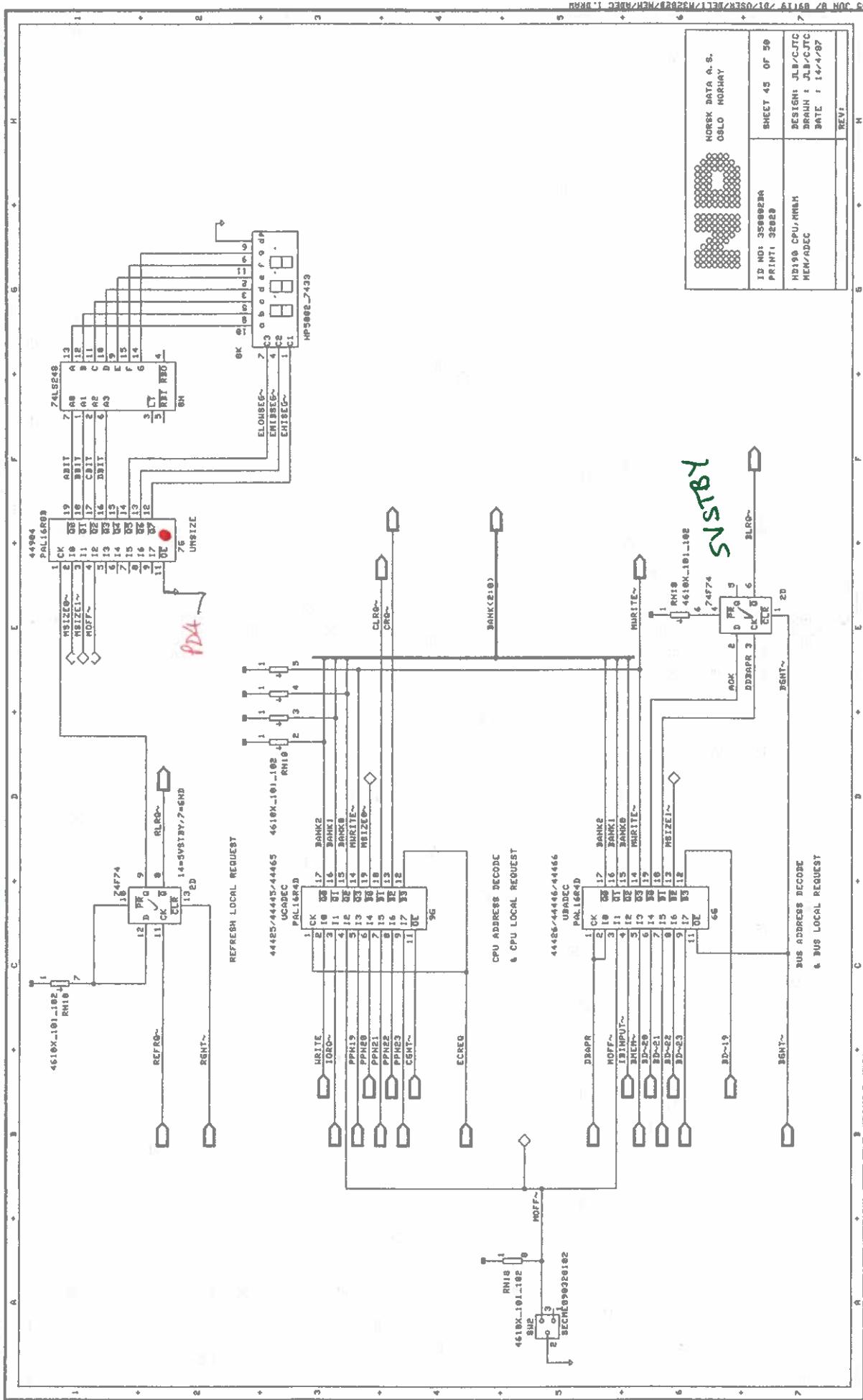


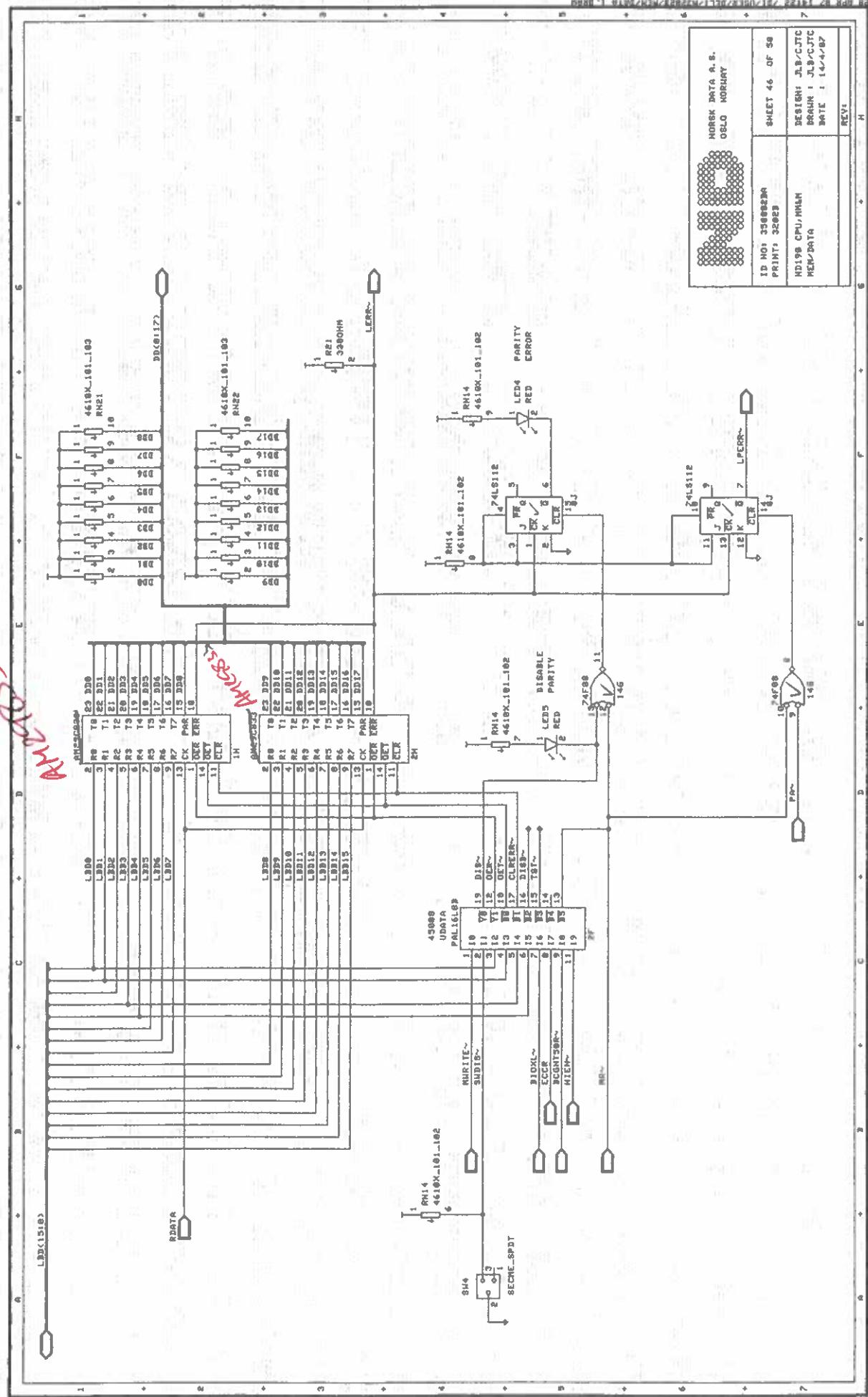


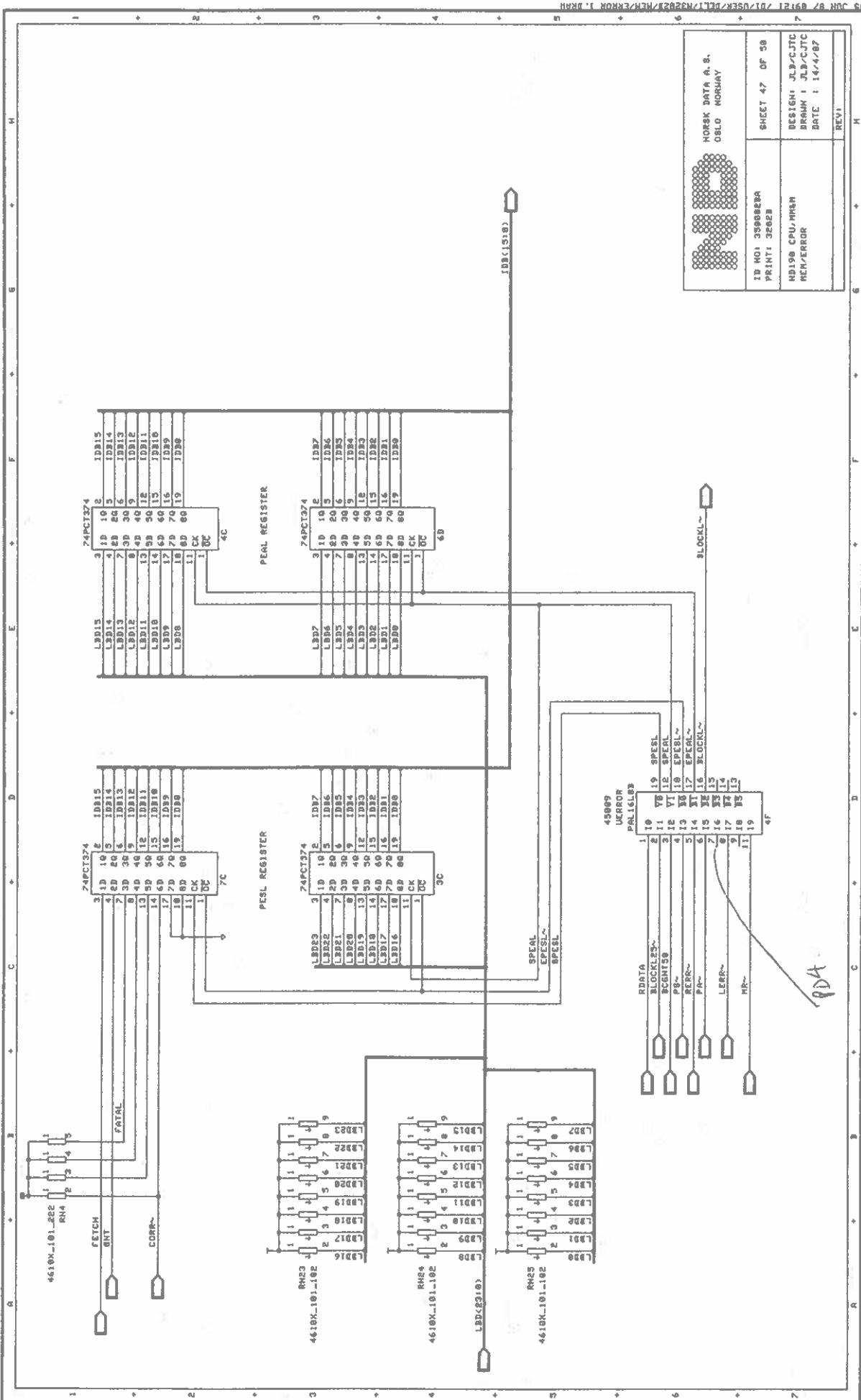


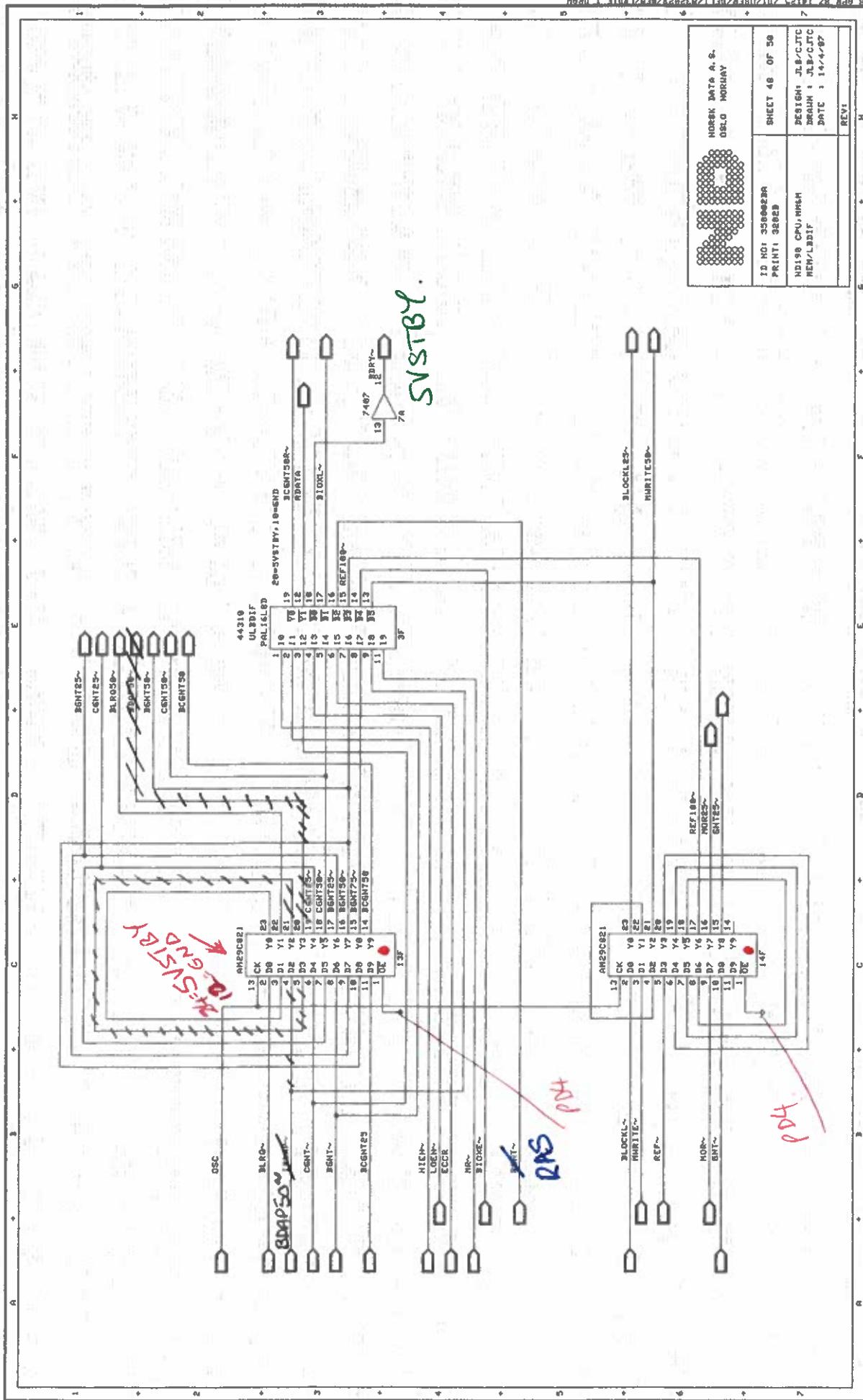


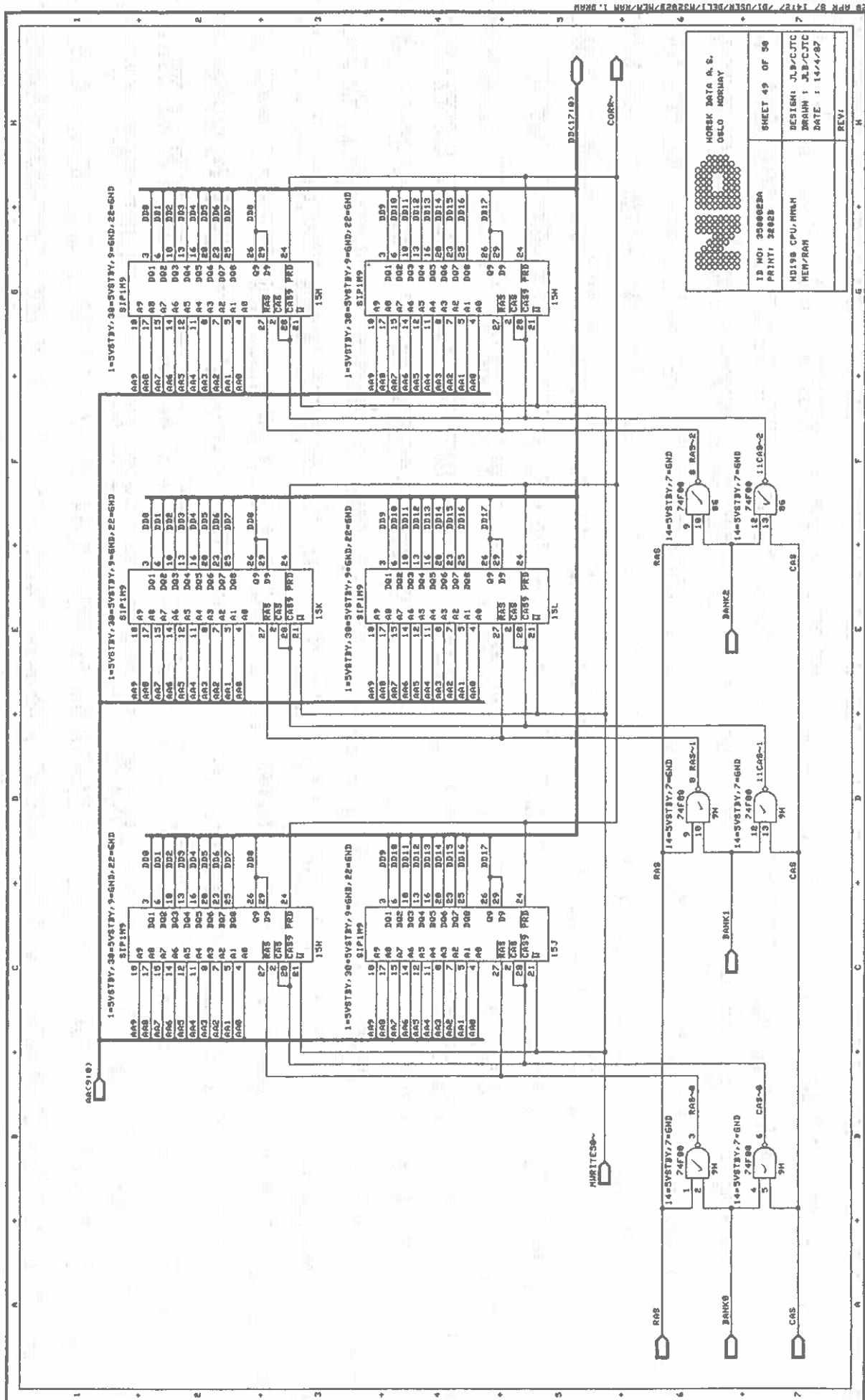


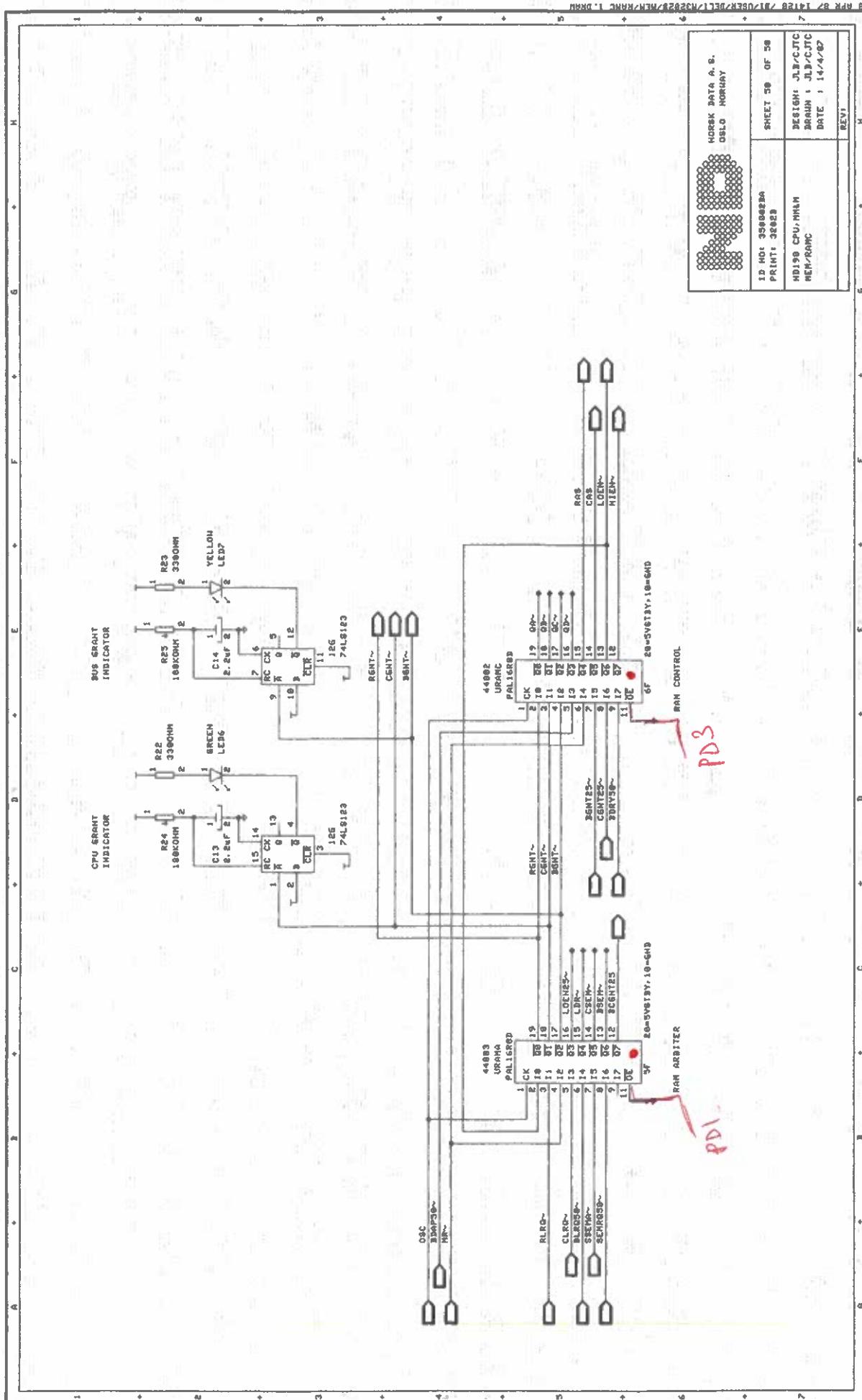


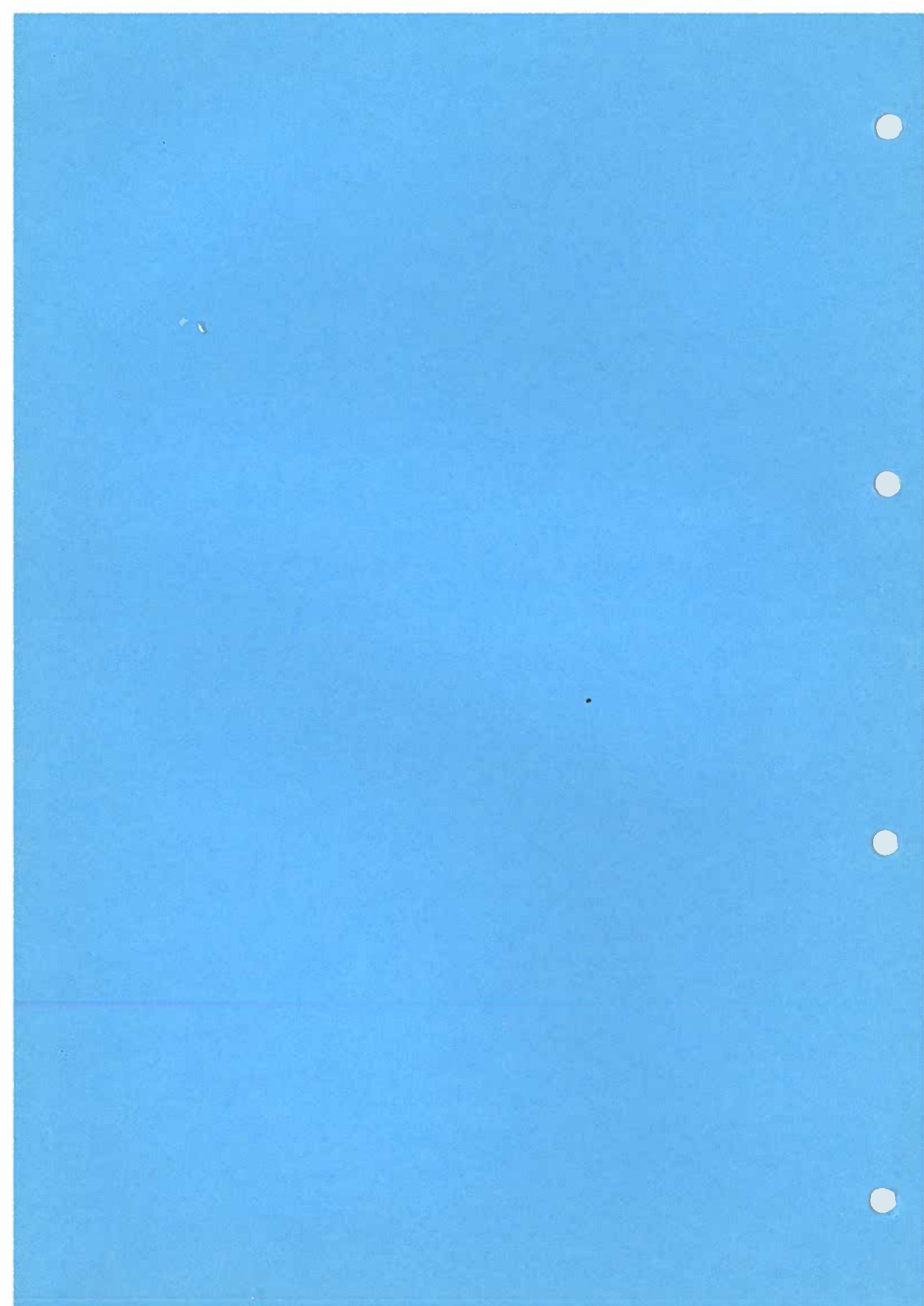












PAL's for board no. 3202C. ND120/CX. Last update 12. October 1987.
Standard is 4Mb memory configured contiguously from address 0.

Pos.no.	Check-sum	Device	Max. delay	Stock no.	Reg. no.	Mnemonic
11D	3B8B	16L8D	*	10ns	513035	44302B LBC1
2C	3932	16L8D	*	10ns	513035	44303B LBC2
1C	508A	16L8D	*	10ns	513035	44304E LBC3
15F		16L8D		10ns	513035	44305D CSCTL
21G	7856	16L8D		10ns	513035	44306A MMUCTL
13D	834E	16L8D		10ns	513035	44307C CYCLK
3F	46FA	16L8D		10ns	513035	44310D LBDIF
5D	59AF	16R4D		10ns	513060	44401B BTIM
18F		16R4D		10ns	513060	44402D UBITS
14D		16R4D		10ns	513060	44403C CYINO
15D		16R4D		10ns	513060	44404C CYIN1 <i>44404D</i>
19F	0F93	16R4D		10ns	513060	44407A ERFIX
9G	44C7	16R4D		10ns	513060	44445B CADEC
6G	3EF5	16R4D		10ns	513060	44446B BADEC
22F	3160	16R4D		10ns	513060	44408B VXFIX <i>44608A</i>
12D	7F40	16R6D		10ns	513061	44601B CYCFSM
10D	6B08	16R8D		10ns	513062	44801A BARB
5F	605E	16R8D		10ns	513062	44803A RAMA
6F		16R8B		15ns	500829	44902C RAMC NEW
7G	48B4	16R8B		15ns	500829	44904B MSIZE
8D	5963	16L8B	*	15ns	500827	45001B BPAR
2F		16L8B		15ns	500827	45008B DATA NEW*
4F	43ED	16L8B	*	15ns	500827	45009B ERROR
26H		16R4B		15ns	44511A	LEVO NEW
26H		16L8B		15ns	45011A	LEVO OLD

PAL's for board no. 3202B. ND120/CX 2Mb version.
Replace 44445X with 44425X, and 44446X with 44426X.

9G	411E	16R4D	10ns	513060	44425B	CADEC
6G	42EF	16R4D	10ns	513060	44426B	BADEC

PAL's for board no. 3202B. ND120/CX 6Mb version.
Replace 44445X with 44465X, and 44446X with 44466X.

9G	4441	16R4D	10ns	513060	44465B	CADEC
6G	42EF	16R4D	10ns	513060	44466B	BADEC

PROM's

Pos.no.	Check-sum	Device	Max. delay	Stock no.	Reg. no.	Floating Bit format	no.
23B		27256	250ns	500854	45132J	32bit 0-7	
26B		27256	250ns	500854	45133J	32bit 8-15	
23B		27256	250ns	500854	45148J	48bit 0-7	
26B		27256	250ns	500854	45149J	48bit 8-15	

* Will not work on the B-print. (Use versions without test mode).
NEW* Can use the previous version instead of a blank for raw pal.
OLD Need not be replaced on existing C-prints, but must be on all D-prints.

PAL's for board no. 3202B. ND120/CX. Last update 13 July 1987.
Standard is 4Mb memory configured contiguously from address 0.

Pos.no.	Check-sum	Device	Max. delay	Stock no.	Reg. no.	Mnemonic
11D	3BAB	16L8D	10ns	513035	44302A	LBC1
2C	393A	16L8D	10ns	513035	44303A	LBC2
1C	418B	16L8D	10ns	513035	44304 D	LBC3
15F	51E1	16L8D	10ns	513035	44305 D	CSCTL
21G	7856	16L8D	10ns	513035	44306A	MMUCTL
13D	834E	16L8D	10ns	513035	44307C	CYCLK
3F	43C4	16L8D	10ns	513035	44310 D	LBDIF
5D	4913	16R4D	10ns	513060	44401A	BTIM
18F	27CB	16R4D	10ns	513060	44402 D	UBITS
14D	3A22	16R4D	10ns	513060	44403 C	CYINO
15D	0F58	16R4D	10ns	513060	44404 C	CYIN1
19F	0F93	16R4D	10ns	513060	44407A	ERFIX
22F	3160	16R4D	10ns	513060	44408B	VXFIX
9G	44C7	16R4D	10ns	513060	44445B	CADEC
6G	3EF5	16R4D	10ns	513060	44446B	BADEC
12D	5D88	16R6D	10ns	513061	44601A	CYCFSM
10D	6B08	16R8D	10ns	513062	44801A	BARB
6F	5C1D	16R8D	10ns	513062	44802A	RAMC
5F	605E	16R8D	10ns	513062	44803A	RAMA
7G	48B4	16R8B	15ns		44904B	MSIZE
8D	5BE3	16L8B	15ns	500827	45001A	BPAR
2F	546C	16L8B	15ns	500827	45008A	DATA
4F	448D	16L8B	15ns	500827	45009A	ERROR
26H	13CA	16L8B	15ns	500827	45011A	LEVO
					44S11A	"

PAL's for board no. 3202B. ND120/CX 2Mb version.
Replace 44445X with 44425X, and 44446X with 44426X.

9G	411E	16R4D	10ns	513060	44425B	CADEC
6G	42EF	16R4D	10ns	513060	44426B	BADEC

PAL's for board no. 3202B. ND120/CX 6Mb version.
Replace 44445X with 44465X, and 44446X with 44466X.

9G	4441	16R4D	10ns	513060	44465B	CADEC
6G	42EF	16R4D	10ns	513060	44466B	BADEC

PROM's

Pos.no.	Check-sum	Device	Max. delay	Stock no.	Reg. no.	Floating Bit format	no.
23B	8025	27256	250ns	500854	45132F	32bit 0-7	
26B	C9B6	27256	250ns	500854	45133F	32bit 8-15	
23B	6541	27256	250ns	500854	45148F	48bit 0-7	
26B	8AFD	27256	250ns	500854	45149F	48bit 8-15	

PAL16L8
JLB/CJTC 14AUG86
44302B, 11D, LBC1

/Q0 /Q2 /CC2 /BDRY25 /BDRY50 /CGNT /CGNT50 /CACT /TERM GND
/BGNT /CGNTCACT /RT /IORQ TEST NC16 /DSTB /EMD /BGNTCACT VCC

```
IF (/TEST) EMD = Q2 * Q0 * CACT ; CPU CYCLE TO BUS SET
    + EMD * CACT ; " HOLD
    + CGNT * CGNT50 ; CPU CYCLE TO MEM SET
    + EMD * RT * CC2 * /TERM ; ) HOLD TERMS FOR
    + EMD * IORQ * CC2 * /TERM ; ) CPU READ, FETCH AND
    ; ) MAP CYCLES
```

IF (/TEST) CGNTCACT = CGNT + CACT

IF (/TEST) BGNTCACT = BGNT + CACT

```
IF (/TEST) DSTB = CGNT + CACT * /BDRY50 * /BDRY25 * /IORQ
    + CACT * IORQ * CC2 ; IOX CYCLE
```

DESCRIPTION

```
; 060387 JLB: EMD WAS HOLDING IN ADDRESS PART OF IOX CYCLES AFTER
; BUFFERED WRITE CYCLES.
; EMD - ENABLE DATA PATH BETWEEN CD AND LBD
; 270387 CJTC: NEW SIGNAL DSTB TO SAMPLE DATA AT LBD/CD BUFFERS ON
; CPU FROM BUS READ, AT BDRY.
; 040487 JLB: DSTB MUST NOT CLOCK DATA BEFORE CACT GOES OFF IN IOXES.
; (NEGATIVE SETUP OF DATA IN BUS SPECS.)
;
; 180587 CJTC: 3202B
; 070887 JLB: 3202C ONLY! (TEST MODE).
```

PAL16L8
JLB/CJTC 15AUG86
44303B, 2C, LBC2 - LOCAL DATA BUS CONTROL PAL

/CACT /CGNT /EADR /BINPUT50 MISO /IOD WRITE TEST NC9 GND
/BACT /WLBD NC13 NC14 NC15 NC16 /CMWRITE /CBWRITE /WBD VCC

; LBD TO BD TRANSCEIVER
; -----

; WBD - DIRECTION FROM LBD TO BD

IF (/TEST) WBD = EADR ; ADDRESS FROM CPU TO BUS
+ CBWRITE ; CPU WRITE CYCLE TO BUS
+ IOD * MISO * /BINPUT50 ; OUTPUT PART OF IOX
+ BACT ; DMA OUTPUT CYCLE

; (CBWRITE) - CPU TO BUS WRITE. STARTS ONLY WHEN THE BUS IS GRANTED.
; LASTS UNTIL THE END OF THE BUS CYCLE.

IF (/TEST) CBWRITE = WRITE * CACT
+ CBWRITE * CACT

; CD TO LBD TRANSCEIVER
; -----

; WLBD - DIRECTION FROM CD TO LBD

IF (/TEST) WLBD = CBWRITE ; CPU WRITE CYCLE TO BUS
+ CMWRITE ; CPU WRITE CYCLE TO LOCAL MEMORY
+ IOD * MISO * /BINPUT50 ; OUTPUT PART OF IOX

; (CMWRITE) - CPU WRITE TO LOCAL MEMORY. LASTS UNTIL END OF MEMORY CYCLE
; ON BUFFERED WRITE.

IF (/TEST) CMWRITE = WRITE * CGNT
+ CMWRITE * CGNT

DESCRIPTION

; 180587 - 3202B
; 070887 JLB: 3202C ONLY ! (TEST MODE).

PAL16L8
CJTC 02SEP86
44304E,1C,LBC3 - LOCAL DATA BUS CONTROL PAL

/CGNT /BGNT /BGNT50 /MWRITE /BDAP50 /EBUS /IBAPR /GNT TEST GND
NC11 NC12 /EBD CLKBD SAPR FAPR EBADR /BACT DBAPR VCC

; BACT - BUS ACTIVITY. LASTS FOR COMPLETE DMA TO LOCAL MEMORY
; CYCLE (ONLY ON MEMORY READ)

IF (/TEST) BACT = BGNT50 * /MWRITE ; ENABLE FOR DATA ONLY AFTER ADDRESS
+ BACT * BDAP50 ; HOLD AFTER BDAP FINISHED

; EBD - ENABLE BUS DATA. ENABLE LBD TO BD TRANSCEIVER
; SHOULD BE DISABLED DURING CGNT * /BACT, IE DISABLE WHEN CPU
; IS ACCESSING LOCAL MEMORY, EXCEPT WHEN TRANSCEIVER IS BEING USED
; AS A REGISTER TO HOLD DATA FROM A PREVIOUS DMA MEMORY READ.

IF (/TEST) EBD = EBUS * /CGNT * /GNT
+ EBUS * BGNT
+ EBUS * BACT

; EBADR - ENABLE ADDRESS FROM BUS TO LOCAL MEMORY

IF (/TEST) /EBADR = /GNT * /BGNT ; TURN ON AT BAPR WITH GNT
+ /IBAPR * /EBADR ; HOLD UNTIL BGNT AND GNT BOTH GONE
+ /GNT * /EBADR
; SLOW INVERSION

IF (/TEST) /FAPR = /IBAPR
IF (/TEST) /SAPR = /FAPR
IF (/TEST) /DBAPR = /SAPR

; CLOCK PULSE TO 648'S.

IF (/TEST) /CLKBD = /SAPR * /BGNT50 ; CLOCK ADDRESSES ON DELAYED BAPR.
+ /SAPR * /BDAP50 ; CLOCK DATA 50NS AFTER START OF
+ /SAPR * /MWRITE ; BGNT*BDAP ON MEMORY WRITES FROM DMA.

DESCRIPTION

; 200387 CJTC: NEED TO SLOW DOWN APR TO AS648 BUS TCVRS. PUT IT
; THROUGH THIS PAL INSTEAD OF F04
; 200387 JLB: EBADR COMES ON AT BAPR TO AVOID SPIKE ON LBD.
; NEW INPUT CGNT~
; 230387 JLB: APR DELAYED 3XPAL DELAY
; 240387 JLB: EBD MUST NOT CHANGE WHEN DATA IS CLOCKED IN.
;
; 180587 - 3202B
; 310787 JLB: BUFFERED DMA WRITE: CLOCK DATA IN 648'S ALSO.
; 040887 JLB: BUFFERED DMA WRITE: NEED TO ENABLE THE REGISTER IN THE
; 648'S FOR THE PERIOD OF BGNT.
; 060887 D JLB: EBADR CHANGED TO MAKE BUFFERED DMA WRITE WORK.
; 090887 E JLB: TEST MODE FOR C-PRINT.

PAL16L8
JLB 26NOV86
44305D,15F,CSCTL

/FORM /CC1 /CC2 /CC3 /LCS /RWCS /WCS FETCH /BRK GND
/TERM /WCSTB LUA12 /WCA /ELOW /EUPP /EWCA /ECSL /WICA VCC

; CONTROL STORE CONTROL

IF (VCC) WICA = WCA * FETCH * /TERM ;WRITE PULSE TO MICROINSTRUCTION CACHE

IF (VCC) WCSTB = /CC3 * CC2 * CC1 * WCS * RWCS ; e+f WRITE PULSE TO WRITEABLE
+ CC3 * /CC2 * CC1 * LCS ;m+n WRITE PULSE DURING LOAD CONTROL

IF (VCC) ECSL = RWCS * /WCS * CC3 * /TERM ;READ CONTROL STORE HOLD
+ RWCS * /WCS * /CC1 * CC2 * /TERM ;HOLD OVERLAP WITH EWCA

IF (VCC) EWCA = RWCS * /CC3 * CC2 * /TERM ;ENABLE WCA REG. IN MIC ONTO MA
+ RWCS * /CC3 * CC1 * /TERM ; AVOID BLIP ON NEXT CYCLE

IF (VCC) EUPP = LUA12 ;NORMAL ADRESSING
+ WCA * FETCH ;WRITE INTO MICROINSTRUCTION CACHE
+ FETCH * /CC1 * /CC2 * /CC3 * /TERM ;ENABLE IN THE FIRST 50NS
; + HOLD TIME = 75NS

IF (VCC) ELOW = /LUA12 * /FETCH ;NORMAL ADRESSING. ON FETCH EITHER MI
+ /LUA12 * TERM ;ENABLE ACCORDING TO LUA12 BEFORE FET
+ FORM * /BRK * CC2 * /TERM ;OR A MAP IS USED.
+ FORM * /BRK * CC3 * /TERM ;DO A MAP
+ /LUA12 * BRK * CC2 * /TERM ;ON BRK: USE BANK SELECTED BY LUA12.
+ /LUA12 * BRK * CC3 * /TERM ;

DESCRIPTION

; 130387 JLB: ELOW ALWAYS ENABLED ON TERM IF LUA12 IS LOW.
; MAY SPEED UP NON FETCH CYCLES.

; 180587 3202B
; 090687 JLB: EWCA MUST NOT BE ENABLED DURING a AND b. WILL CREATE BLIP ON
; NEXT CYCLE.
; 090687 JLB: ECSL HOLD IN g AND h.
; 030987 JLB: WRITE IN CONTROL STORE DOES NOT WORK. WRITE PULSE STARTS TOO
; SOON. WCSTB CHANGED TO e+f IN THIS CASE, AND TO m+n DURING LCS
; TO BE ABLE TO USE 250ns PROMS.

PAL16L8
JLB 26NOV86
44306A,21G,MMUCTL

CAO WRITE /DVACC /RT /WCHIM DOUBLE /EMCL /CC2 /WCA GND
LSHADOW /LAPA /EPT /EPMAP /EPTI /EIPL /EIPU /EIPUR /ECD VCC

; MEMORY MANAGEMENT CONTROL

```
IF (VCC) ECD = WCA * /LSHADOW           ;DISABLE CACHE ON SHADON ACCESSES
      + RT * /LSHADOW * /CC2             ;ENABLE WHEN WRITING IN CACHE
      + CAO * /LSHADOW * /EMCL          ;ENABLE IN THE FIRST PART OF READ/FETCH CYCLES

IF (VCC) LAPA = DVACC * /LSHADOW * /WCHIM ;LA TO PPN WHEN VIRTUAL ACCESSES ARE DISABLED
                                              ;WE ARE NOT ACCESSING SHADOW MEMORY OR WRITIN
                                              ;CACHE INHIBIT MAP

IF (VCC) EIPUR = /DOUBLE * LSHADOW * WRITE ;WRITING IN SHADOW IN REX MODE WILL MASK AWAY
                                              ;THE PROTECT BITS

IF (VCC) EIPU = WCHIM                   ;PASS PAGE NUMBER TO BE INHIBITED FROM IDB
      + DOUBLE * LSHADOW * CAO        ;SHADOW ACCESSES IN SEX MODE
      + DOUBLE * LSHADOW * WRITE       ;WRITING IN SHADOW IN SEX MODE WILL WRITE A F
                                              ;BIT PAGE NUMBER

IF (VCC) EIPL = WCHIM                   ;PASS PAGE NUMBER TO BE INHIBITED FROM IDB
      + DOUBLE * LSHADOW * CAO        ;SHADOW ACCESSES IN SEX MODE
      + LSHADOW * WRITE              ;WRITING LOWER BYTE (SAME FOR REX AND SEX)

IF (VCC) EPTI = LSHADOW * /EMCL * WRITE  ;DISABLE DURING EMCL TO AVOID JAMMING THE IDB
      + LSHADOW * /EMCL * /DOUBLE    ;ENABLE ONLY WHEN IN SHADOW
      + LSHADOW * /EMCL * /CAO       ;DISABLE WHEN IN SEX MODE WE ARE READ/FETCHIN
                                              ;ADDRESSES. (USE OTHER SRAM BLOCK).

IF (VCC) EPMAP = /WCHIM * /DVACC * /WRITE ;DISABLE WHEN WRITING THE CACHE INHIBIT MAP
      + /WCHIM * /DVACC * /LSHADOW   ;DISABLE WHEN VIRTUAL ACCESS IS DISABLED AN
      + /WCHIM * /DVACC * /DOUBLE    ;ACCESSING SHADOW MEMORY EITHER.
      + /WCHIM * /DVACC * CAO        ;DISABLE ON SHADOW MEMORY WRITE IN SEX MODE
      + /WCHIM * LSHADOW * /WRITE    ;ADDRESSES.
      + /WCHIM * LSHADOW * /DOUBLE
      + /WCHIM * LSHADOW * CAO

IF (VCC) EPT  = /WRITE * /EMCL           ; DISBALE ON EMCL OR
      + /LSHADOW * /EMCL            ; WRITING IN OTHER HALF
      + /DOUBLE * /EMCL             ; WHEN IN SEX MODE
      + /CAO * /EMCL
```

DESCRIPTION

; 25/2/87 JLB EQUATION FOR EPT MISSING
; 18/5/87 3202B

PAL16L8
JLB 26NOV86
44307C,13D,CYCLK

/TERM /CC0 /CC1 /CC2 /CC3 /FORM /BRK /RWCS /TRAP GND
VEX /MACLK /MAP /ETRAP UCLK /EORF CYD WRFSTB /MCLK VCC

; CYCLE CONTROL CLOCK GENERATOR.

IF (VCC) MCLK = RWCS * /CC3 ;BECAUSE THE CONTROL STORE ADDRESS TO B
+ RWCS * CC2 ;IN PRESENTED ONTO MA. THEN THE ADDRESS
;STORE LOCATION TO BE EXECUTED IS PRESE

IF (VCC) /WRFSTB = CC3 ;b ON 75NS CYCLES TO PROVIDE A WRITE PU
+ CC2
+ CC1
+ /CC0
+ TERM

IF (VCC) /CYD = CC3 ; d + e + f WRITE PULSE USED IN WMAP AND WCA
+ /CC1
+ /CC2 * CC0
+ TERM

IF (VCC) EORF = /CC3 * /CC2 * CC1 * /CC0 * /TERM ;d MISC WRITE PULSE.

IF (VCC) /UCLK = CC3 ;ON c ON ALL MEMORY REQUESTS.
+ CC2 ;USED TO UPDATE USED BITS AND CLOCK TRA
+ /CC1
+ /CC0
+ TERM ;EXPERIMENT TO SEE IF UCLK ON TERM WAS DANGEROUS.

IF (VCC) MAP = FORM * /BRK * CC2 * /TERM ;MUST NOT COME BEFORE ALL SHORT CYCLES

IF (VCC) MACLK = MAP * /CC3 * CC2 * CC1 ;e+f CAPTURE CD FROM MEMORY THROUGH M
+ TRAP * /CC3 * CC1 * /CC0 ;d+e CAPTURE TRAP VECTOR
+ RWCS * /CC3 ; CAPTURE MICROADDRESS AFTER EWCA
+ RWCS * CC2 * /CC1 ; TURNED OFF

IF (VCC) ETRAP = /TERM * /VEX * CC3 ; ENABLE TRAPS ONLY OUTSIDE t OR a
+ /TERM * /VEX * CC2 ; UNSTABLE TRAP IN THIS PERIOD
+ /TERM * /VEX * CC1 ; CAN DESTROY MA !
+ /TERM * /VEX * CC0 ; DISABLE TRAPS DURING VEX

DESCRIPTION

;280287 JLB: ECREQ TO LOCAL MEMORY GIVES TWO CGNTS. A SHORTER EORF,
; I.E. ONLY ON e AND NOT ON f, WILL MAKE ECREQ GO OFF 25NS SOONER
;AND HOPEFULLY CURE THIS.
;010387 JLB: ETRAP NEW OUTPUT. WILL DISABLE TRAP ON t AND a.
;080387 JLB: REMOVED UCLK ON CACHE HIT CYCLES.
;160387 JLB: REMOVED TERM IN MCLK AND MACLK TO PROVIDE SYMMETRICAL
; CLOCKS IN 50 NS CYCLES.
;170387 JLB/CJTC: REMOVED MREQ - NEEDED THE INPUT FOR NEW SIGNAL VEX.
; VEX SHOULD DISABLE TRAPS.
;180387 JLB: EORF ON d ONLY. MACLK ON e + f ON MAP.

;
; 270487 : M3202B
;B 300687 JLB: CYD POSITIVE POLARITY.
;C 130787 JLB: CYD FROM d TO f.

AL16L8

ADGD 13/8/86

44310D,3F,LBDIF

/HIEN /BGNT /CGNT /LOEN /CGNT50 ECCR /BGNT50 /BGNT75 /BDAP50 GND
/MR RDATA /MWRITE50 /BIOXE /REF100 RAS /BIOXL /BDRY /BCGNT50R VCC

IF (VCC) BCGNT50R = /MWRITE50 * BGNT * BGNT50 ;FROM 50NS AFTER GNT ON READ C
+ /MWRITE50 * CGNT * CGNT50 ;LASTS FOR THE REST OF THE CYC

IF (VCC) BDRY = /MWRITE50 * BDAP50 * BGNT * /LOEN * /HIEN * /RAS ;BUS READ FROM LOCAL M
+ MWRITE50 * BDAP50 * BGNT50 * BGNT ;BUS WRITE TO LOCAL MEM.
+ BIOXL * ECCR ;IOX=ECCR
+ /MR * BDRY * BDAP50 ;HOLD TERM FOR MEMORY
+ /MR * BDRY * BIOXE ;HOLD TERM FOR IOX CYCLE
+ REF100
+ /MWRITE50 * BDAP50 * /BGNT50 * BGNT75 ;LATE BDRY FOR 10MHZ DISK.

F (VCC) BIOXL = BIOXE * /BGNT * /CGNT

IF (VCC) /RDATA = MWRITE50 ;INDICATES DATA READY ON READ CYCLES
+ LOEN
+ HIEN
+ /BGNT * /CGNT
+ RAS

DESCRIPTION

;280287 JLB: ECCR WRONG POLARITY, RESPONDS WITH BDRY TO ALL NON-
;EXISTING IOX-ES.

;280287 JLB: NEW INPUT REF^, TO GENERATE A REF PULSE OF 175-200NS
;DURATION BY GENERATING BDRY^.

;

;180587 M3202B

;090787 B JLB: RAS USED IN RDATA TO AVOID SPIKE ON TRANSITION FROM
; LOEN TO HIEN.

;290787 C JLB: BD HAD A TYPICAL SETUP TIME OF 140NS BEFORE BDRY ON DMA READ
; CHANGED TO 65NS (25NS REQUIRED). DMA BUFFERED WRITE: BDRY START
; 50NS AFTER BGNT GOES ACTIVE ON DMA WRITE, AND LASTS UNTIL BGNT
; OR BDAP50 GOES OFF (105NS MIN.). THIS IS TO GIVE TIME FROM
; GRANT OFF TO BMEM ON IN THE FOLLOWING CYCLE.

;110887 D JLB: BDRY CAN BE LOST IF BDRY50 IS NOT PRESENT AT THE TIME STATE
; 7 IN THE RAM CONTROL IS REACHED. HAPPENS WITH 10MHZ DISK CONTR.
; SINTRAN STOPS ON LEVEL 14 DURING STARTUP.

PAL16R4

JLB 12AUG86

BTIM.PAL

44401B,5D,BTIM

OSC /CC2 /CACT /CACT25 /BDRY50 /CGNT /CGNT50 /TERM /IORQ GND
/OE /EADR /EIOD /NC14 /Q2 /Q1 /Q0 /DAP /APR VCC

Q0 := CACT * /Q2 * /Q1 * /Q0 * /CACT25
+ /Q2 * /Q1 * Q0
+ Q2 * Q1 * Q0
+ Q2 * Q1 * /Q0

Q1 := /Q2 * Q0 * Q1
+ /Q2 * Q0 * /Q1
+ Q1 * /Q0 * Q2
+ Q1 * /Q0 * /Q2

Q2 := Q1 * /Q0 * Q2
+ Q1 * /Q0 * /Q2
+ Q2 * Q0 * Q1
+ Q2 * Q0 * /Q1

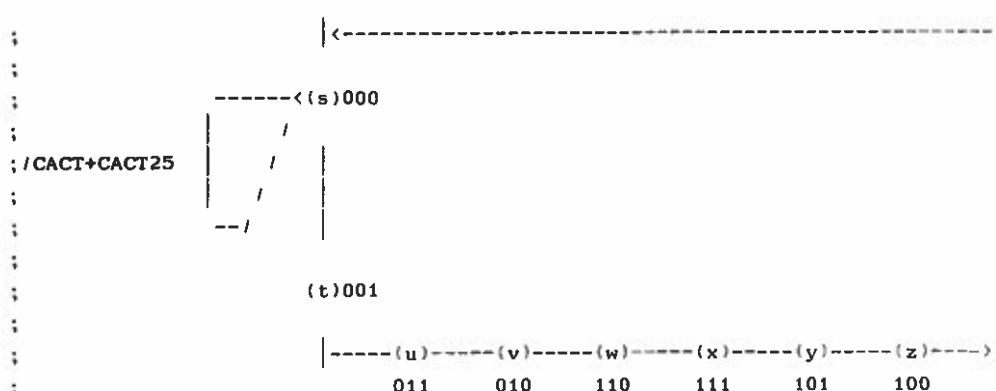
IF (VCC) APR = /Q2 * Q1 * CACT

IF (VCC) EADR = /Q2 * Q0 * CACT ; t + u
+ /Q2 * Q1 * CACT ; u + v
+ Q1 * /Q0 * CACT ; v + w
+ /Q2 * /Q1 * /Q0 * CACT * /CACT25 ; s
+ CGNT * /CGNT50 ; address part for CPU cycle

IF (VCC) DAP = /Q2 * Q1 * /Q0 * CACT * CACT25
+ DAP * /TERM * IORQ * CC2

IF (VCC) EIOD = IORQ * /Q2 * Q1 * /Q0 * CACT * CACT25 * /BDRY50 * CC2
;STARTS WHEN THE s STATE HAS BEEN REACHED AFTER COMPLETING THE LOOP.

DESCRIPTION



; 010387 JLB: EIOD TOO SOON, ONLY 15NS SETUP FOR BD BEFORE BIOXE.
; WOULD NOT LOAD FROM FLOPPY. EIOD FRONT FLANK DELAYED 25NS.

; SAME WITH DAP. DAP HELD FOR THE REST OF THE CYCLE UNTIL TERM
; ON IORQ.
; 060387 JLB: DAP HELD INTO ADDRESS PART OF IOX CYCLES AFTER A
; BUFFERED WRITE CYCLE. SWAPPED IOD FOR IORQ IN EIOD.
; USING CC2 (NEW INPUT) TO QUALIFY DAP AND EIOD
; STATE MACHINE
;
; 180587 M3202B
; 090887 B JLB: MAXIMIZED EQUATIONS TO MATCH CLOCK SKEW.

PAL16R4
JLB/CJTC 8AUG86
44402D, 18F, UBITS

UCLK /DT /RT LSHADOW FMISS CYD /HITO /HIT1 /EWC GND
/OE OUBI OUBD /IHIT NC15 NUBD NUBI /WCA /USED VCC

; CACHE USED BIT CONTROL

IHIT := HIT1 * HIT0 * OUBI * RT * /DT * /WCA ;FETCH
+ HIT1 * HIT0 * OUBD * RT * DT * /WCA ;READ

IF (VCC) USED = OUBI * RT * /DT * /WCA ;FETCH
+ OUBD * RT * DT * /WCA ;READ

IF (VCC) WCA = /RT * DT * EWC * CYD * /FMISS * /LSHADOW ;WRITE OUTSIDE SHADOW
+ RT * /IHIT * EWC * CYD * /FMISS * /LSHADOW ;FETCH/READ WITHOUT HIT
;OUTSIDE SHADOW

/NUBI := DT * /OUBI ; READ OR WRITE KEEP OLD VALUE
+ /RT * DT * HIT0 * HIT1 ; CLEAR IF WRITE WITH HIT

/NUBD := RT * /DT * /OUBD ; IF FETCH KEEP OLD VALUE

DESCRIPTION

;B 050387 JLB: USED BITS INVERTED TO ACTIVE HIGH.
;C 060387 JLB: SHOULD NOT PRODUCE WCA WHEN IN SHADOW.
;D 120387 JLB: HIT PATH IMPROVED

; 180576 M3202B
;B 300687 JLB: CYD POSITIVE POLARITY.
;C 130787 JLB: HOLD TERM ON WCA REMOVED BECAUSE CYD FROM d TO f.
;D 030987 JLB: TERM REMOVED AS AN INPUT, FMISS NEW INPUT PIN 5.
; WCA SHOULD NOT APPEAR WHEN FMISS (TSET FAILS).

PAL16R4
JLB 26NOV86
44403C,15D,CYINO

CLK CSDELAY0 CSDLY CSECOND CSLOOP /ACOND /MR LUA12 /MAP GND
/OE /NC12 /SLCOND /DMAP /DMA12 /MDLY /LCS /NC18 /DLY0 VCC

; CYCLE CONTROL INPUT GENERATOR. PART 0.

IF (VCC) DLY0 = MDLY ;25NS DELAY ON MICROCODE REQUEST
+ CSDELAY0 ;25NS DELAY OF PREVIOUS CYCLE ON MICRO
+ ACOND * CSECOND ;CONDITIONAL MICROSEQUENCING
+ ACOND * CSLOOP ;USING ALU RESULT
+ LUA12 * /DMA12 ;
+ /LUA12 * DMA12 ;CHANGING FROM LOWER TO UPPER CONTROL
+ DMAP ; AFTER MAP TO AVOID CSDELAY BEING TO

LCS := MR ;LCS FROM MR AND UNTIL MA12 HAS GONE H
+ /DMA12 * /LUA12 * LCS ;I.E. LMA COUNTED FROM 0 TO 8K.
+ DMA12 * LUA12 * LCS
+ /DMA12 * LUA12 * LCS

MDLY := CSDLY

DMA12 := LUA12

DMAP := MAP

IF (VCC) SLCOND = ACOND * CSECOND
+ ACOND * CSLOOP

DESCRIPTION

; 270487 : M3202B
; 160687 JLB: DLY0 AFTER EVERY MAP.
; 070987 C JLB: SLCOND NEW OUTPUT USED IN 44404

PAL16R4
JLB 26NOV86

44404C,14D,CYIN1
CLK CSDELAY1 CSALUM1 CSALUM0 CSALUI8 CSALUI7 LBA3 LBA1 LBA0 GND
/OE /DLY1 /SLCOND /NC14 /NC15 /NC16 /NOWRIT /NC18 /RRF VCC

; CYCLE CONTROL INPUT GENERATOR. PART 1.

IF (VCC) DLY1 = CSDELAY1 * /LBA3 * LBA1 * LBA0 ; 25NS DELAY OF PREVIOUS CYC
+ RRF * SLCOND ; ON MICROCODE REQUEST IN AD
; DLY0. NB.! MUST ALSO HAVE
; OF LONG COMPUTATION TIME.
; THIS DELAY IS ONLY USED WH
; IS USED
; FOR ADDRESS COMPUTATION IN
NOWRIT := /CSALUM1 * /CSALUI8 * /CSALUI7
+ /CSALUM0 * /CSALUI8 * /CSALUI7

DESCRIPTION

CAN BE CHANGED TO 16R6 IF NEEDED

; 270487 M3202B
; 150687 JLB: DELAY ALSO WHEN WE ARE NOT WRITING TO B- OR X-REGISTER.
; (THEY CAN STILL BE USED FOR ADDRESS COMPUTATION IN THE NEXT CYCLE !!!!)
; 070987 C: DLY1 WHEN WE HAVE AN ALU CONDITION USED IN MICROBRANCHING COMBI
; WITH IDBS REG IN THE PREVIOUS CYCLE.

PAL16R4
JLB 25FEB87
44407A,19F,ERFFIX

CLK IDBS0 IDBS1 IDBS2 IDBS3 IDBS4 WRTRF /LCS NC9 GND
/OE /NC12 /NC13 /NC14 /NC15 /NC16 /RRF /NC18 /ERF VCC

; IDBS = REG FILE = 5

RRF := /LCS * /IDBS4 * /IDBS3 * IDBS2 * /IDBS1 * IDBS0

; ERF

IF (VCC) ERF = RRF
+ WRTRF

DESCRIPTION

; 180587 M3202B

PAL16R4
JLB/CJTC 17MAR87
44408B,22F,VEXFIX

CLK C4 C3 C2 C1 C0 M1 M0 /LCS GND
/OE IDB2 NC13 /RWCS OPCCLCS VEX /LDEXM NC18 NC19 VCC

; TO FIX VIRTUAL EXAMINE BUG IN CGA
; + MISC. OTHER BUGS.

LDEXM := C4 * /C3 * /C2 * /C1 * C0 * M1 * M0 * /LCS ; COMMAND 21.3

/VEX := LDEXM * /IDB2 ; CLEAR
+ /LDEXM * /VEX ; HOLD CLEAR
+ LCS

/OPCLCS := /C4 + /C3 + /C2 + /C1 + C0 + /M1 + M0 + LCS ; COMMAND 36.2

RWCS := C4 * C3 * C2 * C1 * /C0 * /M1 * M0 * /LCS ; COMMAND 36.1

DESCRIPTION

; 180587 M3202B
; 150687 RWCS SIGNAL TOO SLOW FROM NEC G.A. MUST BE DONE IN A PAL.
; 010787 REGISTRATION NUMBER CHANGED FROM 44501B

PAL16R4
ADGD 18/8/86
44415B,9G,CADEC
CPU ADDRESS DECODER FOR 1MB MEMORY
CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND
/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20
* /PPN19 * /MOFF ;1MB

IF (VCC) CRQ = ECREQ * IORQ ;ECREQ WILL HOLD UNT
+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21
+ ECREQ * PPN20
+ ECREQ * PPN19

/BANK0 := PPN21 + PPN20

/BANK2 := PPN21 + /PPN20

/BANK1 := /PPN21 + PPN20

MSIZE0 = VCC

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISBLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
ADGD 18/8/86
44416B,6G,BADEC
DMA ADDRESS DECODE FOR 1MB MEMORY
DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT
IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + BD20 + BD19 + MOFF ;1 MB

IF (VCC) /DDBAPR = /DBAPR
/BANK0 := BD21 + BD20
/BANK2 := BD21 + /BD20
/BANK1 := /BD21 + BD20

MSIZE1 = VCC

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
ADGD 18/8/86
44425B,9G,CADEC
CPU ADDRESS DECODER FOR 2MB MEMORY
CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND
/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;EACH LINE R
;TO ALLOW MA
;IN THE ADDR
;THE 4MB (2M
;NEED NO HOL
;ECREQ WILL HOLD UNT
IF (VCC) CRQ = ECREQ * IORQ
+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21
+ ECREQ * PPN20

/BANK0 := PPN21 + PPN20

/BANK2 := PPN21 + /PPN20

/BANK1 := /PPN21 + PPN20

MSIZE0 = GND

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
ADGD 18/8/86
44426B,6G,BADEC
DMA ADDRESS DECODE FOR 2MB MEMORY
DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT

IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + BD20 + MOFF ;2 MB

IF (VCC) /DDBAPR = /DBAPR

/BANK0 := BD21 + BD20

/BANK2 := BD21 + /BD20

/BANK1 := /BD21 + BD20

MSIZE1 = GND

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
ADGD 18/8/86
44445B,9G,CADEC
CPU ADDRESS DECODER FOR 4MB MEMORY
CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND
/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;EACH LINE R
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * PPN20 * /MOFF ;TO ALLOW MA
+ ECREQ * IORQ * /PPN23 * /PPN22 * /PPN21 * PPN20 * /MOFF ;IN THE ADDR
+ ECREQ * /PPN23
+ ECREQ * /PPN22
+ ECREQ * /PPN21 ;THE 4MB (2M
;NEED NO HOL
;ECREQ WILL HOLD UNT

/BANK0 := PPN21 + PPN20

/BANK2 := PPN21 + /PPN20

/BANK1 := /PPN21 + PPN20

MSIZE0 = VCC

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISBLE THE WHOLE MEMORY. PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4

ADGD 18/8/86

44446B, 6G, BADEC

DMA ADDRESS DECODE FOR 4MB MEMORY

DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT

IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + MOFF ;4 MB

IF (VCC) /DDBAPR = /DBAPR

/BANK0 := BD21 + BD20

/BANK2 := BD21 + /BD20

/BANK1 := /BD21 + BD20

MSIZE1 = GND

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
ADGD 18/8/86
44465B,9G,CADEC
CPU ADDRESS DECODER FOR 6MB MEMORY
CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND
/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;EACH LINE R
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * PPN20 * /MOFF ;TO ALLOW MA
+ ECREQ * /IORQ * /PPN23 * /PPN22 * PPN21 * /PPN20 * /MOFF ;IN THE ADDR
;THE 4MB +2M
;NEED NO HOL
;ECREQ WILL

IF (VCC) CRQ = ECREQ * IORQ
+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21 * PPN20

/BANK0 := PPN21 + PPN20

/BANK2 := PPN21 + /PPN20

/BANK1 := /PPN21 + PPN20

MSIZE0 = GND

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
ADGD 18/8/86
44466B,6G,BADEC
DMA ADDRESS DECODE FOR 6MB MEMORY
DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT

IF (VCC) /AOK = /BMEM
+ BD23
+ BD22
+ BD21 * BD20
+ MOFF ;6 MB

IF (VCC) /DDBAPR = /DBAPR

/BANK0 := BD21 + BD20

/BANK2 := BD21 + /BD20

/BANK1 := /BD21 + BD20

MSIZE1 = VCC

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR
; CHANGED TO AOK

; 180587 M3202B
; 060687 JLB: SWAPPED BANK1 AND BANK2 TO PROVIDE ENOUGH SPACE FOR PACKAGES.

PAL16R4
CJTC 30SEP87
44511A, 26H, LEVO

CLK PILO PIL1 PIL2 PIL3 CLK /MREQ /WCA NC9 GND
/OE LEVO /NC13 /NC14 /NC15 /NC16 CUP /NC18 /CWR VCC

; LEVEL ZERO

IF (VCC) /LEVO = PIL3
+ PIL2
+ PIL1
+ PILO

; (CWR)
IF (VCC) CWR = MREQ * WCA ; SET ON WRITE TO CACHE
+ CWR * /CLK ; HOLD UNTIL START OF NEXT CYCLE

; CUP
/CUP := /CWR * MREQ ; CUP := CWR * MREQ ; SET ON WRITE TO CACHE
+ /CUP * /MREQ ; + CUP * /MREQ ; HOLD UNTIL NEXT MREQ

DESCRIPTION

; 180587 M3202B

061087 CJTC : ADDED CACHE UPDATE BIT (CUP) FOR M3202D

PAL16R6
JLB 26NOV86
44601B, 12D,CYCFSM

OSC /DLY1 /DLY0 CSDELAY0 WAIT1 WAIT2 /CGNTCACT HIT /BRK GND
/OE /SHORT /CC3 /CC2 /CC1 /CC0 /TERM /CX /SLOW VCC

; CYCLE CONTROL STATE COUNTER. FAST VERSION (ND-120/CX).

CX := VCC ; THIS IS THE FAST VERSION

TERM := /CC3 * /CC2 * /CC1 * /CC0 * SHORT * /TERM * /DLY0 * /CSDELAY0 ;50NS CYCLE
+ /CC3 * /CC2 * /CC1 * CC0 * SHORT * /BRK * /DLY1 * /TERM ;75NS CYCLE
+ /CC3 * /CC2 * /CC1 * CC0 * HIT * /BRK * /DLY1 * /TERM ;75NS CYCLE
+ /CC3 * /CC2 * CC1 * CC0 * SHORT * /BRK * /TERM ;100NS CYCLE
+ /CC3 * /CC2 * CC1 * CC0 * HIT * /BRK * /TERM ;100NS CYCLE
+ /CC3 * CC2 * CC1 * CC0 * BRK * /TERM ;BRK CYCLE (>200
+ /CC3 * CC2 * /CC1 * CC0 * SLOW * /TERM ;SLOW CYCLES INCL. FE
+ CC3 * /CC2 * /CC1 * /CC0 * /TERM ;UART,LCS,RWCS CYCLES

CC3 := CC2 * /CC1 * /CC0 * /TERM ;h+i+j+k+l+m+n+o
+ CC3 * CC1 * /TERM * CC2
+ CC3 * CC1 * /TERM * /CC2
+ CC3 * CC0 * /TERM * CC2 * CC1
+ CC3 * CC0 * /TERM * /CC2 * CC1
+ CC3 * CC0 * /TERM * CC2 * /CC1
+ CC3 * CC0 * /TERM * /CC2 * /CC1

CC2 := /CC3 * CC2 * CC1 * /TERM ;e+f+g+h+i+j+k
+ CC2 * /CC1 * /TERM * CC3
+ CC2 * /CC1 * /TERM * /CC3
+ CC2 * CC0 * /TERM * CC3
+ CC2 * CC0 * /TERM * /CC3
+ /CC3 * /CC2 * CC1 * /CC0 * CGNTCACT * /TERM ;d WAIT FOR BUS IF
+ /CC3 * /CC2 * CC1 * /CC0 * /WAIT1 * /TERM ;d WAIT1 AND NOT
+ /CC3 * /CC2 * CC1 * /CC0 * BRK * /TERM ;d BRK

CC1 := /CC3 * /CC2 * CC0 * /TERM * CC1 ;b+c+d+e+j+k+l+m
+ /CC3 * /CC2 * CC0 * /TERM * /CC1
+ CC3 * CC2 * CC0 * /TERM * CC1
+ CC3 * CC2 * CC0 * /TERM * /CC1
+ CC1 * /CC0 * /TERM * CC2 * CC3
+ CC1 * /CC0 * /TERM * CC2 * /CC3
+ CC1 * /CC0 * /TERM * /CC2 * CC3
+ CC1 * /CC0 * /TERM * /CC2 * /CC3

CC0 := /CC3 * /CC2 * /CC1 * /TERM ;a+b+f+i+j+m+n
+ /CC3 * CC2 * CC1 * CC0 * /TERM
+ CC3 * CC2 * /CC1 * /TERM
+ CC3 * /CC2 * CC1 * /TERM
+ /CC3 * CC2 * CC1 * /CC0 * /CGNTCACT * /TERM ;e WAIT FOR BUS OR LOC
+ /CC3 * CC2 * CC1 * /CC0 * BRK * /TERM ;e MEM CYCLE TO FINISH
+ /CC3 * CC2 * CC1 * /CC0 * /WAIT2 * /TERM ;e IF WAIT2 AND NOT BRK
+ /CC3 * /CC2 * CC1 * CC0 * CGNTCACT * /BRK * /TERM ;c PREV WRITE.

DESCRIPTION

; 060387 JLB: MOD'S FROM SLOW VERSION IMPLEMENTED.
; 060387 JLB: 100 NS CYCLE MIN. NO BUFFERED WRITE.
; 070387 JLB: 75 NS CYCLE MIN. NO BUFFERED WRITE.
; 120387 JLB: IMPROVED HIT PATH. FORM^ REMOVED. HIT INPUT ON PIN 12.
; SHORT IN ON PIN 4.
; 120387 JLB: 50 NS CYCLE ON SHORT
; 180387 JLB: MR GATED WITH WAIT1 OUTSIDE. NEW INPUT CSDELAY0.
; 180387 JLB: BUFFERED WRITE.
; 180387 JLB: 175NS SLOW & BRK CYCLES.
; 210387 JLB: 200NS SLOW CYCLES, 175NS BRK CYCLES.

; 270487 M3202B
; 060887 JLB: MAXIMIZED EQUATIONS TO MATCH CLOCK SKEW.

PAL16R8
JLB/CJTC 11AUG86
44801A,10D,BARB

OSC /CRQ /IORQ /MR /BRQ50 /REFRQ50 /BDRY25 /SEMRQ50 NC9 GND
/OE /ACT /GNT /IOD /REF /MEM /DOREF /ACT /SEM VCC

; CACT - CPU IS ACTIVE ON THE ND100 BUS

CACT := CRQ * /REFRQ50 * /BRQ50 * /REF * /GNT * /SEM * /BDRY25 * /MR ; 4
+ CRQ * /REFRQ50 * DOREF * /REF * /GNT * /SEM * /BDRY25 * /MR ; 2
+ CACT * /BDRY25 * /MR ; HOLD
+ CRQ * SEM * /GNT * /BDRY25 * /MR ; SEMAPHORE

; REF - REFRESH GRANT ON ND100 BUS

REF := REFRQ50 * /CACT * /GNT * /SEM * /BDRY25 ; 1
+ REF * /BDRY25 ; HOLD
+ REFRQ50 * MR ; ALWAYS GRANT REFRESH DURING MR

; GNT - GRANT ND100 BUS TO A DMA DEVICE OR EXTERNAL BUS CONTROLLER

GNT := BRQ50 * /REFRQ50 * /CRQ * /REF * /CACT * /SEM * /BDRY25 * /MR ; 3
+ BRQ50 * /REFRQ50 * DOREF * /REF * /CACT * /SEM * /BDRY25 * /MR ; 3
+ GNT * /BDRY25 * /MR ; HOLD
+ BRQ50 * SEM * GNT * /MR ; SEMAPHORE

; IOD - IO SIGNAL TO LAST FOR THE ENTIRE BUS CYCLE

IOD := IORQ * CRQ * /REFRQ50 * /BRQ50 * /REF * /GNT * /SEM * /BDRY25 * /MR ; 4
+ IORQ * CRQ * /REFRQ50 * DOREF * /REF * /GNT * /SEM * /BDRY25 * /MR ; 2
+ IOD * /BDRY25 * /MR ; HOLD
+ IORQ * CRQ * SEM * /GNT * /BDRY25 * /MR ; SEMAPHORE

; MEM - MEM SIGNAL TO LAST FOR ENTIRE BUS CYCLE

; GENERATES BMEM WHICH IS PRESENT ON REFRESH, CPU MEMORY AND DMA CYCLES

MEM := BRQ50 * /IORQ * /IOD * /BDRY25 * /MR
+ BRQ50 * /CRQ * /IOD * /BDRY25 * /MR
+ BRQ50 * /DOREF * /IOD * /BDRY25 * /MR
+ CRQ * /IORQ * /IOD * /BDRY25 * /MR
+ REFRQ50 * /IOD * /BDRY25
+ REFRQ50 * MR
+ MEM * /BDRY25 * /MR

; SEM - SEMAPHORE GRANT SIGNAL

SEM := SEMRQ50 * /MR * BDRY25
+ SEM * /MR * /ACT

; ACT - BUS IS ACTIVE

ACT := CACT * /BDRY25 * /MR
+ GNT * /BDRY25 * /MR

```
+ REF * /BDRY25 * /MR
```

```
; DOREF - INDICATES THAT LAST BUS CYCLE WAS A REFRESH
```

```
DOREF := REF * /MR * BDRY25  
+ DOREF * /MR * /CACT * /GNT * /REF
```

DESCRIPTION

```
; PRIORITY:  
;  
; 1. REFRESH  
;  
; 2. CPU REQUEST AFTER A REFRESH  
;  
; 3. BUS REQUEST  
;  
; 4. CPU REQUEST
```

```
; 26/2-87JLB: WRONG HOLD TERM IN IOD.
```

```
;  
;  
; 180587 M3202B
```

PAL16R8
ADGD/13/8/86
44803A,5F, RAMA

OSC /LOEN /RLRQ /MR /CLRQ /BLRQ50 /SSEMA /SEMRQ50 NC9 GND
/OE BCGNT25 /BSEM /CSEM /LDR /LOEN25 /BGNT /CGNT /RGNT VCC

RGNT := RLRQ * /CSEM * /BSEM * /RGNT * /CGNT * /BGNT ;RLRQ HIGHEST PRIORITY
+ RGNT * /LOEN * /LOEN25 ;HOLD TO END OF DRAM CYCLE
+ RGNT * LOEN * LOEN25
+ RGNT * LOEN * /LOEN25

CGNT := /MR * /CSEM * /BSEM * CLRQ * /BLRQ50 * /RLRQ * /RGNT * /CGNT * /BGNT ;CLRQ ALONE
+ /MR * /CSEM * /BSEM * LDR * /RLRQ * CLRQ * /RGNT * /CGNT * /BGNT ;CLRQ * LAST DONE REF
+ /MR * CSEM * /BSEM * CLRQ * /RGNT * /CGNT * /BGNT ;CLRQ WITH SEMAPHOR
+ CGNT * /LOEN * /LOEN25 * /MR
+ CGNT * LOEN * LOEN25 * /MR
+ CGNT * LOEN * /LOEN25 * /MR

BGNT := /MR * /CSEM * /BSEM * /RLRQ * /CLRQ * BLRQ50 * /RGNT * /CGNT * /BGNT ;BLRQ ALO
+ /MR * /CSEM * /BSEM * /LDR * /RLRQ * BLRQ50 * /RGNT * /CGNT * /BGNT ;BLRQ * N
+ /MR * /CSEM * BSEM * BLRQ50 * /RGNT * /CGNT * /BGNT ;BLRQ WITH
+ BGNT * /LOEN * /LOEN25 * /MR
+ BGNT * LOEN * LOEN25 * /MR
+ BGNT * LOEN * /LOEN25 * /MR

LDR := RGNT ;SET ON REFRESH
+ LDR * /CGNT * /BGNT ;HOLD UNTIL NEXT B OR C-GNT

CSEM := /MR * SSEMA * CGNT ;SET ON SSEMA * CGNT
+ /MR * CSEM * LOEN25 * LOEN ;HOLD UNTIL END OF 2ND. CGNT
+ /MR * CSEM * LOEN25 * /LOEN
+ /MR * CSEM * /LOEN25 * /LOEN

BSEM := /MR * SEMRQ50 * BGNT ;SET IN SEMRQ50 * BGNT
+ /MR * BSEM * LOEN25 * LOEN ;HOLD UNTIL END OF 2ND. BGNT
+ /MR * BSEM * LOEN25 * /LOEN
+ /MR * BSEM * /LOEN25 * /LOEN

LOEN25 := LOEN

/BCGNT25 := /BGNT * /CGNT

DESCRIPTION

PRIORITY: 1.REFRESH
2.CPU * LAST DONE REFRESH
3.BUS
4.CPU

; 270387 CJTC: INCREASE PERIOD BETWEEN SUCCESSIVE GRANTS BY 25NS BY
; INTRODUCING NEW SIGNAL MFREE25TM AND NOT GRANTING ANYTHING UNTIL
; THIS IS TRUE
; 020487 JLB: MFREE NOT NEEDED, BUT TO AVIOD POWER UP PROBLEMS MCLTM ADDED.
;
; 180587 M3202B

PAL16R8
ADGD 13/8/86
44902C,6F, RAMC

OSC /RGNT /CGNT /BGNT /BDAP50 /MR /BGNT25 /CGNT25 /BDRY50 GND
/OE /HIEN /LOEN CAS RAS /QD /QC /QB /QA VCC

QA := QD * QC * QB * QA * /RGNT * /CGNT25 * /BGNT25
+ /QD * /QB
+ /QD * QC
+ QD * /QC
+ /QB * QA * QD * QC
+ /QB * QA * /QD * QC
+ /QB * QA * QD * /QC
+ /QB * QA * /QD * /QC

QB := /QD * QA * QB
+ /QD * QA * /QB
+ /QD * /QA * QB
+ /QD * /QA * /QB
+ QA * QC
+ QA * /QC
+ /QC * QB

QC := QD * QC * /QB * /QA * BGNT25 * /BDAP50 * /MR * /BDRY50
+ /QD * /QB * QA
+ /QD * /QB * /QA
+ QC * QA * /QD
+ QC * QA * QD
+ QB * /QA * /QD
+ QB * /QA * QD

QD := /QB * /QA * QC
+ /QB * QA * QC
+ /QB * QA * /QC
+ /QB * /QA * /QC
+ QC * QB * /QD
+ QC * QB * QD
+ QD * /QA

/RAS := /QD * QC * QB ;RAS=1,2,3,4,5,6
+ /QD * QC * /QB
+ /QD * /QC * QB
+ /QD * /QC * /QB
+ QC * QA * QD
+ QC * QA * /QD
+ /QC * QB * /QA

LOEN := QD * /QB * /QA * QC ;LOEN=3,4,5,6
+ QD * /QB * /QA * /QC
+ QD * /QC * QA * QB
+ QD * /QC * QA * /QB

HIEN := QD * QC * QB * QA ;HIEN=0,1,2,8
+ QD * QC * QB * /QA
+ /QD * QB * /QA * QC
+ /QD * QB * /QA * /QC

/CAS := QC * /RGNT ;CAS=4,5,6,7,8

```
+ /QD * RGNT ;CAS ON REFRESH=1,2,3,4,5
+ /QD * /QB
+ QC * /QB * QA
+ QD * QB * /QA * /RGNT
+ QD * /QC * QB * RGNT
```

DESCRIPTION

```
;0)1111 IDLE UNIT NEXT GNT OF ANY TYPE
;1)1110
;2)1100 PAUSE UNTIL BDAP OCCURS (ONLY ON BGNTS)
;      NO WAIT STATE ON CPU TO MEMORY WRITE
;3)1000
;4)1001
;5)1011

;6)0011
;7)0010
;8)0110
;OTHER STATES WILL GO TO IDLE AFTER 1 OSC PERIOD.

;190387 JLB: RAS & CAS INVERTED.
;190387 JLB: BGNT25 NEW INPUT. USED TO DELAY STATE MACHINE TURN ON 25NS ON
; BUS CYCLES.
;230387 CJTC: CGNT25 NEW INPUT. USED TO DELAY STATE MACHINE TURN ON 25NS ON
; CPU CYCLES.
; 020487 JLB: BDRY50 WILL GET US OUT OF THE WAIT STATE ON TIMEOUT.
;
; 180587 M3202B
; 091087 C CJTC: STATE MACHINE CHANGED TO GIVE TRANSITION ON QD BETWEEN
; STATES 5 AND 6. NEED FOR CLRERR IN 45008B.
; CHANGED FROM 44802C BECAUSE PATTERN SENSITIVITY WITH
; MMI 10NS PALS
```

PAL16R8
CJTC 180587
44904B,7G,SIZEIND

```
CLK /MSIZE0 /MSIZE1 /MOFF NC5 NC6 NC7 NC8 NC9 GND
/OE /EHI /EMID /ELOW NC15 DBIT CBIT ABIT VCC

; MEMORY SIZE INDICATOR FOR 0, 2, 4 OR 6 MB MEMORY ARRAYS

EHI := EMID + ELOW * EHI + /ELOW * /EHI      ; ENABLE DIGIT 3

EMID := ELOW * /EMID * /EHI                  ; ENABLE DIGIT 2

ELOW := /ELOW * /EMID * EHI                  ; ENABLE DIGIT 1

/ABIT := MOFF
  + MSIZE0 * EMID
  + EHI
  + ELOW

/BBIT := MOFF
  + /MSIZE1 * /MSIZE0 * EMID
  + MSIZE1 * MSIZE0 * EMID
  + EHI
  + ELOW

/CBIT := /MSIZE1 * ELOW
  + /MSIZE0 * ELOW
  + EHI
  + EMID
  + MOFF

/DBIT := VCC
```

DESCRIPTION

MEMORY SIZE	S1	S0
-----	--	--
2MB	F	F
4MB	F	T
6MB	T	F
1MB	T	T

DIGIT ENABLE BITS : ELOW --> EMID --> EHI

; 170687 CJTC/JLB: ADDED 1MB INDICATION.

PAL16L8
JLB/CJTC 11AUG86
45001B, 8D, BPAR

/BDRY50 /BDRY75 /BLOCK25 /BPERR50 DBAPR /MOR25 /LPERR /MR /EPES GND
/EPEA SPES /LERR TEST NC15 /RERR /PARERR /BLOCK SPEA VCC

; STROBE PARITY ERROR STATUS WORD

IF (/TEST) /SPES = /BDRY50 * /BDRY75
+ BDRY50 * BDRY75
+ /BDRY50 * BDRY75
+ BLOCK25
+ EPEA
+ EPES
+ MR

; STROBE PARITY ERROR ADDRESS

IF (/TEST) /SPEA = /DBAPR + BLOCK25 + EPEA + MR

; BLOCK SIGNAL FOR PES AND PEA STROBE - BLOCK ON ERROR, RELEASE ON PEA READ

IF (/TEST) BLOCK = BDRY50 * /BDRY75 * /EPEA * /EPES * MOR25 * /MR
+ BDRY50 * /BDRY75 * /EPEA * /EPES * BPERR50 * /MR
+ BLOCK * /EPEA * /MR

; PARITY ERROR SIGNALS FROM BUS AND LOCAL MEMORY

IF (/TEST) PARERR = BDRY50 * /BDRY75 * BPERR50 * /MR
+ LERR

; REMOTE ERROR - LAST ERROR WAS FROM MEMORY ATTACHED TO THE ND100 BUS
; WILL BE OVERRIDEN BY AN ERROR FROM LOCAL MEMORY (PERR1 AND PERR0)

IF (/TEST) RERR = BPERR50 * /MR ;SET REMOTE ERROR ON BUS PARITY E
+ RERR * /LPERR * /MR ;HOLD UNTIL A LOCAL MEMORY ERROR
+ MOR25 * /MR ;=> LOCAL ERROR HAS PRIORITY

DESCRIPTION

; 260387 CJTC: NEED TO USE DELAYED BAPR (DBAPR) INSTEAD OF BAPR" IN
; PRODUCING SPEA. POLARITY CHANGE.
; 260387 JLB: BLOCK SIGNAL MUST NOT BE PRODUCED ON LOCAL MEMORY ERROR.
; IT WILL ONLY BE UNLOCKED ON PEA READ FROM REMOTE ERROR PEA.
; 260387 JLB: PERR HANDLING CHANGED.
; 070487 JLB: RERR MUST LATCH UP ON MOR ALSO.

; 180587 M3202B
; 090887 B JLB: TEST MODE FOR C-PRINT.

PAL16L8
ADGD 18/8/86
45008B,2F,DATA

/MWRITE /SWDIS LBD0 LBD1 LBD3 LBD4 /BIOXL ECCR /BCGNT50R GND
/HIEN /OER /MR /QD /TST /DISB /CLRERR /OET /DIS VCC

IF (VCC) OET = MWRITE ;ON WRITE TO MEMORY

IF (VCC) OER = BCGNT50R ;ON READ FROM MEMORY AFTER THE ADDRESS PE
+ TST * MWRITE ;ON WRITE IN TEST MODE BOTH OER AND OET S

IF (VCC) CLRERR = MR ;CLEAR PARITY ERROR ON MR, READING EPESL
+ /BCGNT50R
+ DISB
+ QD

IF (VCC) DISB = LBD3 * BIOXL * ECCR ;SET IF LDB3=1 AND IOX=ECCR
+ /MR * DISB * /BIOXL ;HOLD UNTIL NEXT IOX=ECCR
+ /MR * DISB * /ECCR

IF (VCC) TST = LBD0 * BIOXL * ECCR ;SET IF ANY OF LBD0,1,4 AND IOX=ECCR
+ LBD1 * BIOXL * ECCR ;HOLD UNTIL IOX=ECCR
+ LBD4 * BIOXL * ECCR
+ /MR * TST * /BIOXL
+ /MR * TST * /ECCR

IF (VCC) DIS = DISB + SWDIS

DESCRIPTION

; 200387 CJTC: LOGICAL ERRORS IN EQUATIONS FOR DISB AND TST
; 260387 CJTC: CHANGED PIN 2 /EPESL TO /EPEAL - CIRCUIT CHANGE ONLY!!!
; 260387 JLB: CLRERR COMES IMMEDIATELY TO MAKE PERRO&1 PULSES ONLY!!!

; 180587 M3202B
; 091087 B CJTC: AM29833 ARE GIVING ERROR OUTPUT EVEN BEFORE CLOCKED.
; QD GOES INACTIVE ON 6, JUST BEFORE RDATA THUS STOPPING
; THE FALSE CLOCKING OF THE 29833 BY HOLDING CLRERR TRUE.

PAL16L8
ADGD 12AUG86
45009B, 4F, ERROR

```
RDATA /BLOCKL25 BCGNT50 /PS /RERR /PA TEST /LERR NC9 GND
/MR SPEAL /NC13 /NC14 /NC15 /BLOCKL /EPEAL /EPESL SPESL VCC

IF (/TEST) /SPESL = /RDATA + BLOCKL25 + EPEAL + EPESL + MR ;RDATA USED AS WRITE
;PULSE WHEN NOT BLOCKED
IF (/TEST) /SPEAL = /BCGNT50 + BLOCKL25 + EPEAL + MR ;BCGNT USED AS WRITE
;PULSE

IF (/TEST) EPESL = PS * /RERR ;ENABLE IF ERROR IN LOCAL MEMORY

IF (/TEST) EPEAL = PA * /RERR

IF (/TEST) BLOCKL = RDATA * /EPEAL * /EPESL * LERR * /MR ;SET ON LOCAL ERROR
+ BLOCKL * /PA * /MR ;HOLD TILL PEA READ
```

DESCRIPTION

```
; 2/1-87JLB: RDATA PIN 1.
; 070487 JLB: MUST NOT LOCK ON MOR, THAT IS DONE IN THE BUS INTERFACE ANYWAY
; UNBLOCK ON PA (I.E. ALSO IF THE BUS PEA WAS READ)
; 150487 CJTC: NO!!! SPIKES ON SPEAL - USE BLOCKL25 INSTEAD OF BLOCKL
;
; 180587 : M3202B
; 090887 B JLB: TEST MODE FOR C-PRINT.
```

PAL16L8
JLB/CJTC 14AUG86
44302A, 11D, LBC1

/Q0 /Q2 /CC2 /BDRY25 /BDRY50 /CGNT /CGNT50 /CACT /TERM GND
/BGNT /CGNTCACT /RT /IORQ NC15 NC16 /DSTB /EMD /BGNTCACT VCC

IF (VCC) EMD = Q2 * Q0 * CACT ; CPU CYCLE TO BUS SET
+ EMD * CACT ; " HOLD
+ CGNT * CGNT50 ; CPU CYCLE TO MEM SET
+ EMD * RT * CC2 * /TERM ;) HOLD TERMS FOR
+ EMD * IORQ * CC2 * /TERM ;) CPU READ, FETCH AND
; MAP CYCLES

IF (VCC) CGNTCACT = CGNT + CACT

IF (VCC) BGNTCACT = BGNT + CACT

IF (VCC) DSTB = CGNT + CACT * /BDRY50 * /BDRY25 * /IORQ
+ CACT * IORQ * CC2 ; IOX CYCLE

DESCRIPTION

; 060387 JLB: EMD WAS HOLDING IN ADDRESS PART OF IOX CYCLES AFTER
; BUFFERED WRITE CYCLES.
; EMD - ENABLE DATA PATH BETWEEN CD AND LBD
; 270387 CJTC: NEW SIGNAL DSTB TO SAMPLE DATA AT LBD/CD BUFFERS ON
; CPU FROM BUS READ, AT BDRY.
; 040487 JLB: DSTB MUST NOT CLOCK DATA BEFORE CACT GOES OFF IN IOXES.
; (NEGATIVE SETUP OF DATA IN BUS SPECS.)
;
; 180587 CJTC: 3202B

CP

R

B

A

PAL16L8
JLB/CJTC 15AUG86
44303A,2C,LBC2 - LOCAL DATA BUS CONTROL PAL

/CACT /CGNT /EADR /BINPUT50 MISO /IOD WRITE NC8 NC9 GND
/BACT /WLBD NC13 NC14 NC15 NC16 /CMWRITE /CBWRITE /WBD VCC

; LBD TO BD TRANSCEIVER
; -----

; WBD - DIRECTION FROM LBD TO BD

IF (VCC) WBD = EADR ; ADDRESS FROM CPU TO BUS
+ CBWRITE ; CPU WRITE CYCLE TO BUS
+ IOD * MISO * /BINPUT50 ; OUTPUT PART OF IOX
+ BACT ; DMA OUTPUT CYCLE

; (CBWRITE) - CPU TO BUS WRITE. STARTS ONLY WHEN THE BUS IS GRANTED.
; LASTS UNTIL THE END OF THE BUS CYCLE.

IF (VCC) CBWRITE = WRITE * CACT
+ CBWRITE * CACT

; CD TO LBD TRANSCEIVER
; -----

; WLBD - DIRECTION FROM CD TO LBD

IF (VCC) WLBD = CBWRITE ; CPU WRITE CYCLE TO BUS
+ CMWRITE ; CPU WRITE CYCLE TO LOCAL MEMORY
+ IOD * MISO * /BINPUT50 ; OUTPUT PART OF IOX

; (CMWRITE) - CPU WRITE TO LOCAL MEMORY. LASTS UNTIL END OF MEMORY CYCLE
; ON BUFFERED WRITE.

IF (VCC) CMWRITE = WRITE * CGNT
+ CMWRITE * CGNT

DESCRIPTION

; 180587 - 3202B

Cpnt X

b

b

?

PAL16L8
CJTC 02SEP86
44304A,1C,LBC3 - LOCAL DATA BUS CONTROL PAL

/CGNT /BGNT /BGNT50 /MWRITE /BDAP50 /EBUS /IBAPR /GNT NC9 GND
NC11 NC12 /EBD NC14 SAPR FAPR EBADR /BACT DBAPR VCC

; BACT - BUS ACTIVITY. LASTS FOR COMPLETE DMA TO LOCAL MEMORY
; CYCLE (ONLY ON MEMORY READ)

IF (VCC) BACT = BGNT50 * /MWRITE ; ENABLE FOR DATA ONLY AFTER ADDRESS
+ BACT * BDAP50 ; HOLD AFTER BDAP FINISHED

; EBD - ENABLE BUS DATA. ENABLE LBD TO BD TRANSCEIVER
; SHOULD BE DISABLED DURING CGNT * /BACT, IE DISABLE WHEN CPU
; IS ACCESSING LOCAL MEMORY, EXCEPT WHEN TRANSCEIVER IS BEING USED
; AS A REGISTER TO HOLD DATA FROM A PREVIOUS DMA MEMORY READ.

IF (VCC) EBD = EBUS * /CGNT * /GNT
+ EBUS * GNT * BGNT
+ EBUS * BACT

- GNT not needed.

; EBADR - ENABLE ADDRESS FROM BUS TO LOCAL MEMORY

IF (VCC) /EBADR = /IBAPR * BGNT50 ; TURN ON AT BAPR WITH GNT
+ /IBAPR * /EBADR ; HOLD UNTIL BGNT50 OR IN
+ /GNT ; H.C. UNTIL GNT GOES OFF.

; SLOW INVERSION

IF (VCC) /FAPR = /IBAPR
IF (VCC) /SAPR = /FAPR
IF (VCC) /DBAPR = /SAPR

DESCRIPTION

; 200387 CJTC: NEED TO SLOW DOWN APR TO AS648 BUS TCVRS. PUT IT
; THROUGH THIS PAL INSTEAD OF F04
; 200387 JLB: EBADR COMES ON AT BAPR TO AVOID SPIKE ON LBD.
; NEW INPUT CGNT~
; 230387 JLB: APR DELAYED 3XPAL DELAY
; 240387 JLB: EBD MUST NOT CHANGE WHEN DATA IS CLOCKED IN.
;
; 180587 - 3202B

B
PAL16L8
JLB 26NOV86
44305A, 15F, CSCTL

/FORM /CC1 /CC2 /CC3 /LCS /RWCS /WCS FETCH /BRK GND
/TERM /WCSTB LUA12 /WCA /ELOW /EUPP /EWCA /ECSL /WICA VCC

; CONTROL STORE CONTROL

IF (VCC) WICA = WCA * FETCH * /TERM ;WRITE PULSE TO MICROINSTRUCTION CACHE
IF (VCC) WCSTB = /CC3 * CC1 * WCS * RWCS ;WRITE PULSE TO WRITEABLE CONTROL STORE
+ CC3 * CC2 * CC1 * LCS ;WRITE PULSE DURING LOAD CONTROL STORE
IF (VCC) ECSL = RWCS * /WCS * CC3 * /TERM ;READ CONTROL STORE HOLD
IF (VCC) EWCA = RWCS * /CC3 /TERM ;ENABLE WCA REG. IN MIC ONTO MA
+ RWCS * /CC3 * /TERM
IF (VCC) EUPP = LUA12 ;NORMAL ADDRESSING
+ WCA * FETCH ;WRITE INTO MICROINSTRUCTION CACHE
+ FETCH * /CC1 * /CC2 * /CC3 * /TERM;
IF (VCC) ELOW = /LUA12 * /FETCH ;NORMAL ADDRESSING. ON FETCH EITHER MICROINSTU
+ /LUA12 * TERM ;ENABLE ACCORDING TO LUA12 BEFORE FETCH VALID
+ FORM * /BRK * CC2 * /TERM ;OR A MAP IS USED.
+ FORM * /BRK * CC3 * /TERM ;DO A MAP
+ /LUA12 * BRK * CC2 * /TERM ;ON BRK: USE BANK SELECTED BY LUA12.
+ /LUA12 * BRK * CC3 * /TERM ;

DESCRIPTION

; 130387 JLB: ELOW ALWAYS ENABLED ON TERM IF LUA12 IS LOW.
; MAY SPEED UP NON FETCH CYCLES.

; 180587 3202B

AL16L8

CJTC 02SEP86

44304D,1C,LBC3 - LOCAL DATA BUS CONTROL PAL

/CGNT /BGNT /BGNT50 /MWRITE /BDAP50 /EBUS /IBAPR /GNT NC9 GND
NC11 NC12 /EBD CLKBD SAPR FAPR EBADR /BACT DBAPR VCC

; BACT - BUS ACTIVITY. LASTS FOR COMPLETE DMA TO LOCAL MEMORY
; CYCLE (ONLY ON MEMORY READ)

IF (VCC) BACT = BGNT50 * /MWRITE ; ENABLE FOR DATA ONLY AFTER ADDRESS
+ BACT * BDAP50 ; HOLD AFTER BDAP FINISHED

; EBD - ENABLE BUS DATA. ENABLE LBD TO BD TRANSCEIVER
SHOULD BE DISABLED DURING CGNT * /BACT, IE DISABLE WHEN CPU
IS ACCESSING LOCAL MEMORY, EXCEPT WHEN TRANSCEIVER IS BEING USED
; AS A REGISTER TO HOLD DATA FROM A PREVIOUS DMA MEMORY READ.

IF (VCC) EBD = EBUS * /CGNT * /GNT
+ EBUS * BGNT
+ EBUS * BACT

; EBADR - ENABLE ADDRESS FROM BUS TO LOCAL MEMORY

IF (VCC) /EBADR = /GNT * /BGNT ; TURN ON AT BAPR WITH GNT
+ /IBAPR * /EBADR ; HOLD UNTIL BGNT AND GNT BOTH GONE
+ /GNT * /EBADR

; SLOW INVERSION

IF (VCC) /FAPR = /IBAPR
IF (VCC) /SAPR = /FAPR
IF (VCC) /DBAPR = /SAPR

; CLOCK PULSE TO 648'S.

IF (VCC) /CLKBD = /SAPR * /BGNT50 ; CLOCK ADDRESSES ON DELAYED BAPR.
+ /SAPR * /BDAP50 ; CLOCK DATA 50NS AFTER START OF
+ /SAPR * /MWRITE ; BGNT*BDAP ON MEMORY WRITES FROM DMA.

DESCRIPTION

; 200387 CJTC: NEED TO SLOW DOWN APR TO AS648 BUS TCVRS. PUT IT
; THROUGH THIS PAL INSTEAD OF F04
; 200387 JLB: EBADR COMES ON AT BAPR TO AVOID SPIKE ON LBD.
; NEW INPUT CGNT~
; 230387 JLB: APR DELAYED 3XPAL DELAY
; 240387 JLB: EBD MUST NOT CHANGE WHEN DATA IS CLOCKED IN.
;
; 180587 ~ 3202B
; 310787 JLB: BUFFERED DMA WRITE: CLOCK DATA IN 648'S ALSO.
; 040887 JLB: BUFFERED DMA WRITE: NEED TO ENABLE THE REGISTER IN THE
648'S FOR THE PERIOD OF BGNT.
; 060887 D JLB: EBADR CHANGED TO MAKE BUFFERED DMA WRITE WORK.

Capit



PAL16L8
JLB 26NOV86
44305C, 15F, CSCTL

/FORM /CC1 /CC2 /CC3 /LCS /RWCS /WCS FETCH /BRK GND
/TERM /WCSTB LUA12 /WCA /ELOW /EUPP /EWCA /ECSL /WICA VCC

; CONTROL STORE CONTROL

```

IF (VCC) WICA = WCA * FETCH * /TERM      ;WRITE PULSE TO MICROINSTRUCTION CACHE

IF (VCC) WCSTB = /CC3 * CC1 * WCS * RWCS  ;WRITE PULSE TO WRITEABLE CONTROL STORE
+ CC3 * CC2 * CC1 * LCS                  ;WRITE PULSE DURING LOAD CONTROL STORE

IF (VCC) ECSL = RWCS * /WCS * CC3 * /TERM ;READ CONTROL STORE HOLD
+ RWCS * /WCS * /CC1 * CC2 * /TERM      ;HOLD OVERLAP WITH EWCA

IF (VCC) EWCA = RWCS * /CC3 * CC2 * /TERM ;ENABLE WCA REG. IN MIC ONTO MA
+ RWCS * /CC3 * CC1 * /TERM            ;AVOID BLIP ON NEXT CYCLE

IF (VCC) EUPP = LUA12                   ;NORMAL ADDRESSING
+ WCA * FETCH                         ;WRITE INTO MICROINSTRUCTION CACHE
+ FETCH * /CC1 * /CC2 * /CC3 * /TERM  ;ENABLE IN THE FIRST 50NS
+ + HOLD TIME = 75NS

IF (VCC) ELOW = /LUA12 * /FETCH        ;NORMAL ADDRESSING. ON FETCH EITHER MICR
+ /LUA12 * TERM                      ;ENABLE ACCORDING TO LUA12 BEFORE FETCH
+ FORM * /BRK * CC2 * /TERM          ;OR A MAP IS USED.
+ FORM * /BRK * CC3 * /TERM          ;DO A MAP
+ /LUA12 * BRK * CC2 * /TERM        ;ON BRK: USE BANK SELECTED BY LUA12.
+ /LUA12 * BRK * CC3 * /TERM :
```

DESCRIPTION

; 130387 JLB: ELOW ALWAYS ENABLED ON TERM IF LUA12 IS LOW.
; MAY SPEED UP NON FETCH CYCLES.

; 180587 3202B
; 090687 JLB: EWCA MUST NOT BE ENABLED DURING a AND b. WILL CREATE BLIP ON
; NEXT CYCLE.
; 090687 JLB: ECSL HOLD IN g AND h.

PAL16L8
JLB 26NOV86
44307A, 13D, CYCLK

/TERM /CC0 /CC1 /CC2 /CC3 /FORM /BRK /RWCS /TRAP GND
VEX /MACLK /MAP /ETRAP UCLK /EORF /CYD WRFSTB /MCLK VCC

; CYCLE CONTROL CLOCK GENERATOR.

IF (VCC) MCLK = RWCS * /CC3
+ RWCS * CC2 ;BECAUSE THE CONTROL STORE ADDRESS TO B
;IN PRESENTED ONTO MA. THEN THE ADDRESS
;STORE LOCATION TO BE EXECUTED IS PRESE

IF (VCC) /WRFSTB = CC3 ;b ON 75NS CYCLES TO PROVIDE A WRITE PU
+ CC2
+ CC1
+ /CC0
+ TERM

IF (VCC) CYD = /CC3 * /CC2 * CC1 * /CC0 * /TERM ;d USED TO START WRITE PULSE TO CAC

IF (VCC) EORF = /CC3 * /CC2 * CC1 * /CC0 * /TERM ;d MISC WRITE PULSE.

IF (VCC) /UCLK = CC3 ;ON c ON ALL MEMORY REQUESTS.
+ CC2 ;USED TO UPDATE USED BITS AND CLOCK TRA
+ /CC1
+ /CC0
+ TERM ;EXPERIMENT TO SEE IF UCLK ON TERM WAS DANGEROUS.

IF (VCC) MAP = FORM * /BRK * CC2 * /TERM ;MUST NOT COME BEFORE ALL SHORT CYCLES

IF (VCC) MACLK = MAP * /CC3 * CC2 * CC1 ;e+f CAPTURE CD FROM MEMORY THROUGH M
+ TRAP * /CC3 * CC1 * /CC0 ;d+e CAPTURE TRAP VECTOR
+ RWCS * /CC3 ; CAPTURE MICROADDRESS AFTER EWCA
+ RWCS * CC2 * /CC1 ; TURNED OFF

IF (VCC) ETRAP = /TERM * /VEX * CC3 ; ENABLE TRAPS ONLY OUTSIDE t OR a
+ /TERM * /VEX * CC2 ; UNSTABLE TRAP IN THIS PERIOD
+ /TERM * /VEX * CC1 ; CAN DESTROY MA !
+ /TERM * /VEX * CC0 ; DISABLE TRAPS DURING VEX

DESCRIPTION

;280287 JLB: ECREQ TO LOCAL MEMORY GIVES TWO CGNTS. A SHORTER EORF,
; I.E. ONLY ON e AND NOT ON f, WILL MAKE ECREQ GO OFF 25NS SOONER
;AND HOPEFULLY CURE THIS.

;010387 JLB: ETRAP NEW OUTPUT. WILL DISABLE TRAP ON t AND a.

;080387 JLB: REMOVED UCLK ON CACHE HIT CYCLES.

;160387 JLB: REMOVED TERM IN MCLK AND MACLK TO PROVIDE SYMMETRICAL
; CLOCKS IN 50 NS CYCLES.

;170387 JLB/CJTC: REMOVED MREQ - NEEDED THE INPUT FOR NEW SIGNAL VEX.
; VEX SHOULD DISABLE TRAPS.

;180387 JLB: EORF ON d ONLY. MACLK ON e + f ON MAP.

;

; 270487 : M3202B

PAL16L8
ADGD 13/8/86
44310A,3F,LBDIF

/HIEN /BGNT /CGNT /LOEN /CGNT50 ECCR /BGNT50 /BGNT75 /BDAP GND
/MR RDATA /MWRITE50 /BIOXE /REF100 /RGNT /BIOXL /BDRY /BCGNT50R VCC

IF (VCC) BCGNT50R = /MWRITE50 * BGNT * BGNT50 ;FROM 50NS AFTER CNT ON READ C
+ /MWRITE50 * CGNT * CGNT50 ;LASTS FOR THE REST OF THE CYC

IF (VCC) BDRY = /MWRITE50 * BDAP * /BGNT50 * BGNT75 ;BUS READ FROM LOCAL MEM. NEED!
+ MWRITE50 * BGNT * BDAP * /LOEN * /HIEN ;BUS WRITE TO LOCAL MEMORY.
+ BIOXL * ECCR ;IOX=ECCR
+ /MR * BDRY * BDAP ;HOLD TERM FOR MEMORY CYCLES
+ /MR * BDRY * BIOXE ;HOLD TERM FOR IOX CYCLE
+ REF100

IF (VCC) BIOXL = BIOXE * /BGNT * /CGNT

IF (VCC) /RDATA = MWRITE50 ;INDICATES DATA READY ON READ CYCLES
+ LOEN
+ HIEN
+ RGNT

DESCRIPTION

;280287 JLB: ECCR WRONG POLARITY, RESPONDS WITH BDRY TO ALL NON-
;EXISTING IOX-ES.
;280287 JLB: NEW INPUT REF~, TO GENERATE A REF PULSE OF 175-200NS
;DURATION BY GENERATING BDRY~.
;
;180587 M3202B

PAL16L8
ADGD 13/8/86
44310B,3F,LBDIF

/HIEN /BGNT /CGNT /LOEN /CGNT50 ECCR /BGNT50 /BGNT75 /BDAP GND
/MR RDATA /MWRITE50 /BIOXE /REF100 RAS /BIOXL /BDRY /BCGNT50R VCC

```
IF (VCC) BCGNT50R = /MWRITE50 * BGNT * BGNT50          ;FROM 50NS AFTER GNT ON READ C
               + /MWRITE50 * CGNT * CGNT50          ;LASTS FOR THE REST OF THE CYC

IF (VCC) BDRY = /MWRITE50 * BDAP * /BGNT50 * BGNT75    ;BUS READ FROM LOCAL MEM. NEED setup before BDRY
               + MWRITE50 * BGNT * BDAP * /LOEN * /HIEN  ;BUS WRITE TO LOCAL MEMORY.
               + BIOXL * ECCR                         ;IOX=ECCR
               + /MR * BDRY * BDAP                      ;HOLD TERM FOR MEMORY CYCLES
               + /MR * BDRY * BIOXE                     ;HOLD TERM FOR IOX CYCLE
               + REF100

IF (VCC) BIOXL = BIOXE * /BGNT * /CGNT

IF (VCC) /RDATA = MWRITE50      ;INDICATES DATA READY ON READ CYCLES
               + LOEN
               + HIEN
               + /BGNT * /CGNT
               + RAS
```

DESCRIPTION

;280287 JLB: ECCR WRONG POLARITY, RESPONDS WITH BDRY TO ALL NON-
;EXISTING IOX-ES.
;280287 JLB: NEW INPUT REF~, TO GENERATE A REF PULSE OF 175-200NS
;DURATION BY GENERATING BDRY~.
;
;180587 M3202B
;090787 B JLB: RAS USED IN RDATA TO AVOID SPIKE ON TRANSITION FROM
; LOEN TO HIEN.

PAL16R4
JLB 12AUG86 BTIM.PAL
44401A,5D,BTIM

OSC /CC2 /CACT /CACT25 /BDRY50 /CGNT /CGNT50 /TERM /IIRQ GND
/OE /EADR /EIOD /NC14 /Q2 /Q1 /Q0 /DAP /APR VCC

```

Q0 := CACT * /Q2 * /Q1 * /Q0 * /CACT25
      + /Q2 * /Q1 * Q0
      + Q2 * Q1

```

$$Q_1 := /Q_2 * Q_0 \\ + Q_1 * /Q_0$$

$Q_2 := Q_1 * /Q_0$
 $\pm Q_2 * Q_0$

IF (VCC) APR = /Q2 * Q1 * CACT

```

IF (VCC) EADR = /Q2 * Q0 * CACT ; t + u
      + /Q2 * Q1 * CACT ; u + v
      + Q1 * /Q0 * CACT ; v + w
      + /Q2 * /Q1 * /Q0 * CACT * /CACT25 ; s
      + CGNT * /CGNT50 ; address part for CPU cycle

```

IF (VCC) DAP = /Q2 * /Q1 * /Q0 * CACT * CACT25
+ DAP * /TERM * IORQ * QC2

IF (VCC) EIOD = IORQ * /Q2 * /Q1 * /Q0 * CACT * CACT25 * /BDRY50 * CC2
;STARTS WHEN THE s STATE HAS BEEN REACHED AFTER COMPLETING THE LOOP.

DESCRIPTION

; 010387 JLB: EIOD TOO SOON, ONLY 15NS SETUP FOR BD BEFORE BIOXE.
; WOULD NOT LOAD FROM FLOPPY. EIOD FRONT FLANK DELAYED 25NS.
; SAME WITH DAP. DAP HELD FOR THE REST OF THE CYCLE UNTIL TERM
; ON IORQ.
; 060387 JLB: DAP HELD INTO ADDRESS PART OF IOX CYCLES AFTER A
; BUFFERED WRITE CYCLE. SWAPPED IOD FOR IORQ IN EIOD.
; USING CC2 (NEW INPUT) TO QUALIFY DAP AND EIOD

; STATE MACHINE
;
; 180587 M3202B

PAL16R4
JLB/CJTC 8AUG86
44402A,18F,UBITS

UCLK /DT /RT LSHADOW /TERM /CYD /HITO /HIT1 /EWC GND
/OE OUBI OUBD /IHIT NC15 NUBD NUBI /WCA /USED VCC

; CACHE USED BIT CONTROL

IHIT := HIT1 * HIT0 * OUB1 * RT * /DT * /WCA ;FETCH
+ HIT1 * HIT0 * OUBD * RT * DT * /WCA ;READ

IF (VCC) USED = OUBI * RT * /DT * /WCA ;FETCH
+ OUBD * RT * DT * /WCA ;READ

IF (VCC) WCA = /RT * DT * EWC * CYD * /TERM * /LSHADOW ;WRITE OUTSIDE SHADOW
+ RT * IHIT * EWC * CYD * /TERM * /LSHADOW ;FETCH/READ WITHOUT HIT
+ WCA * /TERM ;OUTSIDE SHADOW

/NUBI := DT * /OUBI ; READ OR WRITE KEEP OLD VALUE
+ /RT * DT * HIT0 * HIT1 ; CLEAR IF WRITE WITH HIT

/NUBD := RT * /DT * /OUBD ; IF FETCH KEEP OLD VALUE

DESCRIPTION

;B 050387 JLB: USED BITS INVERTED TO ACTIVE HIGH.
;C 060387 JLB: SHOULD NOT PRODUCE WCA WHEN IN SHADOW.
;D 120387 JLB: HIT PATH IMPROVED

; 180576 M3202B

PAL16R4
JLB/CJTC 8AUG86
44402C, 18F, UBITS

UCLK /DT /RT LSHADOW /TERM CYD /HITO /HIT1 /EWC GND
/OE OUBI OUBD /IHIT NC15 NUBD NUBI /WCA /USED VCC

; CACHE USED BIT CONTROL

IHIT := HIT1 * HIT0 * OUBI * RT * /DT * /WCA ;FETCH
+ HIT1 * HIT0 * OUBD * RT * DT * /WCA ;READ

IF (VCC) USED = OUBI * RT * /DT * /WCA ;FETCH
+ OUBD * RT * DT * /WCA ;READ

IF (VCC) WCA = /RT * DT * EWC * CYD * /TERM * /LSHADOW ;WRITE OUTSIDE SHADOW
+ RT * /IHIT * EWC * CYD * /TERM * /LSHADOW ;FETCH/READ WITHOUT HIT
;OUTSIDE SHADOW

/NUBI := DT * /OUBI ; READ OR WRITE KEEP OLD VALUE
+ /RT * DT * HIT0 * HIT1 ; CLEAR IF WRITE WITH HIT

/NUBD := RT * /DT * /OUBD ; IF FETCH KEEP OLD VALUE

DESCRIPTION

;B 050387 JLB: USED BITS INVERTED TO ACTIVE HIGH.
;C 060387 JLB: SHOULD NOT PRODUCE WCA WHEN IN SHADOW.
;D 120387 JLB: HIT PATH IMPROVED

; 180576 M3202B
;B 300687 JLB: CYD POSITIVE POLARITY.
;C 130787 JLB: HOLD TERM ON WCA REMOVED BECAUSE CYD FROM d TO f.

D
P

PAL16R4
JLB 26NOV86
44403A,15D,CYINO

CLK CSDELAY0 CSDLY CSECOND CSLOOP /ACOND /MR LUA12 /MAP GND
/OE /NC12 /NC13 /DMAP /DMA12 /MDLY /LCS /NC18 /DLYO VCC

; CYCLE CONTROL INPUT GENERATOR. PART 0.

IF (VCC) DLY0 = MDLY ;25NS DELAY ON MICROCODE REQUEST
+ CSDELAY0 ;25NS DELAY OF PREVIOUS CYCLE ON MICROCODE REQUEST
+ ACOND * CSECOND ;CONDITIONAL MICROSEQUENCING
+ ACOND * CSLOOP ;USING ALU RESULT
+ LUA12 * /DMA12 ;
+ /LUA12 * DMA12 ;CHANGING FROM LOWER TO UPPER CONTROL STORE AND VIC
+ DMAP * ~~LUA12~~ ;

LCS := MR ;LCS FROM MR AND UNTIL MA12 HAS GONE HIGH AND THEN
+ /DMA12 * /LUA12 * LCS ;I.E. LMA COUNTED FROM 0 TO 8K.
+ DMA12 * LUA12 * LCS
+ /DMA12 * LUA12 * LCS

MDLY := CSDLY

DMA12 := LUA12

DMAP := MAP

DESCRIPTION

; 270487 : M3202B

PAL16R4
JLB 26NOV86
44403B,15D,CYINO

CLK CSDELAY0 CSDLY CSECOND CSLOOP /ACOND /MR LUA12 /MAP GND
/OE /NC12 /NC13 /DMAP /DMA12 /MDLY /LCS /NC18 /DLY0 VCC

; CYCLE CONTROL INPUT GENERATOR. PART 0.

IF (VCC) DLY0 = MDLY ;25NS DELAY ON MICROCODE REQUEST
+ CSDELAY0 ;25NS DELAY OF PREVIOUS CYCLE ON MICROCODE REQUEST
+ ACOND * CSECOND ;CONDITIONAL MICROSEQUENCING
+ ACOND * CSLOOP ;USING ALU RESULT
+ LUA12 * /DMA12 ;
+ /LUA12 * DMA12 ;CHANGING FROM LOWER TO UPPER CONTROL STORE AND VIC
+ DMAP ; AFTER MAP TO AVOID CSDELAY BEING TO LATE.

LCS := MR
+ /DMA12 * /LUA12 * LCS ;LCS FROM MR AND UNTIL MA12 HAS GONE HIGH AND THEN
+ DMA12 * LUA12 * LCS ;I.E. LMA COUNTED FROM 0 TO 8K.
+ /DMA12 * LUA12 * LCS

MDLY := CSDLY

DMA12 := LUA12

DMAP := MAP

DESCRIPTION

; 270487 : M3202B
; 160687 JLB: DLY0 AFTER EVERY MAP.



PAL16R4
JLB 26NOV86

44404A, 14D, CYIN1
CLK CSDELAY1 CSALUM1 CSALUM0 CSALUI8 CSALUI7 LBA3 LBA1 LBA0 GND
/OE /DLY1 /NC13 /NC14 /NC15 /NC16 /NOWRIT /NC18 /NC19 VCC

; CYCLE CONTROL INPUT GENERATOR. PART 1.

IF (VCC) DLY1 = CSDELAY1 * /LBA3 * LBA1 * LBA0 * /NOWRIT ;25NS DELAY OF PREVIOUS CYCLE
; ON MICROCODE REQUEST IN ADDIT
; DLY0. NB. ! MUST ALSO HAVE DLY
; OF LONG COMPUTATION TIME.
; THIS DELAY IS ONLY USED WHEN
; IS WRITTEN INTO AND ONE OF TH
; FOR ADDRESS COMPUTATION IN TH

NOWRIT := /CSALUM1 * /CSALUI8 * /CSALUI7
+ /CSALUM0 * /CSALUI8 * /CSALUI7

DESCRIPTION

CAN BE CHANGED TO 16R6 IF NEEDED

; 270487 M3202B

PAL16R4
JLB 26NOV86

44404B, 14D, CYIN1

CLK CSDELAY1 CSALUM0 CSALUM1 CSALUI8 CSALUI7 LBA3 LBA1 LBA0 GND
/OE /DLY1 /NC13 /NC14 /NC15 /NC16 /NOWRIT /NC18 /NC19 VCC

; CYCLE CONTROL INPUT GENERATOR. PART 1.

IF (VCC) DLY1 = CSDELAY1 * /LBA3 * LBA1 * LBA0 ; 25NS DELAY OF PREVIOUS CYCLE
; ON MICROCODE REQUEST IN ADDITION TO
; DLY0. NB. I MUST ALSO HAVE DLY0 BECAUSE
; OF LONG COMPUTATION TIME.
; THIS DELAY IS ONLY USED WHEN X OR B
; IS USED
; FOR ADDRESS COMPUTATION IN THE NEXT CYC

NOWRIT := /CSALUM1 * /CSALUI8 * /CSALUI7
+ /CSALUM0 * /CSALUI8 * /CSALUI7

DESCRIPTION

CAN BE CHANGED TO 16R6 IF NEEDED

; 270487 M3202B
; 150687 JLB: DELAY ALSO WHEN WE ARE NOT WRITING TO B- OR X-REGISTER.
; (THEY CAN STILL BE USED FOR ADDRESS COMPUTATION IN THE NEXT CYCLE !!!)

Cⁱ

A

PAL16R4
ADGD 18/8/86
44425A, 9G, CADEC
CPU ADDRESS DECODER FOR 2MB MEMORY
CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND
/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;EACH LINE R
;TO ALLOW MA
;IN THE ADDR
;THE 4MB (2M
;NEED NO HOI.
;ECREQ WILL HOLD UNT

IF (VCC) CRQ = ECREQ * IORQ
+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21
+ ECREQ * PPN20

/BANK0 := PPN21 + PPN20

/BANK1 := PPN21 + /PPN20

/BANK2 := /PPN21 + PPN20

MSIZE0 = GND

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.
; 180587 M3202B

PAL16R4
ADGD 18/8/86
44426A,6G,BADEC
DMA ADDRESS DECODE FOR 2MB MEMORY
DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT
IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + BD20 + MOFF ;2 MB

IF (VCC) /DDBAPR = /DBAPR
/BANK0 := BD21 + BD20
/BANK1 := BD21 + /BD20
/BANK2 := /BD21 + BD20
MSIZE1 = GND

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK

; 180587 M3202B

PAL16R4

ADGD 18/8/86

44445A, 9G, CADEC

CPU ADDRESS DECODER FOR 4MB MEMORY

CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND

/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;EACH LINE R
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;TO ALL ON MA
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;IN THE ADDR
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;THE 4MB (2M
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ;NEED NO HOL
;ECREQ WILL HOLD UNT

IF (VCC) CRQ = ECREQ * IORQ
+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21

/BANK0 := PPN21 + PPN20

/BANK1 := PPN21 + /PPN20

/BANK2 := /PPN21 + PPN20

MSIZE0 = VCC

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY. PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

; 180587 M3202B

PAL16R4
ADGD 18/8/86
44446A,6G,BADEC
DMA ADDRESS DECODE FOR 4MB MEMORY
DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT
IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + MOFF ;4 MB

IF (VCC) /DDBAPR = /DBAPR

/BANK0 := BD21 + BD20

/BANK1 := BD21 + /BD20

/BANK2 := /BD21 + BD20

MSIZE1 = GND

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK
; 180587 M3202B

PAL16R4
ADGD 18/8/86
44465A, 9G, CADEC
CPU ADDRESS DECODER FOR 6MB MEMORY

CK WRITE /IORQ /MOFF PPN19 PPN20 PPN21 PPN22 PPN23 GND
/CGNT ECREQ /CRQ /MWRITE BANK0 BANK1 BANK2 /CLRQ /MSIZE0 VCC

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ; EACH LINE R
+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * PPN20 * /MOFF ; TO ALLOW MA
+ ECREQ * /IORQ * /PPN23 * /PPN22 * PPN21 * /PPN20 * /MOFF ; IN THE ADDR
; THE 4MB (2M
; NEED NO HOL
; ECREQ WILL

IF (VCC) CRQ = ECREQ * IORQ
+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21 * PPN20

/BANK0 := PPN21 + PPN20

/BANK1 := PPN21 + /PPN20

/BANK2 := /PPN21 + PPN20

MSIZE0 = GND

DESCRIPTION

; 8/1-87JLB: NEW INPUT /MOFF TO DISBLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.
; 150387 JLB: WRITE WAS WRONG POLARITY.
; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

; 180587 M3202B

PAL16R4
ADGD 18/8/86
44466A,6G,BADEC
DMA ADDRESS DECODE FOR 6MB MEMORY
DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 CND
/BGNT /BD19 /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDBAPR AOK VCC

MWRITE := BINPUT

IF (VCC) /AOK = /BMEM
+ BD23
+ BD22
+ BD21 * BD20
+ MOFF ;6 MB

IF (VCC) /DDBAPR = /DBAPR

/BANK0 := BD21 + BD20

/BANK1 := BD21 + /BD20

/BANK2 := /BD21 + BD20

MSIZE1 = VCC

DESCRIPTION

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISBLE THE WHOLE MEMORY. BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK

; 180587 M3202B

PAL16R4
JLB/CJTC 17MAR87
44501A,22F,VEXFIX

CLK C4 C3 C2 C1 C0 M1 M0 /LCS GND
/OE IDB2 NC13 NC14 OPCLCS VEX /LDEXM NC18 NC19 VCC

; TO FIX VIRTUAL EXAMINE BUG IN CGA

LDEXM := C4 * /C3 * /C2 * /C1 * C0 * M1 * M0 * /LCS ; COMMAND 21.3

/VEX := LDEXM * /IDB2 ; CLEAR
+ /LDEXM * /VEX ; HOLD CLEAR
+ LCS

/OPCLCS := /C4 + /C3 + /C2 + /C1 + C0 + /M1 + M0 + LCS ; COMMAND 36.2

DESCRIPTION

; 180587 M3202B

PAL16R4
JLB/CJTC 17MAR87
44501B,22F,VEXFIX

CLK C4 C3 C2 C1 C0 M1 M0 /LCS GND
/OE IDB2 NC13 /RWCS OPCLCS VEX /LDEXM NC18 NC19 VCC

; TO FIX VIRTUAL EXAMINE BUG IN CGA
; + MISC. OTHER BUGS.

LDEXM := C4 * /C3 * /C2 * /C1 * C0 * M1 * M0 * /LCS ; COMMAND 21.3

/VEX := LDEXM * /IDB2 ; CLEAR
+ /LDEXM * /VEX ; HOLD CLEAR
+ LCS

/OPCLCS := /C4 + /C3 + /C2 + /C1 + C0 + /M1 + M0 + LCS ; COMMAND 36.2

RWCS := C4 * C3 * C2 * C1 * /C0 * /M1 * M0 * /LCS ; COMMAND 36.1

DESCRIPTION

; 180587 M3202B
; 150687 RWCS SIGNAL TOO SLOW FROM NEC G/A. MUST BE DONE IN A PAL.

Move
X 4115

PAL16R6
JLB 26NOV86
44601A,12D,CYCFSM

OSC /DLY1 /DLYO CSDELAY0 WAIT1 WAIT2 /CGNTCACT HIT /BRK GND
/OE /SHORT /CC3 /CC2 /CC1 /CC0 /TERM /CX /SLOW VCC

; CYCLE CONTROL STATE COUNTER. FAST VERSION.

CX := VCC ; THIS IS THE FAST VERSION

TERM := /CC3 * /CC2 * /CC1 * /CC0 * SHORT * /TERM * /DLYO * /CSDELAY0 ;50NS CYCLE
+ /CC3 * /CC2 * /CC1 * CC0 * SHORT * /BRK * /DLY1 * /TERM ;75NS CYCLE
+ /CC3 * /CC2 * /CC1 * CC0 * HIT * /BRK * /DLY1 * /TERM ;75NS CYCLE
+ /CC3 * /CC2 * CC1 * CC0 * SHORT * /BRK * /TERM ;100NS CYCLE
+ /CC3 * /CC2 * CC1 * CC0 * HIT * /BRK * /TERM ;100NS CYCLE
+ /CC3 * CC2 * CC1 * CC0 * BRK * /TERM ;BRK CYCLE (200
+ /CC3 * CC2 * /CC1 * CC0 * SLOW * /TERM ;SLOW CYCLES INCL. FE
+ CC3 * /CC2 * /CC1 * /CC0 * /TERM ;UART,LCS,RWCS CYCLES

CC3 := CC2 * /CC1 * /CC0 * /TERM ;h+i+j+k+l+m+n+o
+ CC3 * CC1 * /TERM
+ CC3 * CC0 * /TERM

CC2 := /CC3 * CC2 * CC1 * /TERM ;e+f+g+h+i+j+k
+ CC2 * /CC1 * /TERM
+ CC2 * CC0 * /TERM
+ /CC3 * /CC2 * CC1 * /CC0 * CGNTCACT * /TERM ;d WAIT FOR BUS IF
+ /CC3 * /CC2 * CC1 * /CC0 * /WAIT1 * /TERM ;d WAIT1 AND NOT
+ /CC3 * /CC2 * CC1 * /CC0 * BRK * /TERM ;d BRK

CC1 := /CC3 * /CC2 * CC0 * /TERM ;b+c+d+e+j+k+l+m
+ CC3 * CC2 * CC0 * /TERM
+ CC1 * /CC0 * /TERM

CC0 := /CC3 * /CC2 * /CC1 * /TERM ;a+b+f+i+j+m+n
+ /CC3 * CC2 * CC1 * CC0 * /TERM
+ CC3 * CC2 * /CC1 * /TERM
+ CC3 * /CC2 * CC1 * /TERM
+ /CC3 * CC2 * CC1 * /CC0 * /CGNTCACT * /TERM ;e WAIT FOR BUS OR LOC
+ /CC3 * CC2 * CC1 * /CC0 * BRK * /TERM ;e MEM CYCLE TO FINISH
+ /CC3 * CC2 * CC1 * /CC0 * /WAIT2 * /TERM ;e IF WAIT2 AND NOT BRK
+ /CC3 * /CC2 * CC1 * CC0 * CGNTCACT * /BRK * /TERM ;c PREV WRITE.

DESCRIPTION

; 060387 JLB: MOD'S FROM SLOW VERSION IMPLEMENTED.
; 060387 JLB: 100 NS CYCLE MIN. NO BUFFERED WRITE.
; 070387 JLB: 75 NS CYCLE MIN. NO BUFFERED WRITE.
; 120387 JLB: IMPROVED HIT PATH. FORM~ REMOVED. HIT INPUT ON PIN 12.
; SHORT IN ON PIN 4.
; 120387 JLB: 50 NS CYCLE ON SHORT
; 180387 JLB: MR GATED WITH WAIT1 OUTSIDE. NEW INPUT CSDELAY0.
; 180387 JLB: BUFFERED WRITE.
; 180387 JLB: 175NS SLOW & BRK CYCLES.
; 210387 JLB: 200NS SLOW CYCLES, 175NS BRK CYCLES.

; 270487 M3202B

PAL16R8
ADGD 13/8/86
44802A,6F, RAMC

OSC /RGNT /CGNT /BGNT /BDAP50 /MR /BGNT25 /CGNT25 /BDRY50 GND
/OE /HIEN /LOEN CAS RAS /QD /QC /QB /QA VCC

QA := /QD * /QC * /QB
+ QD * /QC * QB
; 0)1110 IDLE UNIT NEXT GNT OF ANY TYPE
; 1)1010
; 2)1011 PAUSE UNTIL BDAP OCCURS (ONLY ON BGNTS)
; NO WAIT STATE ON CPU TO MEMORY WRITE
; 3)1001
; 4)1000
; 5)0000
+ QB * BGNT25 * /BDAP50 * /MR * /BDRY50 ;6)0001
; 7)0011
; 8)0010
QC := /QD * QC
+ QC * /QB
+ QC * QA
+ /QD * QB * /QA
+ QC * /RGNT * /CGNT25 * /BGNT25
; OTHER STATES WILL GO TO IDLE AFTER 1 OSC PE
QB := QC
+ QB * /QA
+ QD * QA
;RAS := QC
+ /QD * QA
+ /QD * QB
;RAS=1,2,3,4,5,6
LOEN := /QC * /QB * /QA
+ QD * /QC * QA
;LOEN=3,4,5,6
HIEN := QD * QB * /QA
+ /QD * /QC * QB
;HIEN=0,1,2,8
/CAS := QB * /QA * /RGNT
+ QD * QB * /RGNT
+ QC * /QB
+ QC * QA
+ /QD * RGNT
;CAS=4,5,6,7,8
;CAS ON REFRESH=1,2,3,4,5
Xo
removed

DESCRIPTION

;190387 JLB: RAS & CAS INVERTED.
;190387 JLB: BGNT25 NEW INPUT. USED TO DELAY STATE MACHINE TURN ON 25NS ON
; BUS CYCLES.
;230387 CJTC: CGNT25 NEW INPUT. USED TO DELAY STATE MACHINE TURN ON 25NS ON
; CPU CYCLES.
; 020487 JLB: BDRY50 WILL GET US OUT OF THE WAIT STATE ON TIMEOUT.
;
; 180587 M3202B

PAL16R8
CJTC 180587
44904A, 7G, SIZEIND

CLK /MSIZE0 /MSIZE1 /MOFF NC5 NC6 NC7 NC8 NC9 GND
/OE /EHI /EMID /ELOW NC15 DBIT CBIT ABIT VCC

; MEMORY SIZE INDICATOR FOR 0, 2, 4 OR 6 MB MEMORY ARRAYS

EHI := EMID + ELOW * EHI + /ELOW * /EHI ; ENABLE DIGIT 3

EMID := ELOW * /EMID * /EHI ; ENABLE DIGIT 2

ELOW := /ELOW * /EMID * EHI ; ENABLE DIGIT 1

/ABIT := MOFF
+ ~~/MSIZE1 * MSIZE0 * EMID~~
+ EHI
+ ELOW

/BBIT := MOFF
+ /MSIZE1 * /MSIZE0 * EMID
+ EHI
+ ELOW

/CBIT := VCC
/DBIT := VCC

DESCRIPTION

{ /MSIZE1 * ELOW
+ /MSIZE0 * ELOW
+ EHI
+ EMID

MEMORY SIZE	S1	S0
-----	--	--
2MB	F	F
4MB	F	T
6MB	T	F
SPARE	T	T

DIGIT ENABLE BITS : ELOW --> EMID --> EHI

PAL16L8
JLB/CJTC 11AUG86
45001A, 8D, BPAR

/BDRY50 /BDRY75 /BLOCK25 /BPERR50 DBAPR /MOR25 /LPERR /MR /EPES GND
/EPEA SPEA /LERR NC14 NC15 /RERR /PARERR /BLOCK SPEA VCC

; STROBE PARITY ERROR STATUS WORD

IF (VCC) /SPEA = /BDRY50 * /BDRY75
+ BDRY50 * BDRY75
+ /BDRY50 * BDRY75
+ BLOCK25
+ EPEA
+ EPES
+ MR

; STROBE PARITY ERROR ADDRESS

IF (VCC) /SPEA = /DBAPR + BLOCK25 + EPEA + MR

; BLOCK SIGNAL FOR PES AND PEA STROBE - BLOCK ON ERROR, RELEASE ON PEA READ

IF (VCC) BLOCK = BDRY50 * /BDRY75 * /EPEA * /EPES * MOR25 * /MR
+ BDRY50 * /BDRY75 * /EPEA * /EPES * BPERR50 * /MR
+ BLOCK * /EPEA * /MR

; PARITY ERROR SIGNALS FROM BUS AND LOCAL MEMORY

IF (VCC) PARERR = BDRY50 * /BDRY75 * BPERR50 * /MR
+ LERR

; REMOTE ERROR - LAST ERROR WAS FROM MEMORY ATTACHED TO THE ND100 BUS
; WILL BE OVERRIDEN BY AN ERROR FROM LOCAL MEMORY (PERR1 AND PERRO)

IF (VCC) RERR = BPERR50 * /MR ;SET REMOTE ERROR ON BUS PARITY ERR
+ RERR * /LPERR * /MR ;HOLD UNTIL A LOCAL MEMORY ERROR
+ MOR25 * /MR ;=> LOCAL ERROR HAS PRIORITY

DESCRIPTION

; 260387 CJTC: NEED TO USE DELAYED BAPR (DBAPR) INSTEAD OF BAPR~ IN
; PRODUCING SPEA. POLARITY CHANGE.
; 260387 JLB: BLOCK SIGNAL MUST NOT BE PRODUCED ON LOCAL MEMORY ERROR.
; IT WILL ONLY BE UNLOCKED ON PEA READ FROM REMOTE ERROR PEA.
; 260387 JLB: PERR HANDLING CHANGED.
; 070487 JLB: RERR MUST LATCH UP ON MOR ALSO.

; 180587 M3202B

PAL16LS
ADGD 18/8/86
45008A, 2F, DATA

/MWRITE /SWDIS LBD0 LBD1 LBD3 LBD4 /BIOXL ECCR /BCGNT50R GND
/HIEN /OER /MR NC14 /TST /DISB /CLRERR /OET /DIS VCC

IF (VCC) OET = MWRITE ;ON WRITE TO MEMORY

IF (VCC) OER = BCGNT50R ;ON READ FROM MEMORY AFTER THE ADDRESS PE
+ TST * MWRITE ;ON WRITE IN TEST MODE BOTH OER AND OET S

IF (VCC) CLRERR = MR ;CLEAR PARITY ERROR ON MR, READING EPESL
+ /BCGNT50R
+ DISB

IF (VCC) DISB = LBD3 * BIOXL * ECCR ;SET IF LDB3=1 AND IOX=ECCR
+ /MR * DISB * /BIOXL ;HOLD UNTIL NEXT IOX=ECCR
+ /MR * DISB * /ECCR

IF (VCC) TST = LBD0 * BIOXL * ECCR ;SET IF ANY OF LBD0,1,4 AND IOX=ECCR
+ LBD1 * BIOXL * ECCR ;HOLD UNTIL IOX=ECCR
+ LBD4 * BIOXL * ECCR
+ /MR * TST * /BIOXL
+ /MR * TST * /ECCR

IF (VCC) DIS = DISB + SWDIS

DESCRIPTION

; 200387 CJTC: LOGICAL ERRORS IN EQUATIONS FOR DISB AND TST
; 260387 CJTC: CHANGED PIN 2 /EPESL TO /EPEAL - CIRCUIT CHANGE ONLY!!!
; 260387 JLB: CLRERR COMES IMMEDIATELY TO MAKE PERR0&1 PULSES ONLY!!!

; 180587 M3202B

PAL16L8
ADGD 12AUG86
45009A,4F,ERROR

RDATA /BLOCKL25 BCGNT50 /PS /RERR /PA NC7 /LERR NC9 GND
/MR SPEAL /NC13 /NC14 /NC15 /BLOCKL /EPEAL /EPESL SPESL VCC

IF (VCC) /SPESL = /RDATA + BLOCKL25 + EPEAL + EPESL + MR ;RDATA USED AS WRITE
;PULSE WHEN NOT BLOCKED
IF (VCC) /SPEAL = /BCGNT50 + BLOCKL25 + EPEAL + MR ;BCGNT USED AS WRITE
;PULSE
IF (VCC) EPESL = PS * /RERR ;ENABLE IF ERROR IN LOCAL MEMORY
IF (VCC) EPEAL = PA * /RERR
IF (VCC) BLOCKL = RDATA * /EPEAL * /EPESL * LERR * MR ;SET ON LOCAL ERROR
+ BLOCKL * /PA * /MR ;HOLD TILL PEA READ

DESCRIPTION

; 2/1-87JLB: RDATA PIN 1.
; 070487 JLB: MUST NOT LOCK ON MOR, THAT IS DONE IN THE BUS INTERFACE ANYWAY
; UNBLOCK ON PA (I.E. ALSO IF THE BUS PEA WAS READ)
; 150487 CJTC: NO!!! SPIKES ON SPEAL - USE BLOCKL25 INSTEAD OF BLOCKL
;
; 180587 : M3202B

PAL16L8
JLB 7JAN87
45011A, 26H, LEVO

NC1 PILO PIL1 PIL2 PIL3 NC6 NC7 NC8 NC9 GND
/NC11 LEVO /NC13 /NC14 /NC15 /NC16 /NC17 /NC18 /NC19 VCC

; LEVEL ZERO

IF (VCC) /LEVO = PIL3
+ PIL2
+ PIL1
+ PILO

DESCRIPTION

; 180587 M3202B

44511A
Moved by

M3202C

NORSK DATA A.S.

Title

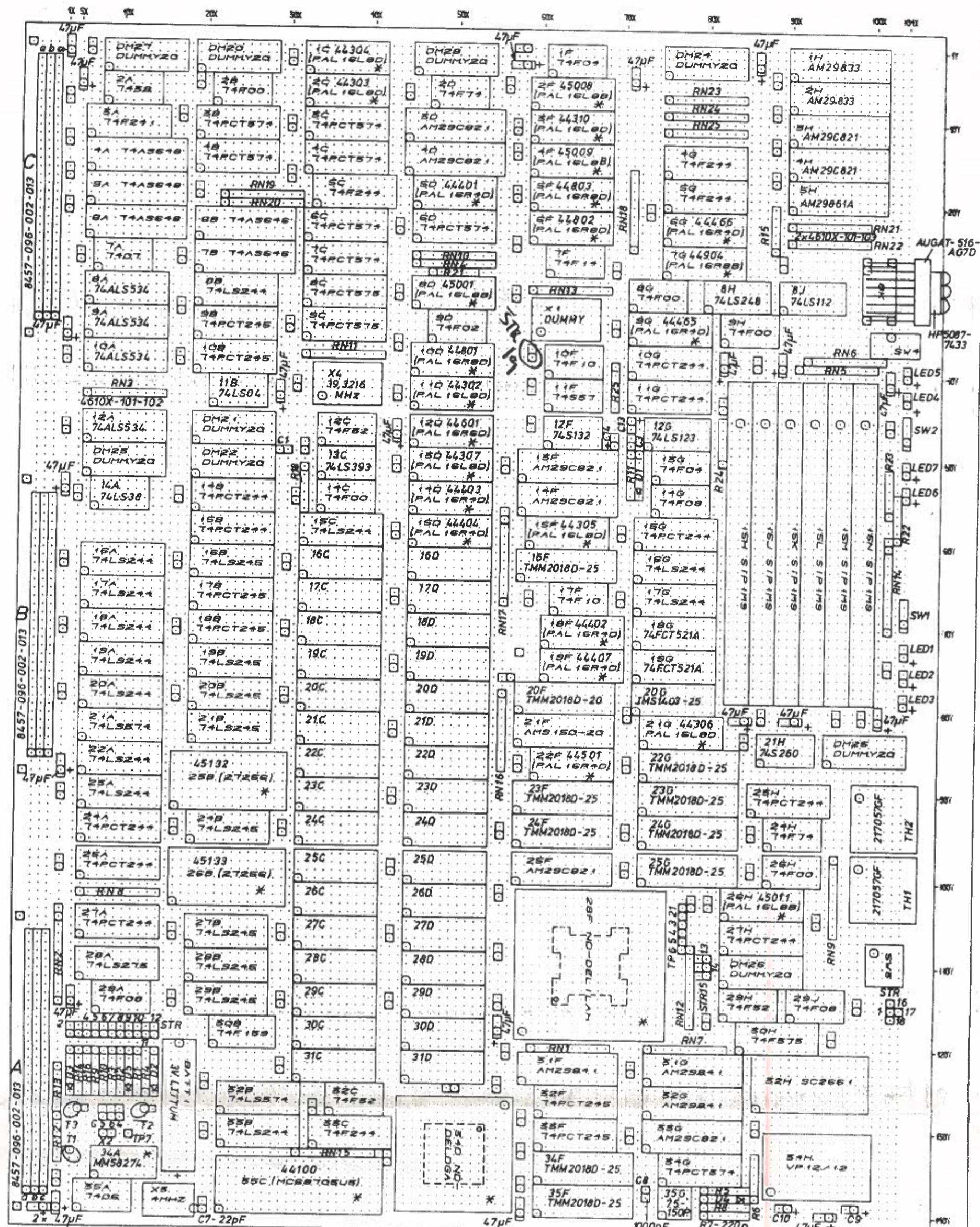
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32-BIT FAST 6Mb

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Card Pr

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B



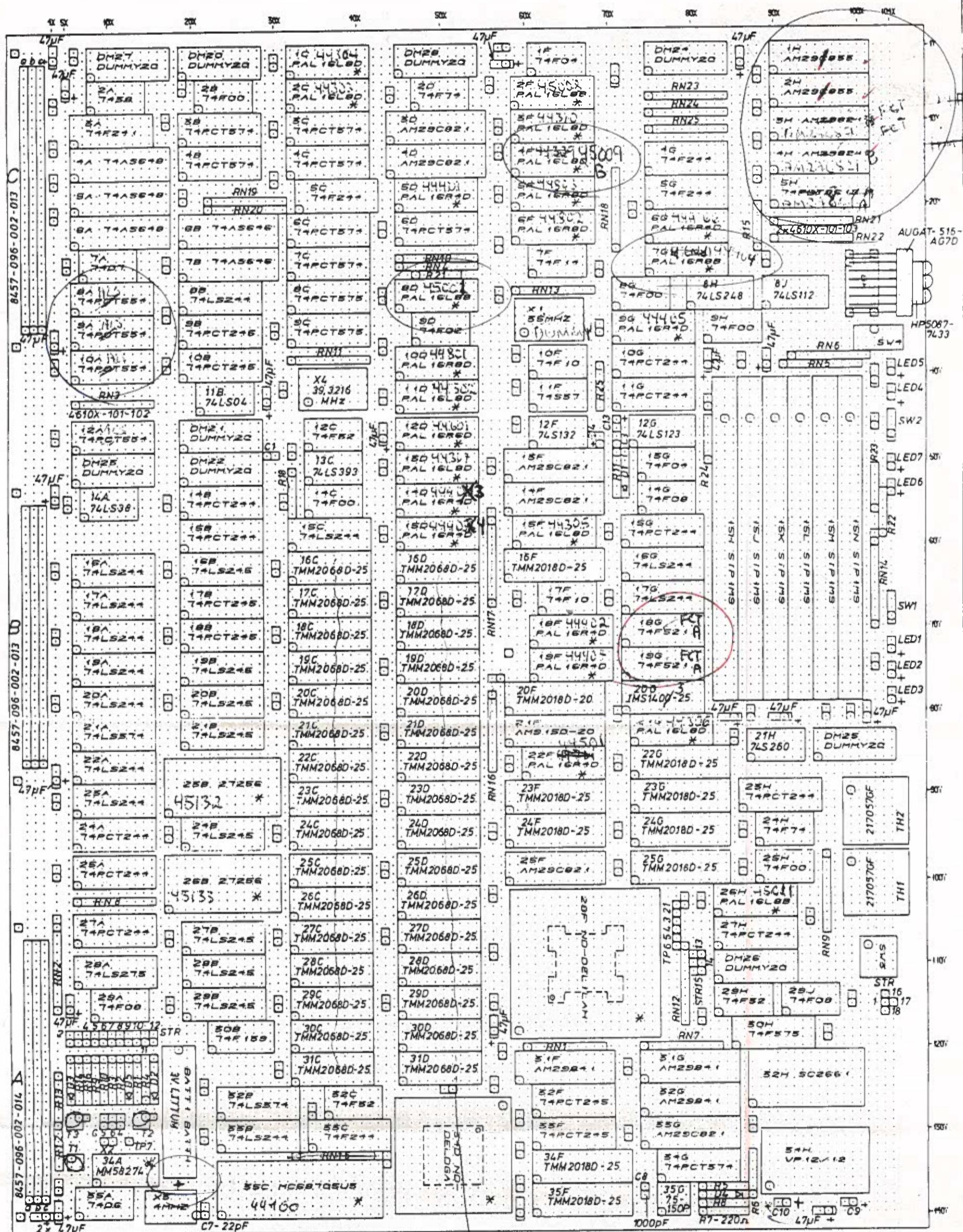
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UNMARKED CAPACITOR 100nF, 0.1" spacing (119 pcs.)

CORRECTION: WITHOUT EGO

UNMARKED IC's 16C-31C, 16D-31D = IDT6168A-20

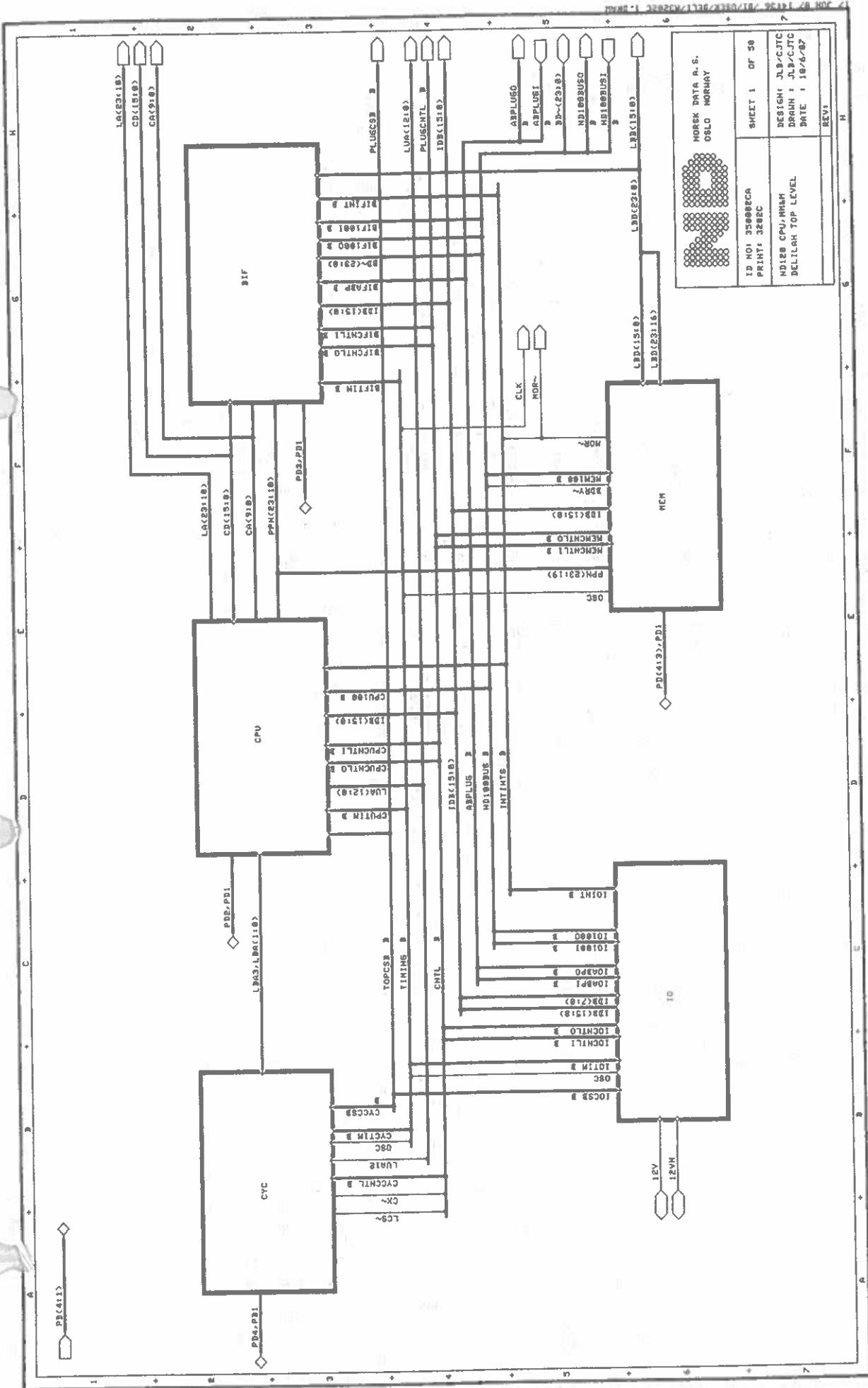
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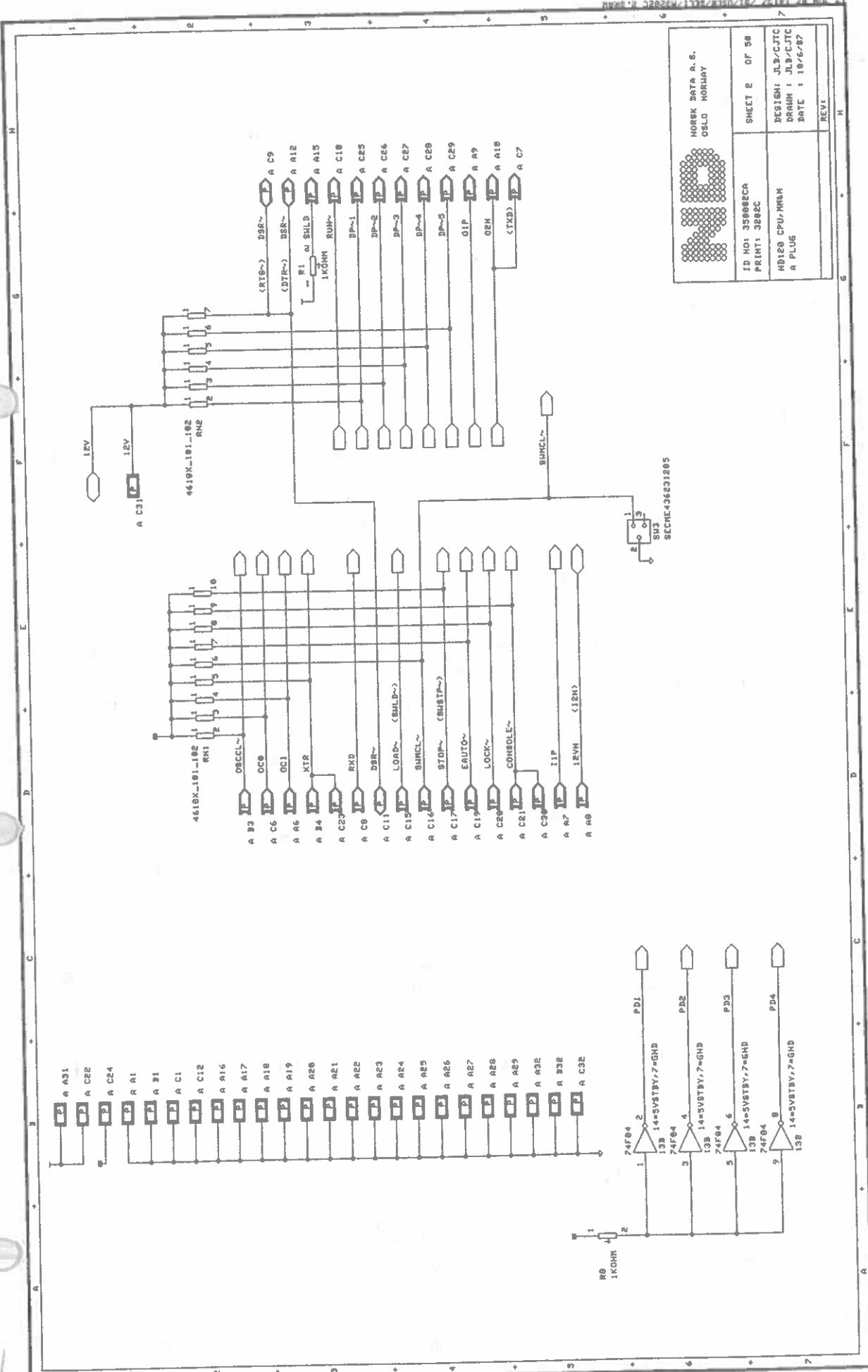


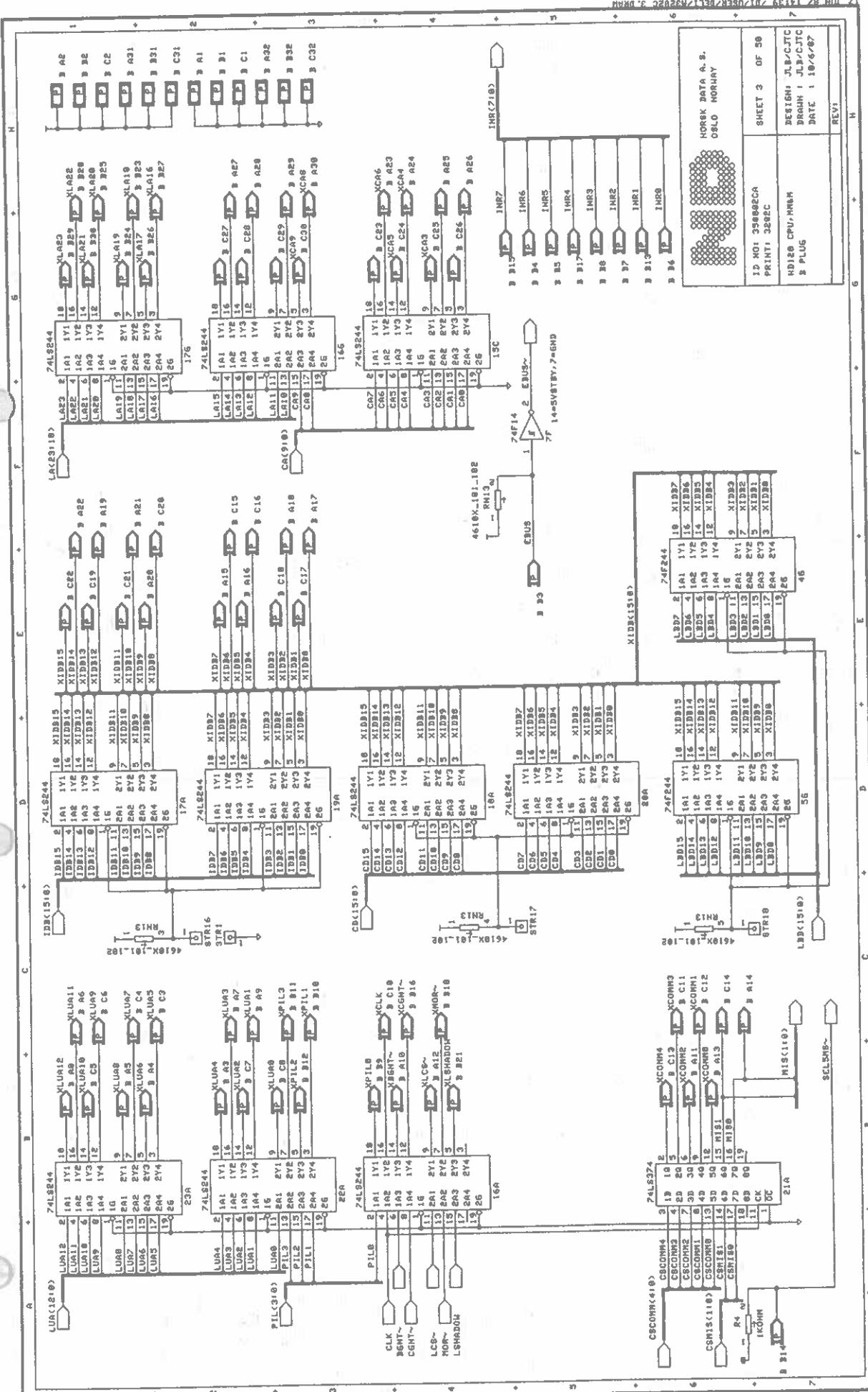
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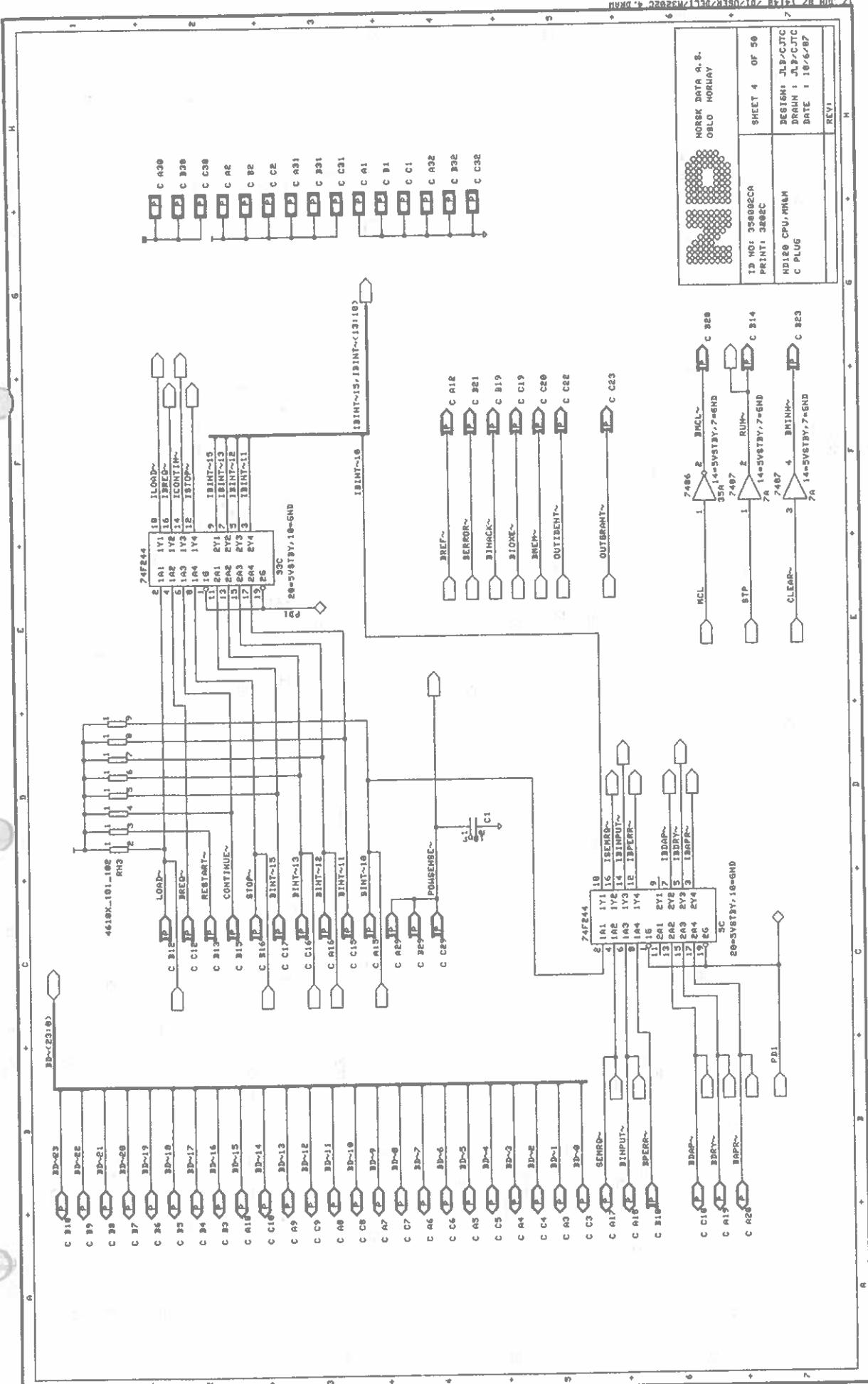
UNMARKED CAPACITOR 100nF, 0,1" spacing (119 pcs.)

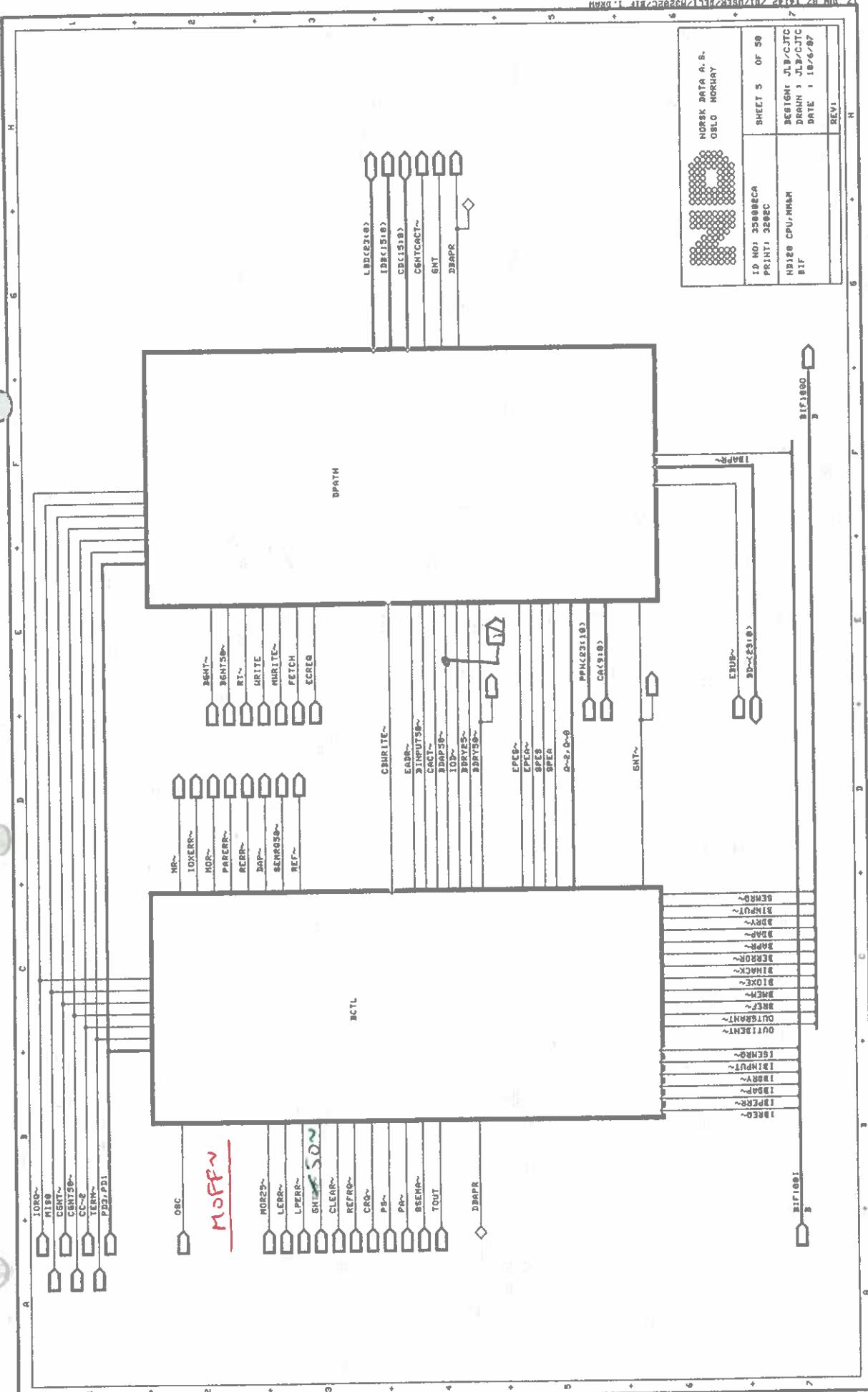
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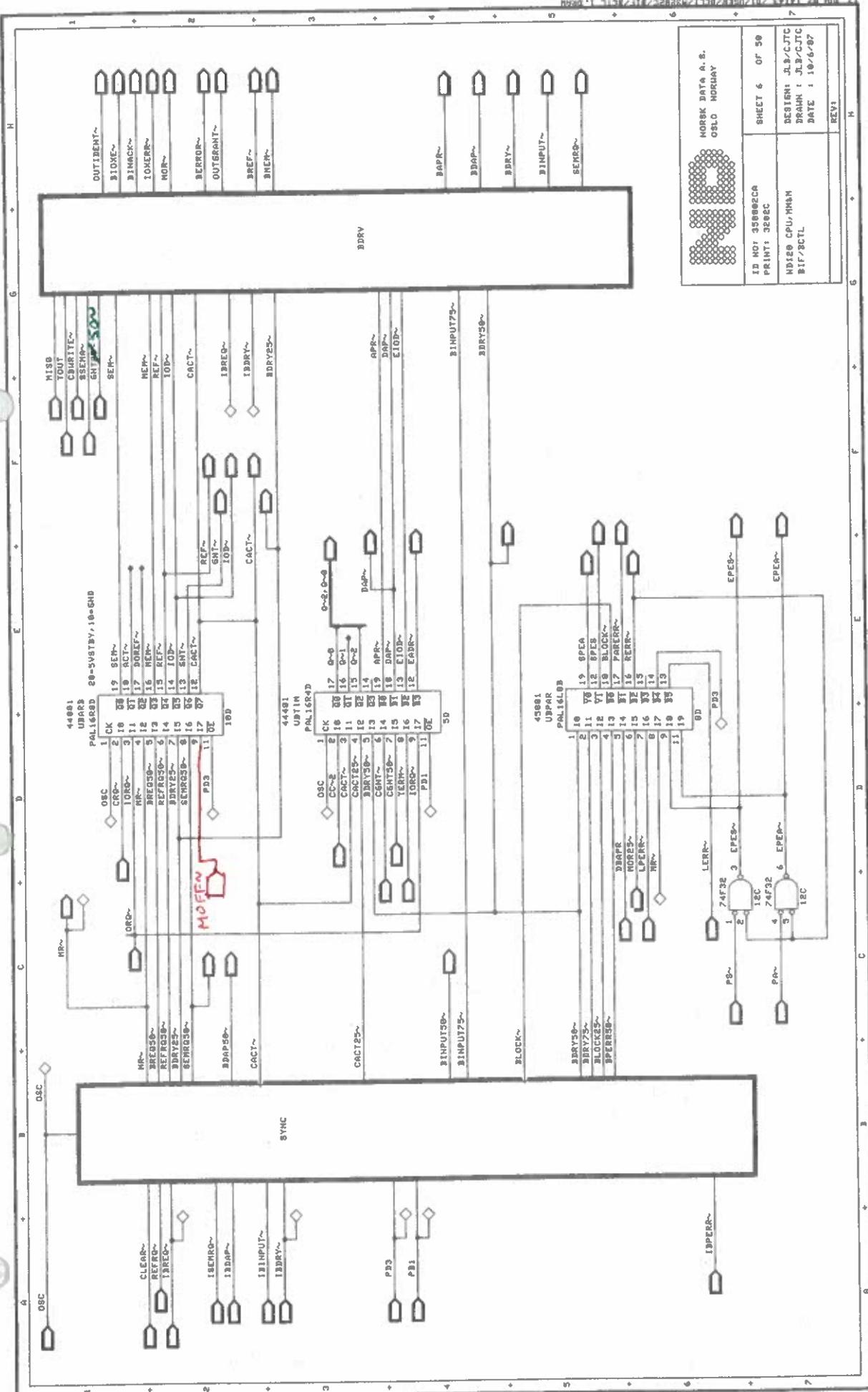


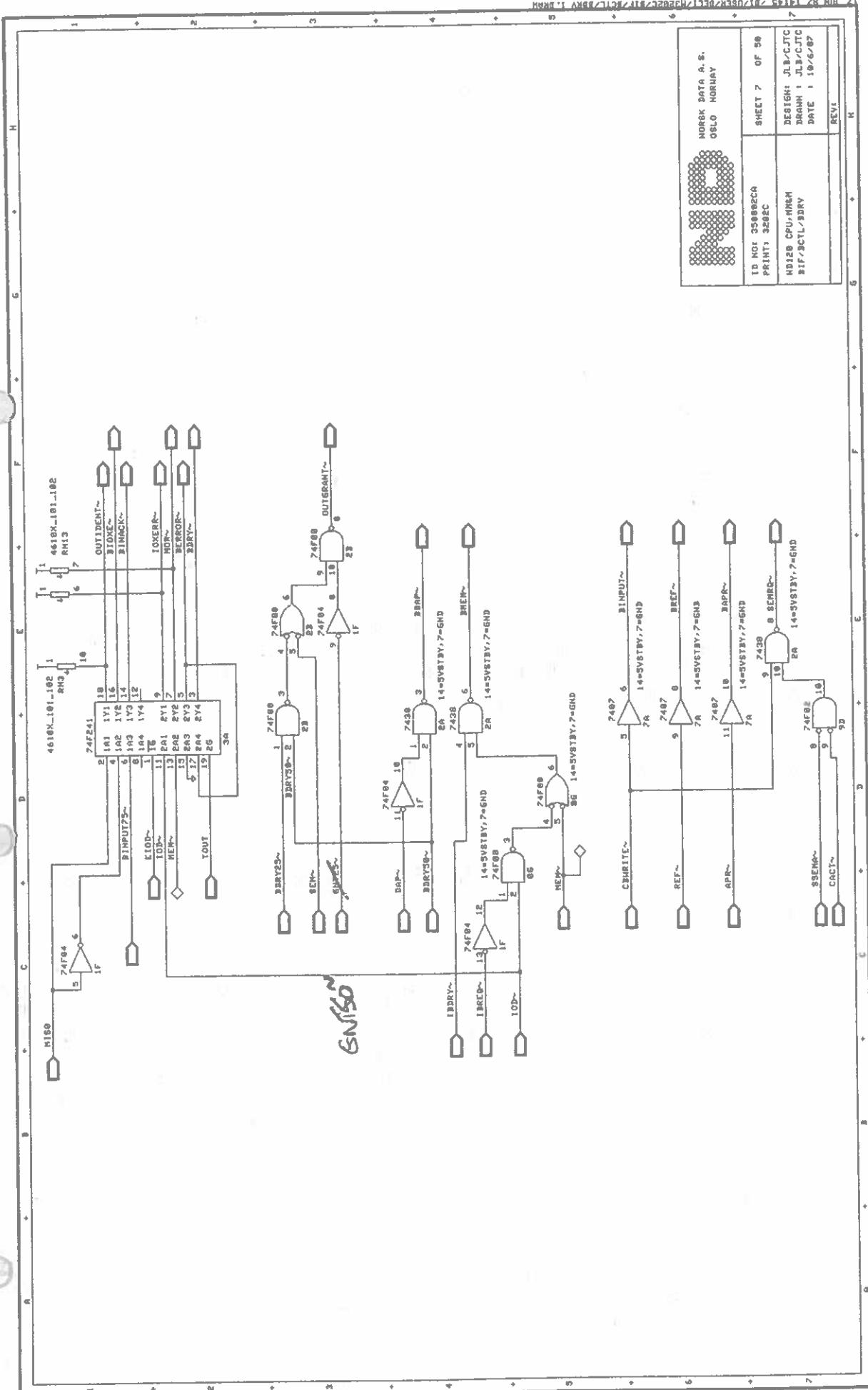


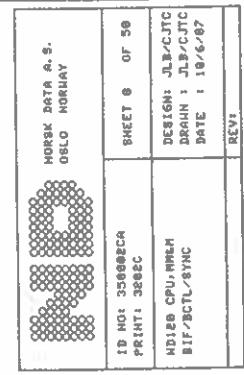












17 JUN 87 14:46 /D1/USER/DELLI/N3202C/FILE/SC1L/SYNC 1, BMMH
 Norsk Data A. S.
 Oslo Norway

SHEET # OF 50

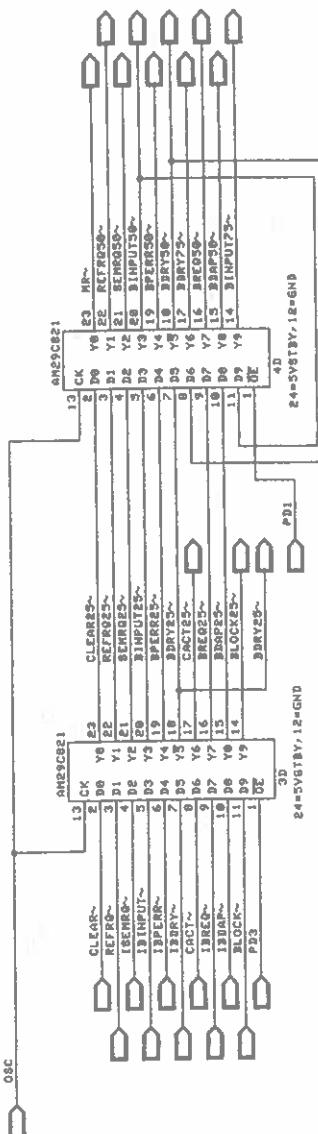
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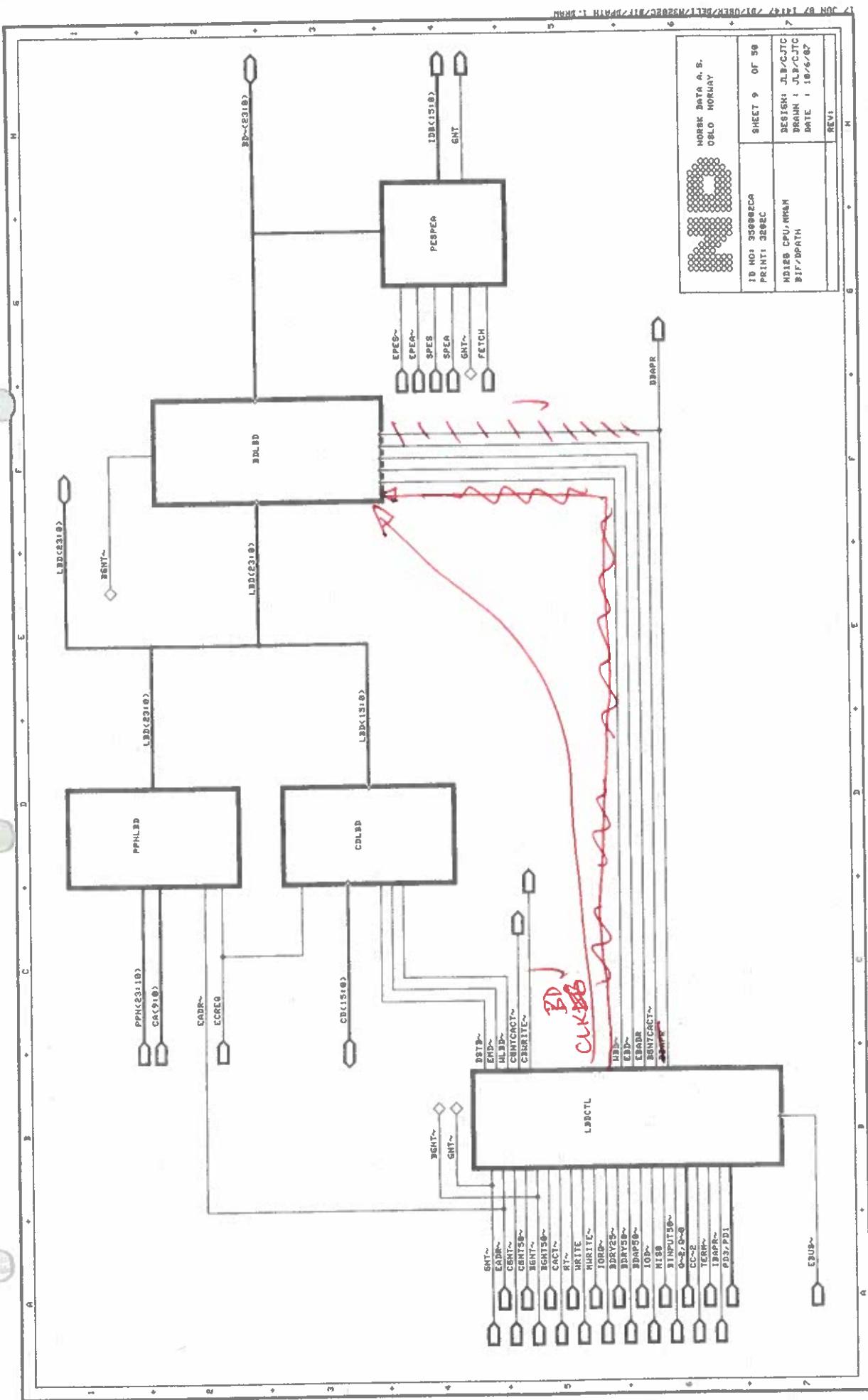
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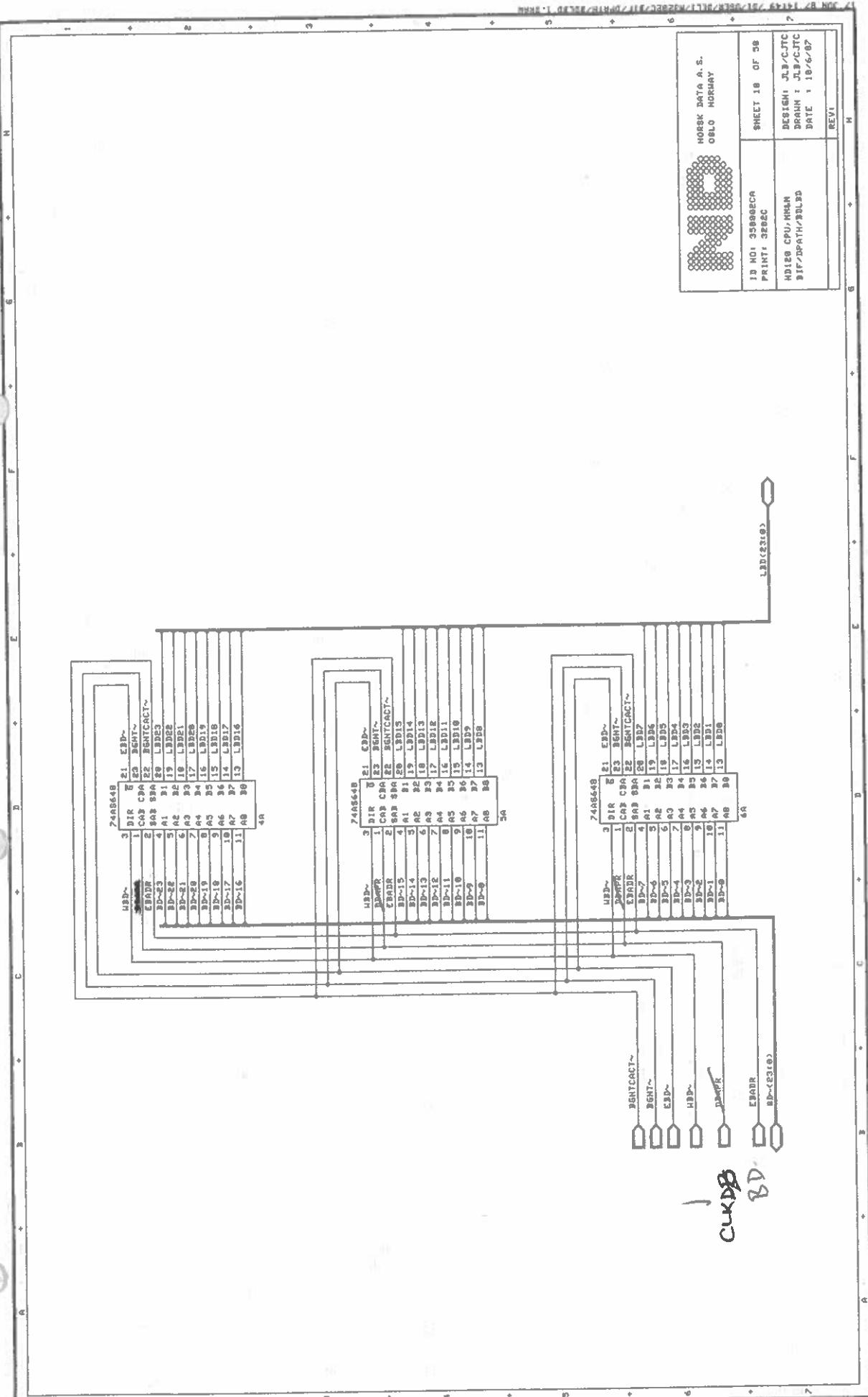
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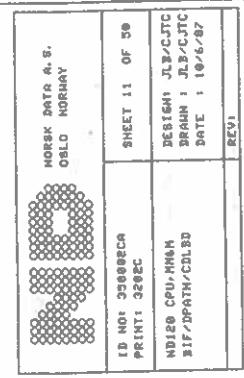
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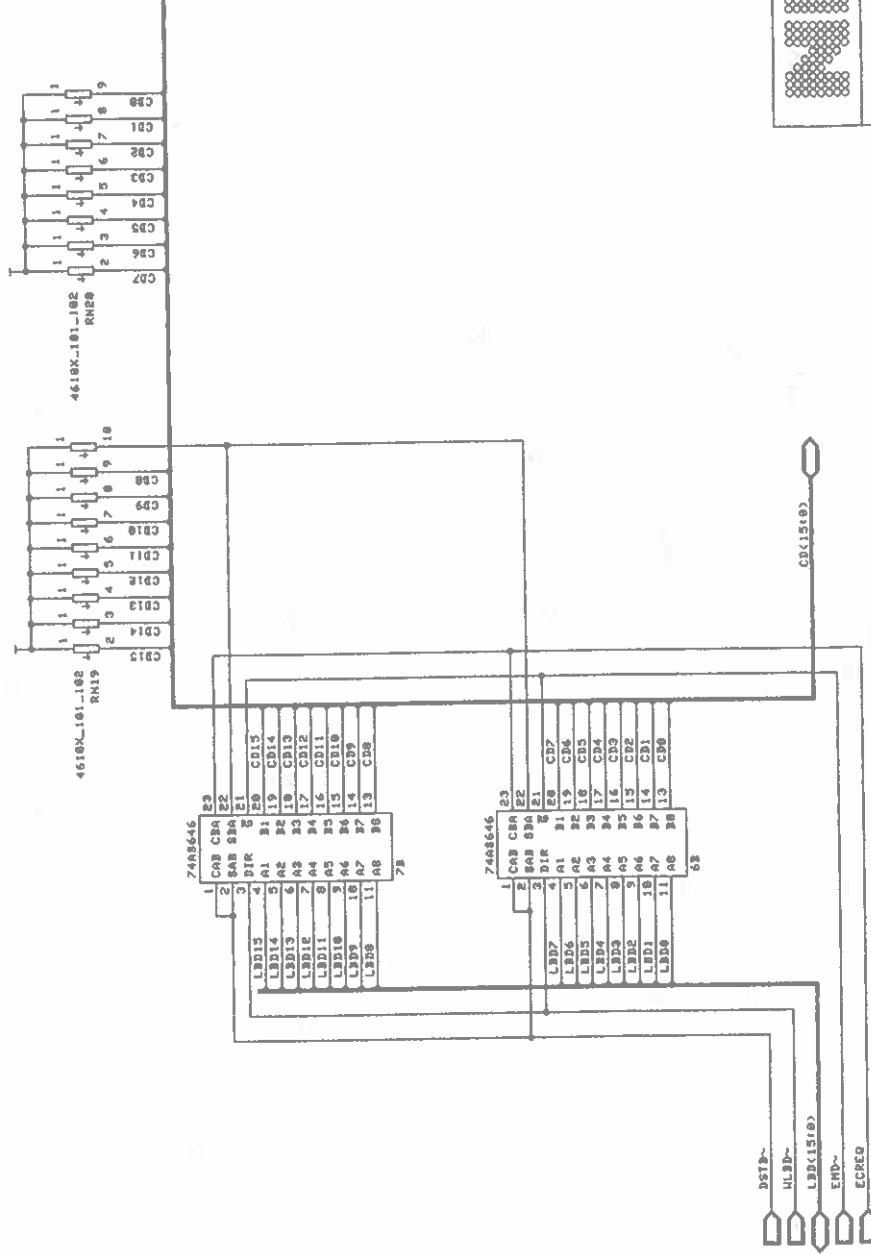


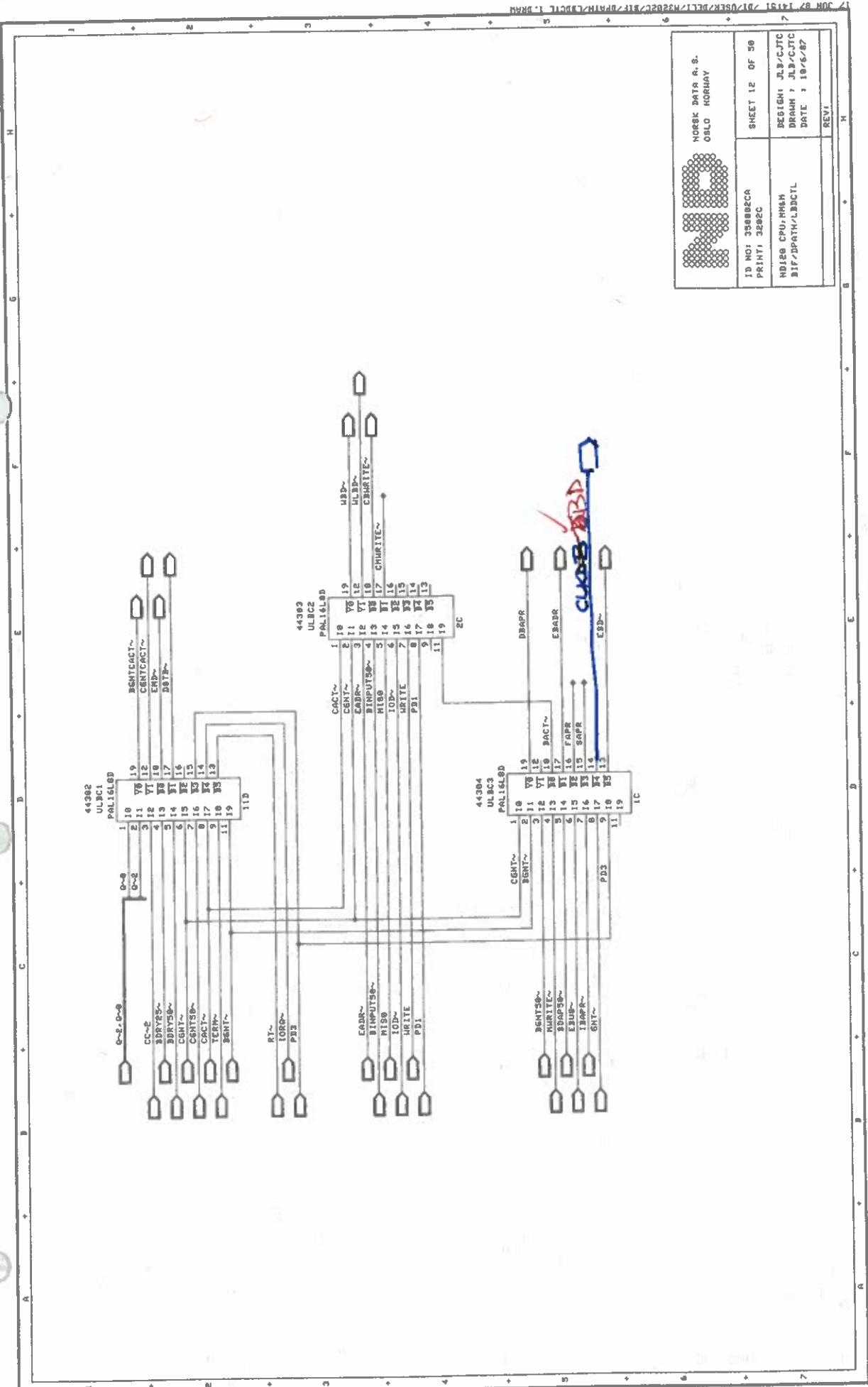


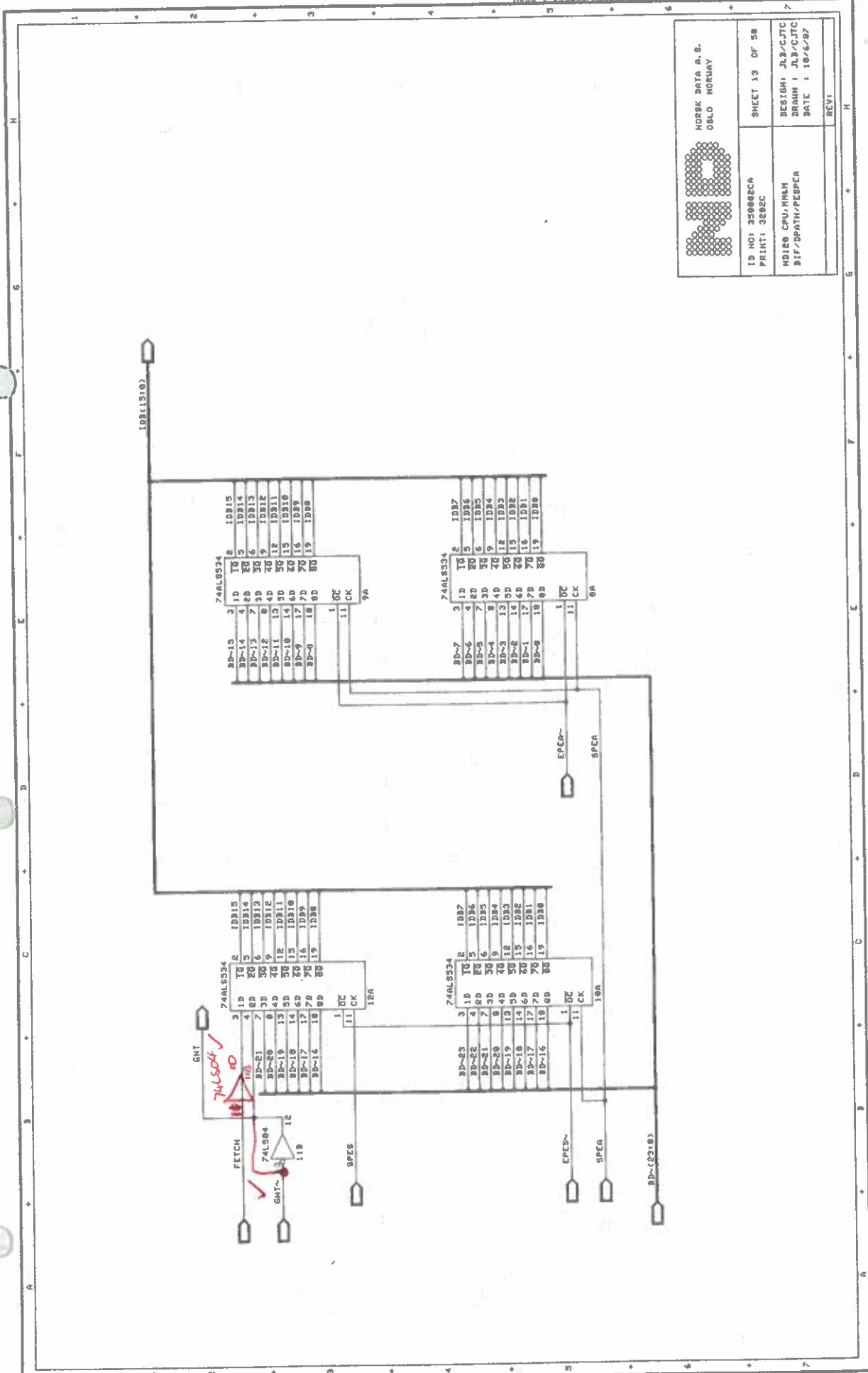


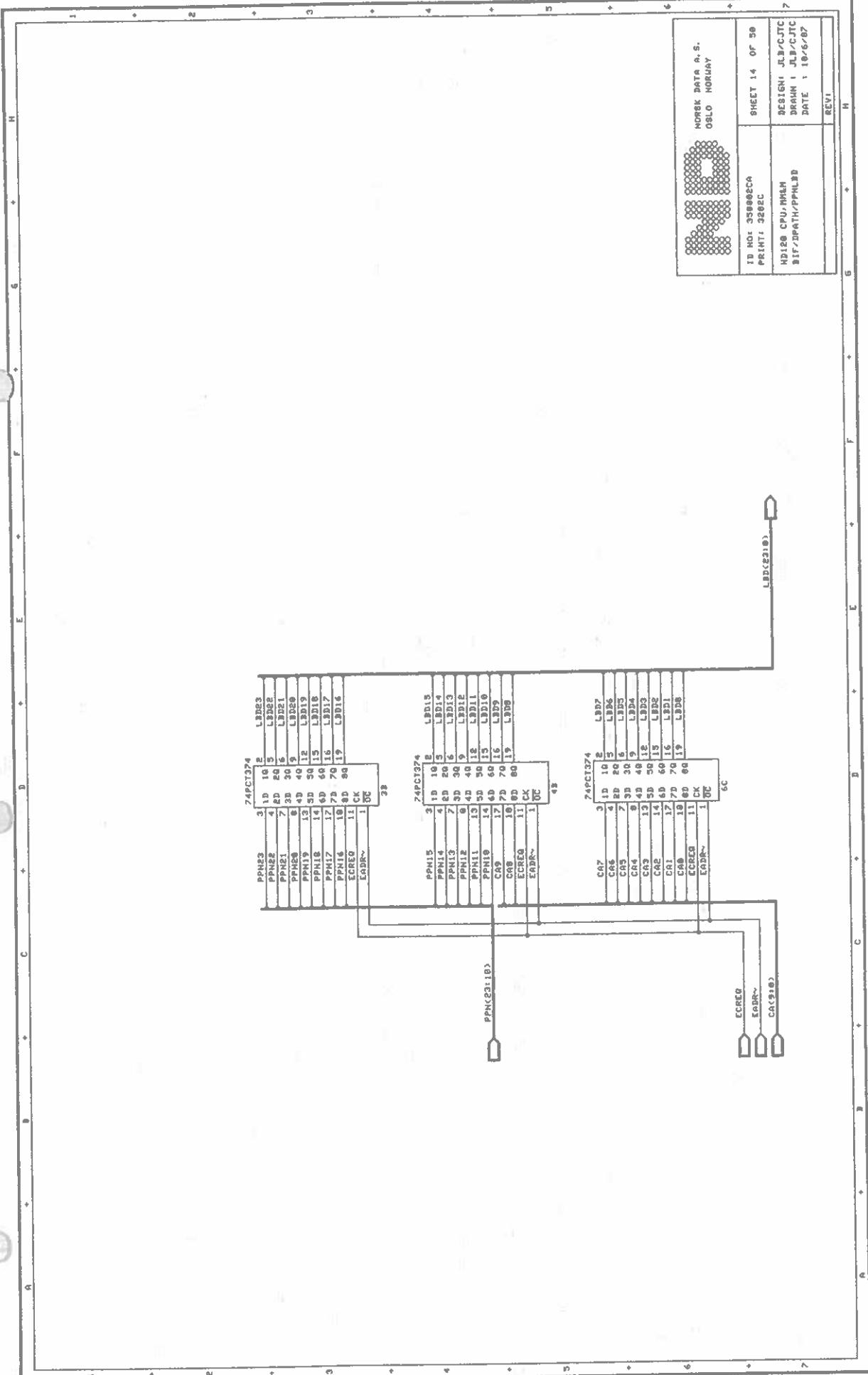
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ND16 CPU, NM4M SIF-DPATH/COLBD	DRAWN: J.B.C-CTC DATE: 10/6/87

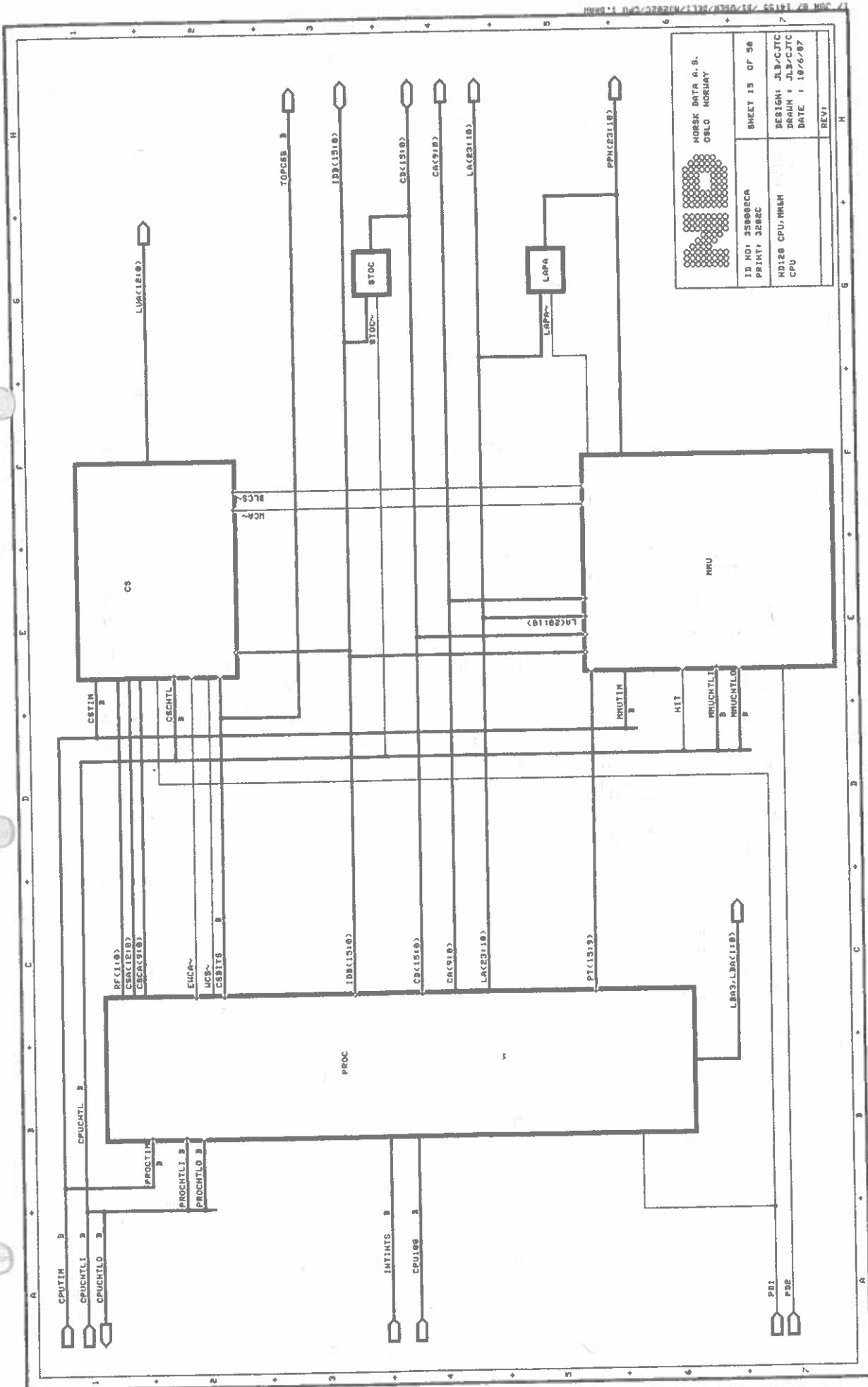
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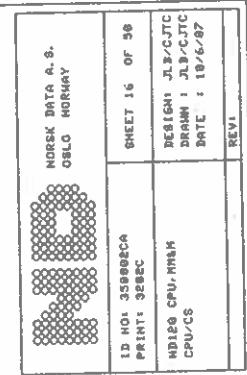
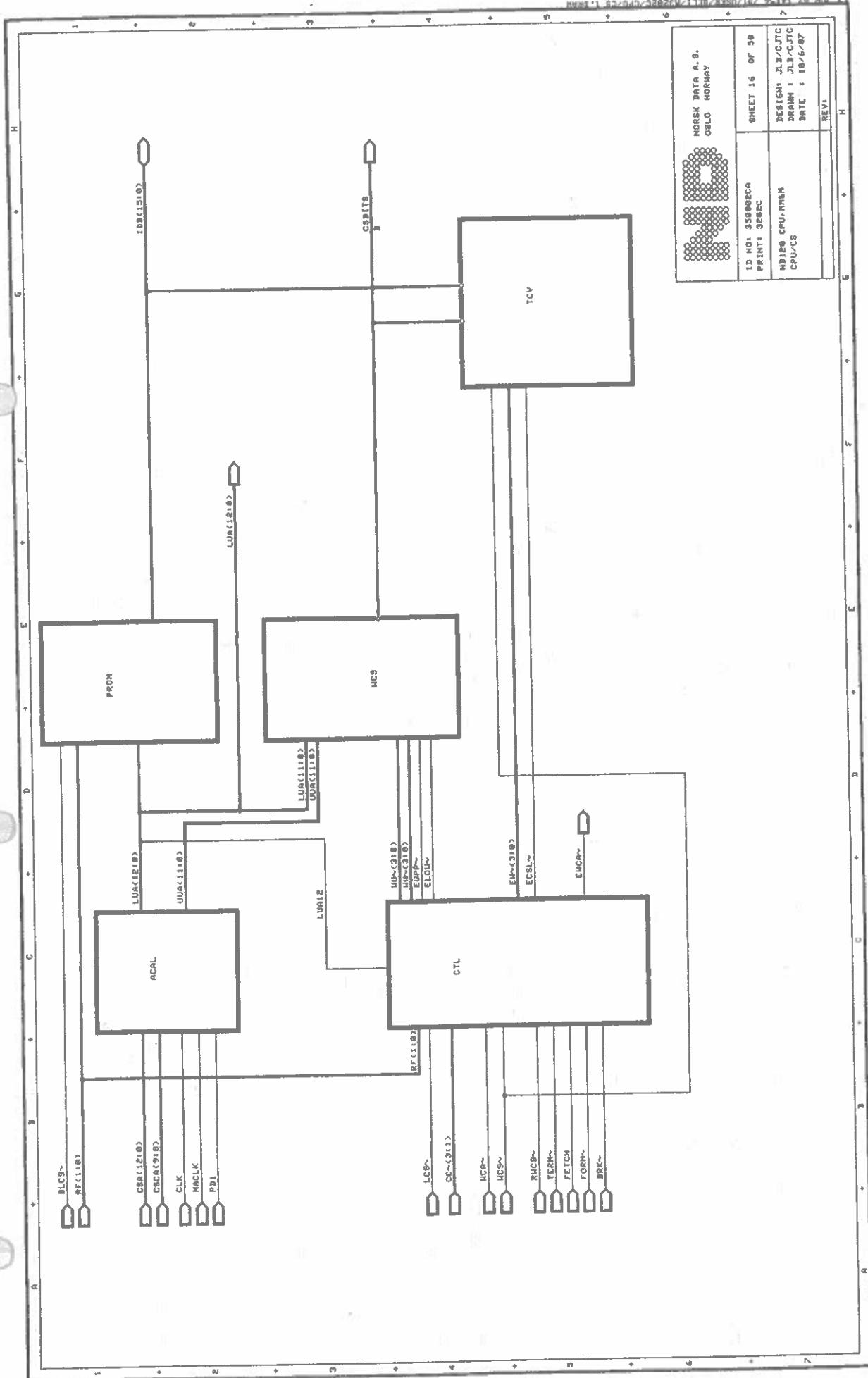










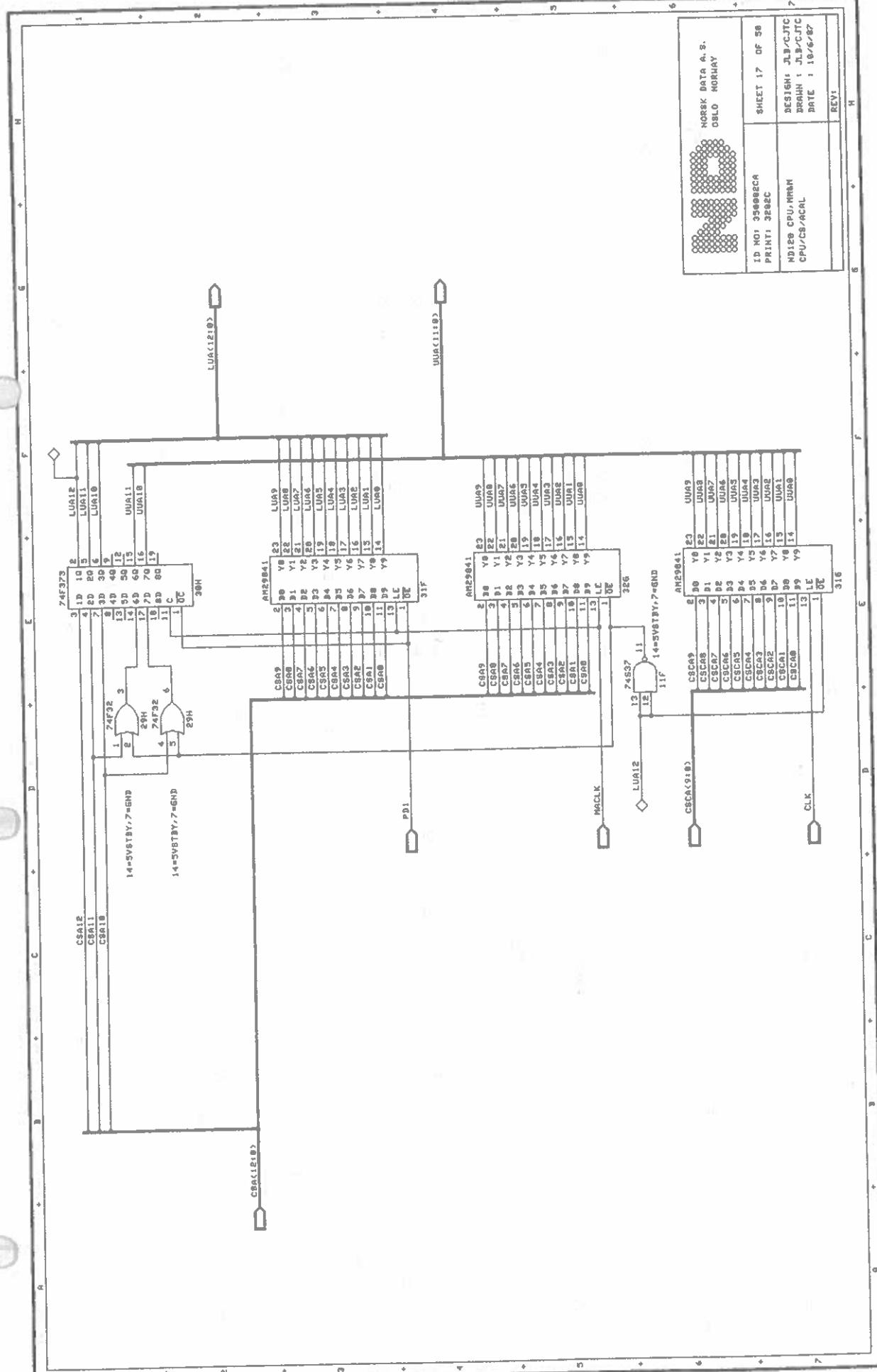


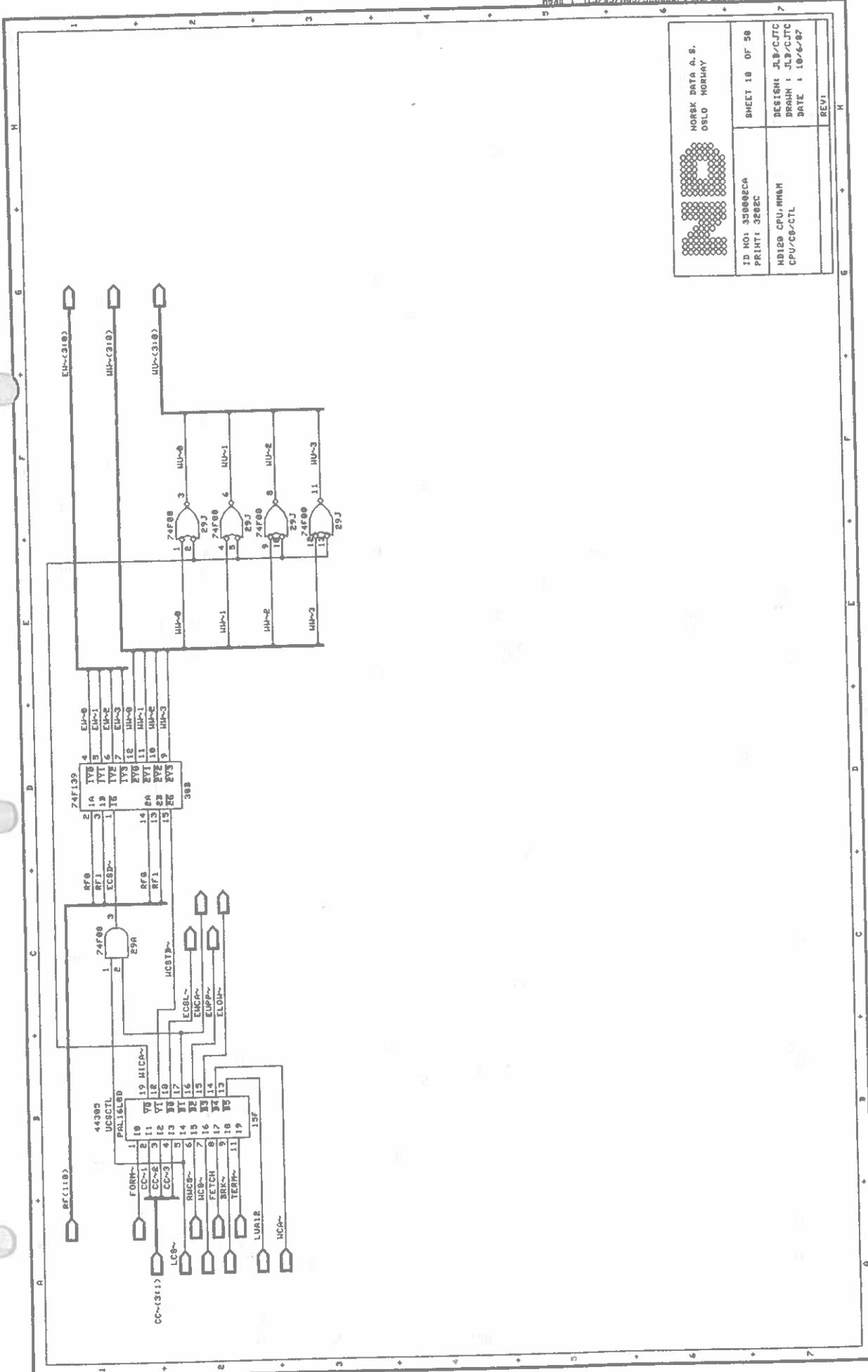
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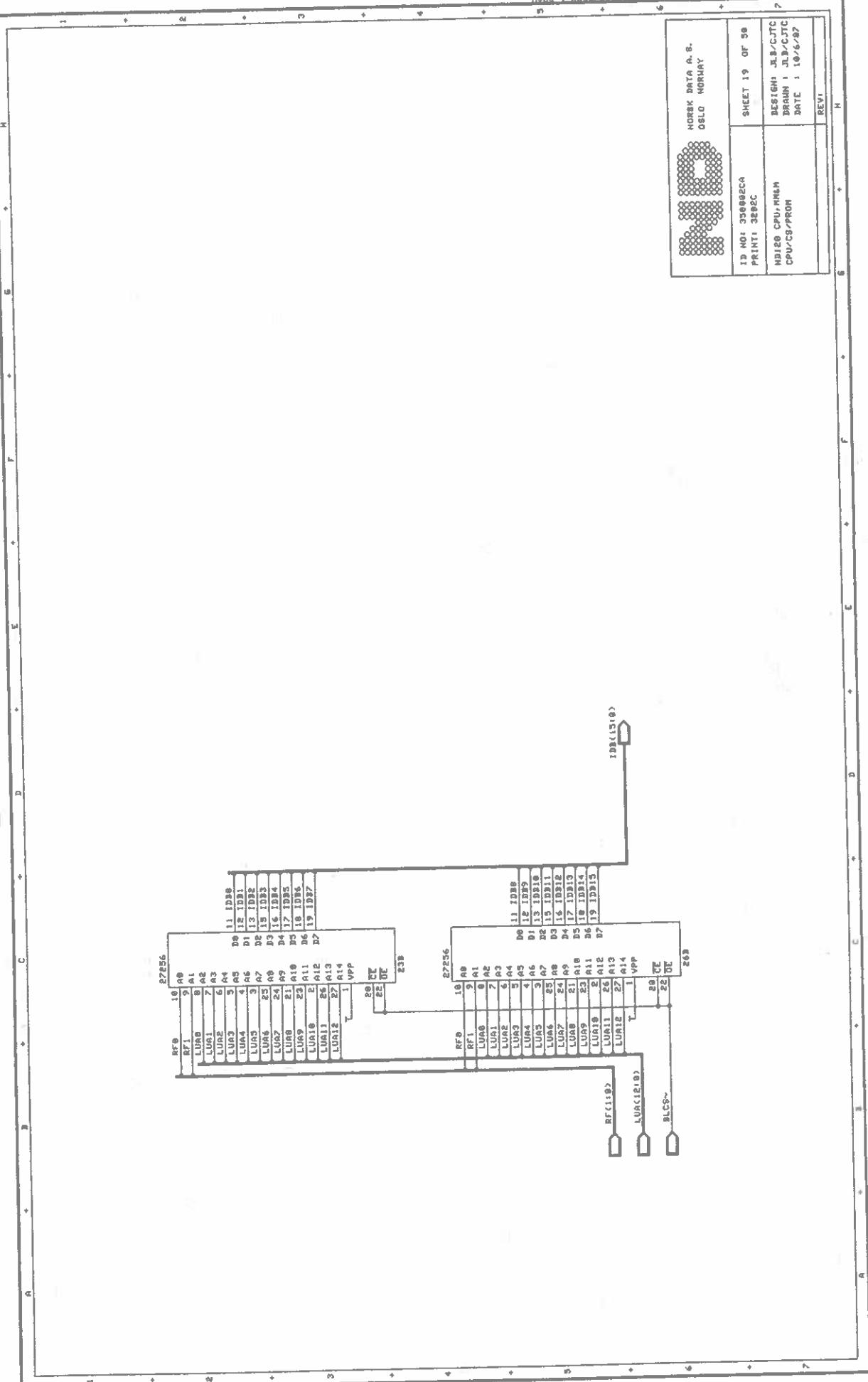
DESIGN: JLB-CJTC
DRAWN: JLB-CJTC
DATE: 18/6/92

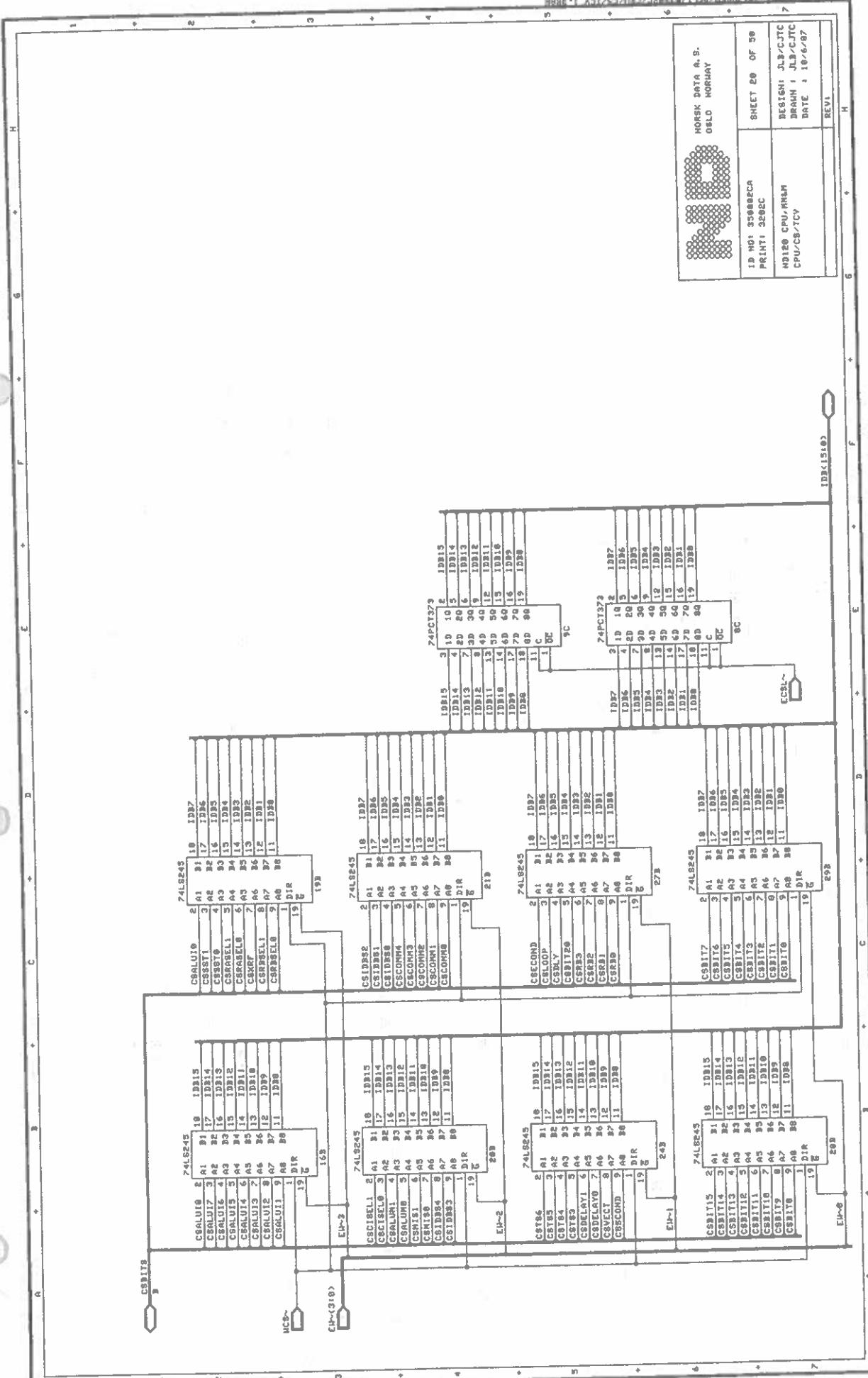
REV:

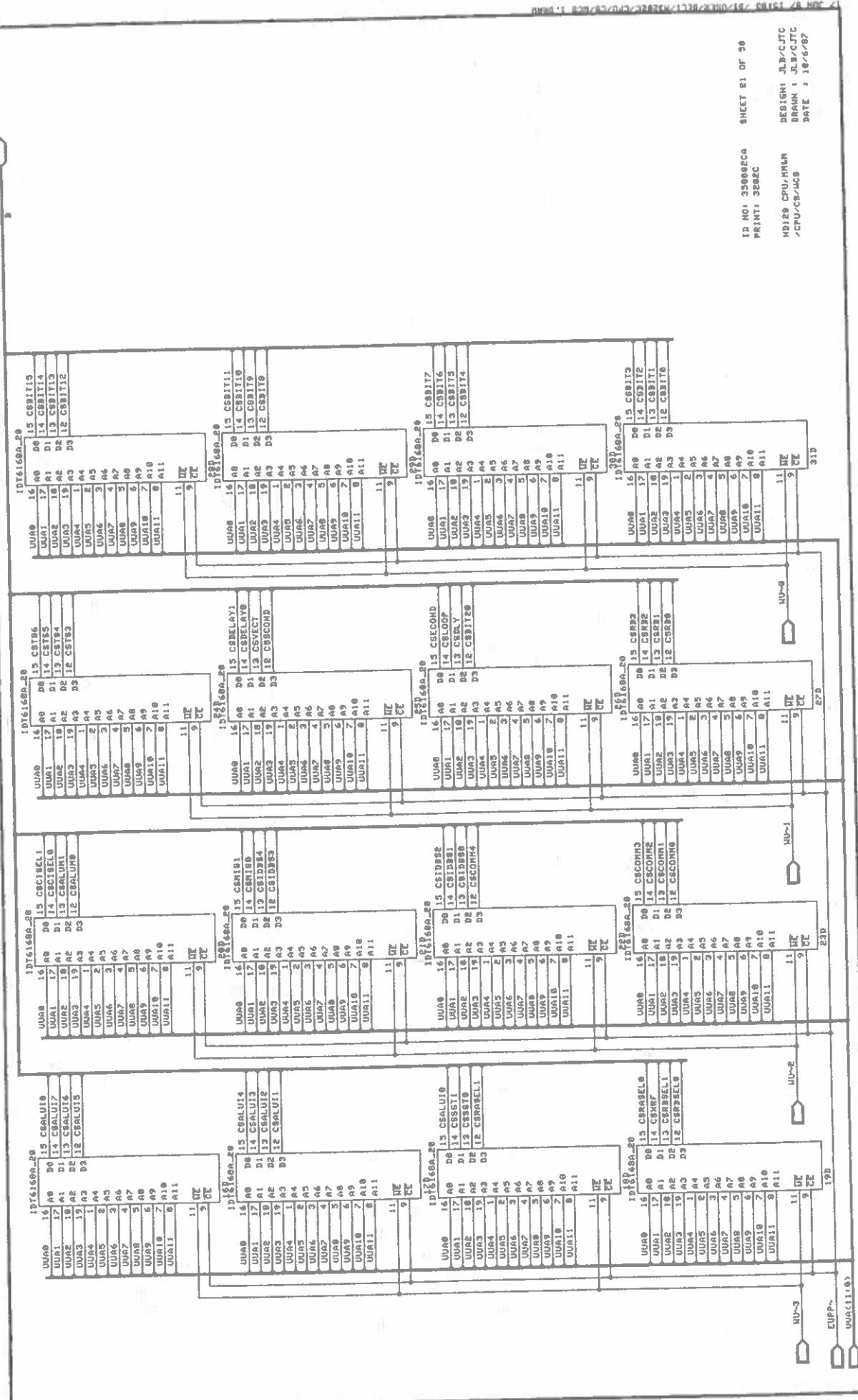
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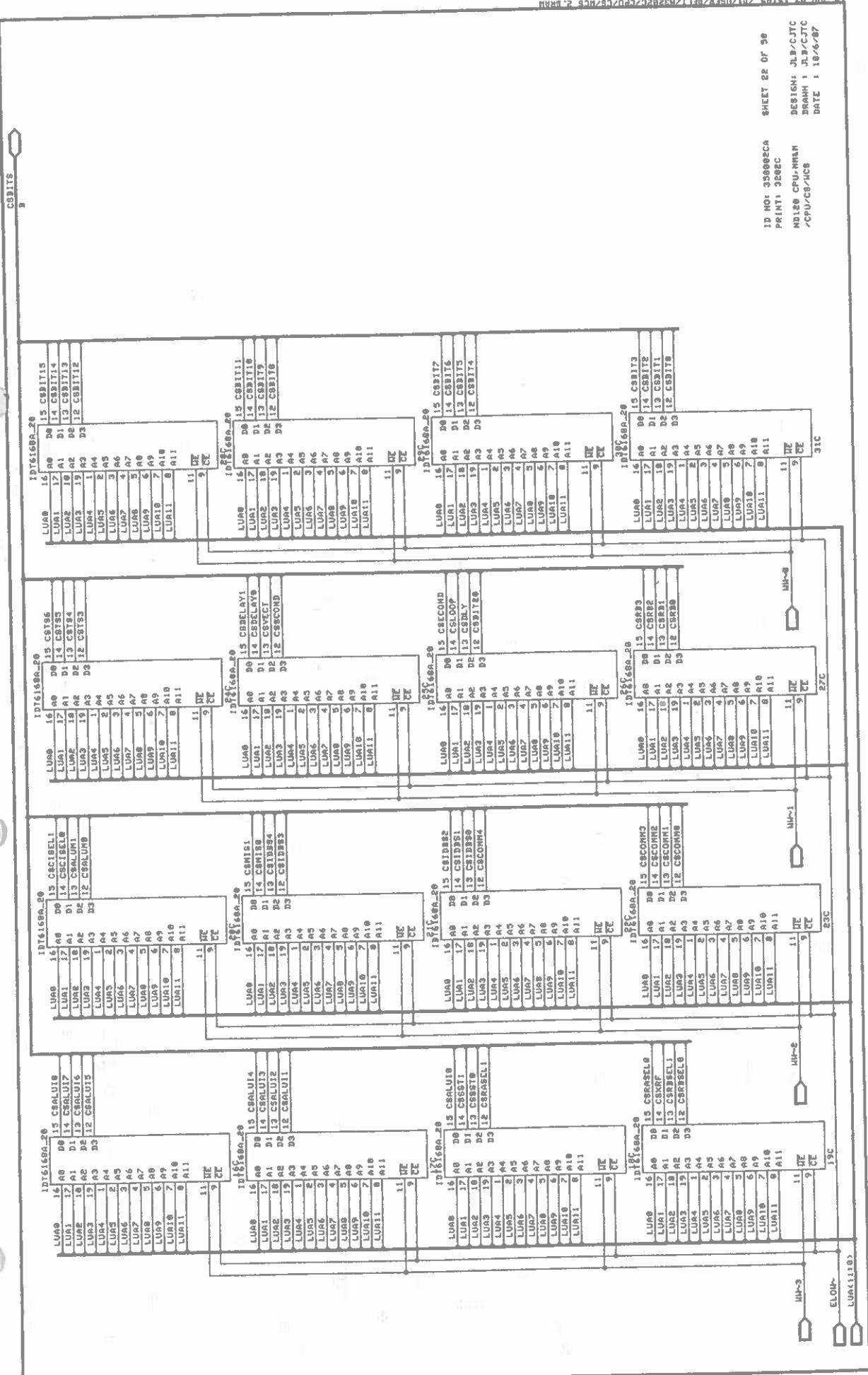


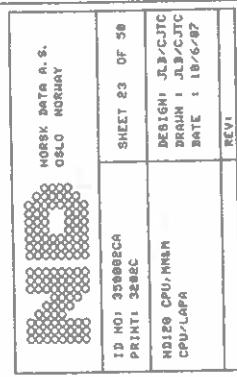




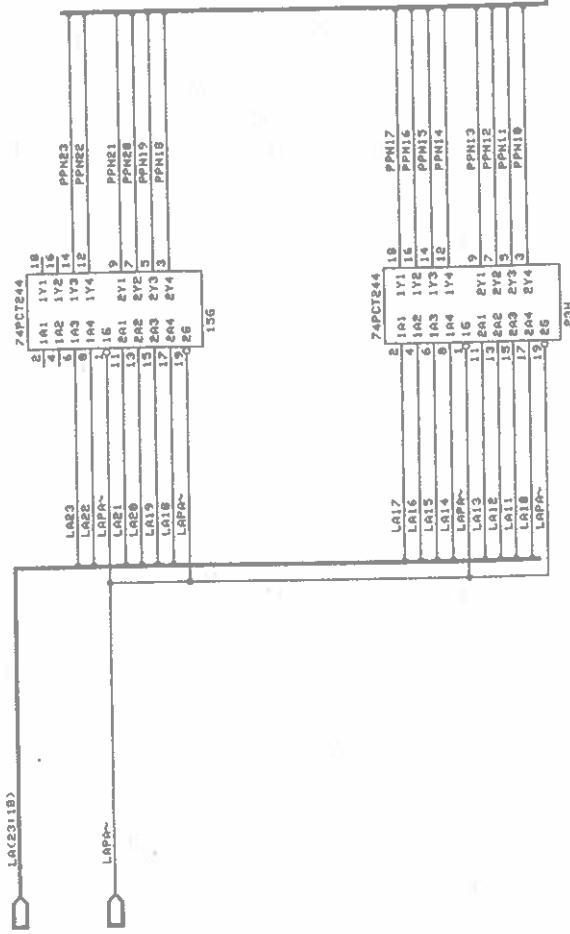


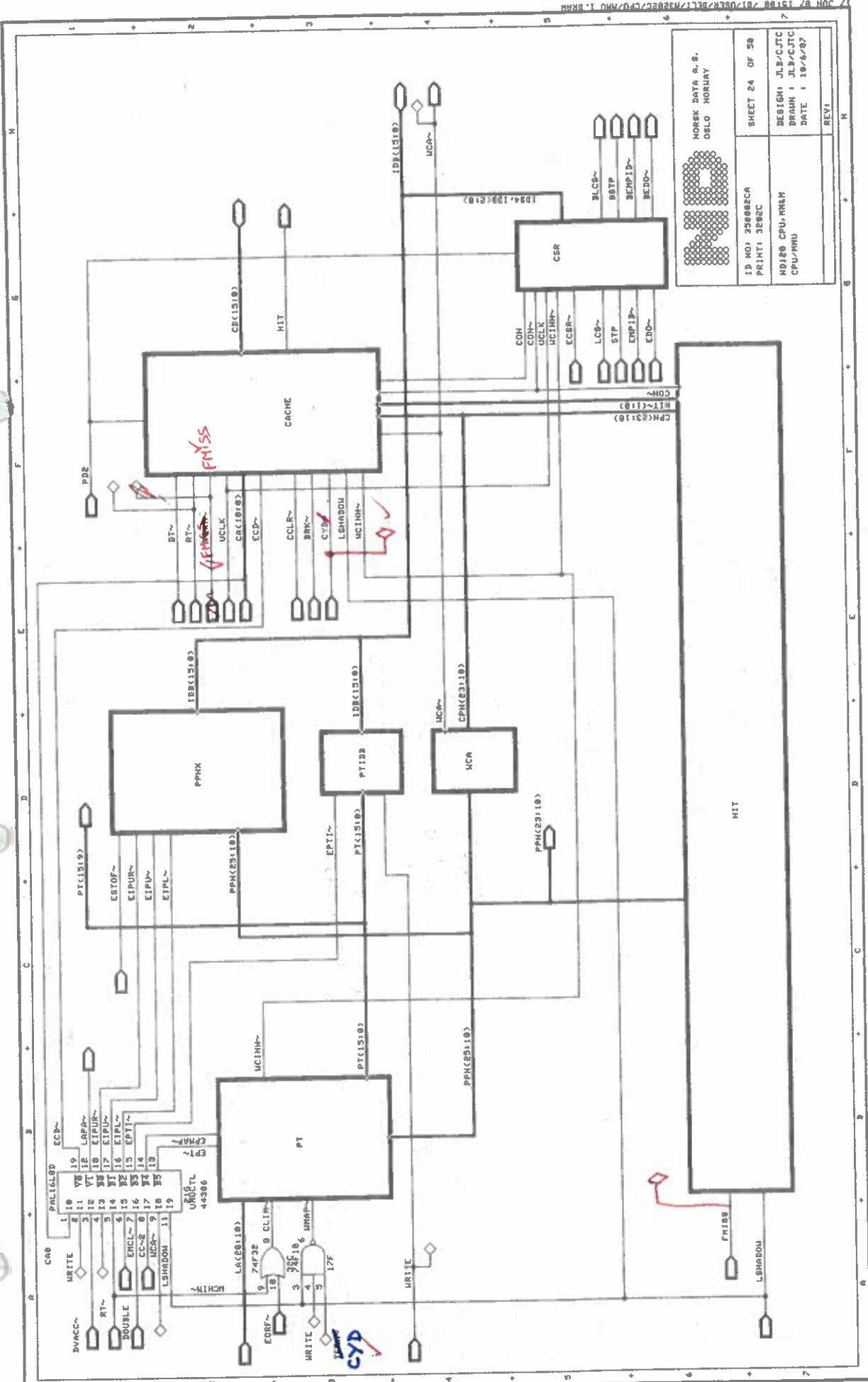


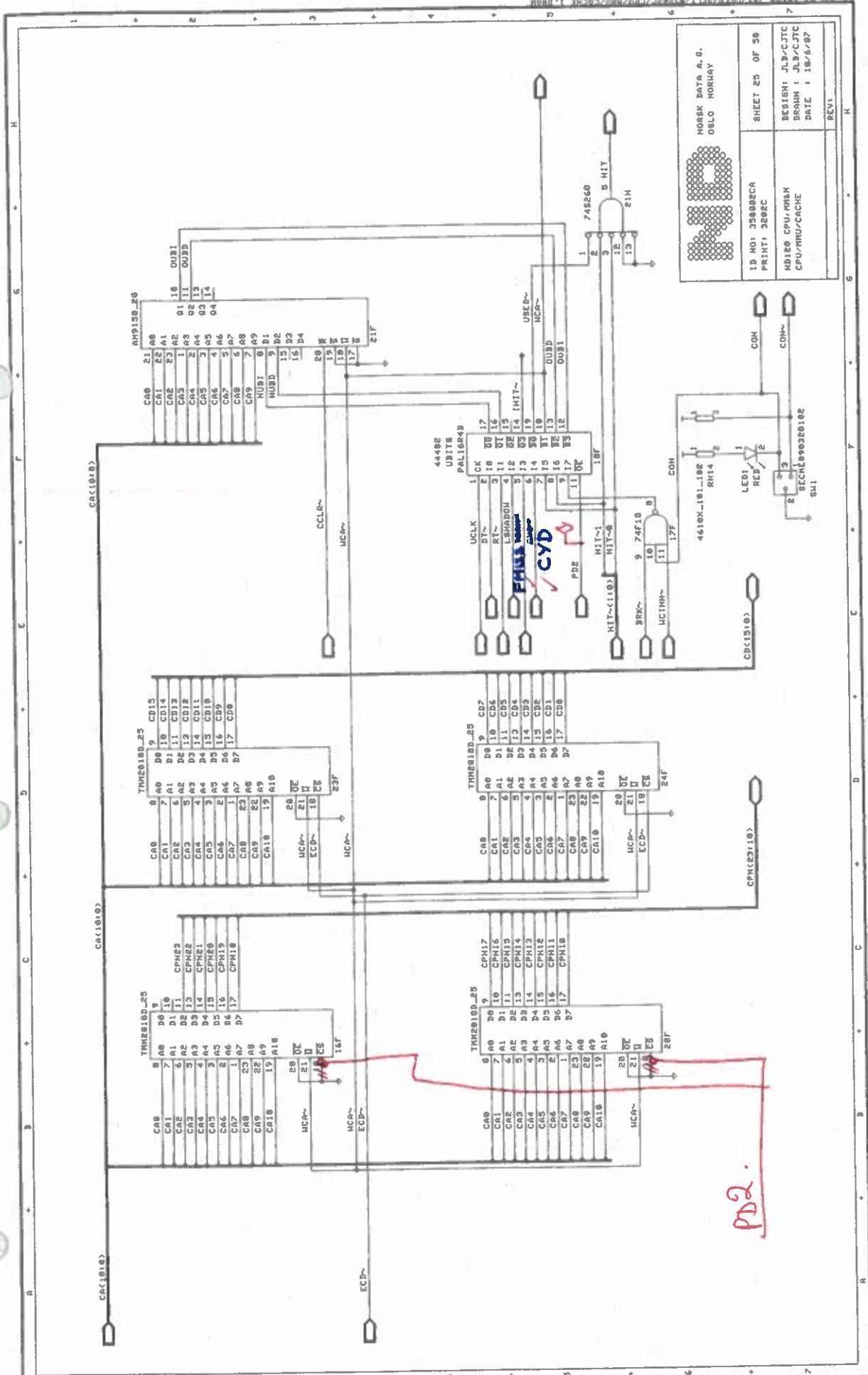


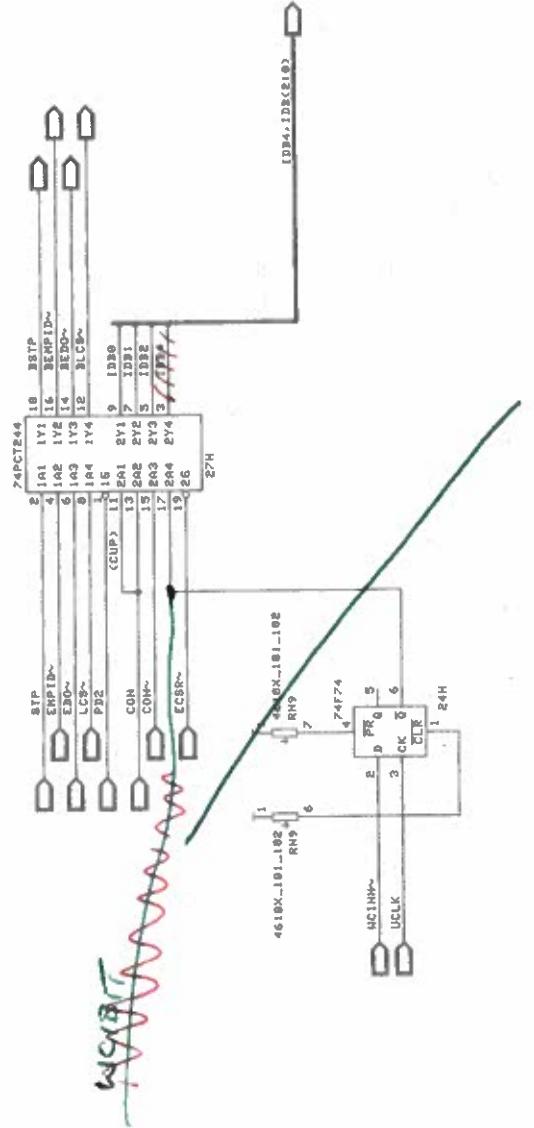


SHEET 23 OF 50
ID NO: 3500BBCA
PRINT: 328C
DESIGN: J.B.CJTC
DRAWN: J.B.CJTC
DATE: 10/6/82
REV:



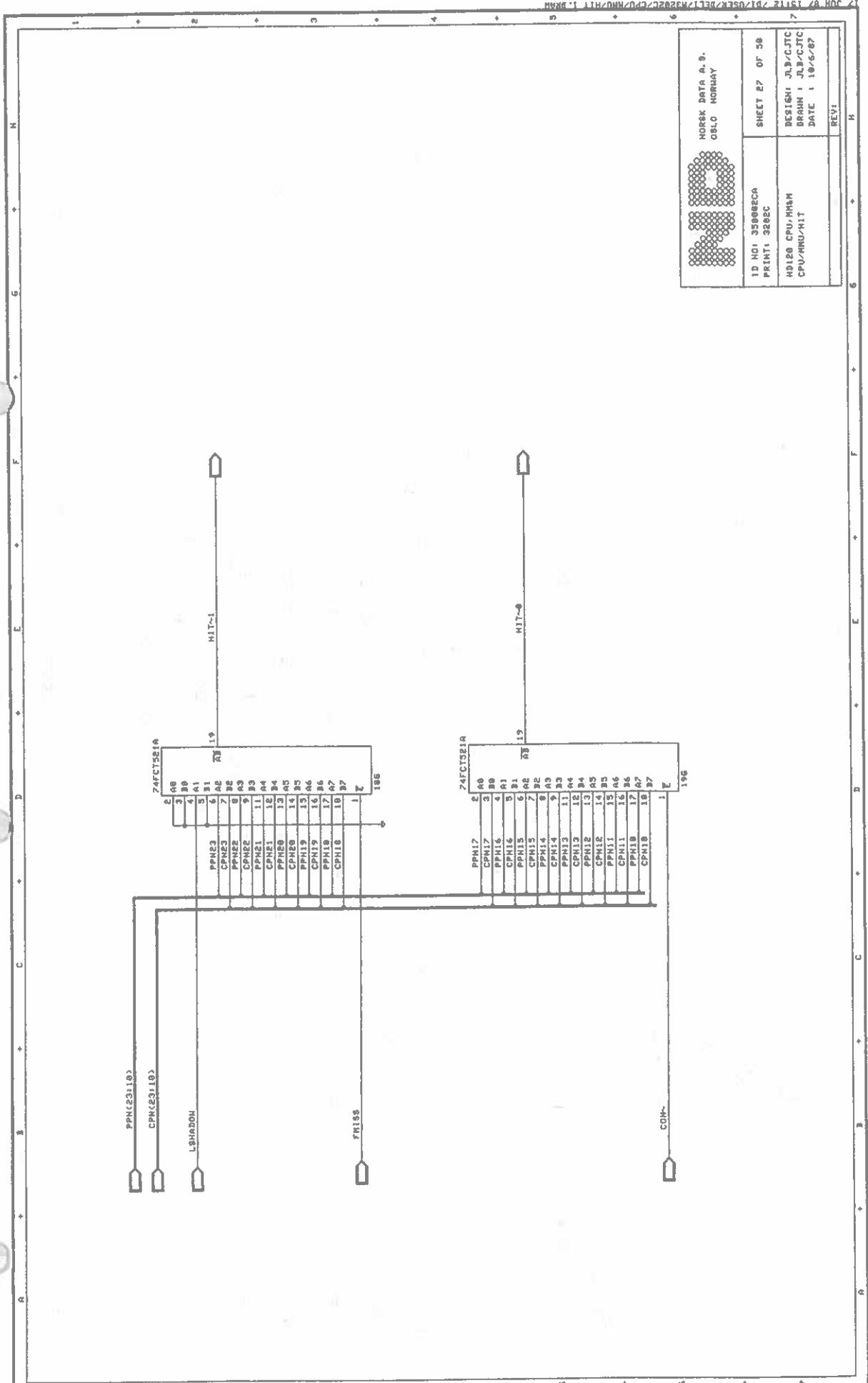


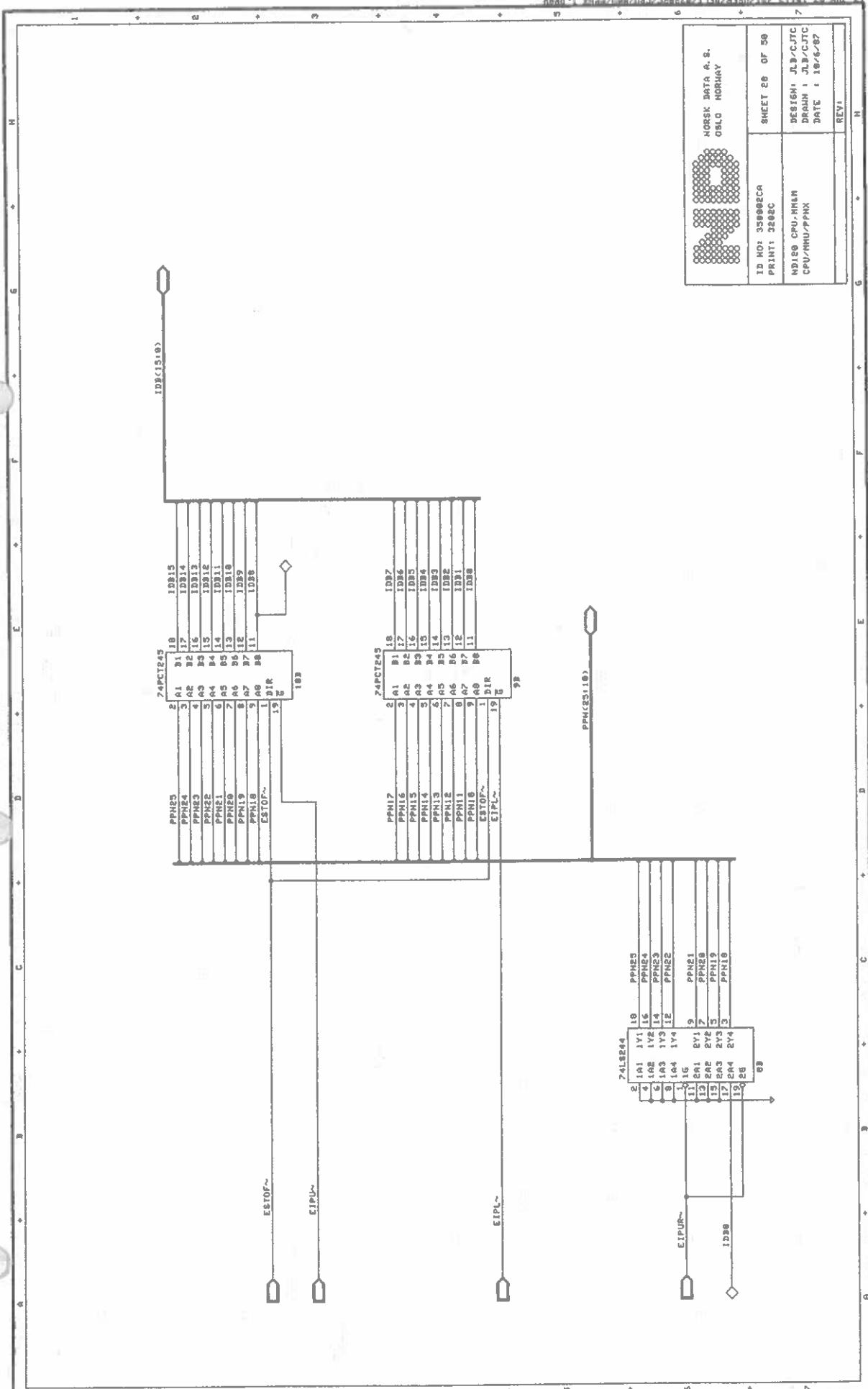


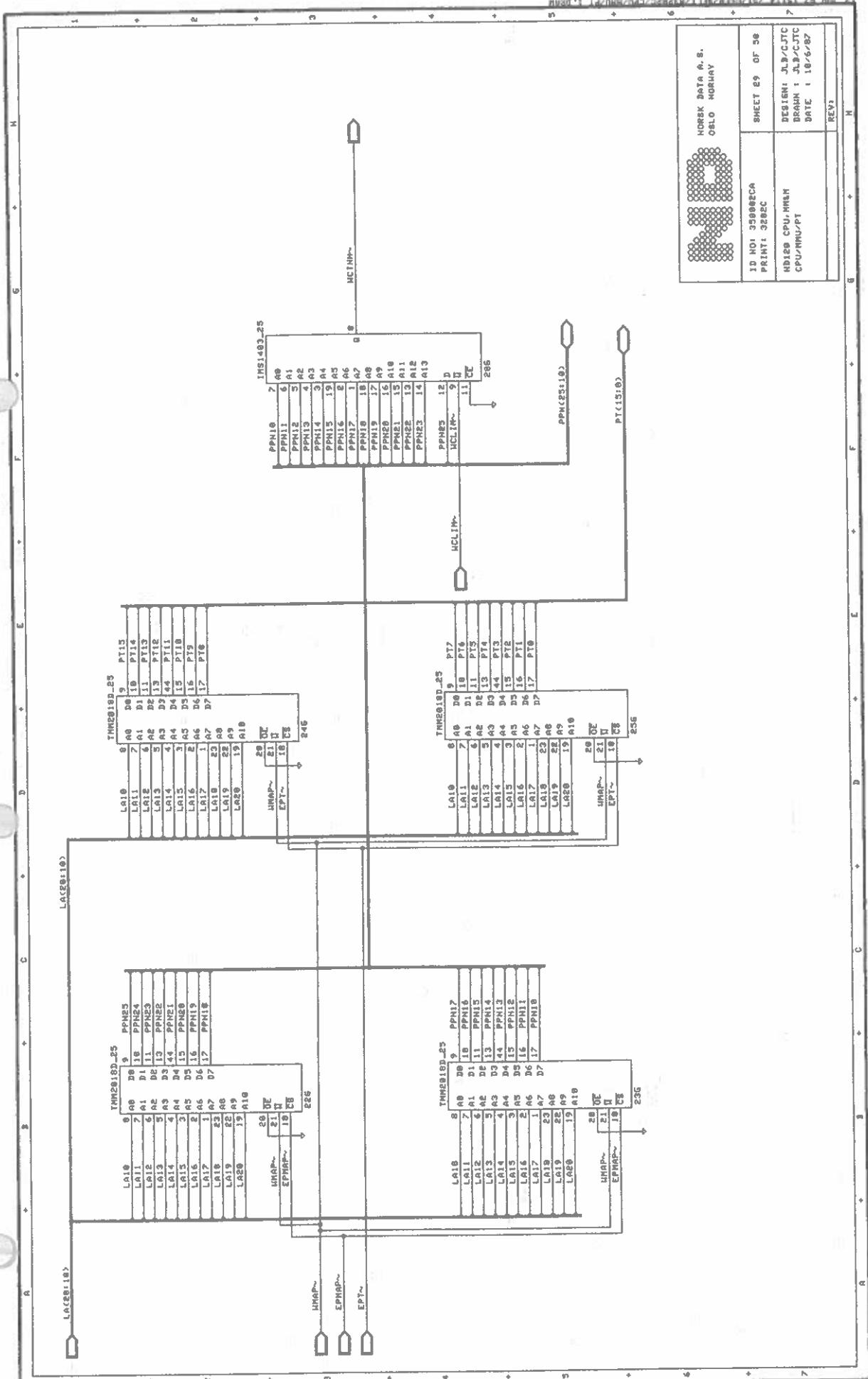


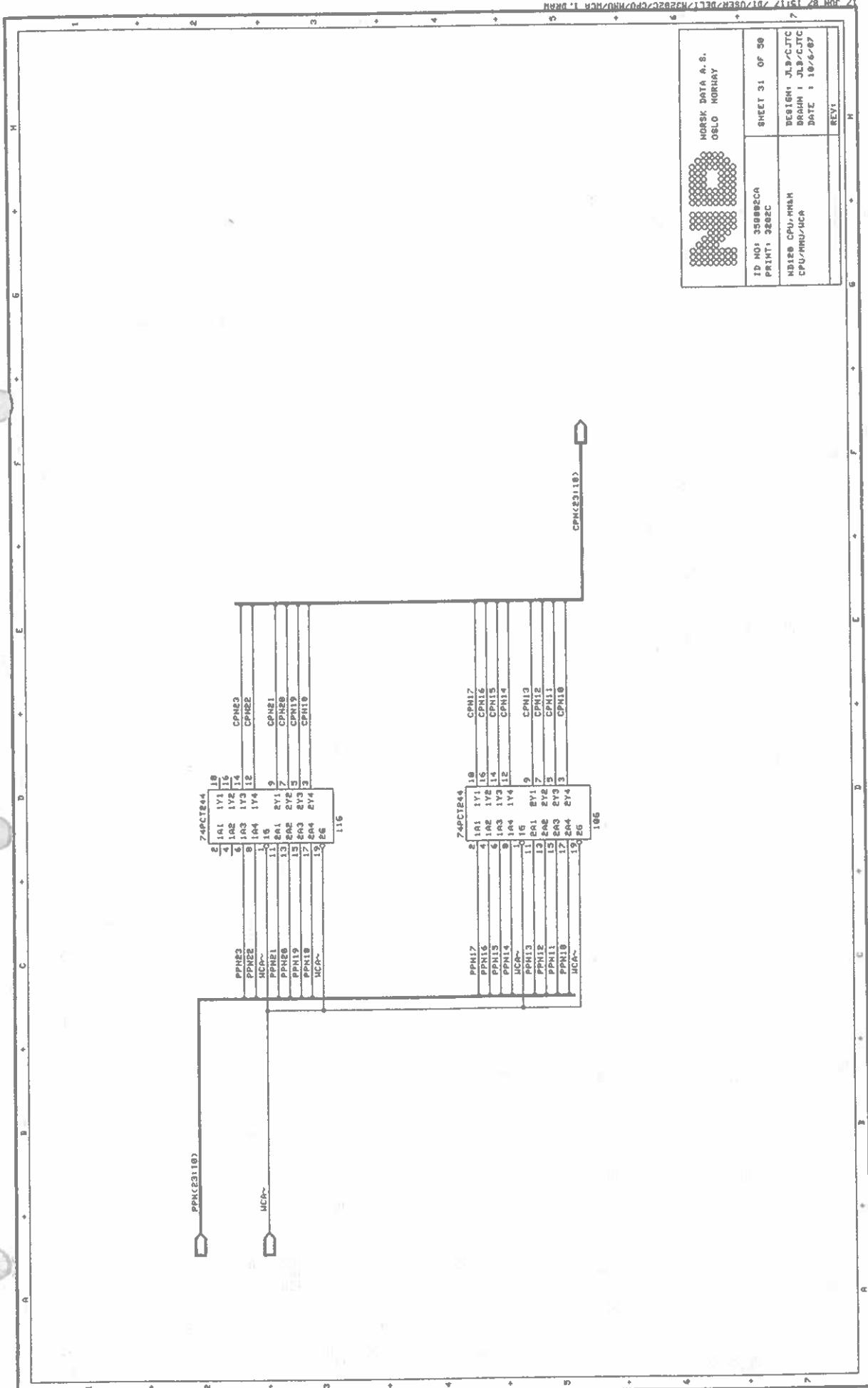
NORSK DATA A.S. OSLO NORWAY		SHEET 26 OF 56
		DESIGNER: JLB-CJTC DRAWN: JLB-CJTC DATE: 18-6-82
1D NO: 399002CA PRINT: 3282C	N01-120 CPU/MIN/M CPU/MINU-CSR	R72V1

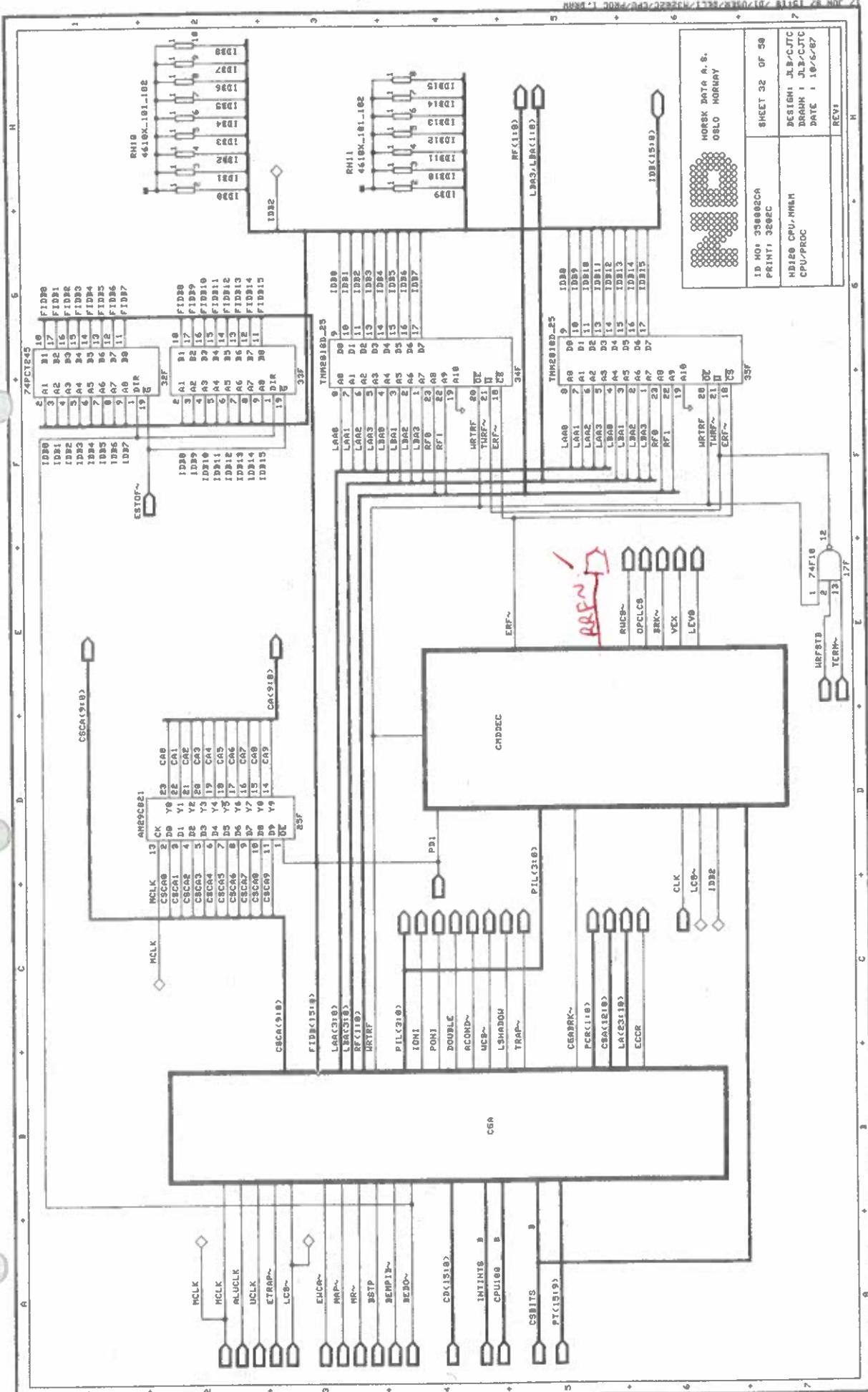
P/N: 111-1000 REV: 1
 HD128 CPU-MIN/MAX
 CPU-MINUS/CSR
 DESIGN: J.B./CJTC
 DRAWN: J.B./CJTC
 DATE: 10-6-87

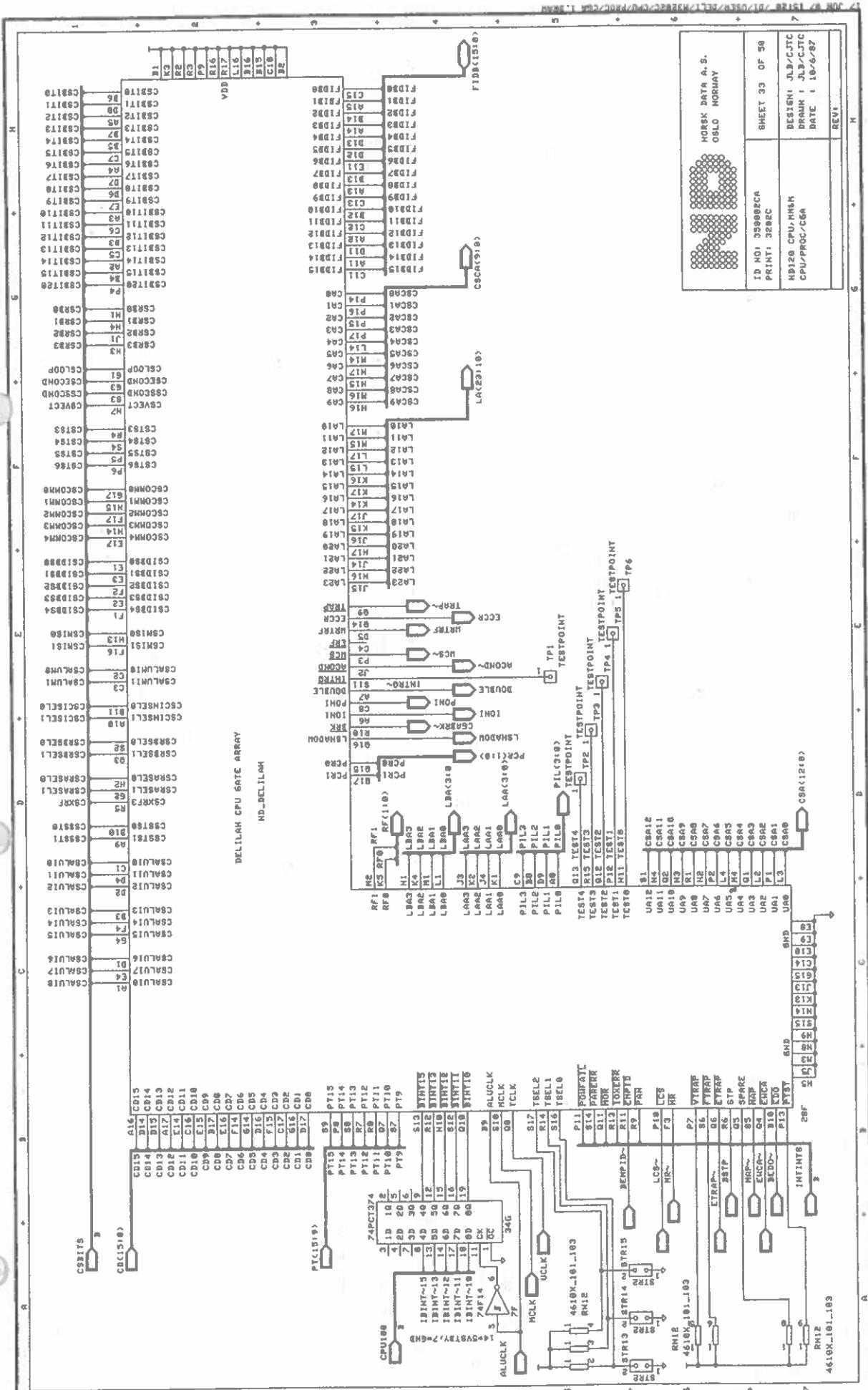


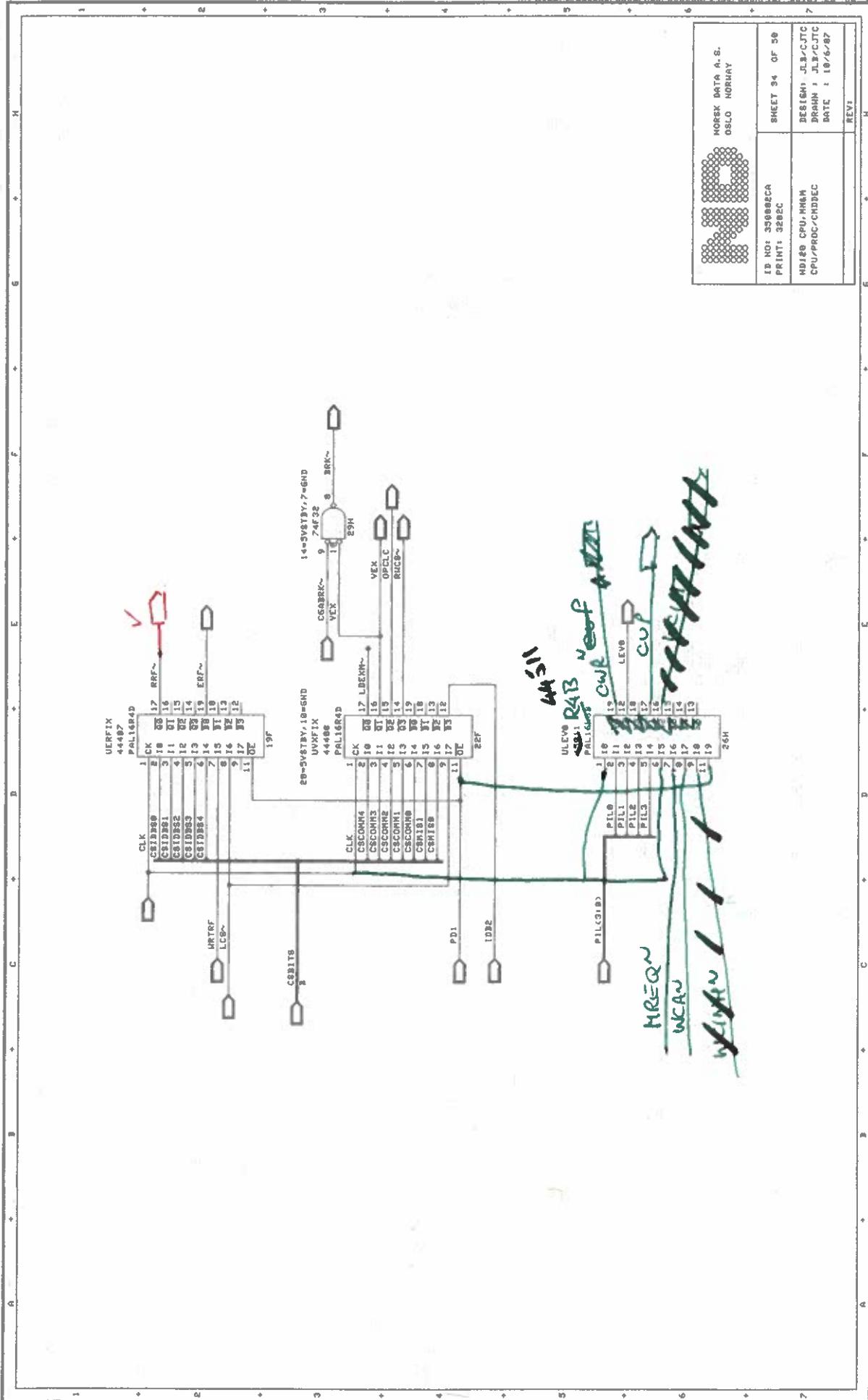


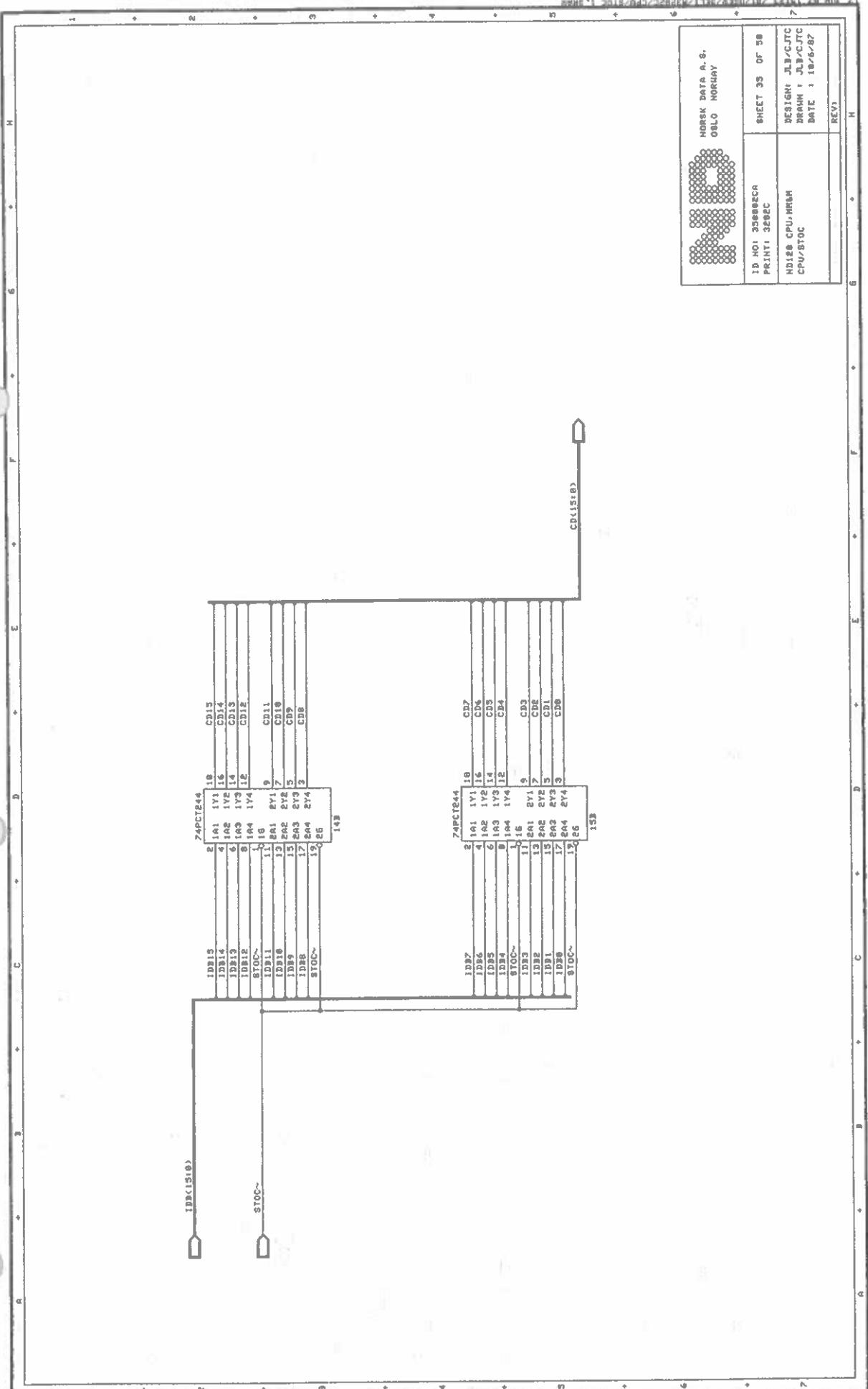


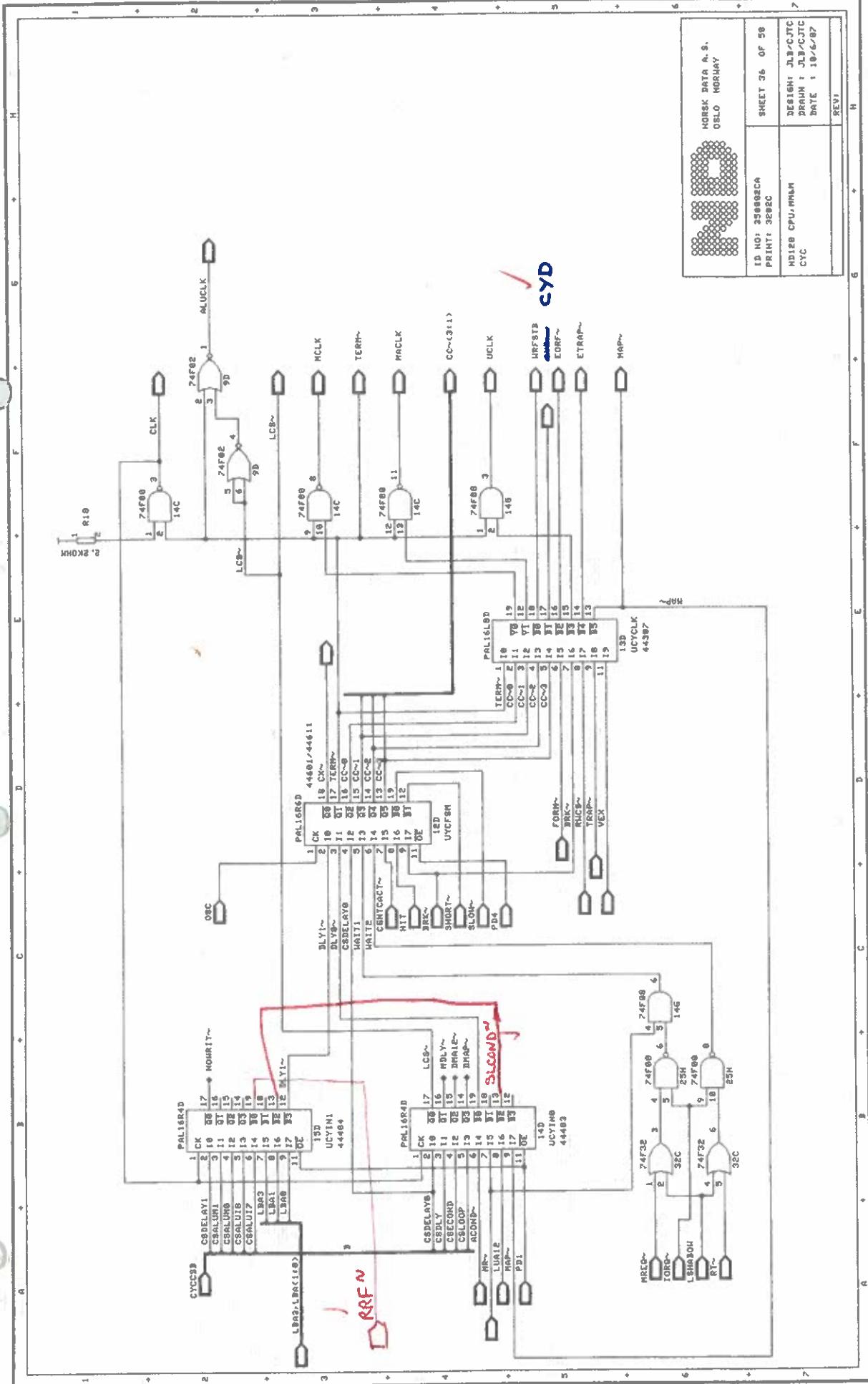


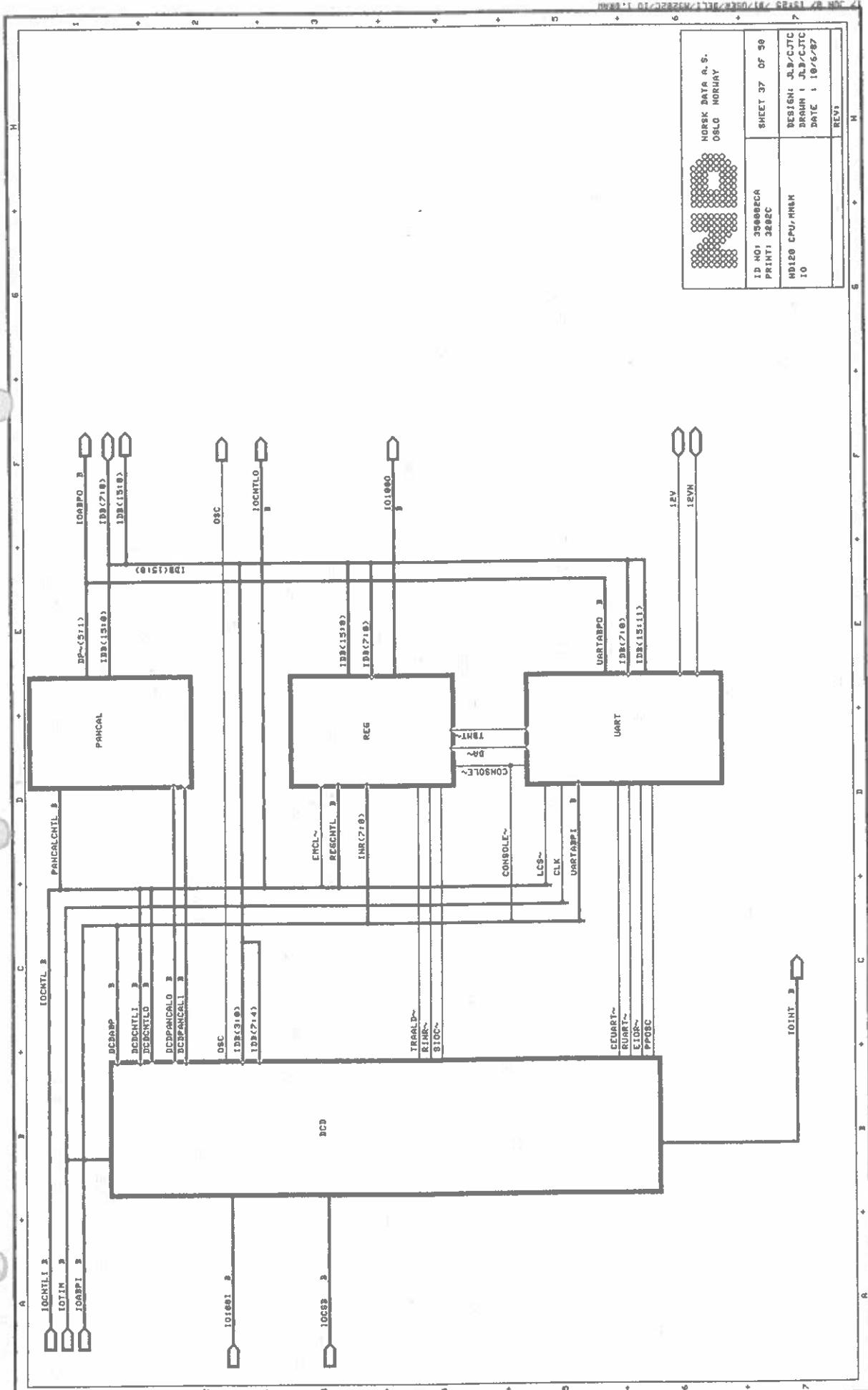


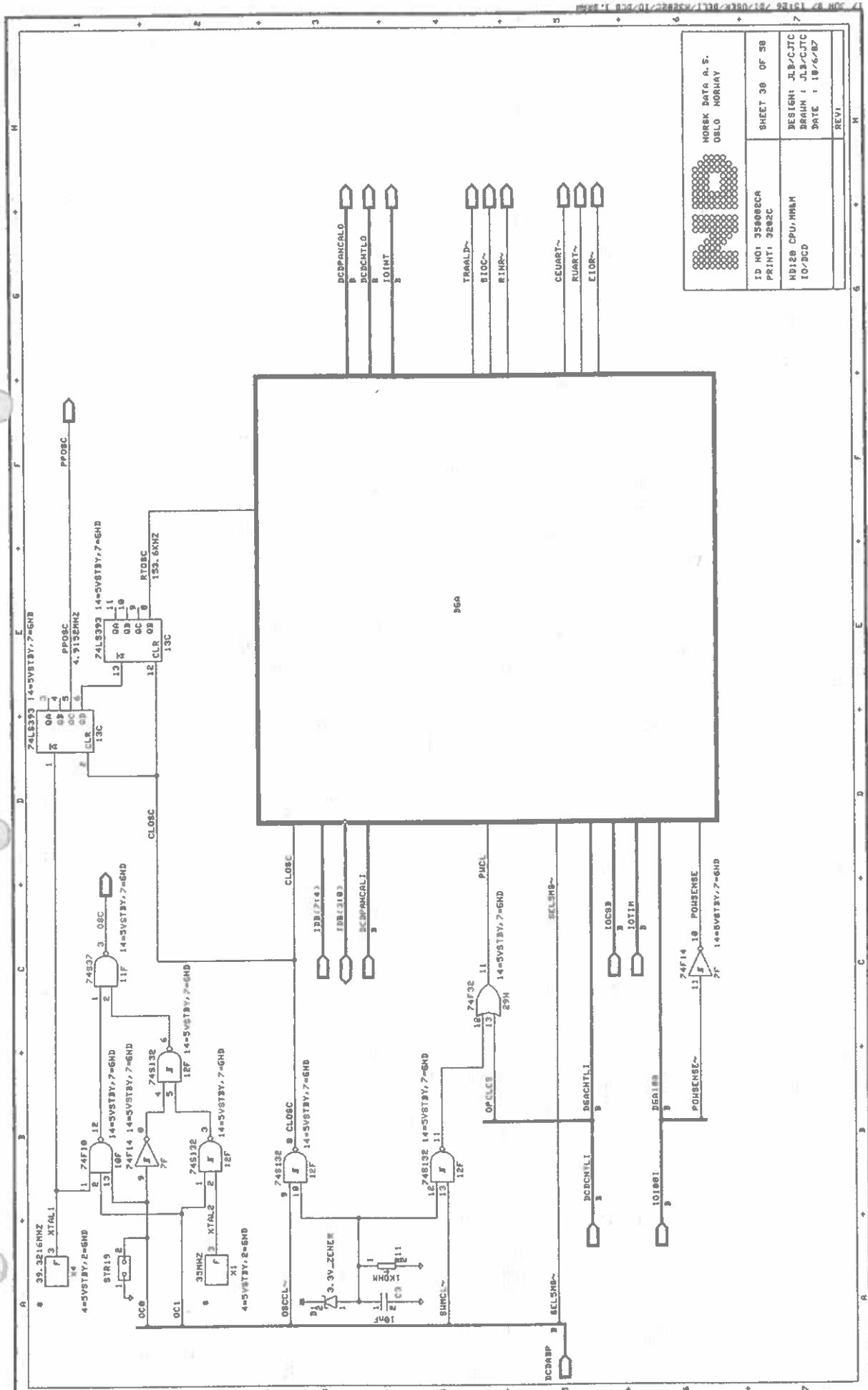


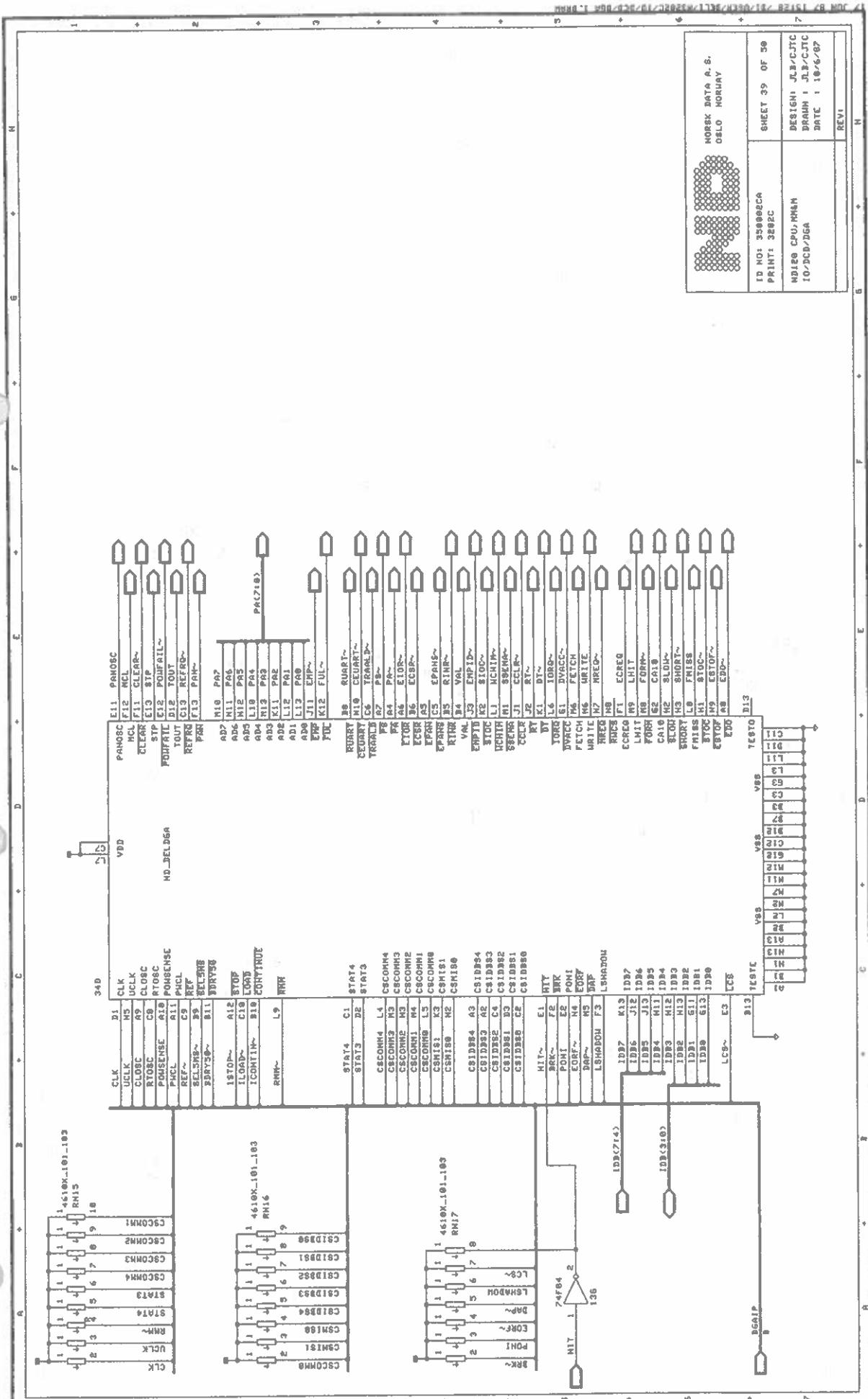


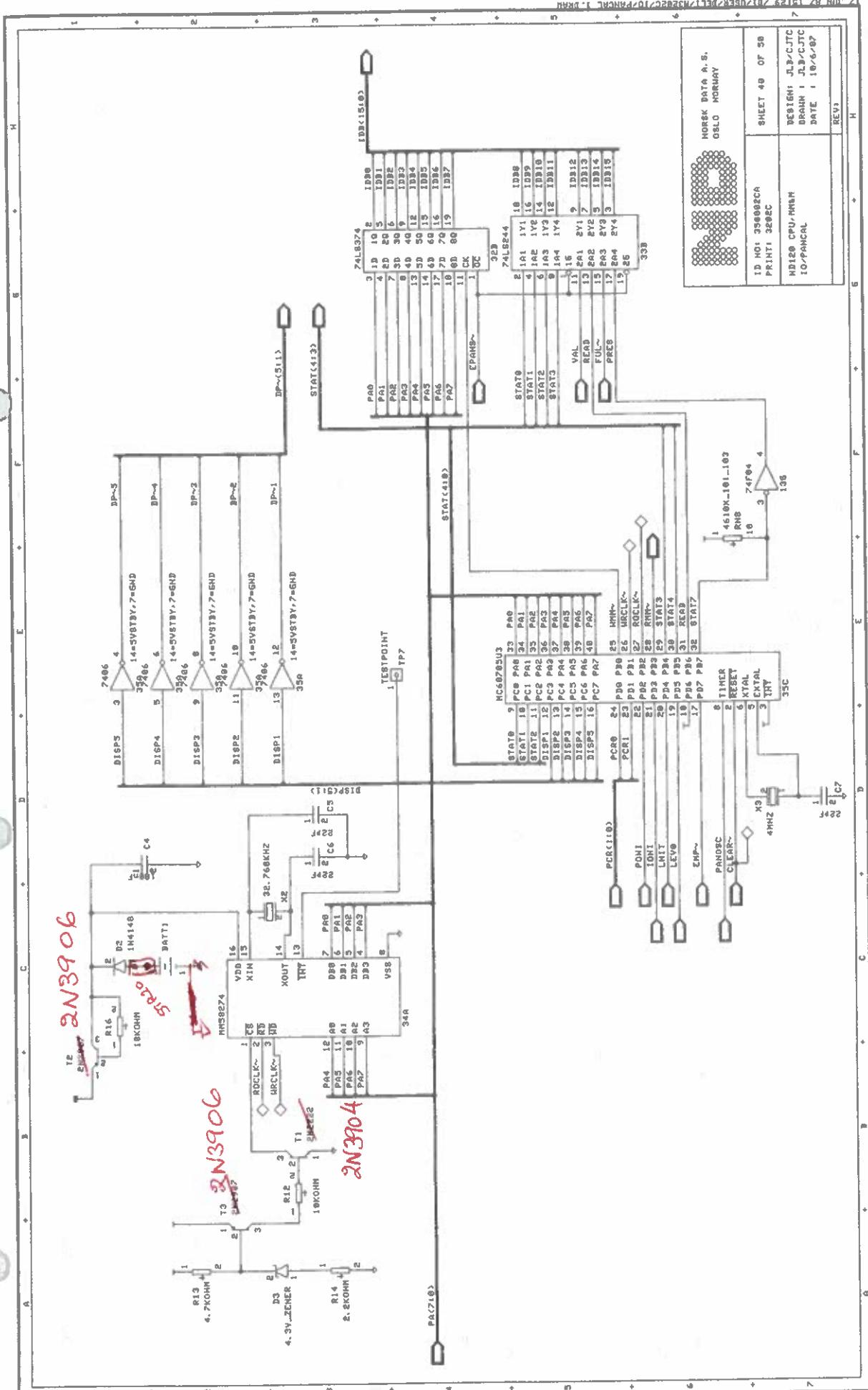


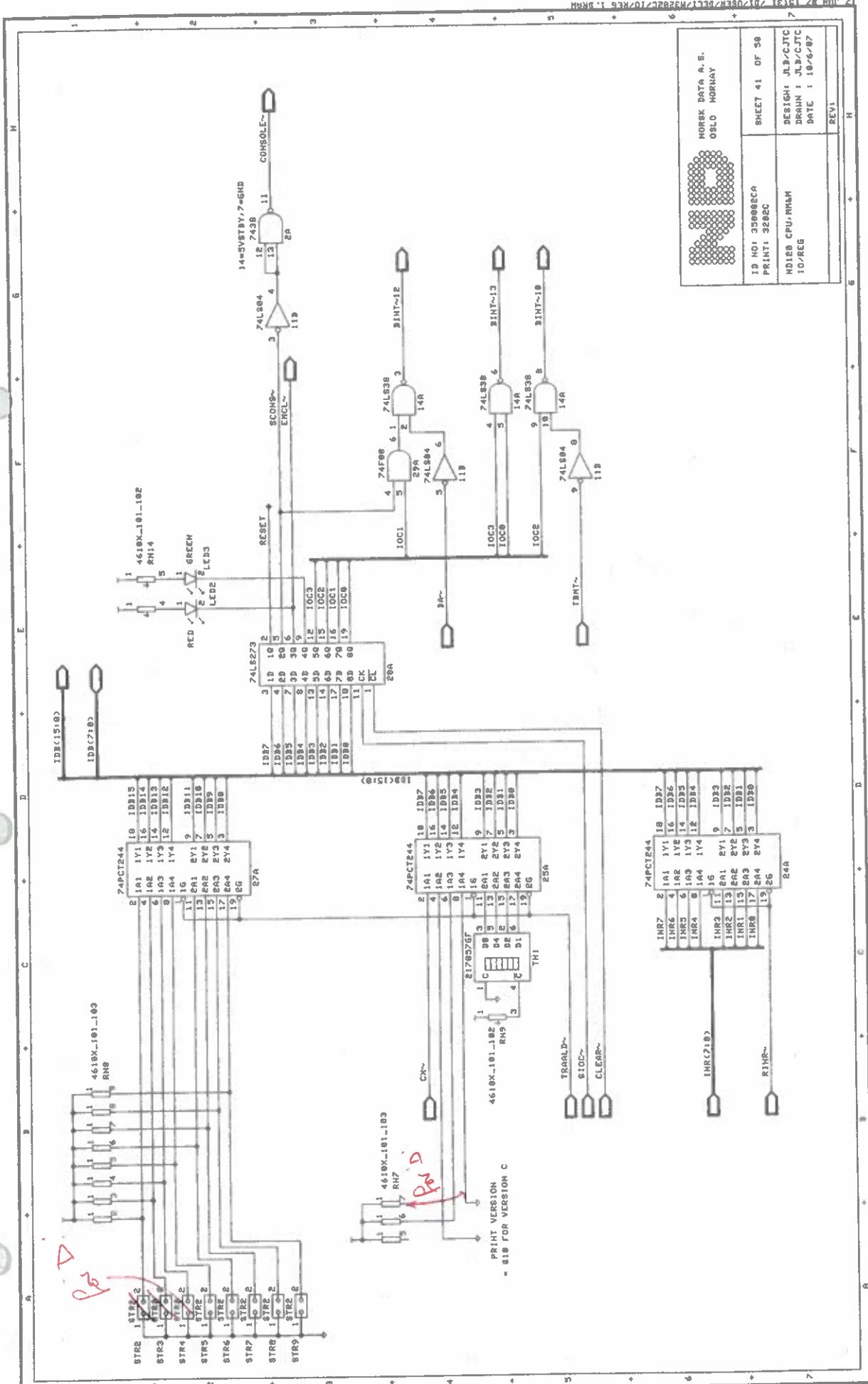


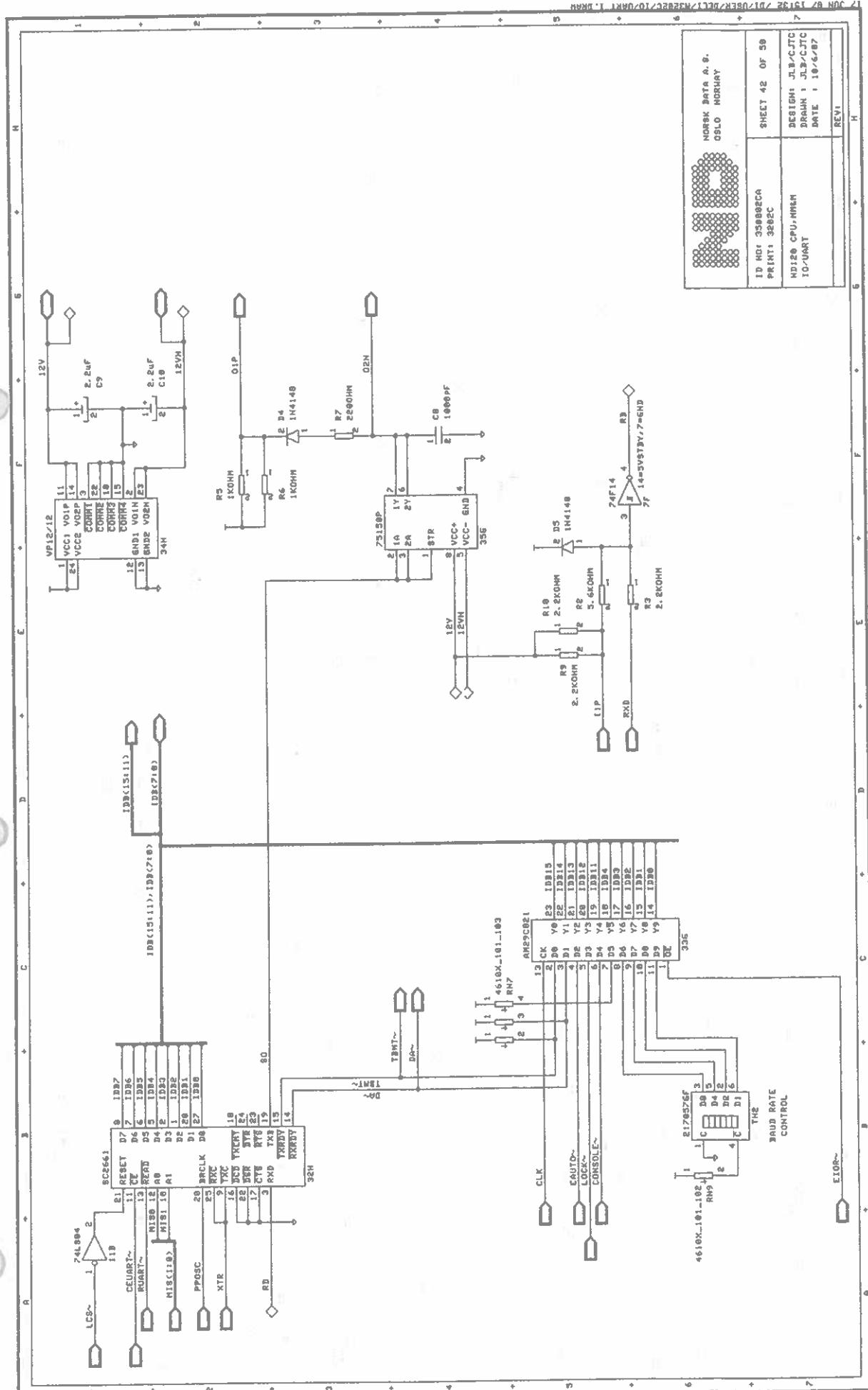


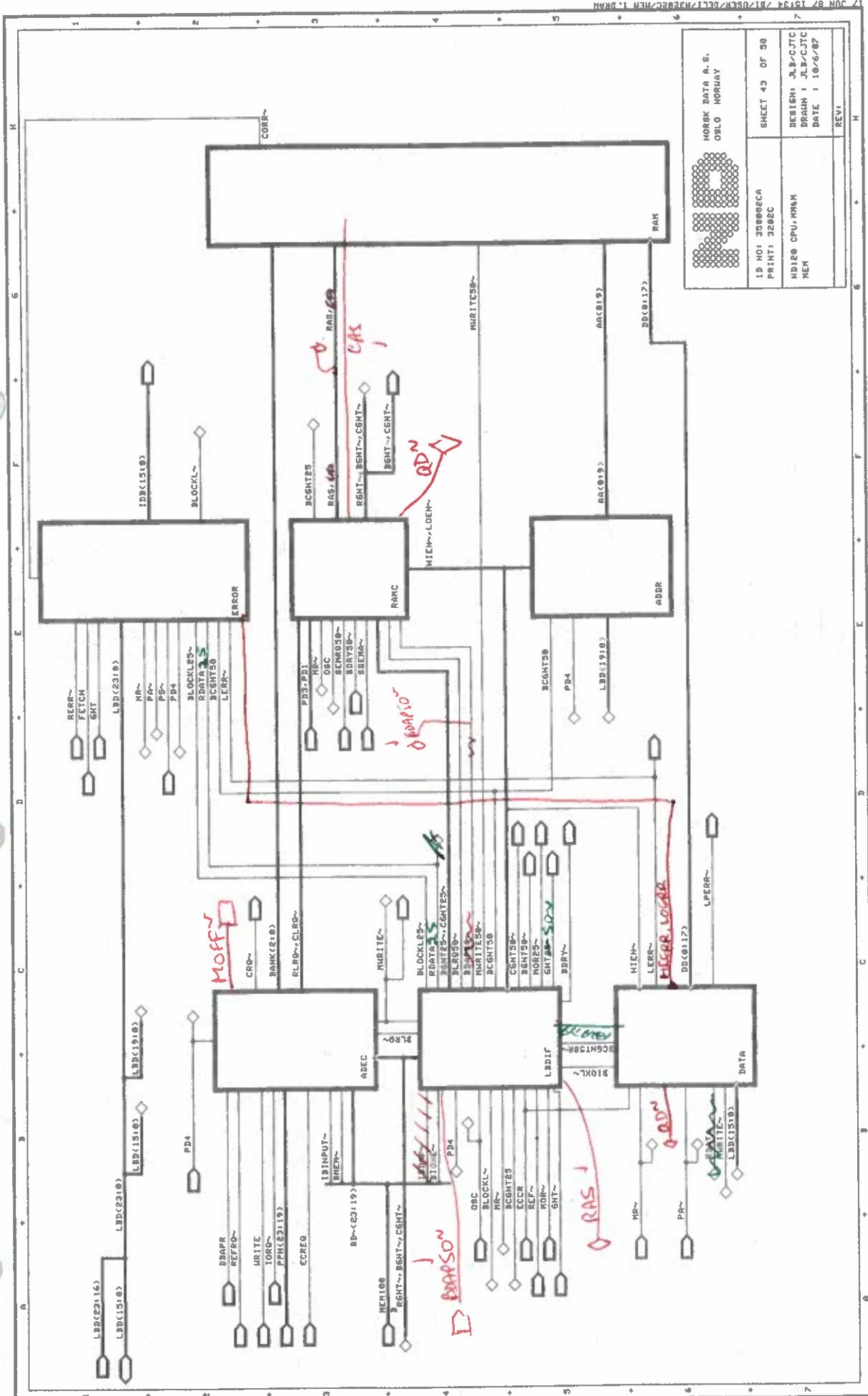


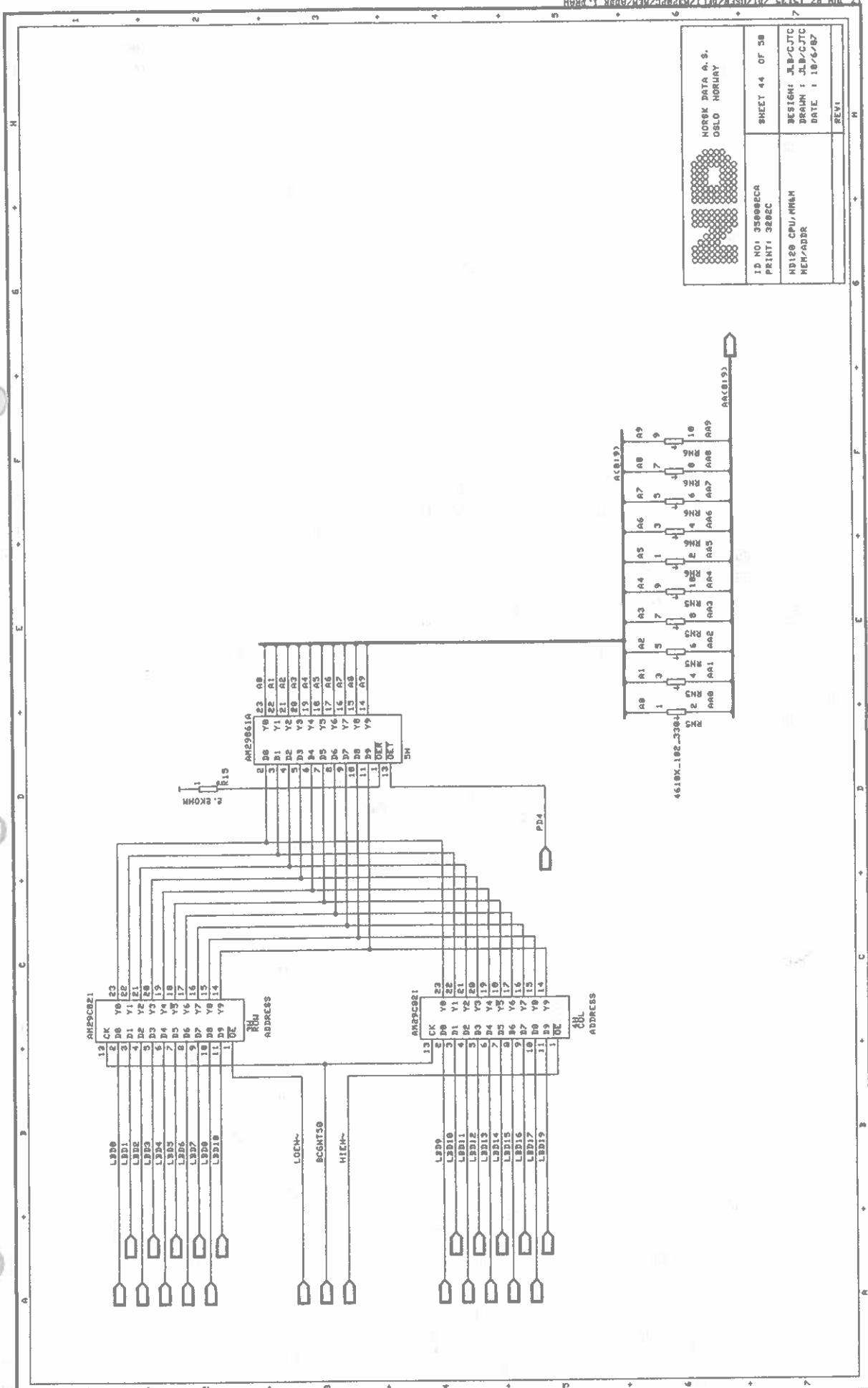


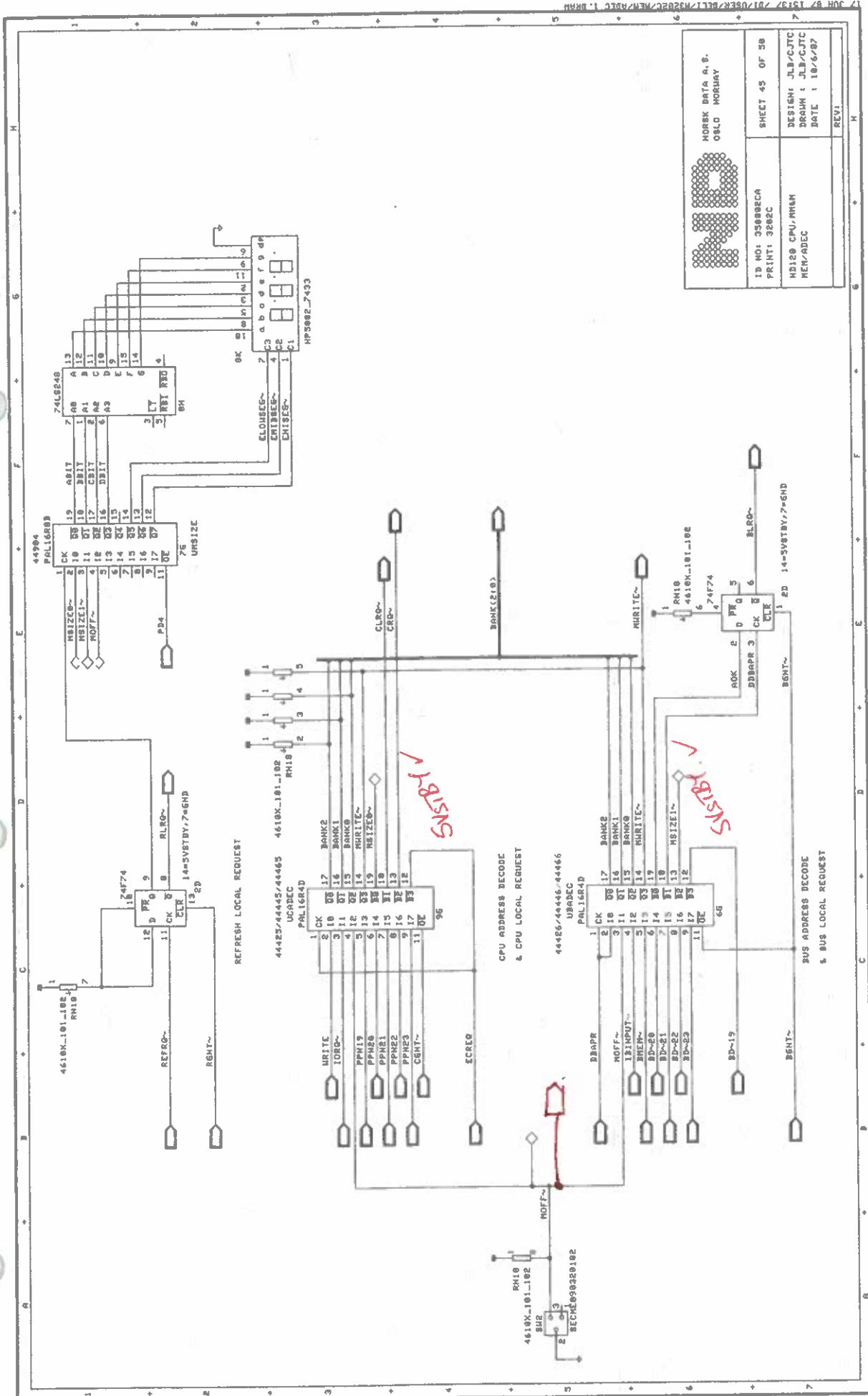


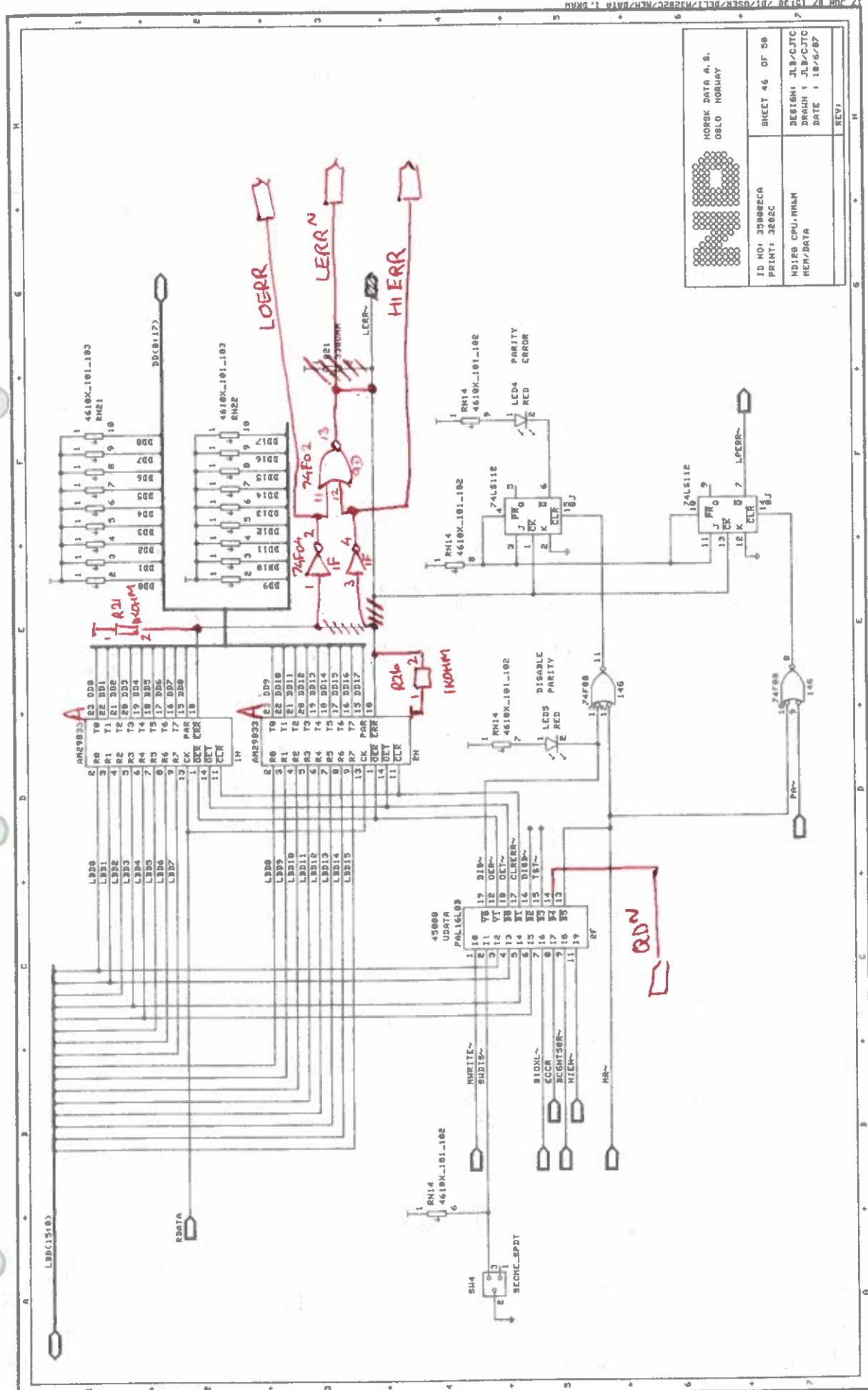


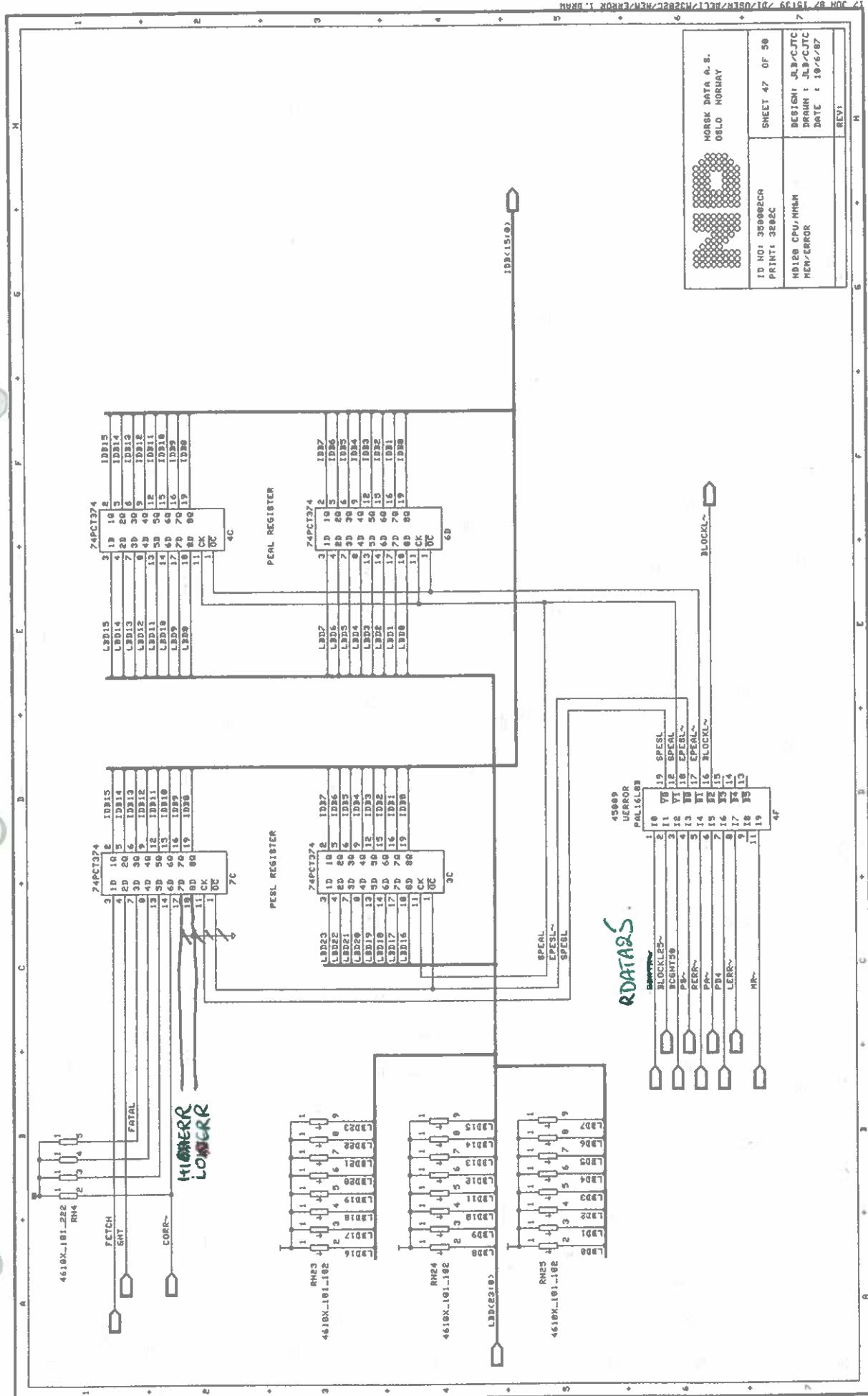


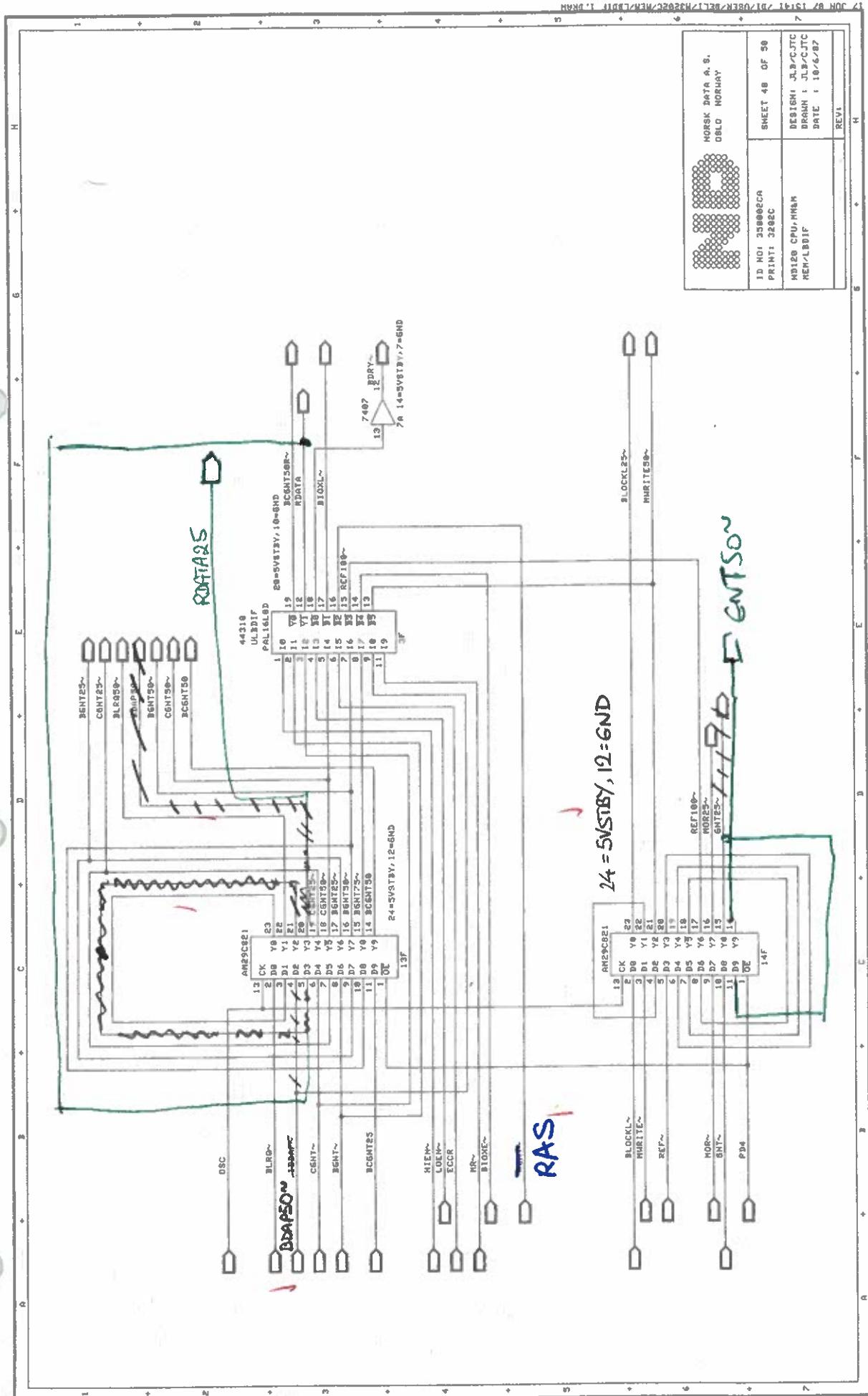


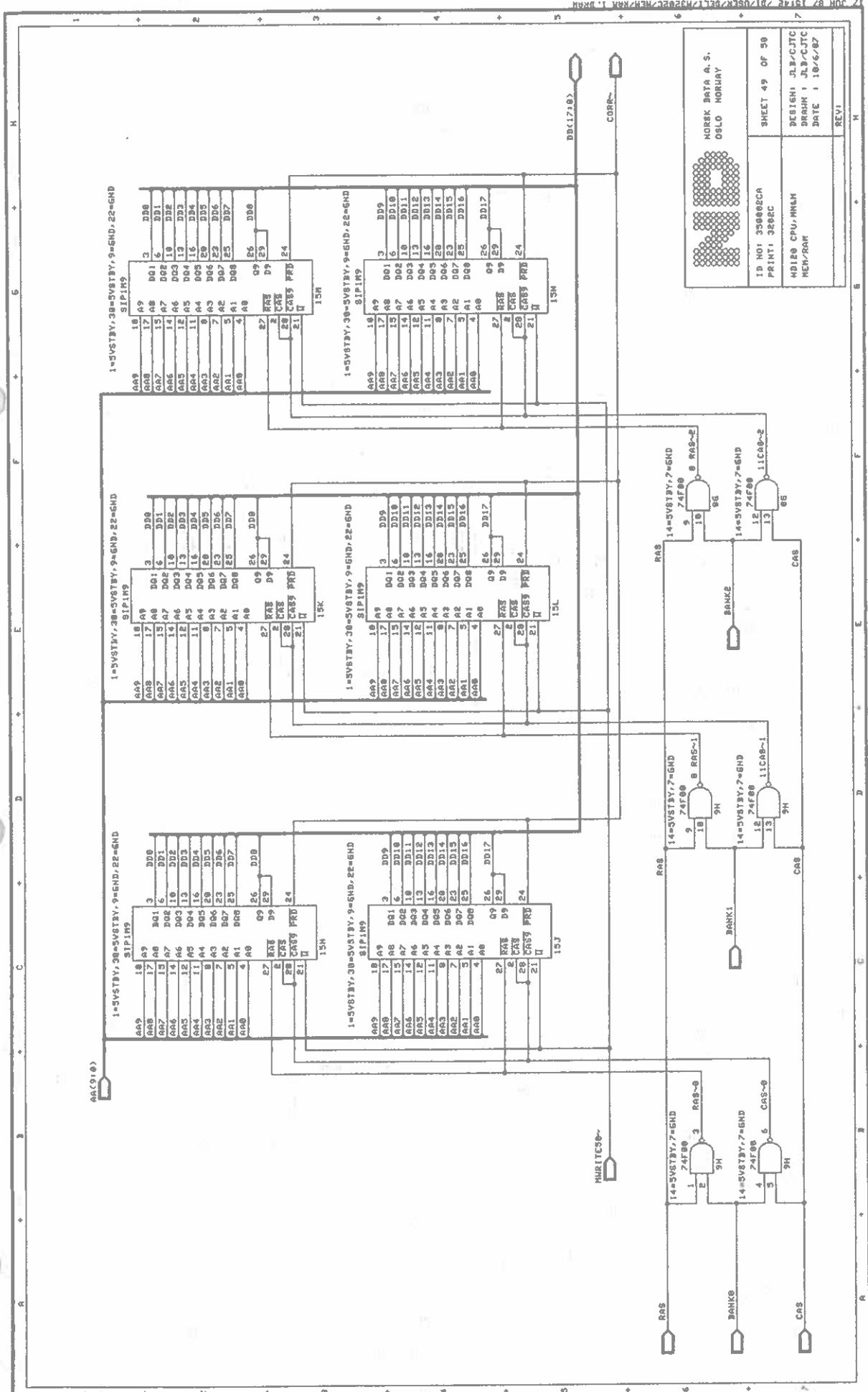




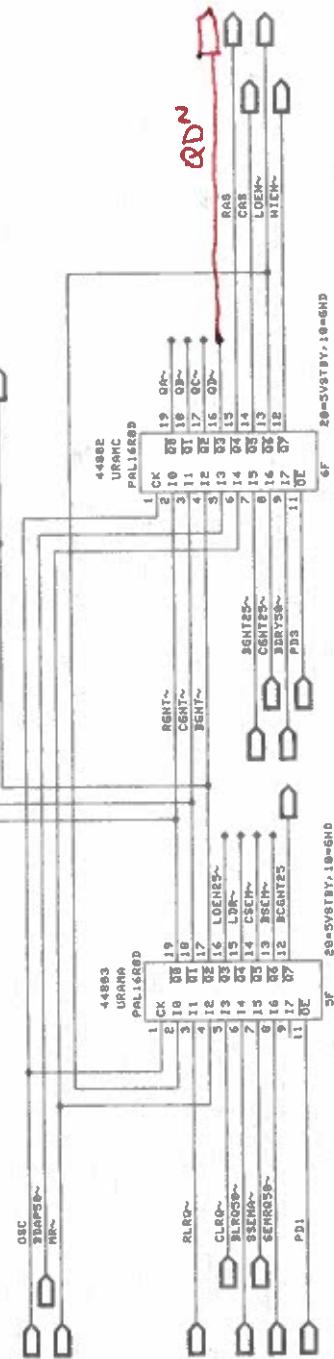
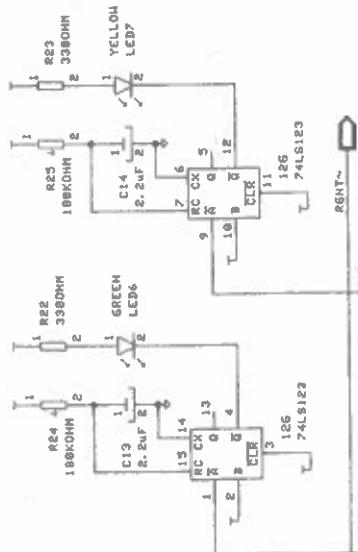




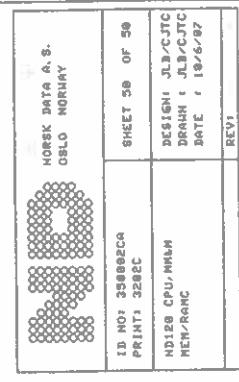




CPU GRANT
INDICATOR



RAM CONTROL
RAM ARBITER



M3202C
SIG-ACT

CC
 C
 C SIGLISTE EXTRACTOR VERS. 870225
 C
 C USER: /D1/USER/DELI/M3202C DATE: 16-JUN-1987 19:09
 C OPTION:4
 C REGISTERED 933 DIFFERENT SIGNALS
 C 1 ERRORS, 0 WARNINGS DETECTED,
 C 3 SIGNALS NOT PROCESSED. TOO MANY ENTRIES
 CCC

END:
 ERROR. 3 OVERFLOWS IN SIGNAL CONNECTIONS

PG NO: PAGE: BLK NO: BLOCK:

1	1.DRAW	1	-
2	2.DRAW	1	-
3	3.DRAW	1	-
4	4.DRAW	1	-
5	1.DRAW	2	-/BIF
6	1.DRAW	3	-/BIF/BCTL
7	1.DRAW	4	-/BIF/BCTL/BDRV
8	1.DRAW	5	-/BIF/BCTL/SYNC
9	1.DRAW	6	-/BIF/DPATH
10	1.DRAW	7	-/BIF/DPATH/BDLBD
11	1.DRAW	8	-/BIF/DPATH/CDLBD
12	1.DRAW	9	-/BIF/DPATH/LBDCTL
13	1.DRAW	10	-/BIF/DPATH/PESPEA
14	1.DRAW	11	-/BIF/DPATH/PPNLBD
15	1.DRAW	12	-/CPU
16	1.DRAW	13	-/CPU/CS
17	1.DRAW	14	-/CPU/CS/ACAL
18	1.DRAW	15	-/CPU/CS/CTL
19	1.DRAW	16	-/CPU/CS/PROM
20	1.DRAW	17	-/CPU/CS/TCV
21	1.DRAW	18	-/CPU/CS/WCS
22	2.DRAW	18	-/CPU/CS/WCS
23	1.DRAW	19	-/CPU/LAPA
24	1.DRAW	20	-/CPU/MMU
25	1.DRAW	21	-/CPU/MMU/CACHE
26	1.DRAW	22	-/CPU/MMU/CSR
27	1.DRAW	23	-/CPU/MMU/HIT
28	1.DRAW	24	-/CPU/MMU/PPNX
29	1.DRAW	25	-/CPU/MMU/PT
30	1.DRAW	26	-/CPU/MMU/PTIDB
31	1.DRAW	27	-/CPU/MMU/WCA
32	1.DRAW	28	-/CPU/PROC
33	1.DRAW	29	-/CPU/PROC/CGA
34	1.DRAW	30	-/CPU/PROC/CMDDEC
35	1.DRAW	31	-/CPU/STOC
36	1.DRAW	32	-/CYC
37	1.DRAW	33	-/IO
38	1.DRAW	34	-/IO/DCD
39	1.DRAW	35	-/IO/DCD/DGA
40	1.DRAW	36	-/IO/PANCAL
41	1.DRAW	37	-/IO/REG
42	1.DRAW	38	-/IO/UART
43	1.DRAW	39	-/MEM
44	1.DRAW	40	-/MEM/ADDR
45	1.DRAW	41	-/MEM/ADEC
46	1.DRAW	42	-/MEM/DATA
47	1.DRAW	43	-/MEM/ERROR
48	1.DRAW	44	-/MEM/LBDIF
49	1.DRAW	45	-/MEM/RAM
50	1.DRAW	46	-/MEM/RAMC

C ***** SIGNAL NAME INFO *****

SIGNAL	##'	SIGTYPE	DIRECT:PAGE+QUADR/COMP-PIN/TYPE
--------	-----	---------	---------------------------------

12V	13	B:2F1/A-C31!! B:2F2/RN2-1/4610X 101 102! B:2F2/RN2-1/4610X 101 102! B:2F2/RN2-1/4610X 101 102! B:2G2/RN2-1/4610X 101 102! B:2G2/RN2-1/4610X 101 102! B:2G2/RN2-1/4610X 101 102! O:42E2/34H-11/VP12/12! O:42E2/34H-14/VP12/12! B:42F1/C9-1/2.2uF! I:42E4/35G-8/75150P B:42E5/R9-1/2.2KOHM! B:42E5/R10-1/2.2KOHM!
12VN	5	O:2D5/A-A8!! O:42E2/34H-2/VP12/12! O:42E2/34H-23/VP12/12! B:42F2/C10-2/2.2uF! I:42E4/35G-5/75150P

SVSTBY 70 \$SOVERFLOW\$\$ B:2E2/RN1-1/4610X 101_102!
 B:2E2/RN1-1/4610X 101_102! B:2E2/RN1-1/4610X 101_102!
 B:2E2/RN1-1/4610X 101_102! B:2D2/RN1-1/4610X 101_102!
 B:2D2/RN1-1/4610X 101_102! I:2A5/R8-1/1K0HM B:2B1/A-C24/! I:3A7/R4-1/1K0HM
 +
 B:4G2/C-A30/! B:4G2/C-B30/! B:4G2/C-C30/! B:32H2/RN10-1/4610X 101_102!
 B:32H2/RN10-1/4610X 101_102! B:32H2/RN10-1/4610X 101_102!
 B:32H2/RN10-1/4610X 101_102! B:32H2/RN10-1/4610X 101_102!
 B:32H2/RN10-1/4610X 101_102! B:32H2/RN10-1/4610X 101_102!
 B:32H2/RN10-1/4610X 101_102! B:32H2/RN10-1/4610X 101_102!
 B:32H4/RN11-1/4610X 101_102! B:32H4/RN11-1/4610X 101_102!
 B:32H4/RN11-1/4610X 101_102! B:32H4/RN11-1/4610X 101_102!
 B:32H4/RN11-1/4610X 101_102! B:32H4/RN11-1/4610X 101_102!
 B:32H4/RN11-1/4610X 101_102! B:32H4/RN11-1/4610X 101_102!
 B:32H4/RN11-1/4610X 101_102! B:38A3/D1-2/3.3V_ZENER/
 I:39A4/RN17-1/4610X 101_103 I:39A4/RN17-1/4610X 101_103
 I:39A4/RN17-1/4610X 101_103 I:39A4/RN17-1/4610X 101_103
 I:39A1/RN15-1/4610X 101_103 I:39A1/RN15-1/4610X 101_103
 I:39A1/RN15-1/4610X 101_103 I:39A1/RN15-1/4610X 101_103
 I:39A1/RN15-1/4610X 101_103 I:39A1/RN15-1/4610X 101_103
 I:39A1/RN15-1/4610X 101_103 I:39C7/34D-L7/ND_DELDGA I:39C7/34D-C7/ND_DELDGA
 +
 I:39A3/RN16-1/4610X 101_103 I:39A3/RN16-1/4610X 101_103
 I:39A3/RN16-1/4610X 101_103 I:39A3/RN16-1/4610X 101_103
 A0 #44 2 I:44D6/RN5-1/4610X 102_330 B:44D4/5H-23/AM29861A!
 A1 #44 2 I:44E6/RN5-3/4610X 102_330 B:44D4/5H-22/AM29861A!
 A2 #44 2 I:44E6/RN5-5/4610X 102_330 B:44D4/5H-21/AM29861A!
 A3 #44 2 I:44E6/RN5-7/4610X 102_330 B:44D4/5H-20/AM29861A!
 A4 #44 2 I:44E6/RN5-9/4610X 102_330 B:44D4/5H-19/AM29861A!
 A5 #44 2 I:44E6/RN6-1/4610X 102_330 B:44D4/5H-18/AM29861A!
 A6 #44 2 I:44E6/RN6-3/4610X 102_330 B:44D4/5H-17/AM29861A!
 A7 #44 2 I:44F6/RN6-5/4610X 102_330 B:44D4/5H-16/AM29861A!
 AB #44 2 I:44F6/RN6-7/4610X 102_330 B:44D4/5H-15/AM29861A!
 A9 #44 2 I:44F6/RN6-9/4610X 102_330 B:44D4/5H-14/AM29861A!
 AA0 7 O:44D6/RN5-2/4610X 102_330! I:49C3/15H-4/SIP1M9
 I:49C5/15J-4/SIP1M9 I:49E3/15K-4/SIP1M9 I:49E5/15L-4/SIP1M9
 I:49G5/15N-4/SIP1M9 I:49G3/15M-4/SIP1M9
 AA1 7 O:44E6/RN5-4/4610X 102_330! I:49C3/15H-5/SIP1M9
 I:49C5/15J-5/SIP1M9 I:49E3/15K-5/SIP1M9 I:49E5/15L-5/SIP1M9
 I:49G5/15N-5/SIP1M9 I:49G3/15M-5/SIP1M9
 AA2 7 O:44E6/RN5-6/4610X 102_330! I:49C3/15H-7/SIP1M9
 I:49C5/15J-7/SIP1M9 I:49E3/15K-7/SIP1M9 I:49E5/15L-7/SIP1M9
 I:49G5/15N-7/SIP1M9 I:49G3/15M-7/SIP1M9
 AA3 7 O:44E6/RN5-8/4610X 102_330! I:49C3/15H-8/SIP1M9
 I:49C5/15J-8/SIP1M9 I:49E3/15K-8/SIP1M9 I:49E5/15L-8/SIP1M9
 I:49G5/15N-8/SIP1M9 I:49G3/15M-8/SIP1M9
 AA4 7 O:44E6/RN5-10/4610X 102_330! I:49C3/15H-11/SIP1M9
 I:49C5/15J-11/SIP1M9 I:49E3/15K-11/SIP1M9 I:49E5/15L-11/SIP1M9
 I:49G5/15N-11/SIP1M9 I:49G3/15M-11/SIP1M9
 AA5 7 O:44E6/RN6-2/4610X 102_330! I:49C3/15H-12/SIP1M9
 I:49C5/15J-12/SIP1M9 I:49E3/15K-12/SIP1M9 I:49E5/15L-12/SIP1M9
 I:49G5/15N-12/SIP1M9 I:49G3/15M-12/SIP1M9
 AA6 7 O:44E6/RN6-4/4610X 102_330! I:49C3/15H-14/SIP1M9
 I:49C5/15J-14/SIP1M9 I:49E3/15K-14/SIP1M9 I:49E5/15L-14/SIP1M9
 I:49G5/15N-14/SIP1M9 I:49G3/15M-14/SIP1M9
 AA7 7 O:44F6/RN6-6/4610X 102_330! I:49C3/15H-15/SIP1M9
 I:49C5/15J-15/SIP1M9 I:49E3/15K-15/SIP1M9 I:49E5/15L-15/SIP1M9
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 AA8 7 O:44F6/RN6-8/4610X 102_330! I:49C3/15H-17/SIP1M9
 I:49C5/15J-17/SIP1M9 I:49E3/15K-17/SIP1M9 I:49E5/15L-17/SIP1M9
 I:49G5/15N-17/SIP1M9 I:49G3/15M-17/SIP1M9
 AA9 7 O:44F6/RN6-10/4610X 102_330! I:49C3/15H-18/SIP1M9
 I:49C5/15J-18/SIP1M9 I:49E3/15K-18/SIP1M9 I:49E5/15L-18/SIP1M9
 I:49G5/15N-18/SIP1M9 I:49G3/15M-18/SIP1M9
 ABIT #45 2 T:45E2/7G-19/PAL16R8B! I:45F2/8H-7/74LS248
 ACOND~ 2 O:33B7/28F-J2/ND DELILAH! I:36B5/14D-6/PAL16R4D
 ACT~ #6 1 T:6D2/10D-18/PAL16R8D!
 ALUCLK 3 I:33B7/28F-B9/ND DELILAH I:33A5/7F-5/74F14
 O:36F2/9D-1/74F02!
 AOK #45 2 B:45C6/6G-19/PAL16R4D! I:45E7/2D-2/74F74
 APR~ 2 B:6D4/5D-19/PAL16R4D! I:7D7/7A-11/7407
 BACT~ #12 2 I:12E4/2C-11/PAL16L8D B:12D6/1C-18/PAL16L8D!
 BANK0 5 T:45C6/6G-15/PAL16R4D! T:45C4/9G-15/PAL16R4D!
 O:45E3/RN18-4/4610X 101_102! I:49B6/9H-2/74F00 I:49B7/9H-4/74F00
 BANK1 5 T:45C6/6G-16/PAL16R4D! T:45C4/9G-16/PAL16R4D!
 O:45D3/RN18-3/4610X 101_102! I:49D6/9H-10/74F00 I:49D7/9H-12/74F00
 BANK2 5 T:45C6/6G-17/PAL16R4D! T:45C4/9G-17/PAL16R4D!
 O:45D3/RN18-2/4610X 101_102! I:49F6/8H-10/74F00 I:49F7/8G-12/74F00
 BAPR~ 3 I:4C6/5C-17/74F244 B:4A6/C-A20/! O:7D7/7A-10/7407!
 BBIT #45 2 T:45E2/7G-18/PAL16R8B! I:45F2/8H-1/74LS248
 BCGNT25 2 I:48C4/13F-11/AM29C821 T:50B6/5F-12/PAL16R8D!
 BCGNT50 4 I:44B5/4H-13/AM29C821 I:44B2/3H-13/AM29C821
 I:47D7/4F-3/PAL16L8B O:48C4/13F-14/AM29C821!
 BCGNT50R~ 2 I:46C5/2F-9/PAL16L8B O:48E4/3F-19/PAL16L8D!

BDAP25~ #8 2 0:8C3/3D-15/AM29C821! I:8E3/4D-10/AM29C821
 BDAP50~ 4 0:8E3/4D-15/AM29C821! I:12D6/1C-5/PAL16L8D
 0:48C4/13F-20/AM29C821! I:50E6/6F-5/PAL16R8D
 BDAP~ 3 I:4C6/5C-13/74F244 B:4A6/C-C18!! O:7D4/2A-3/7438!
 BDRY25~ 5 I:6D2/10D-7/PAL16R8D I:7D3/2B-1/74F00
 0:8C3/3D-18/AM29C821! I:8E3/4D-7/AM29C821 I:12D2/11D-4/PAL16L8D
 BDRY50~ 9 I:6D6/8D-1/PAL16L8B I:6D4/5D-5/PAL16R4D
 I:7D3/2B-2/74F00 I:7D4/2A-2/7438 I:8E3/4D-8/AM29C821 O:8E3/4D-18/AM29C821!
 +
 BDRY75~ 2 I:12D2/11D-5/PAL16L8D I:39C7/34D-B11/ND_DELDGA I:50E6/6F-9/PAL16R8D
 BDRY~ 4 I:4C6/5C-15/74F244 B:4A6/C-A19!! T:7D2/3A-3/74F241!
 0:48F4/7A-12/7407!
 BD~0 3 B:4A5/C-C3!! B:10D6/6A-11/74AS648!
 I:13E5/8A-18/74ALS534
 BD~1 3 B:4A5/C-A3!! B:10D6/6A-10/74AS648!
 I:13E5/8A-17/74ALS534
 BD~10 3 B:4A3/C-C8!! B:10D4/5A-9/74AS648! I:13E3/9A-14/74ALS534
 BD~11 3 B:4A3/C-A8!! B:10D4/5A-8/74AS648! I:13E3/9A-13/74ALS534
 BD~12 3 B:4A3/C-C9!! B:10D4/5A-7/74AS648! I:13E3/9A-8/74ALS534
 BD~13 3 B:4A3/C-A9!! B:10D4/5A-6/74AS648! I:13E3/9A-7/74ALS534
 BD~14 3 B:4A2/C-C10!! B:10D4/5A-5/74AS648! I:13E3/9A-4/74ALS534
 BD~15 3 B:4A2/C-A10!! B:10D4/5A-4/74AS648! I:13E3/9A-3/74ALS534
 BD~16 4 B:4A2/C-B3!! B:10D2/4A-11/74AS648!
 I:13C5/10A-18/74ALS534 I:13C3/12A-18/74ALS534
 BD~17 4 B:4A2/C-B4!! B:10D2/4A-10/74AS648!
 I:13C5/10A-17/74ALS534 I:13C3/12A-17/74ALS534
 BD~18 4 B:4A2/C-B5!! B:10D2/4A-9/74AS648!
 I:13C5/10A-14/74ALS534 I:13C3/12A-14/74ALS534
 BD~19 5 B:4A2/C-B6!! B:10D2/4A-8/74AS648!
 I:13C5/10A-13/74ALS534 I:13C3/12A-13/74ALS534 B:45C6/6G-12/PAL16R4D!
 BD~2 3 B:4A5/C-C4!! B:10D6/6A-9/74AS648! I:13E5/8A-14/74ALS534
 BD~20 5 B:4A1/C-B7!! B:10D2/4A-7/74AS648! I:13C5/10A-8/74ALS534
 I:13C3/12A-8/74ALS534 I:45C6/6G-6/PAL16R4D
 BD~21 5 B:4A1/C-B8!! B:10D2/4A-6/74AS648! I:13C5/10A-7/74ALS534
 I:13C3/12A-7/74ALS534 I:45C6/6G-7/PAL16R4D
 BD~22 4 B:4A1/C-B9!! B:10D2/4A-5/74AS648! I:13C5/10A-4/74ALS534
 I:45C6/6G-8/PAL16R4D
 BD~23 4 B:4A1/C-B10!! B:10D2/4A-4/74AS648!
 I:13C5/10A-3/74ALS534 I:45C6/6G-9/PAL16R4D
 BD~3 3 B:4A5/C-A4!! B:10D6/6A-8/74AS648! I:13E5/8A-13/74ALS534
 BD~4 3 B:4A4/C-C5!! B:10D6/6A-7/74AS648! I:13E5/8A-8/74ALS534
 BD~5 3 B:4A4/C-A5!! B:10D6/6A-6/74AS648! I:13E5/8A-7/74ALS534
 BD~6 3 B:4A4/C-C6!! B:10D6/6A-5/74AS648! I:13E5/8A-4/74ALS534
 BD~7 3 B:4A4/C-A6!! B:10D6/6A-4/74AS648! I:13E5/8A-3/74ALS534
 BD~8 3 B:4A4/C-C7!! B:10D4/5A-11/74AS648!
 I:13E3/9A-18/74ALS534
 BD~9 3 B:4A3/C-A7!! B:10D4/5A-10/74AS648!
 I:13E3/9A-17/74ALS534
 BEDO~ 4 0:26D4/27H-14/74PCT244! I:32F2/32F-1/74PCT245
 I:32F3/33F-1/74PCT245 I:33B7/28F-B10/ND DELILAH
 BEMPID~ 2 0:26D4/27H-16/74PCT244! I:33B7/28F-R11/ND DELILAH
 BERROR~ 3 I:4F4/C-B21! I:7D2/3A-17/74F241 T:7D2/3A-5/74F241!
 BGNT25~ 3 I:48C4/13F-9/AM29C821 O:48C4/13F-17/AM29C821!
 I:50E6/6F-7/PAL16R8D
 BGNT50~ 4 I:12D6/1C-3/PAL16L8D I:48E4/3F-7/PAL16L8D
 I:48C4/13F-10/AM29C821 O:48C4/13F-16/AM29C821!
 BGNT75~ #48 2 I:48E4/3F-8/PAL16L8D O:48C4/13F-15/AM29C821!
 BGNTCACT~ 4 I:10D6/6A-22/74AS648 I:10D4/5A-22/74AS648
 I:10D2/4A-22/74AS648 O:12D2/11D-19/PAL16L8D!
 BGNT~ 13 I:3A4/16A-6/74LS244 I:10D6/6A-23/74AS648
 I:10D4/5A-23/74AS648 I:10D2/4A-23/74AS648 I:12D2/11D-11/PAL16L8D
 I:12D6/1C-2/PAL16L8D I:45C6/6G-11/PAL16R4D I:45E7/2B-1/74F74
 I:48E4/3F-2/PAL16L8D I:48C4/13F-8/AM29C821 T:50B6/5F-17/PAL16R8D!
 I:50E6/6F-4/PAL16R8D I:50E3/12G-9/74LS123
 BINACK~ 2 I:4F4/C-B19! T:7D2/3A-14/74F241!
 BINPUT25~ #8 2 0:8C3/3D-20/AM29C821! I:8E3/4D-5/AM29C821
 BINPUT50~ 3 I:8E3/4D-11/AM29C821 O:8E3/4D-20/AM29C821!
 I:12E4/2C-4/PAL16L8D
 BINPUT75~ 2 I:7D2/3A-6/74F241 O:8E3/4D-14/AM29C821!
 BINPUT~ 3 I:4C6/5C-6/74F244 B:4A6/C-A18!! O:7D6/7A-6/7407!
 BINT~10 4 B:4D1/RN3-9/4610X_101_102! I:4C6/5C-2/74F244
 O:4C3/C-A15!! O:41F5/74A-8/74LS38!
 BINT~11 3 B:4D1/RN3-8/4610X_101_102! I:4E3/33C-17/74F244
 O:4C3/C-C15!!
 BINT~12 4 B:4D1/RN3-7/4610X_101_102! I:4E3/33C-15/74F244
 O:4C3/C-A16!! O:41F4/74A-3/74LS38!
 BINT~13 4 B:4D1/RN3-6/4610X_101_102! I:4E3/33C-13/74F244

		O:4C3/C-C16!! O:41F5/14A-6/74LS38!
BINT~15	3	B:4D1/RN3-5/4610X_101_102! I:4E3/33C-11/74F244
		O:4C3/C-C17!!
BIOXE~	3	I:4F5/C-C19! T:7D2/3A-16/74F241! B:48E4/3F-14/PAL16L8D!
BIOXL~	2	I:46C5/2F-7/PAL16L8B B:48E4/3F-17/PAL16L8D!
BLCS~	5	I:19C6/26B-20/27256 I:19C6/26B-22/27256 I:19C4/23B-20/27256 I:19C4/23B-22/27256 O:26D4/27H-12/74PCT244!
BLOCK25~	2	I:6D6/8D-3/PAL16L8B O:8C3/3D-14/AM29C821!
BLOCKL25~	2	I:47D7/4F-2/PAL16L8B O:48C7/14F-23/AM29C821!
BLOCKL~	2	B:47D7/4F-16/PAL16L8B! I:48C7/14F-2/AM29C821
BLOCK~	2	B:6D6/8D-18/PAL16L8B! I:8C3/3D-11/AM29C821
BLRQ50~	2	O:48C4/13F-22/AM29C821! I:50B6/5F-6/PAL16R8D
BLRQ~	2	O:45E7/2D-6/74F74! I:48C4/13F-2/AM29C821
BMCL~	2	O:4F6/35A-2/7406! I:4F6/C-B20!
BMEM~	3	I:4F5/C-C20! O:7D4/2A-6/7438! I:45C6/6G-5/PAL16R4D
BMINH~	2	O:4F7/7A-4/7407! I:4F7/C-B23!
BPERR25~	#8	O:8C3/3D-19/AM29C821! I:8E3/4D-6/AM29C821
BPERR50~	2	I:6D6/8D-4/PAL16L8B O:8E3/4D-19/AM29C821!
BPERR~	2	I:4C6/5C-8/74F244 O:4A6/C-B18!!
BREF~	2	I:4F4/C-A12! O:7D6/7A-8/7407!
BREQ25~	#8	O:8C3/3D-16/AM29C821! I:8E3/4D-9/AM29C821
BREQ50~	2	I:6D2/10D-5/PAL16R8D O:8E3/4D-16/AM29C821!
BREQ~	2	I:4E3/33C-4/74F244 O:4C2/C-C12!!
BRK~	7	I:18B2/15F-9/PAL16L8D I:25E6/17F-9/74F10 O:34E3/29H-8/74F32! I:36E5/13D-7/PAL16L8D I:36D4/12D-9/PAL16R6D I:39C7/34D-F2/ND DELDGA O:39A4/RN17-2/4610X_101_103!
BSEM~	#50	T:50B6/5F-13/PAL16R8D!
BSTP	2	O:26D4/27H-18/74PCT244! I:33B7/28F-R6/ND DELILAH
CA0	9	I:3F4/15C-17/74LS244 I:14D6/6C-18/74PCT374 I:24A2/21G-1/PAL16L8D I:25D6/24F-8/TMM2018D_25 I:25B6/20F-8/TMM2018D_25 I:25B3/16F-8/TMM2018D_25 I:25G3/21F-21/AM9150_20 I:25D3/23F-8/TMM2018D_25 O:32D3/25F-23/AM29C821!
CA1	8	I:3F4/15C-15/74LS244 I:14D6/6C-17/74PCT374 I:25D6/24F-7/TMM2018D_25 I:25B6/20F-7/TMM2018D_25 I:25B3/16F-7/TMM2018D_25
+		I:25G3/21F-22/AM9150_20 I:25D3/23F-7/TMM2018D_25 O:32D3/25F-22/AM29C821!
CA10	5	I:25D6/24F-19/TMM2018D_25 I:25B6/20F-19/TMM2018D_25 I:25B3/16F-19/TMM2018D_25 I:25D3/23F-19/TMM2018D_25 O:39C7/34D-G2/ND DELDGA
+		!
CA2	8	I:3F4/15C-13/74LS244 I:14D6/6C-14/74PCT374 I:25D6/24F-6/TMM2018D_25 I:25B6/20F-6/TMM2018D_25 I:25B3/16F-6/TMM2018D_25
+		I:25G3/21F-23/AM9150_20 I:25D3/23F-6/TMM2018D_25 O:32D3/25F-21/AM29C821!
CA3	8	I:3F4/15C-11/74LS244 I:14D6/6C-13/74PCT374 I:25D6/24F-5/TMM2018D_25 I:25B6/20F-5/TMM2018D_25 I:25B3/16F-5/TMM2018D_25
+		I:25G3/21F-1/AM9150_20 I:25D3/23F-5/TMM2018D_25 O:32D3/25F-20/AM29C821!
CA4	8	I:3F4/15C-8/74LS244 I:14D6/6C-8/74PCT374 I:25D6/24F-4/TMM2018D_25 I:25B6/20F-4/TMM2018D_25 I:25B3/16F-4/TMM2018D_25
+		I:25G3/21F-2/AM9150_20 I:25D3/23F-4/TMM2018D_25 O:32D3/25F-19/AM29C821!
CA5	8	I:3F4/15C-6/74LS244 I:14D6/6C-7/74PCT374 I:25D6/24F-3/TMM2018D_25 I:25B6/20F-3/TMM2018D_25 I:25B3/16F-3/TMM2018D_25
+		I:25G3/21F-3/AM9150_20 I:25D3/23F-3/TMM2018D_25 O:32D3/25F-18/AM29C821!
CA6	8	I:3F4/15C-4/74LS244 I:14D6/6C-4/74PCT374 I:25D6/24F-2/TMM2018D_25 I:25B6/20F-2/TMM2018D_25 I:25B3/16F-2/TMM2018D_25
+		I:25G3/21F-4/AM9150_20 I:25D3/23F-2/TMM2018D_25 O:32D3/25F-17/AM29C821!
CA7	8	I:3F4/15C-2/74LS244 I:14D6/6C-3/74PCT374 I:25D6/24F-1/TMM2018D_25 I:25B6/20F-1/TMM2018D_25 I:25B3/16F-1/TMM2018D_25
+		I:25G3/21F-5/AM9150_20 I:25D3/23F-1/TMM2018D_25 O:32D3/25F-16/AM29C821!
CA8	8	I:3F3/16G-17/74LS244 I:14D5/4B-17/74PCT374 I:25D6/24F-23/TMM2018D_25 I:25B6/20F-23/TMM2018D_25 I:25B3/16F-23/TMM2018D_25 I:25G3/21F-6/AM9150_20 I:25D3/23F-23/TMM2018D_25
+		O:32D3/25F-15/AM29C821!
CA9	8	I:3F3/16G-15/74LS244 I:14D5/4B-17/74PCT374 I:25D6/24F-22/TMM2018D_25 I:25B6/20F-22/TMM2018D_25 I:25B3/16F-22/TMM2018D_25 I:25G3/21F-7/AM9150_20 I:25D3/23F-22/TMM2018D_25
+		O:32D3/25F-14/AM29C821!
CACT25~	2	I:6D4/5D-4/PAL16R4D O:8C3/3D-17/AM29C821!
CACT~	6	T:6D2/10D-12/PAL16R8D! I:6D4/5D-3/PAL16R4D I:7D7/9D-9/74F02 I:8C3/3D-8/AM29C821 I:12D2/11D-8/PAL16L8D I:12E4/2C-1/PAL16L8D
CAS	4	I:49B7/9H-5/74F00 I:49D7/9H-13/74F00 I:49F7/8G-13/74F00 T:50E6/6F-14/PAL16RBD!
CAS~0	#49	I:49C3/15H-28/SIP1M9 I:49C3/15H-2/SIP1M9 I:49C5/15J-28/SIP1M9 I:49C5/15J-2/SIP1M9 O:49B7/9H-6/74F00!
CAS~1	#49	I:49E3/15K-28/SIP1M9 I:49E3/15K-2/SIP1M9

			I:49E5/15L-28/SIP1M9	I:49E5/15L-2/SIP1M9	O:49D7/9H-11/74F00!
CAS~2	#49	5	I:49G5/15N-28/SIP1M9	I:49G5/15N-2/SIP1M9	
			I:49G3/15M-28/SIP1M9	I:49G3/15M-2/SIP1M9	O:49F7/8G-11/74F00!
CBIT	#45	2	T:45E2/7G-17/PAL16R8B!	I:45F2/8H-2/74LS248	
CBWRITE~		3	I:7E7/2A-9/7438	I:7D6/7A-5/7407	B:12E4/2C-18/PAL16L8D!
CCLR~		2	I:25G3/21F-20/AM9150_20	O:39C7/34D-J1/ND DELDGA!	
CC~0	#36	2	I:36E5/13D-2/PAL16L8D	T:36D4/12D-16/PAL16R6D!	
CC~1		3	I:18B2/15F-2/PAL16L8D	I:36E5/13D-3/PAL16L8D	
			T:36D4/12D-15/PAL16R6D!		
CC~2		6	I:6D4/5D-2/PAL16R4D	I:12D2/11D-3/PAL16L8D	
			I:18B2/15F-3/PAL16L8D	I:24A2/21G-8/PAL16L8D	I:36E5/13D-4/PAL16L8D
			T:36D4/12D-14/PAL16R6D!		
CC~3		3	I:18B2/15F-4/PAL16L8D	I:36E5/13D-5/PAL16L8D	
			T:36D4/12D-13/PAL16R6D!		
CD0		6	I:3D6/20A-17/74LS244	B:11D5/6B-13/74AS646!	
			O:11G2/RN20-9/4610X_101_102!	B:25D6/24F-17/TMM2018D_25!	
			I:33B7/28F-D17/ND DELILAH	O:35D5/15B-3/74PCT244!	
CD1		6	I:3D6/20A-15/74LS244	B:11D5/6B-14/74AS646!	
			O:11G2/RN20-8/4610X_101_102!	B:25D6/24F-16/TMM2018D_25!	
			I:33B7/28F-G16/ND DELILAH	O:35D5/15B-5/74PCT244!	
CD10		6	I:3D4/18A-13/74LS244	O:11E2/RN19-7/4610X_101_102!	
			B:11D4/7B-15/74AS646!	B:25D3/23F-15/TMM2018D_25!	I:33B7/28F-C16/ND DELILAH
+			O:35D3/14B-7/74PCT244!		
CD11		6	I:3D4/18A-11/74LS244	O:11E2/RN19-6/4610X_101_102!	
			B:11D4/7B-16/74AS646!	B:25D3/23F-14/TMM2018D_25!	I:33B7/28F-E14/ND DELILAH
+			O:35D3/14B-9/74PCT244!		
CD12		6	I:3D4/18A-8/74LS244	O:11E2/RN19-5/4610X_101_102!	
			B:11D4/7B-17/74AS646!	B:25D3/23F-13/TMM2018D_25!	I:33B7/28F-A17/ND DELILAH
+			O:35D3/14B-12/74PCT244!		
CD13		6	I:3D4/18A-6/74LS244	O:11E2/RN19-4/4610X_101_102!	
			B:11D4/7B-18/74AS646!	B:25D3/23F-11/TMM2018D_25!	I:33B7/28F-D15/ND DELILAH
+			O:35D3/14B-14/74PCT244!		
CD14		6	I:3D4/18A-4/74LS244	O:11E2/RN19-3/4610X_101_102!	
			B:11D4/7B-19/74AS646!	B:25D3/23F-10/TMM2018D_25!	I:33B7/28F-D14/ND DELILAH
+			O:35D3/14B-16/74PCT244!		
CD15		6	I:3D4/18A-2/74LS244	O:11E2/RN19-2/4610X_101_102!	
			B:11D4/7B-20/74AS646!	B:25D3/23F-9/TMM2018D_25!	I:33B7/28F-A16/ND DELILAH
+			O:35D3/14B-18/74PCT244!		
CD2		6	I:3D6/20A-13/74LS244	B:11D5/6B-15/74AS646!	
			O:11G2/RN20-7/4610X_101_102!	B:25D6/24F-15/TMM2018D_25!	
			I:33B7/28F-C17/ND DELILAH	O:35D5/15B-7/74PCT244!	
CD3		6	I:3D6/20A-11/74LS244	B:11D5/6B-16/74AS646!	
			O:11G2/RN20-6/4610X_101_102!	B:25D6/24F-14/TMM2018D_25!	
			I:33B7/28F-G15/ND DELILAH	O:35D5/15B-9/74PCT244!	
CD4		6	I:3D6/20A-8/74LS244	B:11D5/6B-17/74AS646!	
			O:11G2/RN20-5/4610X_101_102!	B:25D6/24F-13/TMM2018D_25!	
			I:33B7/28F-D16/ND DELILAH	O:35D5/15B-12/74PCT244!	
CD5		6	I:3D6/20A-6/74LS244	B:11D5/6B-18/74AS646!	
			O:11G2/RN20-4/4610X_101_102!	B:25D6/24F-11/TMM2018D_25!	
			I:33B7/28F-G14/ND DELILAH	O:35D5/15B-14/74PCT244!	
CD6		6	I:3D6/20A-4/74LS244	B:11D5/6B-19/74AS646!	
			O:11F2/RN20-3/4610X_101_102!	B:25D6/24F-10/TMM2018D_25!	
			I:33B7/28F-F14/ND DELILAH	O:35D5/15B-16/74PCT244!	
CD7		6	I:3D6/20A-2/74LS244	B:11D5/6B-20/74AS646!	
			O:11F2/RN20-2/4610X_101_102!	B:25D6/24F-9/TMM2018D_25!	
			I:33B7/28F-E16/ND DELILAH	O:35D5/15B-18/74PCT244!	
CD8		6	I:3D4/18A-17/74LS244	O:11F2/RN19-9/4610X_101_102!	
			B:11D4/7B-13/74AS646!	B:25D3/23F-17/TMM2018D_25!	I:33B7/28F-B17/ND DELILAH
+			O:35D3/14B-3/74PCT244!		
CD9		6	I:3D4/18A-15/74LS244	O:11E2/RN19-8/4610X_101_102!	
			B:11D4/7B-14/74AS646!	B:25D3/23F-16/TMM2018D_25!	I:33B7/28F-E15/ND DELILAH
+			O:35D3/14B-5/74PCT244!		
CEUART~		2	O:39C7/34D-N10/ND DELDGA!	I:42B3/32H-11/SC2661	
CGABRK~		2	O:33B7/28F-R10/ND DELILAH!	I:34E3/29H-9/74F32	
CGNT25~		3	I:48C4/13F-7/AM29C821	O:48C4/13F-19/AM29C821!	
			I:50E6/6F-8/PAL16R8D		
CGNT50~		4	I:6D4/5D-7/PAL16R4D	I:12D2/11D-7/PAL16L8D	
			I:48E4/3F-5/PAL16L8D	O:48C4/13F-18/AM29C821!	
CGNTCACT~		2	O:12D2/11D-12/PAL16L8D!	I:36D4/12D-7/PAL16R6D	
CGNT~		11	I:3A4/16A-8/74LS244	I:6D4/5D-6/PAL16R4D	
			I:12D2/11D-6/PAL16L8D	I:12E4/2C-2/PAL16L8D	I:12D6/1C-1/PAL16L8D
			I:45C4/9G-11/PAL16R4D	I:48E4/3F-3/PAL16L8D	I:48C4/13F-6/AM29C821
			T:50B6/5F-18/PAL16R8D!	I:50E6/6F-3/PAL16R8D	I:50D3/12G-1/74LS123
CLEAR25~	#8	2	O:8C3/3D-23/AM29C821!	I:8E3/4D-2/AM29C821	
CLEAR~		5	I:4F7/7A-3/7407	I:8C3/3D-2/AM29C821	
			O:39C7/34D-F11/ND DELDGA!	I:40D7/35C-2/MC68705U3	I:41E4/28A-1/74LS273

CLK	11	I:3A4/16A-4/74LS244 I:3A7/21A-11/74LS374 I:17E7/31G-13/AM29841 I:34D3/19F-1/PAL16R4D I:34D4/22F-1/PAL16R4D I:36B5/14D-1/PAL16R4D I:36B3/15D-1/PAL16R4D O:36F2/14C-3/74F00! O:39A1/RN15-2/4610X_101_103! I:39C7/34D-D1/ND DELDGA I:42C6/33G-13/AM29C821
+ CLOSC	4	I:38D1/13C-2/74LS393 I:38E2/13C-12/74LS393 O:38B3/12F-8/74S132! I:39C7/34D-A9/ND DELDGA
CLRERR~	#46	3 B:46C5/2F-17/PAL16L8B! I:46D2/1H-11/AM29833 I:46D4/2H-11/AM29833
CLRQ~	2	B:45C4/9G-18/PAL16R4D! I:50B6/5F-5/PAL16R8D
CMWRITE~	#12	1 B:12E4/2C-17/PAL16L8D!
CON	5	I:25E6/17F-10/74F10 B:25F7/SW1-3/SECME090320102! B:25F7/LED1-2/RED! I:26D4/27H-11/74PCT244 I:26D4/27H-13/74PCT244
CONSOLE~	5	B:2E2/RN1-9/4610X_101_102! O:2D5/A-C21!! O:2D5/A-C30!! O:41G3/2A-11/7438T I:42C6/33G-6/AM29C821
CONTINUE~	3	B:4D1/RN3-4/4610X_101_102! I:4E3/33C-6/74F244 O:4C2/C-B15!!
CON~	4	B:25F7/SW1-1/SECME090320102! B:25F6/RN14-3/4610X_101_102! I:26D4/27H-15/74PCT244 I:27D6/19G-1/74FCT521A
+ CORR~	8	I:47C2/7C-14/74PCT374 B:47B1/RN4-2/4610X_101_222! O:49C3/15H-24/SIP1M9! O:49C5/15J-24/SIP1M9! O:49E3/15K-24/SIP1M9! O:49E5/15L-24/SIP1M9! O:49G5/15N-24/SIP1M9! O:49G3/15M-24/SIP1M9!
CPN10	3	B:25B6/20F-17/TMM2018D_25! I:27D6/19G-18/74FCT521A O:31D5/10G-3/74PCT244!
CPN11	3	B:25B6/20F-16/TMM2018D_25! I:27D6/19G-16/74FCT521A O:31D5/10G-5/74PCT244!
CPN12	3	B:25B6/20F-15/TMM2018D_25! I:27D6/19G-14/74FCT521A O:31D5/10G-7/74PCT244!
CPN13	3	B:25B6/20F-14/TMM2018D_25! I:27D6/19G-12/74FCT521A O:31D5/10G-9/74PCT244!
CPN14	3	B:25B6/20F-13/TMM2018D_25! I:27D6/19G-9/74FCT521A O:31D5/10G-12/74PCT244!
CPN15	3	B:25B6/20F-11/TMM2018D_25! I:27D6/19G-7/74FCT521A O:31D5/10G-14/74PCT244!
CPN16	3	B:25B6/20F-10/TMM2018D_25! I:27D6/19G-5/74FCT521A O:31D5/10G-16/74PCT244!
CPN17	3	B:25B6/20F-9/TMM2018D_25! I:27D6/19G-3/74FCT521A O:31D5/10G-18/74PCT244!
CPN18	3	B:25B3/16F-17/TMM2018D_25! I:27D3/18G-18/74FCT521A O:31D3/11G-3/74PCT244!
CPN19	3	B:25B3/16F-16/TMM2018D_25! I:27D3/18G-16/74FCT521A O:31D3/11G-5/74PCT244!
CPN20	3	B:25B3/16F-15/TMM2018D_25! I:27D3/18G-14/74FCT521A O:31D3/11G-7/74PCT244!
CPN21	3	B:25B3/16F-14/TMM2018D_25! I:27D3/18G-12/74FCT521A O:31D3/11G-9/74PCT244!
CPN22	3	B:25B3/16F-13/TMM2018D_25! I:27D3/18G-9/74FCT521A O:31D3/11G-12/74PCT244!
CPN23	3	B:25B3/16F-11/TMM2018D_25! I:27D3/18G-7/74FCT521A O:31D3/11G-14/74PCT244!
CRQ~	2	I:6D2/10D-2/PAL16R8D B:45C4/9G-13/PAL16R4D!
CSA0	3	I:17E4/31F-11/AM29841 I:17E5/32G-11/AM29841 O:33B7/28F-L3/ND DELILAH!
CSA1	3	I:17E4/31F-10/AM29841 I:17E5/32G-10/AM29841 O:33B7/28F-P1/ND DELILAH!
CSA10	3	I:17D2/29H-4/74F32 I:17E2/30H-7/74F373 O:33B7/28F-Q2/ND DELILAH!
CSA11	3	I:17D1/29H-1/74F32 I:17E2/30H-4/74F373 O:33B7/28F-N4/ND DELILAH!
CSA12	2	I:17E2/30H-3/74F373 O:33B7/28F-S1/ND DELILAH!
CSA2	3	I:17E4/31F-9/AM29841 I:17E5/32G-9/AM29841 O:33B7/28F-L2/ND DELILAH!
CSA3	3	I:17E4/31F-8/AM29841 I:17E5/32G-8/AM29841 O:33B7/28F-Q1/ND DELILAH!
CSA4	3	I:17E4/31F-7/AM29841 I:17E5/32G-7/AM29841 O:33B7/28F-M4/ND DELILAH!
CSA5	3	I:17E4/31F-6/AM29841 I:17E5/32G-6/AM29841 O:33B7/28F-L4/ND DELILAH!
CSA6	3	I:17E4/31F-5/AM29841 I:17E5/32G-5/AM29841 O:33B7/28F-P2/ND DELILAH!
CSA7	3	I:17E4/31F-4/AM29841 I:17E5/32G-4/AM29841 O:33B7/28F-N2/ND DELILAH!
CSA8	3	I:17E4/31F-3/AM29841 I:17E5/32G-3/AM29841 O:33B7/28F-R1/ND DELILAH!
CSA9	3	I:17E4/31F-2/AM29841 I:17E5/32G-2/AM29841 O:33B7/28F-N3/ND DELILAH!
CSALUI0	4	B:20C3/19B-2/74LS245! B:21B6/18D-15/IDT6168A_20! B:22B6/18C-15/IDT6168A_20! I:33B7/28F-C1/ND DELILAH
CSALUI1	4	B:20B3/16B-9/74LS245! B:21B4/17D-12/IDT6168A_20! B:22B4/17C-12/IDT6168A_20! I:33B7/28F-D4/ND DELILAH
CSALUI2	4	B:20B3/16B-8/74LS245! B:21B4/17D-13/IDT6168A_20! B:22B4/17C-13/IDT6168A_20! I:33B7/28F-D2/ND DELILAH
CSALUI3	4	B:20B3/16B-7/74LS245! B:21B4/17D-14/IDT6168A_20!

		B:22B4/17C-14/IDT6168A 20! I:33B7/28F-D3/ND DELILAH
CSALUI4	4	B:20B3/16B-6/74LS245! B:21B4/17D-15/IDT6168A 20!
		B:22B4/17C-15/IDT6168A 20! I:33B7/28F-F4/ND DELILAH
CSALUIS	4	B:20B3/16B-5/74LS245! B:21B2/16D-12/IDT6168A 20!
		B:22B2/16C-12/IDT6168A 20! I:33B7/28F-G4/ND DELILAH
CSALUI6	4	B:20B3/16B-4/74LS245! B:21B2/16D-13/IDT6168A 20!
		B:22B2/16C-13/IDT6168A 20! I:33B7/28F-D1/ND DELILAH
CSALUI7	5	B:20B3/16B-3/74LS245! B:21B2/16D-14/IDT6168A 20!
		B:22B2/16C-14/IDT6168A 20! I:33B7/28F-E4/ND DELILAH I:36B3/15D-6/PAL16R4D
CSALUI8	5	B:20B3/16B-2/74LS245! B:21B2/16D-15/IDT6168A 20!
		B:22B2/16C-15/IDT6168A 20! I:33B7/28F-A1/ND DELILAH I:36B3/15D-5/PAL16R4D
CSALUM0	5	B:20B4/20B-5/74LS245! B:21C2/20D-12/IDT6168A 20!
		B:22C2/20C-12/IDT6168A 20! I:33B7/28F-C2/ND DELILAH I:36B3/15D-4/PAL16R4D
CSALUM1	5	B:20B4/20B-4/74LS245! B:21C2/20D-13/IDT6168A 20!
		B:22C2/20C-13/IDT6168A 20! I:33B7/28F-C3/ND DELILAH I:36B3/15D-3/PAL16R4D
CSBIT0	4	B:20C7/29B-9/74LS245! B:21F7/31D-12/IDT6168A 20!
		B:22F7/31C-12/IDT6168A 20! I:33B7/28F-B6/ND DELILAH
CSBIT1	4	B:20C7/29B-8/74LS245! B:21F7/31D-13/IDT6168A 20!
		B:22F7/31C-13/IDT6168A 20! I:33B7/28F-D8/ND DELILAH
CSBIT10	4	B:20B7/28B-7/74LS245! B:21F4/29D-14/IDT6168A 20!
		B:22F4/29C-14/IDT6168A 20! I:33B7/28F-A3/ND DELILAH
CSBIT11	4	B:20B7/28B-6/74LS245! B:21F4/29D-15/IDT6168A 20!
		B:22F4/29C-15/IDT6168A 20! I:33B7/28F-C6/ND DELILAH
CSBIT12	4	B:20B7/28B-5/74LS245! B:21F2/28D-12/IDT6168A 20!
		B:22F2/28C-12/IDT6168A 20! I:33B7/28F-B3/ND DELILAH
CSBIT13	4	B:20B7/28B-4/74LS245! B:21F2/28D-13/IDT6168A 20!
		B:22F2/28C-13/IDT6168A 20! I:33B7/28F-C5/ND DELILAH
CSBIT14	4	B:20B7/28B-3/74LS245! B:21F2/28D-14/IDT6168A 20!
		B:22F2/28C-14/IDT6168A 20! I:33B7/28F-A2/ND DELILAH
CSBIT15	4	B:20B7/28B-2/74LS245! B:21F2/28D-15/IDT6168A 20!
		B:22F2/28C-15/IDT6168A 20! I:33B7/28F-B4/ND DELILAH
CSBIT2	4	B:20C7/29B-7/74LS245! B:21F7/31D-14/IDT6168A 20!
		B:22F7/31C-14/IDT6168A 20! I:33B7/28F-A5/ND DELILAH
CSBIT20	4	B:20C6/27B-5/74LS245! B:21D6/26D-12/IDT6168A 20!
		B:22D6/26C-12/IDT6168A 20! I:33B7/28F-P4/ND DELILAH
CSBIT3	4	B:20C7/29B-6/74LS245! B:21F7/31D-15/IDT6168A 20!
		B:22F7/31C-15/IDT6168A 20! I:33B7/28F-B7/ND DELILAH
CSBIT4	4	B:20C7/29B-5/74LS245! B:21F6/30D-12/IDT6168A 20!
		B:22F6/30C-14/IDT6168A 20! I:33B7/28F-B5/ND DELILAH
CSBIT5	4	B:20C7/29B-4/74LS245! B:21F6/30D-13/IDT6168A 20!
		B:22F6/30C-13/IDT6168A 20! I:33B7/28F-C7/ND DELILAH
CSBIT6	4	B:20C7/29B-3/74LS245! B:21F6/30D-14/IDT6168A 20!
		B:22F6/30C-14/IDT6168A 20! I:33B7/28F-A4/ND DELILAH
CSBIT7	4	B:20C7/29B-2/74LS245! B:21F6/30D-15/IDT6168A 20!
		B:22F6/30C-15/IDT6168A 20! I:33B7/28F-D7/ND DELILAH
CSBIT8	4	B:20B7/28B-9/74LS245! B:21F4/29D-12/IDT6168A 20!
		B:22F4/29C-12/IDT6168A 20! I:33B7/28F-D6/ND DELILAH
CSBIT9	4	B:20B7/28B-8/74LS245! B:21F4/29D-13/IDT6168A 20!
		B:22F4/29C-13/IDT6168A 20! I:33B7/28F-E7/ND DELILAH
CSCA0	3	I:17E7/31G-11/AM29841 I:32D3/25F-2/AM29C821 O:33B7/28F-P14/ND DELILAH!
CSCA1	3	I:17E7/31G-10/AM29841 I:32D3/25F-3/AM29C821 O:33B7/28F-P16/ND DELILAH!
CSCA2	3	I:17E7/31G-9/AM29841 I:32D3/25F-4/AM29C821 O:33B7/28F-P15/ND DELILAH!
CSCA3	3	I:17E7/31G-8/AM29841 I:32D3/25F-5/AM29C821 O:33B7/28F-P17/ND DELILAH!
CSCA4	3	I:17E7/31G-7/AM29841 I:32D3/25F-6/AM29C821 O:33B7/28F-L14/ND DELILAH!
CSCA5	3	I:17E7/31G-6/AM29841 I:32D3/25F-7/AM29C821 O:33B7/28F-M14/ND DELILAH!
CSCA6	3	I:17E7/31G-5/AM29841 I:32D3/25F-8/AM29C821 O:33B7/28F-N17/ND DELILAH!
CSCA7	3	I:17E7/31G-4/AM29841 I:32D3/25F-9/AM29C821 O:33B7/28F-N15/ND DELILAH!
CSCA8	3	I:17E7/31G-3/AM29841 I:32D3/25F-10/AM29C821 O:33B7/28F-M16/ND DELILAH!
CSCA9	3	I:17E7/31G-2/AM29841 I:32D3/25F-11/AM29C821 O:33B7/28F-N16/ND DELILAH!
CSCISEL0	4	B:20B4/20B-3/74LS245! B:21C2/20D-14/IDT6168A 20! B:22C2/20C-14/IDT6168A 20! I:33B7/28F-B11/ND DELILAH
CSCISEL1	4	B:20B4/20B-2/74LS245! B:21C2/20D-15/IDT6168A 20! B:22C2/20C-15/IDT6168A 20! I:33B7/28F-A10/ND DELILAH
CSCOMMO	8	I:3A7/21A-13/74LS374 B:20C4/21B-9/74LS245! B:21C7/23D-12/IDT6168A 20! B:22C7/23C-12/IDT6168A 20! I:33B7/28F-G17/ND DELILAH I:34D4/22F-6/PAL16R4D I:39C7/34D-L5/ND DELDGA O:39A3/RN16-2/4610X_101_103!
CSCOMM1	8	I:3A7/21A-8/74LS374 B:20C4/21B-8/74LS245! B:21C7/23D-13/IDT6168A 20! B:22C7/23C-13/IDT6168A 20! I:33B7/28F-H15/ND DELILAH I:34D4/22F-5/PAL16R4D O:39B1/RN15-10/4610X_101_103
		I:39C7/34D-M4/ND DELDGA
CSCOMM2	8	I:3A7/21A-7/74LS374 B:20C4/21B-7/74LS245! B:21C7/23D-14/IDT6168A 20! B:22C7/23C-14/IDT6168A 20!

		I:33B7/28F-F17/ND DELILAH I:34D4/22F-4/PAL16R4D O:39A1/RN15-9/4610X_101_103!
		I:39C7/34D-N3/ND DELDGA
CSCOMM3	8	I:3A7/21A-4/74LS374 B:20C4/21B-6/74LS245! B:21C7/23D-15/IDT6168A 20! B:22C7/23C-15/IDT6168A 20! I:33B7/28F-H14/ND DELILAH I:34D4/22F-3/PAL16R4D O:39A1/RN15-8/4610X_101_103!
+ CSCOMM4	8	I:39C7/34D-M3/ND DELDGA I:3A7/21A-3/74LS374 B:20C4/21B-5/74LS245! B:21C6/22D-12/IDT6168A 20! B:22C6/22C-12/IDT6168A 20! I:33B7/28F-E17/ND DELILAH I:34D4/22F-2/PAL16R4D O:39A1/RN15-7/4610X_101_103!
+ CSDELAY0	5	I:39C7/34D-L4/ND DELDGA B:20B6/24B-7/74LS245! B:21D4/25D-14/IDT6168A 20! B:22D4/25C-14/IDT6168A 20! I:36B5/14D-2/PAL16R4D I:36D4/12D-4/PAL16R6D
CSDELAY1	4	B:20B6/24B-6/74LS245! B:21D4/25D-15/IDT6168A 20! B:22D4/25C-15/IDT6168A 20! I:36B3/15D-2/PAL16R4D
CSDLY	4	B:20C6/27B-4/74LS245! B:21D6/26D-13/IDT6168A 20! B:22D6/26C-13/IDT6168A 20! I:36B5/14D-3/PAL16R4D
CSECOND	5	B:20C6/27B-2/74LS245! B:21D6/26D-15/IDT6168A 20! B:22D6/26C-15/IDT6168A 20! I:33B7/28F-G3/ND DELILAH I:36B5/14D-4/PAL16R4D
CSEM~	#50	T:50B6/5F-14/PAL16R8D!
CSIDBS0	7	B:20C4/21B-4/74LS245! B:21C6/22D-13/IDT6168A 20! B:22C6/22C-13/IDT6168A 20! I:33B7/28F-E1/ND DELILAH I:34D3/19F-2/PAL16R4D
+ CSIDBS1	7	I:39C7/34D-C2/ND DELDGA O:39A3/RN16-9/4610X_101_103! B:20C4/21B-3/74LS245! B:21C6/22D-14/IDT6168A 20! B:22C6/22C-14/IDT6168A 20! I:33B7/28F-E3/ND DELILAH I:34D3/19F-3/PAL16R4D
+ CSIDBS2	7	I:39C7/34D-D3/ND DELDGA O:39A3/RN16-8/4610X_101_103! B:20C4/21B-2/74LS245! B:21C6/22D-15/IDT6168A 20! B:22C6/22C-15/IDT6168A 20! I:33B7/28F-F2/ND DELILAH I:34D3/19F-4/PAL16R4D
+ CSIDBS3	7	I:39C7/34D-C4/ND DELDGA O:39A3/RN16-7/4610X_101_103! B:20B4/20B-9/74LS245! B:21C4/21D-12/IDT6168A 20! B:22C4/21C-12/IDT6168A 20! I:33B7/28F-E2/ND DELILAH I:34D3/19F-5/PAL16R4D
+ CSIDBS4	7	I:39C7/34D-A2/ND DELDGA O:39A3/RN16-6/4610X_101_103! B:20B4/20B-8/74LS245! B:21C4/21D-13/IDT6168A 20! B:22C4/21C-13/IDT6168A 20! I:33B7/28F-F1/ND DELILAH I:34D3/19F-6/PAL16R4D
+ CSLOOP	5	I:39C7/34D-A3/ND DELDGA O:39A3/RN16-5/4610X_101_103! B:20C6/27B-3/74LS245! B:21D6/26D-14/IDT6168A 20! B:22D6/26C-14/IDT6168A 20! I:33B7/28F-G1/ND DELILAH I:36B5/14D-5/PAL16R4D
CSMISO	8	I:3A7/21A-17/74LS374 B:20B4/20B-7/74LS245! B:21C4/21D-14/IDT6168A 20! B:22C4/21C-14/IDT6168A 20! I:33B7/28F-H13/ND DELILAH I:34D4/22F-8/PAL16R4D T:39C7/34D-N2/ND DELDGA O:39A3/RN16-4/4610X_101_103!
CSMIS1	8	I:3A7/21A-14/74LS374 B:20B4/20B-6/74LS245! B:21C4/21D-15/IDT6168A 20! B:22C4/21C-15/IDT6168A 20! I:33B7/28F-F16/ND DELILAH I:34D4/22F-7/PAL16R4D T:39C7/34D-K3/ND DELDGA O:39A3/RN16-3/4610X_101_103!
CSRASEL0	4	B:20C3/19B-6/74LS245! B:21B7/19D-15/IDT6168A 20! B:22B7/19C-15/IDT6168A 20! I:33B7/28F-H2/ND DELILAH
CSRASEL1	4	B:20C3/19B-5/74LS245! B:21B6/18D-12/IDT6168A 20! B:22B6/18C-12/IDT6168A 20! I:33B7/28F-G2/ND DELILAH
CSR80	4	B:20C6/27B-9/74LS245! B:21D7/27D-12/IDT6168A 20! B:22D7/27C-12/IDT6168A 20! I:33B7/28F-H1/ND DELILAH
CSR81	4	B:20C6/27B-8/74LS245! B:21D7/27D-13/IDT6168A 20! B:22D7/27C-13/IDT6168A 20! I:33B7/28F-H4/ND DELILAH
CSR82	4	B:20C6/27B-7/74LS245! B:21D7/27D-14/IDT6168A 20! B:22D7/27C-14/IDT6168A 20! I:33B7/28F-J1/ND DELILAH
CSR83	4	B:20C6/27B-6/74LS245! B:21D7/27D-15/IDT6168A 20! B:22D7/27C-15/IDT6168A 20! I:33B7/28F-H3/ND DELILAH
CSR8SEL0	4	B:20C3/19B-9/74LS245! B:21B7/19D-12/IDT6168A 20! B:22B7/19C-12/IDT6168A 20! I:33B7/28F-S2/ND DELILAH
CSR8SEL1	4	B:20C3/19B-8/74LS245! B:21B7/19D-13/IDT6168A 20! B:22B7/19C-13/IDT6168A 20! I:33B7/28F-Q3/ND DELILAH
CSSCOND	4	B:20B6/24B-9/74LS245! B:21D4/25D-12/IDT6168A 20! B:22D4/25C-12/IDT6168A 20! I:33B7/28F-S3/ND DELILAH
CSSST0	4	B:20C3/19B-4/74LS245! B:21B6/18D-13/IDT6168A 20! B:22B6/18C-13/IDT6168A 20! I:33B7/28F-D10/ND DELILAH
CSSST1	4	B:20C3/19B-3/74LS245! B:21B6/18D-14/IDT6168A 20! B:22B6/18C-14/IDT6168A 20! I:33B7/28F-A9/ND DELILAH
CSTS3	4	B:20B6/24B-5/74LS245! B:21D2/24D-12/IDT6168A 20! B:22D2/24C-12/IDT6168A 20! I:33B7/28F-R4/ND DELILAH
CSTS4	4	B:20B6/24B-4/74LS245! B:21D2/24D-13/IDT6168A 20! B:22D2/24C-13/IDT6168A 20! I:33B7/28F-S4/ND DELILAH
CSTS5	4	B:20B6/24B-3/74LS245! B:21D2/24D-14/IDT6168A 20! B:22D2/24C-14/IDT6168A 20! I:33B7/28F-P5/ND DELILAH
CSTS6	4	B:20B6/24B-2/74LS245! B:21D2/24D-15/IDT6168A 20! B:22D2/24C-15/IDT6168A 20! I:33B7/28F-P6/ND DELILAH
CSVECT	4	B:20B6/24B-8/74LS245! B:21D4/25D-13/IDT6168A 20! B:22D4/25C-13/IDT6168A 20! I:33B7/28F-N7/ND DELILAH
CSXRF	4	B:20C3/19B-7/74LS245! B:21B7/19D-14/IDT6168A 20!

CX~ 2 B:22B7/19C-14/IDT6168A 20! I:33B7/28F-R5/ND DELILAH
 CYD~ 2 T:36D4/12D-18/PAL16R6D! I:41C5/25A-2/74PCT244
 DAP~ 4 I:25F5/18F-6/PAL16R4D B:36E5/13D-17/PAL16L8D!
 DA~ 4 B:6D4/5D-18/PAL16R4D! I:7D4/1F-11/74F04
 I:39C7/34D-M5/ND DELDGA O:39A4/RN17-5/4610X_101_103!
 DBAPR 7 I:41F4/11B-5/74L804 O:42B3/32H-14/SC2661!
 O:42C5/RN7-3/4610X 101_103! I:42C6/33G-3/AM29C821
 I:6D6/8D-5/PAL16L8E I:10D6/6A-1/74AS648
 I:10D4/5A-1/74AS648 I:10D2/4A-1/74AS648 O:12D6/1C-19/PAL16L8D!
 I:45C6/6G-1/PAL16R4D I:45C6/6G-2/PAL16R4D
 DBIT #45 2 T:45E2/7G-16/PAL16R8B! I:45F2/8H-6/74LS248
 DDO 5 B:46D2/1H-23/AM2983J! O:46E1/RN21-2/4610X 101_103!
 B:49C3/15H-3/SIP1M9! B:49E3/15K-3/SIP1M9! B:49G3/15M-3/SIP1M9!
 DD1 5 B:46D2/1H-22/AM2983J! O:46E1/RN21-3/4610X 101_103!
 B:49C3/15H-6/SIP1M9! B:49E3/15K-6/SIP1M9! B:49G3/15M-6/SIP1M9!
 DD10 5 B:46D4/2H-22/AM2983J! O:46E2/RN22-3/4610X 101_103!
 B:49C5/15J-6/SIP1M9! B:49E5/15L-6/SIP1M9! B:49G5/15N-6/SIP1M9!
 DD11 5 B:46D4/2H-21/AM2983J! O:46E2/RN22-4/4610X 101_103!
 B:49C5/15J-10/SIP1M9! B:49E5/15L-10/SIP1M9! B:49G5/15N-10/SIP1M9!
 DD12 5 B:46D4/2H-20/AM2983J! O:46F2/RN22-5/4610X 101_103!
 B:49C5/15J-13/SIP1M9! B:49E5/15L-13/SIP1M9! B:49G5/15N-13/SIP1M9!
 DD13 5 B:46D4/2H-19/AM2983J! O:46F2/RN22-6/4610X 101_103!
 B:49C5/15J-16/SIP1M9! B:49E5/15L-16/SIP1M9! B:49G5/15N-16/SIP1M9!
 DD14 5 B:46D4/2H-18/AM2983J! O:46F2/RN22-7/4610X 101_103!
 B:49C5/15J-20/SIP1M9! B:49E5/15L-20/SIP1M9! B:49G5/15N-20/SIP1M9!
 DD15 5 B:46D4/2H-17/AM2983J! O:46F2/RN22-8/4610X 101_103!
 B:49C5/15J-23/SIP1M9! B:49E5/15L-23/SIP1M9! B:49G5/15N-23/SIP1M9!
 DD16 5 B:46D4/2H-16/AM2983J! O:46F2/RN22-9/4610X 101_103!
 B:49C5/15J-25/SIP1M9! B:49E5/15L-25/SIP1M9! B:49G5/15N-25/SIP1M9!
 DD17 8 B:46D4/2H-15/AM2983J! O:46F2/RN22-10/4610X 101_103!
 I:49C5/15J-29/SIP1M9 O:49C5/15J-26/SIP1M9! I:49E5/15L-29/SIP1M9
 O:49E5/15L-26/SIP1M9! I:49G5/15N-29/SIP1M9 O:49G5/15N-26/SIP1M9!
 DD2 5 B:46D2/1H-21/AM2983J! O:46E1/RN21-4/4610X 101_103!
 B:49C3/15H-10/SIP1M9! B:49E3/15K-10/SIP1M9! B:49G3/15M-10/SIP1M9!
 DD3 5 B:46D2/1H-20/AM2983J! O:46F1/RN21-5/4610X 101_103!
 B:49C3/15H-13/SIP1M9! B:49E3/15K-13/SIP1M9! B:49G3/15M-13/SIP1M9!
 DD4 5 B:46D2/1H-19/AM2983J! O:46F1/RN21-6/4610X 101_103!
 B:49C3/15H-16/SIP1M9! B:49E3/15K-16/SIP1M9! B:49G3/15M-16/SIP1M9!
 DD5 5 B:46D2/1H-18/AM2983J! O:46F1/RN21-7/4610X 101_103!
 B:49C3/15H-20/SIP1M9! B:49E3/15K-20/SIP1M9! B:49G3/15M-20/SIP1M9!
 DD6 5 B:46D2/1H-17/AM2983J! O:46F1/RN21-8/4610X 101_103!
 B:49C3/15H-23/SIP1M9! B:49E3/15K-23/SIP1M9! B:49G3/15M-23/SIP1M9!
 DD7 5 B:46D2/1H-16/AM2983J! O:46F1/RN21-9/4610X 101_103!
 B:49C3/15H-25/SIP1M9! B:49E3/15K-25/SIP1M9! B:49G3/15M-25/SIP1M9!
 DD8 8 B:46D2/1H-15/AM2983J! O:46F1/RN21-10/4610X 101_103!
 I:49C3/15H-29/SIP1M9 O:49C3/15H-26/SIP1M9! I:49E3/15K-29/SIP1M9
 O:49E3/15K-26/SIP1M9! I:49G3/15M-29/SIP1M9 O:49G3/15M-26/SIP1M9!
 DD9 5 B:46D4/2H-23/AM2983J! O:46E2/RN22-2/4610X 101_103!
 B:49C5/15J-3/SIP1M9! B:49E5/15L-3/SIP1M9! B:49G5/15N-3/SIP1M9!
 DDBAPR #45 2 B:45C6/6G-18/PAL16R4D! I:45E7/2D-3/74F74
 DISB~ #46 1 B:46C5/2F-16/PAL16L8B!
 DISP1 #40 2 B:40D7/35C-12/MC68705U3! I:40E3/35A-13/7406
 DISP2 #40 2 B:40D7/35C-13/MC68705U3! I:40E2/35A-11/7406
 DISP3 #40 2 B:40D7/35C-14/MC68705U3! I:40E2/35A-9/7406
 DISP4 #40 2 B:40D7/35C-15/MC68705U3! I:40E2/35A-5/7406
 DISP5 #40 2 B:40D7/35C-16/MC68705U3! I:40E1/35A-3/7406
 DIS~ #46 3 O:46C5/2F-19/PAL16L8B! I:46D5/14G-13/74F08
 B:46D5/LED5-2/RED!
 DLY0~ #36 2 B:36B5/14D-19/PAL16R4D! I:36D4/12D-3/PAL16R6D
 DLY1~ #36 2 B:36B3/15D-12/PAL16R4D! I:36D4/12D-2/PAL16R6D
 DMA12~ #36 1 T:36B5/14D-15/PAL16R4D!
 DMAP~ #36 1 T:36B5/14D-14/PAL16R4D!
 DOREF~ #6 1 T:6D2/10D-17/PAL16R8D!
 DOUBLE 2 I:24A2/21G-6/PAL16L8D O:33B7/28F-A7/ND DELILAH!
 DP~1 3 B:2F2/RN2-2/4610X 101_102! I:2H3/A-C257
 O:40E3/35A-12/7406!
 DP~2 3 B:2F2/RN2-3/4610X 101_102! I:2H4/A-C26/
 O:40E2/35A-10/7406!
 DP~3 3 B:2F2/RN2-4/4610X 101_102! I:2H4/A-C27/
 O:40E2/35A-8/7406!
 DP~4 3 B:2G2/RN2-5/4610X 101_102! I:2H4/A-C28/
 O:40E2/35A-6/7406!
 DP~5 3 B:2G2/RN2-6/4610X 101_102! I:2H4/A-C29/
 O:40E1/35A-4/7406!
 DSR~ 4 B:2D3/A-C11/! B:2G3/A-A12/! B:2G2/RN2-7/4610X_101_102!
 B:2G3/A-C9/!
 DSTB~ 5 I:11D5/6B-1/74AS646 I:11D5/6B-2/74AS646
 I:11D4/7B-1/74AS646 I:11D4/7B-2/74AS646 B:12D2/11D-17/PAL16L8D!
 DT~ 2 I:25F5/18F-2/PAL16R4D O:39C7/34D-K1/ND DELDGA!
 DVACC~ 2 I:24A2/21G-3/PAL16L8D O:39C7/34D-G1/ND DELDGA!
 EADR~ 5 B:6D4/5D-12/PAL16R4D! I:12E4/2C-3/PAL16L8D
 I:14D6/6C-1/74PCT374 I:14D5/4B-1/74PCT374 I:14D3/3B-1/74PCT374
 EAUTO~ 3 B:2E2/RN1-7/4610X 101_102! O:2D4/A-C19/!
 I:42C6/33G-4/AM29C821!

EBADR	4	I:10D6/6A-2/74AS648 I:10D4/5A-2/74AS648 I:10D2/4A-2/74AS648 B:12D6/1C-17/PAL16L8D!
EBD~	4	I:10D6/6A-21/74AS648 I:10D4/5A-21/74AS648 I:10D2/4A-21/74AS648 B:12D6/1C-13/PAL16L8D!
EBUS	3	I:3F5/7F-1/74F14 O:3E5/B-B3/! O:3F5/RN13-2/4610X 101_102!
EBUS~	2	O:3F5/7F-2/74F14! I:12D6/1C-6/PAL16L8D
ECCR	3	O:33B7/28F-Q14/ND DELILAH! I:46C5/2F-8/PAL16L8B I:48E4/3F-6/PAL16L8D
ECD~	3	O:24A2/21G-19/PAL16L8D! I:25D6/24F-18/TMM2018D_25 I:25D3/23F-18/TMM2018D_25
ECREQ	8	I:11D5/6B-23/74AS646 I:11D4/7B-23/74AS646 I:14D6/6C-11/74PCT374 I:14D5/4B-11/74PCT374 I:14D3/3B-11/74PCT374 O:39C7/34D-F1/ND DELDGA! B:45C4/9G-12/PAL16R4D! I:45C4/9G-1/PAL16R4D
ECSD~	#18 2	I:18D2/30B-1/74F139 O:18C1/29A-3/74F08!
ECSL~	5	B:18B2/15F-18/PAL16L8D! I:20E6/8C-11/74PCT373 I:20E6/8C-1/74PCT373 I:20E5/9C-11/74PCT373 I:20E5/9C-1/74PCT373
ECSR~	2	I:26D4/27H-19/74PCT244 O:39C7/34D-B6/ND DELDGA!
EDO~	2	I:26D4/27H-6/74PCT244 O:39C7/34D-A8/ND DELDGA!
EHISEG~	#45 2	T:45E2/7G-12/PAL16R8B! I:45G3/8K-1/HP5082 7433
EIOD~	2	B:6D4/5D-13/PAL16R4D! I:7D2/3A-1/74F241
EIOR~	2	O:39C7/34D-A6/ND DELDGA! I:42C6/33G-1/AM29C821
EIPL~	2	B:24A2/21G-16/PAL16L8D! I:28E5/9B-19/74PCT245
EIPUR~	3	B:24A2/21G-18/PAL16L8D! I:28B7/8B-1/74LS244 I:28B7/8B-19/74LS244
EIPU~	2	B:24A2/21G-17/PAL16L8D! I:28E3/10B-19/74PCT245
ELOWSEG~	#45 2	T:45E2/7G-14/PAL16R8B! I:45G3/8K-7/HP5082 7433
ELOW~	17	B:18B2/15F-15/PAL16L8D! I:22B7/19C-9/IDT6168A_20 I:22B6/18C-9/IDT6168A_20 I:22B4/17C-9/IDT6168A_20 I:22B2/16C-9/IDT6168A_20
+		I:22C6/22C-9/IDT6168A_20 I:22C7/23C-9/IDT6168A_20 I:22C4/21C-9/IDT6168A_20
+		I:22C2/20C-9/IDT6168A_20 I:22D6/26C-9/IDT6168A_20 I:22D7/27C-9/IDT6168A_20
+		I:22D4/25C-9/IDT6168A_20 I:22D2/24C-9/IDT6168A_20 I:22F6/30C-9/IDT6168A_20
+		I:22F7/31C-9/IDT6168A_20 I:22F4/29C-9/IDT6168A_20 I:22F2/28C-9/IDT6168A_20
EMCL~	3	I:24A2/21G-7/PAL16L8D O:41E4/28A-6/74LS273! B:41E2/LED2-2/RED!
EMD~	3	I:11D5/6B-21/74AS646 I:11D4/7B-21/74AS646 B:12D2/11D-18/PAL16L8D!
EMIDSEG~	#45 2	T:45E2/7G-13/PAL16R8B! I:45G3/8K-4/HP5082 7433
EMPID~	2	I:26D4/27H-4/74PCT244 O:39C7/34D-J3/ND DELDGA!
EMP~	2	O:39C7/34D-J11/ND DELDGA! I:40D7/35C-17/MC68705U3
EORF~	4	I:24A3/32C-10/74F32 B:36E5/13D-16/PAL16L8D! O:39A4/RN17-4/4610X 101_103! I:39C7/34D-N4/ND DELDGA
EPANS~	4	O:39C7/34D-C5/ND DELDGA! I:40G4/32B-1/74LS374 I:40G6/33B-1/74LS244 I:40G6/33B-19/74LS244
EPEAL~	#47 3	B:47D7/4F-17/PAL16L8B! I:47E2/4C-1/74PCT374 I:47E4/6D-1/74PCT374
EPEA~	4	I:6D6/8D-11/PAL16L8B O:6C7/12C-6/74F32! I:13E5/8A-1/74ALS534 I:13E3/9A-1/74ALS534
EPESL~	#47 3	B:47D7/4F-18/PAL16L8B! I:47C4/3C-1/74PCT374 I:47C2/7C-1/74PCT374
EPES~	4	I:6D6/8D-9/PAL16L8B O:6C7/12C-3/74F32! I:13C5/10A-1/74ALS534 I:13C3/12A-1/74ALS534
EPMAP~	3	B:24A2/21G-14/PAL16L8D! I:29B3/22G-18/TMM2018D_25 I:29B6/23G-18/TMM2018D_25
EPTI~	3	B:24A2/21G-15/PAL16L8D! I:30D3/17B-19/74PCT245 I:30D5/18B-19/74PCT245
EPT~	3	B:24A2/21G-13/PAL16L8D! I:29D3/24G-18/TMM2018D_25 I:29D6/25G-18/TMM2018D_25
ERF~	3	I:32F5/34F-18/TMM2018D_25 I:32F7/35F-18/TMM2018D_25 B:34D3/19F-19/PAL16R4DT
ESTOF~	5	I:28E3/10B-1/74PCT245 I:28E5/9B-1/74PCT245 I:32F2/32F-19/74PCT245 I:32F3/33F-19/74PCT245 O:39C7/34D-N9/ND DELDGA!
ETRAP~	2	I:33B7/28F-Q6/ND DELILAH B:36E5/13D-14/PAL16L8D!
EUPP~	17	B:18B2/15F-16/PAL16L8D! I:21B7/19D-9/IDT6168A_20 I:21B6/18D-9/IDT6168A_20 I:21B4/17D-9/IDT6168A_20 I:21B2/16D-9/IDT6168A_20
+		I:21C6/22D-9/IDT6168A_20 I:21C7/23D-9/IDT6168A_20 I:21C4/21D-9/IDT6168A_20
+		I:21C2/20D-9/IDT6168A_20 I:21D6/26D-9/IDT6168A_20 I:21D7/27D-9/IDT6168A_20
+		I:21D4/25D-9/IDT6168A_20 I:21D2/24D-9/IDT6168A_20 I:21F6/30D-9/IDT6168A_20
+		I:21F7/31D-9/IDT6168A_20 I:21F4/29D-9/IDT6168A_20 I:21F2/28D-9/IDT6168A_20
EWCA~	3	B:18B2/15F-17/PAL16L8D! I:18C1/29A-2/74F08 I:33B7/28F-Q4/ND DELILAH
EW~0	3	O:18D2/30B-4/74F139! I:20B7/28B-19/74LS245 I:20C7/29B-19/74LS245
EW~1	3	O:18D2/30B-5/74F139! I:20B6/24B-19/74LS245 I:20C6/27B-19/74LS245
EW~2	3	O:18D2/30B-6/74F139! I:20B4/20B-19/74LS245

EW~3 3 I:20C4/21B-19/74LS245
 FAPR #12 1 O:18D2/30B-7/74F139I I:20B3/16B-19/74LS245
 FATAL #47 2 I:47C2/7C-7/74PCT374 B:47B1/RN4-5/4610X 101_222!
 FETCH 4 I:13C3/12A-3/74ALS534 I:18B2/15F-8/PAL16L8D~
 O:39C7/34D-M6/ND DELDGA! I:47C2/7C-3/74PCT374
 FIDB0 2 B:32F2/32F-18/74PCT245! B:33B7/28F-C15/ND DELILAH!
 FIDB1 2 B:32F2/32F-17/74PCT245! B:33B7/28F-A15/ND DELILAH!
 FIDB10 2 B:32F3/33F-16/74PCT245! B:33B7/28F-B12/ND DELILAH!
 FIDB11 2 B:32F3/33F-15/74PCT245! B:33B7/28F-C12/ND DELILAH!
 FIDB12 2 B:32F3/33F-14/74PCT245! B:33B7/28F-A12/ND DELILAH!
 FIDB13 2 B:32F3/33F-13/74PCT245! B:33B7/28F-D11/ND DELILAH!
 FIDB14 2 B:32F3/33F-12/74PCT245! B:33B7/28F-A11/ND DELILAH!
 FIDB15 2 B:32F3/33F-11/74PCT245! B:33B7/28F-C11/ND DELILAH!
 FIDB2 2 B:32F2/32F-16/74PCT245! B:33B7/28F-B14/ND DELILAH!
 FIDB3 2 B:32F2/32F-15/74PCT245! B:33B7/28F-A14/ND DELILAH!
 FIDB4 2 B:32F2/32F-14/74PCT245! B:33B7/28F-D13/ND DELILAH!
 FIDB5 2 B:32F2/32F-13/74PCT245! B:33B7/28F-D12/ND DELILAH!
 FIDB6 2 B:32F2/32F-12/74PCT245! B:33B7/28F-E11/ND DELILAH!
 FIDB7 2 B:32F2/32F-11/74PCT245! B:33B7/28F-B13/ND DELILAH!
 FIDB8 2 B:32F3/33F-18/74PCT245! B:33B7/28F-A13/ND DELILAH!
 FIDB9 2 B:32F3/33F-17/74PCT245! B:33B7/28F-C13/ND DELILAH!
 FMISS 2 I:27D3/18G-1/74FCT521A O:39C7/34D-L8/ND DELDGA!
 FORM~ 3 I:18B2/15F-1/PAL16L8D I:36E5/13D-6/PAL16L8D
 O:39C7/34D-M8/ND DELDGA!
 FUL~ 2 O:39C7/34D-K12/ND DELDGA! I:40G6/33B-15/74LS244
 GND 166 \$\$OVERFLOW\$ B:2B2/ A-A17!! B:2B2/ A-A18!! B:2B3/ A-A19!!
 B:2B3/ A-A20!! B:2B3/ A-A21!! B:2B3/ A-A22!! B:2B3/ A-A23!! B:2B4/ A-A24!!
 B:2B4/ A-A25!! B:2B4/ A-A26!! B:2B4/ A-A27!! B:2B4/ A-A28!! B:2B5/ A-A29!!
 B:2B5/ A-A32!! B:2B5/ A-B32!! B:2B5/ A-C32!! B:3H2/ B-C1!! B:3H3/ B-A32!!
 B:3H3/ B-B32!! B:3H3/ B-C32!! I:3F2/ 17G-1/74LS244 I:3F2/ 17G-19/74LS244
 I:3F3/ 16G-1/74LS244 I:3F3/ 16G-19/74LS244 I:3F4/ 15C-1/74LS244
 I:3F4/ 15C-19/74LS244 I:3A2/ 23A-1/74LS244 I:3A2/ 23A-19/74LS244
 I:3A3/ 22A-1/74LS244 I:3A3/ 22A-19/74LS244 I:3A4/ 16A-1/74LS244
 I:3A4/ 16A-19/74LS244 I:3A7/ 21A-1/74LS374 B:3C2/ STR1-1/STR1! B:3H2/ B-A1!!
 B:3H2/ B-B1!! B:4D4/ C1-2/10nF! B:4G3/ C-A1!! B:4G4/ C-B1!! B:4G4/ C-C1!!
 B:4G4/ C-B32!! B:4G4/ C-C32!! B:4G4/ C-A32!! I:7D2/ 3A-15/74F241
 I:25D6/ 24F-20/TMM2018D_25 I:25B6/ 20F-18/TMM2018D_25 I:25B6/ 20F-20/TMM2018D_2
 5
 B:25F7/ SW1-2/SECME090320102! I:25G6/ 21H-12/74S260 I:25G6/ 21H-13/74S260
 I:25B3/ 16F-18/TMM2018D_25 I:25B3/ 16F-20/TMM2018D_25 I:25G3/ 21F-17/AM9150_20
 +
 I:25G3/ 21F-19/AM9150_20 I:25D3/ 23F-20/TMM2018D_25 I:27D3/ 18G-2/74FCT521A
 I:27D3/ 18G-3/74FCT521A I:27D3/ 18G-5/74FCT521A I:28B7/ 8B-2/74LS244
 I:28B7/ 8B-4/74LS244 I:28B7/ 8B-6/74LS244 I:28B7/ 8B-8/74LS244
 I:28B7/ 8B-11/74LS244 I:28B7/ 8B-13/74LS244 I:28B7/ 8B-15/74LS244
 I:29B3/ 22G-20/TMM2018D_25 I:29F4/ 20G-11/IMS1403_25
 GNT 3 O:13B3/ 11B-12/74LS04! I:13C3/ 12A-4/74ALS534
 GNT25~ 2 I:7E3/ 1F-9/74F04 O:48C7/ 14F-15/AM29C821!
 GNT~ 4 T:6D2/ 10D-13/PAL16R8D! I:12D6/ 1C-8/PAL16L8D
 HIEN~ 4 I:13B3/ 11B-13/74LS04 I:48C7/ 14F-10/AM29C821
 I:44B5/ 4H-1/AM29C821 I:46C5/ 2F-11/PAL16L8B
 HIT 3 O:25G6/ 21H-5/74S260! I:36D4/ 12D-8/PAL16R6D
 I:39A5/ 13G-1/74F04
 HIT~ #39 3 O:39A4/RN17-8/4610X 101_103! O:39A5/ 13G-2/74F04!
 I:39C7/ 34D-E1/ND DELDGA~
 HIT~0 3 I:25F5/ 18F-7/PAL16R4D I:25G6/ 21H-3/74S260
 O:27D3/ 19G-19/74FCT521A!
 HIT~1 3 I:25F5/ 18F-8/PAL16R4D I:25G6/ 21H-2/74S260
 O:27D3/ 18G-19/74FCT521A!
 I1P 4 O:2D5/A-A7!! B:42E5/R9-2/2.2KOHM! B:42E5/R10-2/2.2KOHM!
 B:42E5/R2-2/5.6KOHM!
 IBAPR~ 2 O:4C6/ 5C-3/74F244! I:12D6/ 1C-7/PAL16L8D
 IBDAP~ 4 O:4C6/ 5C-7/74F244! I:8C3/ 3D-10/AM29C821
 I:48E4/ 3F-9/PAL16L8D I:48C4/ 13F-4/AM29C821
 IBDRY~ 3 O:4C6/ 5C-5/74F244! I:7D4/ 2A-4/7438 I:8C3/ 3D-7/AM29C821
 IBINPUT~ 3 O:4C6/ 5C-14/74F244! I:8C3/ 3D-5/AM29C821
 I:45C6/ 6G-4/PAL16R4D
 IBINT~10 2 O:4C6/ 5C-18/74F244! I:33A4/ 34G-18/74PCT374
 IBINT~11 2 O:4E3/ 33C-3/74F244! I:33A4/ 34G-17/74PCT374
 IBINT~12 2 O:4E3/ 33C-5/74F244! I:33A4/ 34G-14/74PCT374
 IBINT~13 2 O:4E3/ 33C-7/74F244! I:33A4/ 34G-13/74PCT374
 IBINT~15 2 O:4E3/ 33C-9/74F244! I:33A4/ 34G-8/74PCT374
 IBPERR~ 2 O:4C6/ 5C-12/74F244! I:8C3/ 3D-6/AM29C821
 IBREQ~ 3 O:4E3/ 33C-16/74F244! I:7C4/ 1F-13/74F04
 I:8C3/ 3D-9/AM29C821
 ICONTIN~ 2 O:4E3/ 33C-14/74F244! I:39C7/ 34D-B10/ND DELDGA!
 IDBO 26 I:3D3/ 19A-17/74LS244 T:13C5/ 10A-19/74ALS534!
 T:13E5/ 8A-19/74ALS534! O:19C4/ 23B-11/27256! I:20E6/ 8C-18/74PCT373
 T:20E6/ 8C-19/74PCT373! B:20C7/ 29B-11/74LS245! B:20C6/ 27B-11/74LS245!
 B:20C4/ 21B-11/74LS245! B:20C3/ 19B-11/74LS245! O:26D4/ 27H-9/74PCT244!

B:28E5/9B-11/74PCT245! B:30D5/18B-9/74PCT245! B:32F5/34F-9/TMM2018D 25!
 B:32F2/32F-2/74PCT245! B:32H2/RN10-2/4610X_101_102! I:35D5/15B-17/74PCT244

+
 B:39C7/34D-G13/ND DELDGA! T:40G4/32B-2/74LS374! I:41E4/28A-18/74LS273
 O:41C7/24A-3/74PCT244! O:41C5/25A-3/74PCT244! B:42B3/32H-27/SC2661!
 O:42C6/33G-14/AM29C821! T:47C4/3C-19/74PCT374! T:47E4/6D-19/74PCT374!
 +
 IDB1 26 I:3D3/19A-15/74LS244 T:13C5/10A-16/74ALS534!
 T:13E5/8A-16/74ALS534! O:19C4/23B-12/27256! I:20E6/8C-17/74PCT373
 T:20E6/8C-16/74PCT373! B:20C7/29B-12/74LS245! B:20C6/27B-12/74LS245!
 B:20C4/21B-12/74LS245! B:20C3/19B-12/74LS245! O:26D4/27H-7/74PCT244!
 B:28E5/9B-12/74PCT245! B:30D5/18B-8/74PCT245! B:32F5/34F-10/TMM2018D 25!
 B:32F2/32F-3/74PCT245! B:32H2/RN10-3/4610X_101_102! I:35D5/15B-15/74PCT244

+
 B:39C7/34D-G11/ND DELDGA! T:40G4/32B-5/74LS374! I:41E4/28A-17/74LS273
 O:41C7/24A-5/74PCT244! O:41C5/25A-5/74PCT244! B:42B3/32H-28/SC2661!
 O:42C6/33G-15/AM29C821! T:47C4/3C-16/74PCT374! T:47E4/6D-16/74PCT374!
 +
 IDB10 20 I:3D2/17A-13/74LS244 T:13E3/9A-15/74ALS534!
 T:13C3/12A-15/74ALS534! O:19C6/26B-13/27256! I:20E5/9C-14/74PCT373
 T:20E5/9C-15/74PCT373! B:20B7/28B-13/74LS245! B:20B6/24B-13/74LS245!
 B:20B4/20B-13/74LS245! B:20B3/16B-13/74LS245! B:28E3/10B-13/74PCT245!
 B:30D3/17B-7/74PCT245! B:32F7/35F-11/TMM2018D 25! B:32F3/33F-4/74PCT245!
 B:32H4/RN11-3/4610X_101_102! I:35D3/14B-13/74PCT244 O:40G6/33B-14/74LS244!

+
 IDB11 21 O:41C2/27A-7/74PCT244! T:47C2/7C-15/74PCT374! T:47E2/4C-15/74PCT374!
 I:3D2/17A-11/74LS244 T:13E3/9A-12/74ALS534!
 T:13C3/12A-12/74ALS534! O:19C6/26B-15/27256! I:20E5/9C-13/74PCT373
 T:20E5/9C-12/74PCT373! B:20B7/28B-14/74LS245! B:20B6/24B-14/74LS245!
 B:20B4/20B-14/74LS245! B:20B3/16B-14/74LS245! B:28E3/10B-14/74PCT245!
 B:30D3/17B-6/74PCT245! B:32F7/35F-13/TMM2018D 25! B:32F3/33F-5/74PCT245!
 B:32H4/RN11-4/4610X_101_102! I:35D3/14B-11/74PCT244 O:40G6/33B-12/74LS244!

+
 IDB12 21 O:41C2/27A-9/74PCT244! O:42C6/33G-19/AM29C821! T:47C2/7C-12/74PCT374!
 T:47E2/4C-12/74PCT374!
 I:3D2/17A-8/74LS244 T:13E3/9A-9/74ALS534!
 T:13C3/12A-9/74ALS534! O:19C6/26B-16/27256! I:20E5/9C-8/74PCT373
 T:20E5/9C-9/74PCT373! B:20B7/28B-15/74LS245! B:20B6/24B-15/74LS245!
 B:20B4/20B-15/74LS245! B:20B3/16B-15/74LS245! B:28E3/10B-15/74PCT245!
 B:30D3/17B-5/74PCT245! B:32F7/35F-14/TMM2018D 25! B:32F3/33F-6/74PCT245!
 B:32H4/RN11-5/4610X_101_102! I:35D3/14B-8/74PCT244 O:40G6/33B-9/74LS244!
 O:41C2/27A-12/74PCT244! O:42C6/33G-20/AM29C821! T:47C2/7C-9/74PCT374!
 T:47E2/4C-9/74PCT374!

IDB13 21 I:3D2/17A-6/74LS244 T:13E3/9A-6/74ALS534!
 T:13C3/12A-6/74ALS534! O:19C6/26B-17/27256! I:20E5/9C-7/74PCT373
 T:20E5/9C-6/74PCT373! B:20B7/28B-16/74LS245! B:20B6/24B-16/74LS245!
 B:20B4/20B-16/74LS245! B:20B3/16B-16/74LS245! B:28E3/10B-16/74PCT245!
 B:30D3/17B-4/74PCT245! B:32F7/35F-15/TMM2018D 25! B:32F3/33F-7/74PCT245!
 B:32H4/RN11-6/4610X_101_102! I:35D3/14B-6/74PCT244 O:40G6/33B-7/74LS244!
 O:41C2/27A-14/74PCT244! O:42C6/33G-21/AM29C821! T:47C2/7C-6/74PCT374!
 T:47E2/4C-6/74PCT374!

IDB14 21 I:3D2/17A-4/74LS244 T:13E3/9A-5/74ALS534!
 T:13C3/12A-5/74ALS534! O:19C6/26B-18/27256! I:20E5/9C-4/74PCT373
 T:20E5/9C-5/74PCT373! B:20B7/28B-17/74LS245! B:20B6/24B-17/74LS245!
 B:20B4/20B-17/74LS245! B:20B3/16B-17/74LS245! B:28E3/10B-17/74PCT245!
 B:30D3/17B-3/74PCT245! B:32F7/35F-16/TMM2018D 25! B:32F3/33F-8/74PCT245!
 B:32H4/RN11-7/4610X_101_102! I:35D3/14B-4/74PCT244 O:40G6/33B-5/74LS244!
 O:41C2/27A-16/74PCT244! O:42C6/33G-22/AM29C821! T:47C2/7C-5/74PCT374!
 T:47E2/4C-5/74PCT374!

IDB15 21 I:3D2/17A-2/74LS244 T:13E3/9A-2/74ALS534!
 T:13C3/12A-2/74ALS534! O:19C6/26B-19/27256! I:20E5/9C-3/74PCT373
 T:20E5/9C-2/74PCT373! B:20B7/28B-18/74LS245! B:20B6/24B-18/74LS245!
 B:20B4/20B-18/74LS245! B:20B3/16B-18/74LS245! B:28E3/10B-18/74PCT245!
 B:30D3/17B-2/74PCT245! B:32F7/35F-17/TMM2018D 25! B:32F3/33F-9/74PCT245!
 B:32H4/RN11-8/4610X_101_102! I:35D3/14B-2/74PCT244 O:40G6/33B-3/74LS244!
 O:41C2/27A-18/74PCT244! O:42C6/33G-23/AM29C821! T:47C2/7C-2/74PCT374!
 T:47E2/4C-2/74PCT374!

IDB2 27 I:3D3/19A-13/74LS244 T:13C5/10A-15/74ALS534!
 T:13E5/8A-15/74ALS534! O:19C4/23B-13/27256! I:20E6/8C-14/74PCT373
 T:20E6/8C-15/74PCT373! B:20C7/29B-13/74LS245! B:20C6/27B-13/74LS245!
 B:20C4/21B-13/74LS245! B:20C3/19B-13/74LS245! O:26D4/27H-5/74PCT244!
 B:28E5/9B-13/74PCT245! B:30D5/18B-7/74PCT245! B:32F5/34F-11/TMM2018D 25!
 B:32F2/32F-4/74PCT245! B:32H2/RN10-4/4610X_101_102! B:34D4/22F-12/PÄL16R4D!
 +
 I:35D5/15B-13/74PCT244 B:39C7/34D-H13/ND DELDGA! T:40G4/32B-6/74LS374!
 I:41E4/28A-14/74LS273 O:41C7/24A-7/74PCT244! O:41C5/25A-7/74PCT244!
 B:42B3/32H-1/SC2661! O:42C6/33G-16/AM29C821! T:47C4/3C-15/74PCT374!
 T:47E4/6D-15/74PCT374!

IDB3 25 I:3D3/19A-11/74LS244 T:13C5/10A-12/74ALS534!
 T:13E5/8A-12/74ALS534! O:19C4/23B-15/27256! I:20E6/8C-13/74PCT373
 T:20E6/8C-12/74PCT373! B:20C7/29B-14/74LS245! B:20C6/27B-14/74LS245!
 B:20C4/21B-14/74LS245! B:20C3/19B-14/74LS245! B:28E5/9B-14/74PCT245!
 B:30D5/18B-6/74PCT245! B:32F5/34F-13/TMM2018D 25! B:32F2/32F-5/74PCT245!
 B:32H2/RN10-5/4610X_101_102! I:35D5/15B-11/74PCT244
 B:39C7/34D-H12/ND DELDGA! T:40G4/32B-9/74LS374! I:41E4/28A-13/74LS273
 O:41C7/24A-9/74PCT244! O:41C5/25A-9/74PCT244! B:42B3/32H-2/SC2661!

IDB4	26	O:42C6/33G-17/AM29C821! T:47C4/3C-12/74PCT374! T:47E4/6D-12/74PCT374! I:3D3/19A-8/74LS244 T:13C5/10A-9/74ALS534! T:13E5/8A-9/74ALS534! O:19C4/23B-16/27256! I:20E6/8C-8/74PCT373 T:20E6/8C-9/74PCT373! B:20C7/29B-15/74LS245! B:20C6/27B-15/74LS245! B:20C4/21B-15/74LS245! B:20C3/19B-15/74LS245! O:26D4/27H-3/74PCT241! B:28E5/9B-15/74PCT245! B:30D5/18B-5/74PCT245! B:32F5/34F-14/TMM2018D 25! B:32F2/32F-6/74PCT245! B:32H2/RN10-6/4610X_101_102! I:35D5/15B-8/74PCT244
+ IDB5	24	I:39C7/34D-H11/ND DELDGA T:40G4/32B-12/74LS374! I:41E4/28A-8/74LS273 O:41C7/24A-12/74PCT244! O:41C5/25A-12/74PCT244! B:42B3/32H-5/SC2661! O:42C6/33G-18/AM29C821! T:47C4/3C-9/74PCT374! T:47E4/6D-9/74PCT37-1! I:3D3/19A-6/74LS244 T:13C5/10A-6/74ALS534! T:13E5/8A-6/74ALS534! O:19C4/23B-17/27256! I:20E6/8C-7/74PCT373 T:20E6/8C-6/74PCT373! B:20C7/29B-16/74LS245! B:20C6/27B-16/74LS245! B:20C4/21B-16/74LS245! B:20C3/19B-16/74LS245! B:28E5/9B-16/74PCT245! B:30D5/18B-4/74PCT245! B:32F5/34F-15/TMM2018D 25! B:32F2/32F-7/74PCT245! B:32H2/RN10-7/4610X_101_102! I:35D5/15B-6/74PCT244 I:39C7/34D-J13/ND_DELDGA
+ IDB6	24	T:40G4/32B-15/74LS374! I:41E4/28A-7/74LS273 O:41C7/24A-14/74PCT244! O:41C5/25A-14/74PCT244! B:42B3/32H-6/SC2661! T:47C4/3C-6/74PCT374! T:47E4/6D-6/74PCT374!
+ IDB7	24	I:3D3/19A-4/74LS244 T:13C5/10A-5/74ALS534! T:13E5/8A-5/74ALS534! O:19C4/23B-18/27256! I:20E6/8C-4/74PCT373 T:20E6/8C-5/74PCT373! B:20C7/29B-17/74LS245! B:20C6/27B-17/74LS245! B:20C4/21B-17/74LS245! B:20C3/19B-17/74LS245! B:28E5/9B-17/74PCT245! B:30D5/18B-3/74PCT245! B:32F5/34F-16/TMM2018D 25! B:32F2/32F-8/74PCT245! B:32H2/RN10-8/4610X_101_102! I:35D5/15B-4/74PCT244 I:39C7/34D-J12/ND_DELDGA
+ IDB8	21	T:40G4/32B-16/74LS374! I:41E4/28A-4/74LS273 O:41C7/24A-16/74PCT244! O:41C5/25A-16/74PCT244! B:42B3/32H-7/SC2661! T:47C4/3C-5/74PCT374! T:47E4/6D-5/74PCT374!
+ IDB9	20	I:3D2/17A-17/74LS244 T:13E3/9A-19/74ALS534! T:13C3/12A-19/74ALS534! O:19C6/26B-11/27256! I:20E5/9C-18/74PCT373 T:20E5/9C-19/74PCT373! B:20B7/28B-11/74LS245! B:20B6/24B-11/74LS245! B:20B4/20B-11/74LS245! B:20B3/16B-11/74LS245! B:28E3/10B-11/74PCT245! I:28B7/8B-17/74LS244 B:30D3/17B-9/74PCT245! B:32F7/35F-9/TMM2018D 25! B:32F3/33F-2/74PCT245! B:32H2/RN10-10/4610X_101_102! I:35D3/14B-17/74PCT244
+ IHIT~	#25 1	O:41C2/27A-5/74PCT244! T:47C2/7C-16/74PCT374! T:47E2/4C-16/74PCT374! T:25F5/18F-14/PAL16R4D!
ILOAD~	2	O:4E3/33C-18/74F244! I:39C7/34D-C10/ND_DELDGA
INR0	2	O:3G6/B-B6/! I:41C7/24A-17/74PCT244
INR1	2	O:3G6/B-B13/! I:41C7/24A-15/74PCT244
INR2	2	O:3G6/B-B7/! I:41C7/24A-13/74PCT244
INR3	2	O:3G5/B-B8/! I:41C7/24A-11/74PCT244
INR4	2	O:3G5/B-B17/! I:41C7/24A-8/74PCT244
INR5	2	O:3G5/B-B5/! I:41C7/24A-6/74PCT244
INR6	2	O:3G5/B-B4/! I:41C7/24A-4/74PCT244
INR7	2	O:3G5/B-B15/! I:41C7/24A-2/74PCT244
INTRQ~	#33 2	B:33E5/TP1-1/TESTPOINT! O:33B7/28F-S11/ND DELILAH!
IOC0	#41 2	O:41E4/28A-19/74LS273! I:41F5/14A-5/74LS38
IOC1	#41 2	O:41E4/28A-16/74LS273! I:41F4/29A-5/74F08
IOC2	#41 2	O:41E4/28A-15/74LS273! I:41F5/14A-9/74LS38
IOC3	#41 2	O:41E4/28A-12/74LS273! I:41F5/14A-4/74LS38
IOD~	4	T:6D2/10D-14/PAL16R8D! I:7D2/3A-11/74F241 I:7C5/8G-2/74F00 I:12E4/2C-6/PAL16L8D
IONI	2	O:33B7/28F-A6/ND DELILAH! I:40D7/35C-21/MC68705U3
IORQ~	7	I:6D2/10D-3/PAL16R8D I:6D4/5D-9/PAL16R4D B:12D2/11D-14/PAL16L8D! I:36B6/25H-5/74F00 I:36B6/25H-9/74F00 O:39C7/34D-L6/ND DELDGA! I:45C4/9G-3/PAL16R4D
IOXERR~	3	T:7D2/3A-9/74F241! O:7E1/RN13-6/4610X_101_102! I:33B7/28F-R13/ND DELILAH
ISEMRO~	2	O:4C6/5C-16/74F244! I:8C3/3D-4/AM29C821
ISTOP~	2	O:4E3/33C-12/74F244! I:39C7/34D-A12/ND DELDGA
LA10	7	I:3F3/16G-13/74LS244 I:23D5/23H-17/74PCT244

I:29B3/22G-8/TMM2018D_25 I:29D3/24G-8/TMM2018D_25 I:29B6/23G-8/TMM2018D_25
 I:29D6/25G-8/TMM2018D_25 O:33B7/28F-M17/ND DELILAH!
LA11 7 I:3F3/16G-11/74LS244 I:23D5/23H-15/74PCT244
 I:29B3/22G-7/TMM2018D_25 I:29D3/24G-7/TMM2018D_25 I:29B6/23G-7/TMM2018D_25
 +
 I:29D6/25G-7/TMM2018D_25 O:33B7/28F-M15/ND DELILAH!
LA12 7 I:3F3/16G-8/74LS244 I:23D5/23H-13/74PCT244
 I:29B3/22G-6/TMM2018D_25 I:29D3/24G-6/TMM2018D_25 I:29B6/23G-6/TMM2018D_25
 +
 I:29D6/25G-6/TMM2018D_25 O:33B7/28F-L17/ND DELILAH!
LA13 7 I:3F3/16G-6/74LS244 I:23D5/23H-11/74PCT244
 I:29B3/22G-5/TMM2018D_25 I:29D3/24G-5/TMM2018D_25 I:29B6/23G-5/TMM2018D_25
 +
 I:29D6/25G-5/TMM2018D_25 O:33B7/28F-L15/ND DELILAH!
LA14 7 I:3F3/16G-4/74LS244 I:23D5/23H-8/74PCT244
 I:29B3/22G-4/TMM2018D_25 I:29D3/24G-4/TMM2018D_25 I:29B6/23G-4/TMM2018D_25
 +
 I:29D6/25G-4/TMM2018D_25 O:33B7/28F-K16/ND DELILAH!
LA15 7 I:3F3/16G-2/74LS244 I:23D5/23H-6/74PCT244
 I:29B3/22G-3/TMM2018D_25 I:29D3/24G-3/TMM2018D_25 I:29B6/23G-3/TMM2018D_25
 +
 I:29D6/25G-3/TMM2018D_25 O:33B7/28F-K17/ND DELILAH!
LA16 7 I:3F2/17G-17/74LS244 I:23D5/23H-4/74PCT244
 I:29B3/22G-2/TMM2018D_25 I:29D3/24G-2/TMM2018D_25 I:29B6/23G-2/TMM2018D_25
 +
 I:29D6/25G-2/TMM2018D_25 O:33B7/28F-K14/ND DELILAH!
LA17 7 I:3F2/17G-15/74LS244 I:23D5/23H-2/74PCT244
 I:29B3/22G-1/TMM2018D_25 I:29D3/24G-1/TMM2018D_25 I:29B6/23G-1/TMM2018D_25
 +
 I:29D6/25G-1/TMM2018D_25 O:33B7/28F-J17/ND DELILAH!
LA18 7 I:3F2/17G-13/74LS244 I:23D3/15G-17/74PCT244
 I:29B3/22G-23/TMM2018D_25 I:29D3/24G-23/TMM2018D_25
 I:29B6/23G-23/TMM2018D_25 I:29D6/25G-23/TMM2018D_25
 O:33B7/28F-K15/ND DELILAH!
LA19 7 I:3F2/17G-11/74LS244 I:23D3/15G-15/74PCT244
 I:29B3/22G-22/TMM2018D_25 I:29D3/24G-22/TMM2018D_25
 I:29B6/23G-22/TMM2018D_25 I:29D6/25G-22/TMM2018D_25
 O:33B7/28F-J16/ND DELILAH!
LA20 7 I:3F2/17G-8/74LS244 I:23D3/15G-13/74PCT244
 I:29B3/22G-19/TMM2018D_25 I:29D3/24G-19/TMM2018D_25
 I:29B6/23G-19/TMM2018D_25 I:29D6/25G-19/TMM2018D_25
 O:33B7/28F-H17/ND DELILAH!
LA21 3 I:3F2/17G-6/74LS244 I:23D3/15G-11/74PCT244
 O:33B7/28F-J14/ND DELILAH!
LA22 3 I:3F2/17G-4/74LS244 I:23D3/15G-8/74PCT244
 O:33B7/28F-H16/ND DELILAH!
LA23 3 I:3F2/17G-2/74LS244 I:23D3/15G-6/74PCT244
 O:33B7/28F-J15/ND DELILAH!
LAA0 3 I:32F5/34F-8/TMM2018D_25 I:32F7/35F-8/TMM2018D_25
 O:33B7/28F-K1/ND DELILAH!
LAA1 3 I:32F5/34F-7/TMM2018D_25 I:32F7/35F-7/TMM2018D_25
 O:33B7/28F-J4/ND DELILAH!
LAA2 3 I:32F5/34F-6/TMM2018D_25 I:32F7/35F-6/TMM2018D_25
 O:33B7/28F-K2/ND DELILAH!
LAA3 3 I:32F5/34F-5/TMM2018D_25 I:32F7/35F-5/TMM2018D_25
 O:33B7/28F-J3/ND DELILAH!
LAPA 5 I:23D3/15G-1/74PCT244 I:23D3/15G-19/74PCT244
 I:23D5/23H-1/74PCT244 I:23D5/23H-19/74PCT244 O:24A2/21G-12/PAL1618D!
LBA0 4 I:32F5/34F-4/TMM2018D_25 I:32F7/35F-4/TMM2018D_25
 O:33B7/28F-L1/ND DELILAH! I:36B3/15D-9/PAL16R4D
LBA1 4 I:32F5/34F-3/TMM2018D_25 I:32F7/35F-3/TMM2018D_25
 O:33B7/28F-M1/ND DELILAH! I:36B3/15D-8/PAL16R4D
LBA2 3 I:32F5/34F-2/TMM2018D_25 I:32F7/35F-2/TMM2018D_25
 O:33B7/28F-K4/ND DELILAH!
LBA3 4 I:32F5/34F-1/TMM2018D_25 I:32F7/35F-1/TMM2018D_25
 O:33B7/28F-N1/ND DELILAH! I:36B3/15D-7/PAL16R4D
LBD0 9 I:3E7/4G-17/74F244 B:10D6/6A-13/74AS648!
 B:11D5/6B-11/74AS646! T:14D6/6C-19/74PCT374! I:44B2/3H-2/AM29C821
 I:46C5/2F-3/PAL16L8B B:46D2/1H-2/AM29833! I:47E4/6D-18/74PCT374
 O:47A5/RN25-2/4610X_101_102!
LBD1 9 I:3E7/4G-15/74F244 B:10D6/6A-14/74AS648!
 B:11D5/6B-10/74AS646! T:14D6/6C-16/74PCT374! I:44B2/3H-3/AM29C821
 I:46C5/2F-4/PAL16L8B B:46D2/1H-3/AM29833! I:47E4/6D-17/74PCT374
 O:47A5/RN25-3/4610X_101_102!
LBD10 8 I:3D7/5G-13/74F244 B:10D4/5A-15/74AS648!
 B:11D4/7B-9/74AS646! T:14D5/4B-15/74PCT374! I:44B5/4H-3/AM29C821
 B:46D4/2H-4/AM29833! I:47E2/4C-14/74PCT374 O:47A4/RN24-4/4610X_101_102!
LBD11 8 I:3D7/5G-11/74F244 B:10D4/5A-16/74AS648!
 B:11D4/7B-8/74AS646! T:14D5/4B-12/74PCT374! I:44B5/4H-4/AM29C821
 B:46D4/2H-5/AM29833! I:47E2/4C-13/74PCT374 O:47B4/RN24-5/4610X_101_102!
LBD12 8 I:3D7/5G-8/74F244 B:10D4/5A-17/74AS648!
 B:11D4/7B-7/74AS646! T:14D5/4B-9/74PCT374! I:44B5/4H-5/AM29C821
 B:46D4/2H-6/AM29833! I:47E2/4C-8/74PCT374 O:47B4/RN24-6/4610X_101_102!
LBD13 8 I:3D7/5G-6/74F244 B:10D4/5A-18/74AS648!

		B:11D4/7B-6/74AS646! T:14D5/4B-6/74PCT374! I:44B5/4H-6/AM29C821 B:46D4/2H-7/AM29833! I:47E2/4C-7/74PCT374 O:47B4/RN24-7/4610X_101_102!
LBD14	8	I:3D7/5G-4/74F244 B:10D4/5A-19/74AS648! B:11D4/7B-5/74AS646! T:14D5/4B-5/74PCT374! I:44B5/4H-7/AM29C821 B:46D4/2H-8/AM29833! I:47E2/4C-4/74PCT374 O:47B4/RN24-8/4610X_101_102!
LBD15	8	I:3D7/5G-2/74F244 B:10D4/5A-20/74AS648! B:11D4/7B-4/74AS646! T:14D5/4B-2/74PCT374! I:44B5/4H-8/AM29C821 B:46D4/2H-9/AM29833! I:47E2/4C-3/74PCT374 O:47B4/RN24-9/4610X_101_102!
LBD16	5	B:10D2/4A-13/74AS648! T:14D3/3B-19/74PCT374! I:44B5/4H-9/AM29C821 I:47C4/3C-18/74PCT374 O:47A3/RN23-2/4610X_101_102!
LBD17	5	B:10D2/4A-14/74AS648! T:14D3/3B-16/74PCT374! I:44B5/4H-10/AM29C821 I:47C4/3C-17/74PCT374 O:47A3/RN23-3/4610X_101_102!
LBD18	5	B:10D2/4A-15/74AS648! T:14D3/3B-15/74PCT374! I:44B2/3H-11/AM29C821 I:47C4/3C-14/74PCT374 O:47A3/RN23-4/4610X_101_102!
LBD19	5	B:10D2/4A-16/74AS648! T:14D3/3B-12/74PCT374! I:44B5/4H-11/AM29C821 I:47C4/3C-13/74PCT374 O:47B3/RN23-5/4610X_101_102!
LBD2	8	I:3E7/4G-13/74F244 B:10D6/6A-15/74AS648! B:11D5/6B-9/74AS646! T:14D6/6C-15/74PCT374! I:44B2/3H-4/AM29C821 B:46D2/1H-4/AM29833! I:47E4/6D-14/74PCT374 O:47A5/RN25-4/4610X_101_102!
LBD20	4	B:10D2/4A-17/74AS648! T:14D3/3B-9/74PCT374! I:47C4/3C-8/74PCT374 O:47B3/RN23-6/4610X_101_102!
LBD21	4	B:10D2/4A-18/74AS648! T:14D3/3B-6/74PCT374! I:47C4/3C-7/74PCT374 O:47B3/RN23-7/4610X_101_102!
LBD22	4	B:10D2/4A-19/74AS648! T:14D3/3B-5/74PCT374! I:47C4/3C-4/74PCT374 O:47B3/RN23-8/4610X_101_102!
LBD23	4	B:10D2/4A-20/74AS648! T:14D3/3B-2/74PCT374! I:47C4/3C-3/74PCT374 O:47B3/RN23-9/4610X_101_102!
LBD3	9	I:3E7/4G-11/74F244 B:10D6/6A-16/74AS648! B:11D5/6B-8/74AS646! T:14D6/6C-12/74PCT374! I:44B2/3H-5/AM29C821 I:46C5/2F-5/PAL16L8B B:46D2/1H-5/AM29833! I:47E4/6D-13/74PCT374 O:47B5/RN25-5/4610X_101_102!
LBD4	9	I:3E7/4G-8/74F244 B:10D6/6A-17/74AS648! B:11D5/6B-7/74AS646! T:14D6/6C-9/74PCT374! I:44B2/3H-6/AM29C821 I:46C5/2F-6/PAL16L8B B:46D2/1H-6/AM29833! I:47E4/6D-8/74PCT374 O:47B5/RN25-6/4610X_101_102!
LBD5	8	I:3E7/4G-6/74F244 B:10D6/6A-18/74AS648! B:11D5/6B-6/74AS646! T:14D6/6C-6/74PCT374! I:44B2/3H-7/AM29C821 B:46D2/1H-7/AM29833! I:47E4/6D-7/74PCT374 O:47B5/RN25-7/4610X_101_102!
LBD6	8	I:3E7/4G-4/74F244 B:10D6/6A-19/74AS648! B:11D5/6B-5/74AS646! T:14D6/6C-5/74PCT374! I:44B2/3H-8/AM29C821 B:46D2/1H-8/AM29833! I:47E4/6D-4/74PCT374 O:47B5/RN25-8/4610X_101_102!
LBD7	8	I:3E7/4G-2/74F244 B:10D6/6A-20/74AS648! B:11D5/6B-4/74AS646! T:14D6/6C-2/74PCT374! I:44B2/3H-9/AM29C821 B:46D2/1H-9/AM29833! I:47E4/6D-3/74PCT374 O:47B5/RN25-9/4610X_101_102!
LBD8	8	I:3D7/5G-17/74F244 B:10D4/5A-13/74AS648! B:11D4/7B-11/74AS646! T:14D5/4B-19/74PCT374! I:44B2/3H-10/AM29C821 B:46D4/2H-2/AM29833! I:47E2/2F-18/74PCT374 O:47A4/RN24-2/4610X_101_102!
LBD9	8	I:3D7/5G-15/74F244 B:10D4/5A-14/74AS648! B:11D4/7B-10/74AS646! T:14D5/4B-16/74PCT374! I:44B5/4H-2/AM29C821 B:46D4/2H-3/AM29833! I:47E2/4C-17/74PCT374 O:47A4/RN24-3/4610X_101_102!
LCS~	13	I:3A4/16A-11/74LS244 I:18B2/15F-5/PAL16L8D I:18C1/29A-1/74F08 I:26D4/27H-8/74PCT244 I:33B7/28F-P10/ND DELILAH I:34D3/19F-8/PAL16R4D I:34D4/22F-9/PAL16R4D T:36B5/14D-17/PAL16R4D! I:36F2/9D-5/74F02 I:36F2/9D-6/74F02 O:39A4/RN17-7/4610X_101_103! I:39C7/34D-E3/ND DELDGA I:42A1/11B-1/74LS04
LDEXM~	#34	T:34D4/22F-17/PAL16R4D!
LDR~	#50	T:50B6/5F-15/PAL16R8D!
LERR~	7	B:6D6/8D-13/PAL16L8B! T:46D2/1H-10/AM29833! T:46D4/2H-10/AM29833! I:46E5/8J-1/74LS112 I:46E7/8J-13/74LS112 O:46F3/R21-2/3300HM! I:47D7/4F-8/PAL16L8B
LEVO	2	O:34D6/26H-12/PAL16L8B! I:40D7/35C-19/MC68705U3
LHIT~	2	O:39C7/34D-M9/ND DELDGA! I:40D7/35C-20/MC68705U3
LOAD~	4	O:2D4/A-C15/! B:4D1/RN3-2/4610X_101_102! I:4E3/33C-2/74F244 O:4C2/C-B12/T
LOCK~	3	B:2E2/RN1-8/4610X_101_102! O:2D4/A-C20/! I:42C6/33G-5/AM29C821
LOEN25~	#50	T:50B6/5F-16/PAL16R8D!
LOEN~	4	I:44B2/3H-1/AM29C821 I:48E4/3F-4/PAL16L8D I:50B6/5F-2/PAL16R8D T:50E6/6F-13/PAL16R8D!
LPERR~	2	I:6D6/8D-7/PAL16L8B O:46E7/8J-7/74LS112!
LSHADOW	10	I:3A4/16A-15/74LS244 I:24A2/21G-11/PAL16L8D I:24A3/17F-3/74F10 I:25F5/18F-4/PAL16R4D I:27D3/18G-4/74FCT521A O:33B7/28F-Q16/ND DELILAH! I:36B6/32C-4/74F32 I:36B6/32C-2/74F32 I:39C7/34D-F3/ND DELDGA O:39A4/RN17-6/4610X_101_103!
LUA0	20	I:3A3/22A-11/74LS244 O:17E4/31F-14/AM29841! I:19C6/26B-8/27256 I:19C4/23B-8/27256 I:22B7/19C-16/IDT6168A_20 I:22B6/18C-16/IDT6168A_20 I:22B4/17C-16/IDT6168A_20 I:22B2/16C-16/IDT6168A_20 I:22C6/22C-16/IDT6168A_20 I:22C7/23C-16/IDT6168A_20 I:22C4/21C-16/IDT6168A_20 I:22C2/20C-16/IDT6168A_20 I:22D6/26C-16/IDT6168A_20 I:22D7/27C-16/IDT6168A_20 I:22D4/25C-16/IDT6168A_20 I:22D2/24C-16/IDT6168A_20 I:22F6/30C-16/IDT6168A_20 I:22F7/31C-16/IDT6168A_20

LUA1	20	I:22F4/29C-16/IDT6168A_20 I:22F2/28C-16/IDT6168A_20 I:3A3/22A-8/74LS244 O:17E4/31F-15/AM29841! I:19C6/26B-7/27256 I:19C4/23B-7/27256 I:22B7/19C-17/IDT6168A_20 I:22B6/18C-17/IDT6168A_20 I:22B4/17C-17/IDT6168A_20 I:22B2/16C-17/IDT6168A_20 I:22C6/22C-17/IDT6168A_20 I:22C7/23C-17/IDT6168A_20 I:22C4/21C-17/IDT6168A_20 I:22C2/20C-17/IDT6168A_20 I:22D6/26C-17/IDT6168A_20 I:22D7/27C-17/IDT6168A_20 I:22D4/25C-17/IDT6168A_20 I:22D2/24C-17/IDT6168A_20 I:22F6/30C-17/IDT6168A_20 I:22F7/31C-17/IDT6168A_20 I:22F4/29C-17/IDT6168A_20 I:22F2/28C-17/IDT6168A_20 LUA10	20	I:3A2/23A-6/74LS244 T:17E2/30H-6/74F373! I:19C6/26B-2/27256 I:19C4/23B-2/27256 I:22B7/19C-7/IDT6168A_20 I:22B6/18C-7/IDT6168A_20 I:22B4/17C-7/IDT6168A_20 I:22B2/16C-7/IDT6168A_20 I:22C6/22C-7/IDT6168A_20 I:22C7/23C-7/IDT6168A_20 I:22C4/21C-7/IDT6168A_20 I:22C2/20C-7/IDT6168A_20 I:22D6/26C-7/IDT6168A_20 I:22D7/27C-7/IDT6168A_20 I:22D4/25C-7/IDT6168A_20 I:22D2/24C-7/IDT6168A_20 I:22F6/30C-7/IDT6168A_20 I:22F7/31C-7/IDT6168A_20 I:22F4/29C-7/IDT6168A_20 I:22F2/28C-7/IDT6168A_20 LUA11	20	I:3A2/23A-4/74LS244 T:17E2/30H-5/74F373! I:19C6/26B-26/27256 I:19C4/23B-26/27256 I:22B7/19C-8/IDT6168A_20 I:22B6/18C-8/IDT6168A_20 I:22B4/17C-8/IDT6168A_20 I:22B2/16C-8/IDT6168A_20 I:22C6/22C-8/IDT6168A_20 I:22C7/23C-8/IDT6168A_20 I:22C4/21C-8/IDT6168A_20 I:22C2/20C-8/IDT6168A_20 I:22D6/26C-8/IDT6168A_20 I:22D7/27C-8/IDT6168A_20 I:22D4/25C-8/IDT6168A_20 I:22D2/24C-8/IDT6168A_20 I:22F6/30C-8/IDT6168A_20 I:22F7/31C-8/IDT6168A_20 I:22F4/29C-8/IDT6168A_20 I:22F2/28C-8/IDT6168A_20 LUA12	9	I:3A2/23A-2/74LS244 T:17D6/11F-13/74S37 I:17D6/11F-12/74S37 T:17E2/30H-2/74F373! I:17E7/31G-1/AM29841 B:18B2/15F-13/PAL16L8D! I:19C6/26B-27/27256 I:19C4/23B-27/27256 I:36B5/14D-8/PAL16R4D		
LUA2	20	I:3A3/22A-6/74LS244 O:17E4/31F-16/AM29841! I:19C6/26B-6/27256 I:19C4/23B-6/27256 I:22B7/19C-18/IDT6168A_20 I:22B6/18C-18/IDT6168A_20 I:22B4/17C-18/IDT6168A_20 I:22B2/16C-18/IDT6168A_20 I:22C6/22C-18/IDT6168A_20 I:22C7/23C-18/IDT6168A_20 I:22C4/21C-18/IDT6168A_20 I:22C2/20C-18/IDT6168A_20 I:22D6/26C-18/IDT6168A_20 I:22D7/27C-18/IDT6168A_20 I:22D4/25C-18/IDT6168A_20 I:22D2/24C-18/IDT6168A_20 I:22F6/30C-18/IDT6168A_20 I:22F7/31C-18/IDT6168A_20 I:22F4/29C-18/IDT6168A_20 I:22F2/28C-18/IDT6168A_20								
LUA3	20	I:3A3/22A-4/74LS244 O:17E4/31F-17/AM29841! I:19C6/26B-5/27256 I:19C4/23B-5/27256 I:22B7/19C-19/IDT6168A_20 I:22B6/18C-19/IDT6168A_20 I:22B4/17C-19/IDT6168A_20 I:22B2/16C-19/IDT6168A_20 I:22C6/22C-19/IDT6168A_20 I:22C7/23C-19/IDT6168A_20 I:22C4/21C-19/IDT6168A_20 I:22C2/20C-19/IDT6168A_20 I:22D6/26C-19/IDT6168A_20 I:22D7/27C-19/IDT6168A_20 I:22D4/25C-19/IDT6168A_20 I:22D2/24C-19/IDT6168A_20 I:22F6/30C-19/IDT6168A_20 I:22F7/31C-19/IDT6168A_20 I:22F4/29C-19/IDT6168A_20 I:22F2/28C-19/IDT6168A_20								
LUA4	20	I:3A3/22A-2/74LS244 O:17E4/31F-18/AM29841! I:19C6/26B-4/27256 I:19C4/23B-4/27256 I:22B7/19C-1/IDT6168A_20 I:22B6/18C-1/IDT6168A_20 I:22B4/17C-1/IDT6168A_20 I:22B2/16C-1/IDT6168A_20 I:22C6/22C-1/IDT6168A_20 I:22C7/23C-1/IDT6168A_20 I:22C4/21C-1/IDT6168A_20 I:22C2/20C-1/IDT6168A_20 I:22D6/26C-1/IDT6168A_20 I:22D7/27C-1/IDT6168A_20 I:22D4/25C-1/IDT6168A_20 I:22D2/24C-1/IDT6168A_20 I:22F6/30C-1/IDT6168A_20								
LUA5	20	I:22F7/31C-1/IDT6168A_20 I:22F4/29C-1/IDT6168A_20 I:22F2/28C-1/IDT6168A_20 I:3A2/23A-17/74LS244 O:17E4/31F-19/AM29841! I:19C6/26B-3/27256 I:19C4/23B-3/27256 I:22B7/19C-2/IDT6168A_20 I:22B6/18C-2/IDT6168A_20 I:22B4/17C-2/IDT6168A_20 I:22B2/16C-2/IDT6168A_20 I:22C6/22C-2/IDT6168A_20 I:22C7/23C-2/IDT6168A_20 I:22C4/21C-2/IDT6168A_20 I:22C2/20C-2/IDT6168A_20 I:22D6/26C-2/IDT6168A_20 I:22D7/27C-2/IDT6168A_20 I:22D4/25C-2/IDT6168A_20 I:22D2/24C-2/IDT6168A_20 I:22F6/30C-2/IDT6168A_20								
LUA6	20	I:22F7/31C-2/IDT6168A_20 I:22F4/29C-2/IDT6168A_20 I:22F2/28C-2/IDT6168A_20 I:3A2/23A-15/74LS244 O:17E4/31F-20/AM29841! I:19C6/26B-25/27256 I:19C4/23B-25/27256 I:22B7/19C-3/IDT6168A_20								

		I:22B6/18C-3/IDT6168A_20	I:22B4/17C-3/IDT6168A_20	I:22B2/16C-3/IDT6168A_20
		I:22C6/22C-3/IDT6168A_20	I:22C7/23C-3/IDT6168A_20	I:22C4/21C-3/IDT6168A_20
		I:22C2/20C-3/IDT6168A_20	I:22D6/26C-3/IDT6168A_20	I:22D7/27C-3/IDT6168A_20
		I:22D4/25C-3/IDT6168A_20	I:22D2/24C-3/IDT6168A_20	I:22F6/30C-3/IDT6168A_20
LUA7	20	I:22F7/31C-3/IDT6168A_20	I:22F4/29C-3/IDT6168A_20	I:22F2/28C-3/IDT6168A_20
		I:3A2/23A-13/74LS244 0:17E4/31F-21/AM29841!		
		I:19C6/26B-24/27256 I:19C4/23B-24/27256	I:22B7/19C-4/IDT6168A_20	
		I:22B6/18C-4/IDT6168A_20	I:22B4/17C-4/IDT6168A_20	I:22B2/16C-4/IDT6168A_20
		I:22C6/22C-4/IDT6168A_20	I:22C7/23C-4/IDT6168A_20	I:22C4/21C-4/IDT6168A_20
		I:22C2/20C-4/IDT6168A_20	I:22D6/26C-4/IDT6168A_20	I:22D7/27C-4/IDT6168A_20
		I:22D4/25C-4/IDT6168A_20	I:22D2/24C-4/IDT6168A_20	I:22F6/30C-4/IDT6168A_20
LUA8	20	I:22F7/31C-4/IDT6168A_20	I:22F4/29C-4/IDT6168A_20	I:22F2/28C-4/IDT6168A_20
		I:3A2/23A-11/74LS244 0:17E4/31F-22/AM29841!		
		I:19C6/26B-21/27256 I:19C4/23B-21/27256	I:22B7/19C-5/IDT6168A_20	
		I:22B6/18C-5/IDT6168A_20	I:22B4/17C-5/IDT6168A_20	I:22B2/16C-5/IDT6168A_20
		I:22C6/22C-5/IDT6168A_20	I:22C7/23C-5/IDT6168A_20	I:22C4/21C-5/IDT6168A_20
		I:22C2/20C-5/IDT6168A_20	I:22D6/26C-5/IDT6168A_20	I:22D7/27C-5/IDT6168A_20
		I:22D4/25C-5/IDT6168A_20	I:22D2/24C-5/IDT6168A_20	I:22F6/30C-5/IDT6168A_20
LUA9	20	I:22F7/31C-5/IDT6168A_20	I:22F4/29C-5/IDT6168A_20	I:22F2/28C-5/IDT6168A_20
		I:3A2/23A-8/74LS244 0:17E4/31F-23/AM29841!		
		I:19C6/26B-23/27256 I:19C4/23B-23/27256	I:22B7/19C-6/IDT6168A_20	
		I:22B6/18C-6/IDT6168A_20	I:22B4/17C-6/IDT6168A_20	I:22B2/16C-6/IDT6168A_20
		I:22C6/22C-6/IDT6168A_20	I:22C7/23C-6/IDT6168A_20	I:22C4/21C-6/IDT6168A_20
		I:22C2/20C-6/IDT6168A_20	I:22D6/26C-6/IDT6168A_20	I:22D7/27C-6/IDT6168A_20
		I:22D4/25C-6/IDT6168A_20	I:22D2/24C-6/IDT6168A_20	I:22F6/30C-6/IDT6168A_20
		I:22F7/31C-6/IDT6168A_20	I:22F4/29C-6/IDT6168A_20	I:22F2/28C-6/IDT6168A_20
MACLK	4	I:17E4/31F-13/AM29841 I:17E5/32G-13/AM29841		
MAP~	3	I:33B7/28F-S5/ND DELILAH B:36E5/13D-13/PAL16R4D		
MCL	2	I:4F6/35A-1/7406 0:39C7/34D-F12/ND DELDGA!		
MCLK	3	I:32D3/25F-13/AM29C821 I:33B7/28F-S10/ND DELILAH		
		O:36F3/14C-8/74F00!		
MDLY~	#36	T:36B5/14D-16/PAL16R4D!		
MEM~	3	T:6D2/10D-16/PAL16R8D! I:7D2/3A-13/74F241		
		I:7D5/8G-5/74F00		
MISO	6	T:3A7/21A-16/74LS374! I:3C6/B-A14/ I:7D2/3A-2/74F241		
		I:7C1/1F-5/74F04 I:12E4/2C-5/PAL16L8D I:42B3/32H-12/SC2661		
MIS1	3	T:3A7/21A-15/74LS374! I:3C6/B-C14/ I:42B3/32H-10/SC2661		
MOFF~	#45	I:45C6/6G-3/PAL16R4D I:45C4/9G-4/PAL16R4D		
		I:45E2/7G-4/PAL16R8B B:45A5/SW2-3/SECME090320102!		
		B:45A5/RN18-8/4610X_101_102!		
MOR25~	2	I:6D6/8D-6/PAL16L8B O:48C7/14F-16/AM29C821!		
MOR~	5	I:3A4/16A-13/74LS244 T:7D2/3A-7/74F241!		
		O:7E1/RN13-7/4610X_101_102! I:33B7/28F-Q11/ND DELILAH I:48C7/14F-9/AM29C821		
+ MREQ~	2	I:36B6/32C-1/74F32 O:39C7/34D-N7/ND DELDGA!		
MR~	13	I:6D2/10D-4/PAL16R8D I:6D6/8D-8/PAL16L8B		
		O:8E3/4D-23/AM29C821! I:33B7/28F-F3/ND DELILAH I:36B5/14D-7/PAL16R4D		
		I:36C6/14G-4/74F08 B:46C5/2F-13/PAL16L8B! I:46D5/14G-12/74F08		
		I:46D7/14G-10/74F08 I:47D7/4F-11/PAL16L8B I:48E4/3F-11/PAL16L8D		
		I:50B6/5F-4/PAL16R8D I:50E6/6F-6/PAL16R8D		
MSIZE0~	#45	B:45C4/9G-19/PAL16R4D! I:45E2/7G-2/PAL16R8B		
MSIZE1~	#45	B:45C6/6G-13/PAL16R4D! I:45E2/7G-3/PAL16R8B		
MWRITE50~	8	B:48E4/3F-13/PAL16L8D! O:48C7/14F-21/AM29C821!		
		I:49C3/15H-21/SIP1M9 I:49C5/15J-21/SIP1M9 I:49E3/15K-21/SIP1M9		
		I:49E5/15L-21/SIP1M9 I:49G5/15N-21/SIP1M9 I:49G3/15M-21/SIP1M9		
MWRITE~	6	I:12D6/1C-4/PAL16L8D T:45C6/6G-14/PAL16R4D!		
		T:45C4/9G-14/PAL16R4D! O:45E3/RN18-5/4610X_101_102! I:46C5/2F-1/PAL16L8B		
		I:48C7/14F-3/AM29C821		
NOWRIT~	#36	T:36B3/15D-17/PAL16R4D!		
NUBD	25	T:25F5/18F-16/PAL16R4D! I:25G3/21F-9/AM9150_20		
NUBI	25	T:25F5/18F-17/PAL16R4D! I:25G3/21F-8/AM9150_20		
01P	4	I:2H4/A-A9/ B:42F3/D4-2/1N4148! B:42F3/R6-1/1KOHM!		
		B:42F2/R5-1/1KOHM!		
02N	6	I:2H5/A-A10/ I:2H5/A-C7/ O:42E4/35G-7/75150P!		
		O:42E4/35G-6/75150P! B:42F3/R7-2/2200HM! B:42F4/C8-1/1000pF!		
OC0	5	B:2D2/RN1-3/4610X_101_102! O:2D3/A-C6/!		

		I:38B1/10F-13/74F10 I:38B2/7F-9/74F14 B:38A1/STR19-2/STR2!
OC1	4	B:2D2/RN1-4/4610X 101_102! O:2D3/A-A6!!
		I:38B1/10F-2/74F10 I:38B2/12F-1/74S132
OER~	#46 3	O:46C5/2F-12/PAL16L8B! I:46D2/1H-1/AM29833
		I:46D4/2H-1/AM29833
OET~	#46 3	B:46C5/2F-18/PAL16L8B! I:46D2/1H-14/AM29833
		I:46D4/2H-14/AM29833
OPCLCS	2	T:34D4/22F-15/PAL16R4D! I:38C4/29H-13/74F32
OSC	10	I:6D2/10D-1/PAL16R8D I:6D4/5D-1/PAL16R4D
		I:8C3/3D-13/AM29C821 I:8E3/4D-13/AM29C821 I:36D4/12D-1/PAL16R6D
		O:38C1/11F-3/74S37! I:48C4/13F-13/AM29C821 I:48C7/14F-13/AM29C821
		I:50B6/5F-1/PAL16R8D I:50E6/6F-1/PAL16R8D
OSCCl~	3	B:2D2/RN1-2/4610X 101_102! O:2D2/A-B3!!
		I:38B3/12F-9/74S132
OUBD	#25 2	B:25F5/18F-13/PAL16R4D! O:25G3/21F-11/AM9150_20!
OUBI	#25 2	B:25F5/18F-12/PAL16R4D! O:25G3/21F-10/AM9150_20!
OUTGRANT~	2	I:4F5/C-C23! O:7E3/2B-8/74F00!
OUTIDENT~	3	I:4F5/C-C22! O:7E1/RN3-10/4610X 101_102!
		T:7D2/3A-18/74F241!
PA0	4	T:39C7/34D-L13/ND DELDGA! O:40C4/34A-7/MM58274!
		I:40G4/32B-3/74LS374 B:40D7/35C-33/MC68705U3!
PA1	4	T:39C7/34D-L12/ND DELDGA! O:40C4/34A-6/MM58274!
		I:40G4/32B-4/74LS374 B:40D7/35C-34/MC68705U3!
PA2	4	T:39C7/34D-K11/ND DELDGA! O:40C4/34A-5/MM58274!
		I:40G4/32B-7/74LS374 B:40D7/35C-35/MC68705U3!
PA3	4	T:39C7/34D-M13/ND DELDGA! O:40C4/34A-4/MM58274!
		I:40G4/32B-8/74LS374 B:40D7/35C-36/MC68705U3!
PA4	4	T:39C7/34D-L10/ND DELDGA! I:40C4/34A-12/MM58274
		I:40G4/32B-13/74LS374 B:40D7/35C-37/MC68705U3!
PA5	4	T:39C7/34D-N12/ND DELDGA! I:40C4/34A-11/MM58274
		I:40G4/32B-14/74LS374 B:40D7/35C-38/MC68705U3!
PA6	4	T:39C7/34D-N11/ND DELDGA! I:40C4/34A-10/MM58274
		I:40G4/32B-17/74LS374 B:40D7/35C-39/MC68705U3!
PA7	4	T:39C7/34D-M10/ND DELDGA! I:40C4/34A-9/MM58274
		I:40G4/32B-18/74LS374 B:40D7/35C-40/MC68705U3!
PANOSC	2	O:39C7/34D-E11/ND DELDGA! I:40D7/35C-8/MC68705U3
PAN~	2	I:33B7/28F-R9/ND DELILAH O:39C7/34D-F13/ND DELDGA!
PARERR~	2	B:6D6/8D-17/PAL16L8B! I:33B7/28F-S14/ND DELILAH
PA~	4	I:6C7/12C-4/74F32 O:39C7/34D-A4/ND DELDGA!
		I:46D7/14G-9/74F08 I:47D7/4F-6/PAL16L8B
PCR0	2	O:33B7/28F-Q15/ND DELILAH! I:40D7/35C-24/MC68705U3
PCR1	2	O:33B7/28F-Q17/ND DELILAH! I:40D7/35C-23/MC68705U3
PD1	16	O:2B6/13B-2/74F04! I:4C6/5C-1/74F244 I:4C6/5C-19/74F244
		I:4E3/33C-1/74F244 I:4E3/33C-19/74F244 I:6D4/5D-11/PAL16R4D
		I:8E3/4D-1/AM29C821 I:12E4/2C-8/PAL16L8D I:17E4/31F-1/AM29841
		I:17E2/30H-1/74F373 I:32D3/25F-1/AM29C821 I:34D3/19F-11/PAL16R4D
		I:34D4/22F-11/PAL16R4D I:36B5/14D-11/PAL16R4D I:36B3/15D-11/PAL16R4D
		I:50B6/5F-11/PAL16R8D
PD2	3	O:2B6/13B-4/74F04! I:25F5/18F-11/PAL16R4D
		I:26D4/27H-1/74PCT244
PD3	7	O:2B7/13B-6/74F04! I:6D2/10D-11/PAL16R8D
		B:6D6/8D-14/PAL16L8B! I:8C3/3D-1/AM29C821 B:12D2/11D-15/PAL16L8D!
		I:12D6/1C-9/PAL16L8D I:50E6/6F-11/PAL16R8D
PD4	7	O:2B7/13B-8/74F04! I:36D4/12D-11/PAL16R6D
		I:44D4/5H-13/AM29861A I:45E2/7G-11/PAL16R8B I:47D7/4F-7/PAL16L8B
		I:48C4/13F-1/AM29C821 I:48C7/14F-1/AM29C821
PILO	3	I:3A4/16A-2/74LS244 O:33B7/28F-A8/ND DELILAH!
		I:34D6/26H-2/PAL16L8B
PIL1	3	I:3A3/22A-17/74LS244 O:33B7/28F-D9/ND DELILAH!
		I:34D6/26H-3/PAL16L8B
PIL2	3	I:3A3/22A-15/74LS244 O:33B7/28F-B8/ND DELILAH!
		I:34D6/26H-4/PAL16L8B
PIL3	3	I:3A3/22A-13/74LS244 O:33B7/28F-C9/ND DELILAH!
		I:34D6/26H-5/PAL16L8B
PON1	4	O:33B7/28F-C8/ND DELILAH! O:39A4/RN17-3/4610X 101_103!
		I:39C7/34D-E2/ND DELDGA I:40D7/35C-22/MC68705U3
POWFAIL~	2	I:33B7/28F-P11/ND DELILAH O:39C7/34D-E12/ND DELDGA!
POWSENSE	2	O:38C6/7F-10/74F14! I:39C7/34D-A10/ND DELDGA
POWSENSE~	5	B:4D4/C1-1/10nF! O:4C4/C-A29!! O:4C4/C-B29!!
		O:4C4/C-C29!! I:38C6/7F-11/74F14
PPN10	7	I:14D5/4B-14/74PCT374 O:23D5/23H-3/74PCT244!
		I:27D6/19G-17/74FCT521A B:28E5/9B-9/74PCT245! I:29F4/20G-7/IMS1403_25
		B:29B6/23G-17/TMM2018D 25! I:31D5/10G-17/74PCT244
PPN11	7	I:14D5/4B-13/74PCT374 O:23D5/23H-5/74PCT244!
		I:27D6/19G-15/74FCT521A B:28E5/9B-8/74PCT245! I:29F4/20G-6/IMS1403_25
		B:29B6/23G-15/TMM2018D 25! I:31D5/10G-15/74PCT244
PPN12	7	I:14D5/4B-8/74PCT374 O:23D5/23H-7/74PCT244!
		I:27D6/19G-13/74FCT521A B:28E5/9B-7/74PCT245! I:29F4/20G-5/IMS1403_25
		B:29B6/23G-15/TMM2018D 25! I:31D5/10G-13/74PCT244
PPN13	7	I:14D5/4B-7/74PCT374 O:23D5/23H-9/74PCT244!
		I:27D6/19G-11/74FCT521A B:28E5/9B-6/74PCT245! I:29F4/20G-4/IMS1403_25
		B:29B6/23G-14/TMM2018D 25! I:31D5/10G-11/74PCT244
PPN14	7	I:14D5/4B-4/74PCT374 O:23D5/23H-12/74PCT244!
		I:27D6/19G-8/74FCT521A B:28E5/9B-5/74PCT245! I:29F4/20G-3/IMS1403_25

PPN15 7 B:29B6/23G-13/TMM2018D 25! I:31D5/10G-8/74PCT244
 I:14D5/4B-3/74PCT374 O:23D5/23H-14/74PCT244!
 I:27D6/19G-6/74FCT521A B:28E5/9B-4/74PCT245! I:29F4/20G-19/IMS1403 25
 B:29B6/23G-11/TMM2018D 25! I:31D5/10G-6/74PCT244
 PPN16 7 I:14D3/3B-18/74PCT374 O:23D5/23H-16/74PCT244!
 I:27D6/19G-4/74FCT521A B:28E5/9B-3/74PCT245! I:29F4/20G-2/IMS1403 25
 B:29B6/23G-10/TMM2018D 25! I:31D5/10G-4/74PCT244
 PPN17 7 I:14D3/3B-17/74PCT374 O:23D5/23H-18/74PCT244!
 I:27D6/19G-2/74FCT521A B:28E5/9B-2/74PCT245! I:29F4/20G-1/IMS1403 25
 B:29B6/23G-9/TMM2018D 25! I:31D5/10G-2/74PCT244
 PPN18 8 I:14D3/3B-14/74PCT374 O:23D3/15G-3/74PCT244!
 I:27D3/18G-17/74FCT521A B:28E3/10B-9/74PCT245! O:28B7/8B-3/74LS244!
 B:29B3/22G-17/TMM2018D 25! I:29F4/20G-18/IMS1403 25 I:31D3/11G-17/74PCT244
 PPN19 9 I:14D3/3B-13/74PCT374 O:23D3/15G-5/74PCT244!
 I:27D3/18G-15/74FCT521A B:28E3/10B-8/74PCT245! O:28B7/8B-5/74LS244!
 B:29B3/22G-16/TMM2018D 25! I:29F4/20G-17/IMS1403 25 I:31D3/11G-15/74PCT244
 + I:45C4/9G-5/PAL16R4D
 PPN20 9 I:14D3/3B-8/74PCT374 O:23D3/15G-7/74PCT244!
 I:27D3/18G-13/74FCT521A B:28E3/10B-7/74PCT245! O:28B7/8B-7/74LS244!
 B:29B3/22G-15/TMM2018D 25! I:29F4/20G-16/IMS1403 25 I:31D3/11G-13/74PCT244
 + I:45C4/9G-6/PAL16R4D
 PPN21 9 I:14D3/3B-7/74PCT374 O:23D3/15G-9/74PCT244!
 I:27D3/18G-11/74FCT521A B:28E3/10B-6/74PCT245! O:28B7/8B-9/74LS244!
 B:29B3/22G-14/TMM2018D 25! I:29F4/20G-15/IMS1403 25 I:31D3/11G-11/74PCT244
 + I:45C4/9G-7/PAL16R4D
 PPN22 9 I:14D3/3B-4/74PCT374 O:23D3/15G-12/74PCT244!
 I:27D3/18G-8/74FCT521A B:28E3/10B-5/74PCT245! O:28B7/8B-12/74LS244!
 B:29B3/22G-13/TMM2018D 25! I:29F4/20G-13/IMS1403 25 I:31D3/11G-8/74PCT244
 I:45C4/9G-8/PAL16R4D
 PPN23 9 I:14D3/3B-3/74PCT374 O:23D3/15G-14/74PCT244!
 I:27D3/18G-6/74FCT521A B:28E3/10B-4/74PCT245! O:28B7/8B-14/74LS244!
 B:29B3/22G-11/TMM2018D 25! I:29F4/20G-14/IMS1403 25 I:31D3/11G-6/74PCT244
 I:45C4/9G-9/PAL16R4D
 PPN24 3 B:28E3/10B-3/74PCT245! O:28B7/8B-16/74LS244!
 B:29B3/22G-10/TMM2018D 25!
 PPN25 4 B:28E3/10B-2/74PCT245! O:28B7/8B-18/74LS244!
 B:29B3/22G-9/TMM2018D 25! I:29F4/20G-12/IMS1403 25
 PPOS C #40 2 O:38D1/13C-5/74LS393! I:42B3/32H-20/SC2661
 PRES #40 2 I:40G6/33B-17/74LS244 O:40F7/13G-4/74F04!
 PS~ 3 I:6C7/12C-1/74F32 O:39C7/34D-A7/ND_DELDGA!
 I:47D7/4F-4/PAL16L8B
 PT0 2 B:29D6/25G-17/TMM2018D 25! B:30D5/18B-11/74PCT245!
 PT1 2 B:29D6/25G-16/TMM2018D 25! B:30D5/18B-12/74PCT245!
 PT10 3 B:29D3/24G-15/TMM2018D 25! B:30D3/17B-13/74PCT245!
 I:33B7/28F-Q7/ND DELILAH
 PT11 3 B:29D3/24G-14/TMM2018D 25! B:30D3/17B-14/74PCT245!
 I:33B7/28F-R8/ND DELILAH
 PT12 3 B:29D3/24G-13/TMM2018D 25! B:30D3/17B-15/74PCT245!
 I:33B7/28F-R7/ND DELILAH
 PT13 3 B:29D3/24G-11/TMM2018D 25! B:30D3/17B-16/74PCT245!
 I:33B7/28F-S8/ND DELILAH
 PT14 3 B:29D3/24G-10/TMM2018D 25! B:30D3/17B-17/74PCT245!
 I:33B7/28F-P8/ND DELILAH
 PT15 3 B:29D3/24G-9/TMM2018D 25! B:30D3/17B-18/74PCT245!
 I:33B7/28F-S9/ND DELILAH
 PT2 2 B:29D6/25G-15/TMM2018D 25! B:30D5/18B-13/74PCT245!
 PT3 2 B:29D6/25G-14/TMM2018D 25! B:30D5/18B-14/74PCT245!
 PT4 2 B:29D6/25G-13/TMM2018D 25! B:30D5/18B-15/74PCT245!
 PT5 2 B:29D6/25G-11/TMM2018D 25! B:30D5/18B-16/74PCT245!
 PT6 2 B:29D6/25G-10/TMM2018D 25! B:30D5/18B-17/74PCT245!
 PT7 2 B:29D6/25G-9/TMM2018D 25! B:30D5/18B-18/74PCT245!
 PT8 2 B:29D3/24G-17/TMM2018D 25! B:30D3/17B-11/74PCT245!
 PT9 3 B:29D3/24G-16/TMM2018D 25! B:30D3/17B-12/74PCT245!
 I:33B7/28F-S7/ND DELILAH
 PWCL 2 O:38C4/29H-11/74F32! I:39C7/34D-A11/ND_DELDGA
 QA~ #50 1 T:50E6/6F-19/PAL16R8D!
 QB~ #50 1 T:50E6/6F-18/PAL16R8D!
 QC~ #50 1 T:50E6/6F-17/PAL16R8D!
 QD~ #50 1 T:50E6/6F-16/PAL16R8D!
 Q~0 2 T:6D4/5D-17/PAL16R4D! I:12D2/11D-1/PAL16L8D
 Q~1 #6 1 T:6D4/5D-16/PAL16R4D!
 Q~2 2 T:6D4/5D-15/PAL16R4D! I:12D2/11D-2/PAL16L8D
 RAS 4 I:49B6/9H-1/74F00 I:49D6/9H-9/74F00 I:49F6/8G-9/74F00
 T:50E6/6F-15/PAL16R8D!
 RAS~0 #49 3 O:49B6/9H-3/74F00! I:49C3/15H-27/SIP1M9
 I:49C5/15J-27/SIP1M9
 RAS~1 #49 3 I:49E3/15K-27/SIP1M9 I:49E5/15L-27/SIP1M9
 O:49D6/9H-8/74F00!
 RAS~2 #49 3 I:49G5/15N-27/SIP1M9 I:49G3/15M-27/SIP1M9
 O:49F6/8G-8/74F00!
 RD #42 2 I:42B3/32H-3/SC2661 O:42F6/7F-4/74F14!

RDATA	4	I:46D2/1H-13/AM29833 I:46D4/2H-13/AM29833 I:47D7/4F-1/PAL16L8B O:48E4/3F-12/PAL16L8D!
READ	#40	2 I:40G6/33B-13/74LS244 B:40D7/35C-31/MC68705U3! REF100~
REFRQ25~	#48	2 B:48E4/3F-15/PAL16L8D! O:48C7/14F-17/AM29C821! REFRQ50~
REFRQ~	8	2 O:8C3/3D-22/AM29C821! I:8E3/4D-3/AM29C821 2 I:6D2/10D-6/PAL16R8D O:8E3/4D-22/AM29C821!
REFRQ~	3	3 I:8C3/3D-3/AM29C821 O:39C7/34D-C13/ND DELDGA! I:45C2/2D-11/74F74
REF~	4	4 T:6D2/10D-15/PAL16R8D! I:7D6/7A-9/7407 I:39C7/34D-C9/ND DELDGA I:48C7/14F-5/AM29C821
RERR~	4	4 B:6D6/8D-16/PAL16L8B! I:6C7/12C-2/74F32 I:6C7/12C-5/74F32 I:47D7/4F-5/PAL16L8B
RESET	#41	1 0:41E4/28A-2/74LS273!
RESTART~	2	2 B:4D1/RN3-3/4610X 101 102! O:4C2/C-B13//
RFO	7	7 I:18D2/30B-2/74F139 I:18D2/30B-14/74F139 I:19C6/26B-10/27256 I:19C4/23B-10/27256 1:32F5/34F-23/TMM2018D_25 I:32F7/35F-23/TMM2018D_25 O:33B7/28F-K5/ND DELILAH!
RF1	7	7 I:18D2/30B-3/74F139 I:18D2/30B-13/74F139 I:19C6/26B-9/27256 I:19C4/23B-9/27256 1:32F5/34F-22/TMM2018D_25 I:32F7/35F-22/TMM2018D_25 O:33B7/28F-M2/ND DELILAH!
RGNT~	4	4 I:45C2/2D-13/74F74 B:48E4/3F-16/PAL16L8D! T:50B6/5F-19/PAL16R8D! I:50E6/6F-2/PAL16R8D
RINR~	3	3 O:39C7/34D-B5/ND DELDGA! I:41C7/24A-1/74PCT244 I:41C7/24A-19/74PCT244
RLRQ~	2	2 O:45C2/2D-8/74F74! I:50B6/5F-3/PAL16R8D
RMM~	3	3 O:39A1/RN15-4/4610X 101 103! I:39C7/34D-L9/ND DELDGA B:40D7/35C-28/MC68705U3!
ROCLK~	#40	2 I:40C4/34A-2/MM58274 B:40D7/35C-27/MC68705U3!
RRF~	#34	1 T:34D3/19F-17/PAL16R4D!
RTOSC	2	2 O:38E2/13C-8/74LS393! I:39C7/34D-C8/ND DELDGA
RT~	5	5 B:12D2/11D-13/PAL16L8D! I:24A2/21G-4/PAL16L8D I:25F5/18F-3/PAL16R4D I:36B6/32C-5/74F32 O:39C7/34D-J2/ND DELDGA!
RUART~	2	2 O:39C7/34D-B8/ND DELDGA! I:42B3/32H-13/SC2661
RUN~	3	3 I:2H3/A-C18! O:4F7/7A-2/7407! I:4F7/C-B14!
RWCS~	3	3 I:18B2/15F-6/PAL16L8D T:34D4/22F-14/PAL16R4D! I:36E5/13D-8/PAL16L8D
RXD	2	2 O:2D3/A-C8// B:42E6/R3-2/2.2KOHM!
SAPR	#12	1 B:12D6/1C-15/PAL16L8D!
SCONS~	#41	3 O:41E4/28A-5/74LS273! I:41F4/29A-4/74F08 I:41G3/11B-3/74LS04
SEL5MS~	3	3 O:3A7/B-B14// O:3A7/R4-2/1KOHM! I:39C7/34D-B9/ND DELDGA
SEMRQ25~	#8	2 O:8C3/3D-21/AM29C821! I:8E3/4D-4/AM29C821
SEMRQ50~	3	3 I:6D2/10D-8/PAL16R8D O:8E3/4D-21/AM29C821! I:50B6/5F-8/PAL16R8D
SEMRQ~	3	3 I:4C6/5C-4/74F244 B:4A5/C-A17// O:7E7/2A-8/7438!
SEM~	2	2 T:6D2/10D-19/PAL16R8D! I:7E3/2B-5/74F00
SHORT~	2	2 B:36D4/12D-12/PAL16R6D! O:39C7/34D-H3/ND DELDGA!
SIOC~	2	2 O:39C7/34D-K2/ND DELDGA! I:41E4/28A-11/74LS273
SLOW~	2	2 B:36D4/12D-19/PAL16R6D! O:39C7/34D-H2/ND DELDGA!
SO	#42	4 O:42B3/32H-19/SC2661! I:42E4/35G-2/75150P I:42E4/35G-3/75150P I:42E4/35G-1/75150P
SPEA	4	4 O:6D6/8D-19/PAL16L8B! I:13C5/10A-11/74ALS534 I:13E5/8A-11/74ALS534 I:13E3/9A-11/74ALS534
SPEAL	#47	4 O:47D7/4F-12/PAL16L8B! I:47C4/3C-11/74PCT374 I:47E2/4C-11/74PCT374 I:47E4/6D-11/74PCT374
SPES	2	2 O:6D6/8D-12/PAL16L8B! I:13C3/12A-11/74ALS534
SPESL	#47	2 O:47D7/4F-19/PAL16L8B! I:47C2/7C-11/74PCT374
SSEMA~	3	3 I:7D7/9D-8/74F02 O:39C7/34D-M1/ND DELDGA! I:50B6/5F-7/PAL16R8D
STAT0	#40	2 I:40G6/33B-2/74LS244 B:40D7/35C-9/MC68705U3!
STAT1	#40	2 I:40G6/33B-4/74LS244 B:40D7/35C-10/MC68705U3!
STAT2	#40	2 I:40G6/33B-6/74LS244 B:40D7/35C-11/MC68705U3!
STAT3	4	4 O:39A1/RN15-6/4610X 101 103! I:39C7/34D-D2/ND DELDGA I:40G6/33B-8/74LS244 B:40D7/35C-29/MC68705U3!
STAT4	3	3 O:39A1/RN15-5/4610X 101 103! I:39C7/34D-C1/ND DELDGA B:40D7/35C-30/MC68705U3!
STAT7	#40	3 B:40D7/35C-32/MC68705U3! I:40F7/13G-3/74F04 O:40E7/RN8-10/4610X 101 103!
STOC~	5	5 I:35D3/14B-1/74PCT244 T:35D3/14B-19/74PCT244 I:35D5/15B-1/74PCT244 I:35D5/15B-19/74PCT244 O:39C7/34D-H1/ND DELDGA!
STOP~	4	4 B:2E2/RN1-10/4610X 101 102! O:2D4/A-C17// I:4E3/33C-8/74F244 O:4C2/C-B16//
STP	3	3 I:4F7/7A-1/74D7 I:26D4/27H-2/74PCT244 O:39C7/34D-E13/ND DELDGA!
SWDIS~	#46	3 I:46C5/2F-2/PAL16L8B B:46A4/SW4-3/SECME_SPDT! O:46A4/RN14-6/4610X 101 102!
SWLD	2	2 O:2G3/R1-2/1KOHM! T:2H3/A-A15!
SWMCL~	4	4 O:2D4/A-C16// B:2E2/RN1-6/4610X 101 102! B:2E6/SW3-1/SECME436231205! I:38B4/12F-13/74S132
TBMT~	4	4 I:41F5/11B-9/74LS04 O:42B3/32H-15/SC2661! O:42B5/RN7-2/4610X 101 103! I:42C6/33G-2/AM29C821
TERM~	13	13 I:6D4/5D-8/PAL16R4D I:12D2/11D-9/PAL16L8D I:18B2/15F-11/PAL16L8D I:24A3/17F-5/74F10 I:25F5/18F-5/PAL16R4D

I:32E7/17F-13/74F10 I:36E5/13D-1/PAL16L8D T:36D4/12D-17/PAL16R6D!
 I:36F2/14C-2/74F00 I:36F2/9D-2/74F02 I:36F5/14G-1/74F08 I:36F3/14C-9/74F00

TEST0	#33	2	I:36F4/14C-12/74F00 B:33E6/TP6-1/TESTPOINT! O:33B7/28F-N11/ND DELILAH!
TEST1	#33	2	B:33E5/TP5-1/TESTPOINT! O:33B7/28F-P12/ND DELILAH!
TEST2	#33	2	B:33E5/TP4-1/TESTPOINT! O:33B7/28F-Q12/ND DELILAH!
TEST3	#33	2	B:33D5/TP3-1/TESTPOINT! O:33B7/28F-R15/ND DELILAH!
TEST4	#33	2	B:33D5/TP2-1/TESTPOINT! O:33B7/28F-Q13/ND DELILAH!
TOUT		2	I:7D2/3A-19/74F241 O:39C7/34D-D12/ND DELDGA!
TRAALD~		5	O:39C7/34D-C6/ND DELDGA! I:41C2/27A-1/74PCT244 I:41C2/27A-19/74PCT244 I:41C5/25A-1/74PCT244 I:41C5/25A-19/74PCT244
TRAP~		2	O:33B7/28F-Q9/ND DELILAH! I:36E5/13D-9/PAL16L8D
TST~	#46	1	B:46C5/2F-15/PAL16L8B!
TWRF~	#32	3	I:32F5/34F-21/TMM2018D_25 I:32F7/35F-21/TMM2018D_25 O:32E7/17F-12/74F10!
UCLK		6	I:25F5/18F-1/PAL16R4D I:26C5/24H-3/74F74 I:33B7/28F-Q8/ND DELILAH O:36F5/14G-3/74F08! O:39A1/RN15-3/4610X_101_103!
USED~	#25	2	I:39C7/34D-N5/ND DELDGA B:25F5/18F-19/PAL16R4D! I:25G6/21H-1/74S260
UUA0		18	O:17E5/32G-14/AM29841! O:17E7/31G-14/AM29841! I:21B7/19D-16/IDT6168A_20 I:21B6/18D-16/IDT6168A_20 I:21B4/17D-16/IDT6168A_20 I:21B2/16D-16/IDT6168A_20 I:21C6/22D-16/IDT6168A_20
UUA1		18	I:21C7/23D-16/IDT6168A_20 I:21C4/21D-16/IDT6168A_20 I:21C2/20D-16/IDT6168A_20 I:21D6/26D-16/IDT6168A_20 I:21D7/27D-16/IDT6168A_20 I:21D4/25D-16/IDT6168A_20 I:21D2/24D-16/IDT6168A_20 I:21F6/30D-16/IDT6168A_20 I:21F7/31D-16/IDT6168A_20 I:21F4/29D-16/IDT6168A_20
UUA10		17	I:21F2/28D-16/IDT6168A_20 O:17E5/32G-15/AM29841! O:17E7/31G-15/AM29841! I:21B7/19D-17/IDT6168A_20 I:21B6/18D-17/IDT6168A_20 I:21B4/17D-17/IDT6168A_20 I:21B2/16D-17/IDT6168A_20 I:21C6/22D-17/IDT6168A_20
UUA11		17	I:21C7/23D-17/IDT6168A_20 I:21C4/21D-17/IDT6168A_20 I:21C2/20D-17/IDT6168A_20 I:21D6/26D-17/IDT6168A_20 I:21D7/27D-17/IDT6168A_20 I:21D4/25D-17/IDT6168A_20 I:21D2/24D-17/IDT6168A_20 I:21F6/30D-17/IDT6168A_20 I:21F7/31D-17/IDT6168A_20 I:21F4/29D-17/IDT6168A_20 I:21F2/28D-17/IDT6168A_20
UUA2		18	T:17E2/30H-16/74F373! I:21B7/19D-8/IDT6168A_20 I:21B6/18D-8/IDT6168A_20 I:21B4/17D-8/IDT6168A_20 I:21B2/16D-8/IDT6168A_20
UUA3		18	I:21C6/22D-8/IDT6168A_20 I:21C7/23D-8/IDT6168A_20 I:21C4/21D-8/IDT6168A_20 I:21C2/20D-8/IDT6168A_20 I:21D6/26D-8/IDT6168A_20 I:21D7/27D-8/IDT6168A_20 I:21D4/25D-8/IDT6168A_20 I:21D2/24D-8/IDT6168A_20 I:21F6/30D-8/IDT6168A_20 I:21F7/31D-8/IDT6168A_20 I:21F4/29D-8/IDT6168A_20 I:21F2/28D-8/IDT6168A_20
+			I:21F2/28D-18/IDT6168A_20 O:17E5/32G-17/AM29841! O:17E7/31G-17/AM29841! I:21B7/19D-19/IDT6168A_20 I:21B6/18D-19/IDT6168A_20 I:21B4/17D-19/IDT6168A_20 I:21B2/16D-19/IDT6168A_20 I:21C6/22D-19/IDT6168A_20
+			I:21C7/23D-19/IDT6168A_20 I:21C4/21D-19/IDT6168A_20 I:21C2/20D-19/IDT6168A_20 I:21D6/26D-19/IDT6168A_20 I:21D7/27D-19/IDT6168A_20
+			I:21D4/25D-19/IDT6168A_20 I:21D2/24D-19/IDT6168A_20

		I:21F6/30D-19/IDT6168A_20	I:21F7/31D-19/IDT6168A_20	I:21F4/29D-19/IDT6168A_20
UUA4	18	I:21F2/28D-19/IDT6168A_20 O:17E5/32G-18/AM29841! O:17E7/31G-18/AM29841! I:21B7/19D-1/IDT6168A_20 I:21B6/18D-1/IDT6168A_20 I:21B4/17D-1/IDT6168A_20		
	+	I:21B2/16D-1/IDT6168A_20 I:21C6/22D-1/IDT6168A_20 I:21C7/23D-1/IDT6168A_20		
	+	I:21C4/21D-1/IDT6168A_20 I:21C2/20D-1/IDT6168A_20 I:21D6/26D-1/IDT6168A_20		
	+	I:21D7/27D-1/IDT6168A_20 I:21D4/25D-1/IDT6168A_20 I:21D2/24D-1/IDT6168A_20		
	+	I:21F6/30D-1/IDT6168A_20 I:21F7/31D-1/IDT6168A_20 I:21F4/29D-1/IDT6168A_20		
UUA5	18	I:21F2/28D-1/IDT6168A_20 O:17E5/32G-19/AM29841! O:17E7/31G-19/AM29841! I:21B7/19D-2/IDT6168A_20 I:21B6/18D-2/IDT6168A_20 I:21B4/17D-2/IDT6168A_20		
	+	I:21B2/16D-2/IDT6168A_20 I:21C6/22D-2/IDT6168A_20 I:21C7/23D-2/IDT6168A_20		
	+	I:21C4/21D-2/IDT6168A_20 I:21C2/20D-2/IDT6168A_20 I:21D6/26D-2/IDT6168A_20		
	+	I:21D7/27D-2/IDT6168A_20 I:21D4/25D-2/IDT6168A_20 I:21D2/24D-2/IDT6168A_20		
	+	I:21F6/30D-2/IDT6168A_20 I:21F7/31D-2/IDT6168A_20 I:21F4/29D-2/IDT6168A_20		
UUA6	18	I:21F2/28D-2/IDT6168A_20 O:17E5/32G-20/AM29841! O:17E7/31G-20/AM29841! I:21B7/19D-3/IDT6168A_20 I:21B6/18D-3/IDT6168A_20 I:21B4/17D-3/IDT6168A_20		
	+	I:21B2/16D-3/IDT6168A_20 I:21C6/22D-3/IDT6168A_20 I:21C7/23D-3/IDT6168A_20		
	+	I:21C4/21D-3/IDT6168A_20 I:21C2/20D-3/IDT6168A_20 I:21D6/26D-3/IDT6168A_20		
	+	I:21D7/27D-3/IDT6168A_20 I:21D4/25D-3/IDT6168A_20 I:21D2/24D-3/IDT6168A_20		
	+	I:21F6/30D-3/IDT6168A_20 I:21F7/31D-3/IDT6168A_20 I:21F4/29D-3/IDT6168A_20		
UUA7	18	I:21F2/28D-3/IDT6168A_20 O:17E5/32G-21/AM29841! O:17E7/31G-21/AM29841! I:21B7/19D-4/IDT6168A_20 I:21B6/18D-4/IDT6168A_20 I:21B4/17D-4/IDT6168A_20		
	+	I:21B2/16D-4/IDT6168A_20 I:21C6/22D-4/IDT6168A_20 I:21C7/23D-4/IDT6168A_20		
	+	I:21C4/21D-4/IDT6168A_20 I:21C2/20D-4/IDT6168A_20 I:21D6/26D-4/IDT6168A_20		
	+	I:21D7/27D-4/IDT6168A_20 I:21D4/25D-4/IDT6168A_20 I:21D2/24D-4/IDT6168A_20		
	+	I:21F6/30D-4/IDT6168A_20 I:21F7/31D-4/IDT6168A_20 I:21F4/29D-4/IDT6168A_20		
UUA8	18	I:21F2/28D-4/IDT6168A_20 O:17E5/32G-22/AM29841! O:17E7/31G-22/AM29841! I:21B7/19D-5/IDT6168A_20 I:21B6/18D-5/IDT6168A_20 I:21B4/17D-5/IDT6168A_20		
	+	I:21B2/16D-5/IDT6168A_20 I:21C6/22D-5/IDT6168A_20 I:21C7/23D-5/IDT6168A_20		
	+	I:21C4/21D-5/IDT6168A_20 I:21C2/20D-5/IDT6168A_20 I:21D6/26D-5/IDT6168A_20		
	+	I:21D7/27D-5/IDT6168A_20 I:21D4/25D-5/IDT6168A_20 I:21D2/24D-5/IDT6168A_20		
	+	I:21F6/30D-5/IDT6168A_20 I:21F7/31D-5/IDT6168A_20 I:21F4/29D-5/IDT6168A_20		
UUA9	18	I:21F2/28D-5/IDT6168A_20 O:17E5/32G-23/AM29841! O:17E7/31G-23/AM29841! I:21B7/19D-6/IDT6168A_20 I:21B6/18D-6/IDT6168A_20 I:21B4/17D-6/IDT6168A_20		
	+	I:21B2/16D-6/IDT6168A_20 I:21C6/22D-6/IDT6168A_20 I:21C7/23D-6/IDT6168A_20		
	+	I:21C4/21D-6/IDT6168A_20 I:21C2/20D-6/IDT6168A_20 I:21D6/26D-6/IDT6168A_20		
	+	I:21D7/27D-6/IDT6168A_20 I:21D4/25D-6/IDT6168A_20 I:21D2/24D-6/IDT6168A_20		
	+	I:21F6/30D-6/IDT6168A_20 I:21F7/31D-6/IDT6168A_20 I:21F4/29D-6/IDT6168A_20		
VAL	2	I:21F2/28D-6/IDT6168A_20 O:39C7/34D-B4/ND DELDGA! I:40G6/33B-11/74LS244		
VCC	157	\$\$OVERFLOW\$\$ I:3C4/RN13-1/4610X_101_102 I:3C6/RN13-1/4610X_101_102 B:3H1/B-A2!! B:3H1/B-B2!! B:3H1/B-C2!! I:3F5/RN13-1/4610X_101_102 B:3H1/B-A3!! B:3H2/B-B3!! B:3H2/B-C3!! B:4G3/C-A3!! B:4G3/C-B3!! B:4G3/C-C3!! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4D1/RN3-1/4610X_101_102! B:4G2/C-A2!! B:4G2/C-B2!! B:4G3/C-C2!! I:7E1/RN3-1/4610X_101_102 I:7E1/RN13-1/4610X_101_102		

I:7E1/RN13-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102
 I:11E2/RN19-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102
 I:11E2/RN19-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102
 I:11E2/RN19-1/4610X_101_102 I:11E2/RN19-1/4610X_101_102
 I:11F2/RN19-1/4610X_101_102 I:11F2/RN20-1/4610X_101_102
 I:11G2/RN20-1/4610X_101_102 I:11G2/RN20-1/4610X_101_102
 I:11G2/RN20-1/4610X_101_102 I:11G2/RN20-1/4610X_101_102
 I:11G2/RN20-1/4610X_101_102 I:11G2/RN20-1/4610X_101_102
 I:11F2/RN20-1/4610X_101_102 I:11F2/RN19-1/4610X_101_102 I:19C6/26B-1/27256
 + I:19C4/23B-1/27256 B:25F6/RN14-1/4610X_101_102! B:25F6/RN14-1/4610X_101_102!
 + I:26B4/RN9-1/4610X_101_102 I:26C4/RN9-1/4610X_101_102
 I:33B7/28F-B2/ND_DELILAH I:33B7/28F-R2/ND_DELILAH! I:33B7/28F-K3/ND_DELILAH
 +
 VEX 3 I:33B7/28F-B1/ND_DELILAH
 T:34D4/22F-16/PAL16R4D! I:34E3/29H-10/74F32
 I:36E5/13D-11/PAL16L8D
 WAIT1 #36 2 I:36D4/12D-5/PAL16R6D O:36C6/14G-6/74F08!
 WAIT2 #36 2 I:36D4/12D-6/PAL16R6D O:36B6/25H-8/74F00!
 WBD~ 4 I:10D6/6A-3/74AS648 I:10D4/5A-3/74AS648
 I:10D2/4A-3/74AS648 O:12E4/2C-19/PAL16L8D!
 WCA~ 12 B:18B2/15F-14/PAL16L8D! I:24A2/21G-9/PAL16L8D
 B:25F5/18F-18/PAL16R4D! I:25D6/24F-21/TMM2018D_25 I:25B6/20F-21/TMM2018D_25
 + I:25B3/16F-21/TMM2018D_25 I:25G3/21F-18/AM9150_20 I:25D3/23F-21/TMM2018D_25
 + I:31D3/11G-1/74PCT244 I:31D3/11G-19/74PCT244 I:31D5/10G-1/74PCT244
 I:31D5/10G-19/74PCT244
 WCHIM~ 3 I:24A2/21G-5/PAL16L8D I:24A3/32C-9/74F32
 O:39C7/34D-L1/ND DELDGA!
 WCINH~ 3 I:25E6/17F-11/74F10 I:26C5/24H-2/74F74
 O:29F4/20G-8/IMS1403_25!
 WCLIM~ 2 O:24A3/32C-8/74F32! I:29F4/20G-9/IMS1403_25
 WCSTB~ #18 2 O:18B2/15F-12/PAL16L8D! I:18D2/30B-15/74F139
 WCS~ 10 I:18B2/15F-7/PAL16L8D I:20B7/28B-1/74LS245
 I:20B6/24B-1/74LS245 I:20B8/20B-1/74LS245 I:20B3/16B-1/74LS245
 I:20C7/29B-1/74LS245 I:20C6/27B-1/74LS245 I:20C4/21B-1/74LS245
 I:20C3/19B-1/74LS245 O:33B7/28F-P3/ND DELILAH!
 WICA~ #18 5 O:18B2/15F-19/PAL16L8D! I:18E2/29J-2/74F08
 I:18E2/29J-5/74F08 I:18E3/29J-10/74F08 I:18E3/29J-13/74F08
 WLBD~ 3 I:11D5/6B-3/74AS646 I:11D4/7B-3/74AS646
 O:12E4/2C-12/PAL16L8D!
 WMAP~ 5 O:24A3/17F-6/74F10! I:29B3/22G-21/TMM2018D_25
 I:29D3/24G-21/TMM2018D_25 I:29B6/23G-21/TMM2018D_25
 I:29D6/25G-21/TMM2018D_25
 WMM~ #40 2 I:40G4/32B-11/74LS374 B:40D7/35C-25/MC68705U3!
 WRCLK~ #40 2 I:40C4/34A-3/MM58274 B:40D7/35C-26/MC68705U3!
 WRFSTB 2 I:32E7/17F-2/74F10 B:36E5/13D-18/PAL16L8D!
 WRITE 7 I:12E4/2C-7/PAL16L8D I:24A2/21G-2/PAL16L8D
 I:24A3/17F-4/74F10! I:30D3/17B-1/74PCT245 I:30D5/18B-1/74PCT245
 O:39C7/34D-N6/ND DELDGA! I:45C4/9G-2/PAL16R4D
 I:32F5/34F-20/TMM2018D_25 I:32F7/35F-20/TMM2018D_25
 I:32E7/17F-1/74F10 O:33B7/28F-D5/ND DELILAH! I:34D3/19F-7/PAL16R4D
 WU~0 5 O:18E2/29J-3/74F08! I:21F6/30D-11/IDT6168A_20
 I:21F7/31D-11/IDT6168A_20 I:21F4/29D-11/IDT6168A_20
 I:21F2/28D-11/IDT6168A_20
 WU~1 5 O:18E2/29J-6/74F08! I:21D6/26D-11/IDT6168A_20
 I:21D7/27D-11/IDT6168A_20 I:21D4/25D-11/IDT6168A_20
 I:21D2/24D-11/IDT6168A_20
 WU~2 5 O:18E3/29J-8/74F08! I:21C6/22D-11/IDT6168A_20
 I:21C7/23D-11/IDT6168A_20 I:21C4/21D-11/IDT6168A_20
 I:21C2/20D-11/IDT6168A_20
 WU~3 5 O:18E3/29J-11/74F08! I:21B7/19D-11/IDT6168A_20
 I:21B6/18D-11/IDT6168A_20 I:21B4/17D-11/IDT6168A_20
 I:21B2/16D-11/IDT6168A_20
 WW~0 6 O:18D2/30B-12/74F139! I:18E2/29J-1/74F08
 I:22F6/30C-11/IDT6168A_20 I:22F7/31C-11/IDT6168A_20
 I:22F4/29C-11/IDT6168A_20 I:22F2/28C-11/IDT6168A_20
 WW~1 6 O:18D2/30B-11/74F139! I:18E2/29J-4/74F08
 I:22D6/26C-11/IDT6168A_20 I:22D7/27C-11/IDT6168A_20
 I:22D4/25C-11/IDT6168A_20 I:22D2/24C-11/IDT6168A_20
 WW~2 6 O:18D2/30B-10/74F139! I:18E3/29J-9/74F08
 I:22C6/22C-11/IDT6168A_20 I:22C7/23C-11/IDT6168A_20
 I:22C4/21C-11/IDT6168A_20 I:22C2/20C-11/IDT6168A_20
 WW~3 6 O:18D2/30B-9/74F139! I:18E3/29J-12/74F08
 I:22B7/19C-11/IDT6168A_20 I:22B6/18C-11/IDT6168A_20
 I:22B4/17C-11/IDT6168A_20 I:22B2/16C-11/IDT6168A_20
 XBGNT~ 2 O:3A4/16A-14/74LS244! I:3B4/B-A10/
 XCA0 2 I:3G4/B-A26! O:3F4/15C-3/74LS244!
 XCA1 2 I:3G4/B-C26! O:3F4/15C-5/74LS244!
 XCA2 2 I:3G4/B-A25! O:3F4/15C-7/74LS244!
 XCA3 2 I:3G4/B-C25! O:3F4/15C-9/74LS244!
 XCA4 2 I:3G4/B-A24! O:3F4/15C-12/74LS244!

XCA5	2	I:3G4/B-C24/ O:3F4/15C-14/74LS244!
XCA6	2	I:3G4/B-A23/ O:3F4/15C-16/74LS244!
XCA7	2	I:3G3/B-C23/ O:3F4/15C-18/74LS244!
XCA8	2	I:3G3/B-A30/ O:3F3/16G-3/74LS244!
XCA9	2	I:3G3/B-C30/ O:3F3/16G-5/74LS244!
XCGNT~	2	O:3A4/16A-12/74LS244! I:3C4/B-B16/
XCLK	2	O:3A4/16A-16/74LS244! I:3C3/B-C10/
XCOMM0	2	T:3A7/21A-12/74LS374! I:3B6/B-A13/
XCOMM1	2	T:3A7/21A-9/74LS374! I:3C6/B-C12/
XCOMM2	2	T:3A7/21A-6/74LS374! I:3B6/B-A11/
XCOMM3	2	T:3A7/21A-5/74LS374! I:3C6/B-C11/
XCOMM4	2	T:3A7/21A-2/74LS374! I:3B6/B-C13/
XIDB0	4	O:3D3/19A-3/74LS244! O:3D6/20A-3/74LS244! O:3E7/4G-3/74F244! I:3E3/B-A17/
XIDB1	4	O:3D3/19A-5/74LS244! O:3D6/20A-5/74LS244! O:3E7/4G-5/74F244! I:3E3/B-C17/
XIDB10	4	O:3D2/17A-7/74LS244! O:3D4/18A-7/74LS244! O:3D7/5G-7/74F244! I:3E1/B-A21/
XIDB11	4	O:3D2/17A-9/74LS244! O:3D4/18A-9/74LS244! O:3D7/5G-9/74F244! I:3E1/B-C21/
XIDB12	4	O:3D2/17A-12/74LS244! O:3D4/18A-12/74LS244! O:3D7/5G-12/74F244! I:3E1/B-A19/
XIDB13	4	O:3D2/17A-14/74LS244! O:3D4/18A-14/74LS244! O:3D7/5G-14/74F244! I:3E1/B-C19/
XIDB14	4	O:3D2/17A-16/74LS244! O:3D4/18A-16/74LS244! O:3D7/5G-16/74F244! I:3E1/B-A22/
XIDB15	4	O:3D2/17A-18/74LS244! O:3D4/18A-18/74LS244! O:3D7/5G-18/74F244! I:3E1/B-C22/
XIDB2	4	O:3D3/19A-7/74LS244! O:3D6/20A-7/74LS244! O:3E7/4G-7/74F244! I:3E3/B-A18/
XIDB3	4	O:3D3/19A-9/74LS244! O:3D6/20A-9/74LS244! O:3E7/4G-9/74F244! I:3E3/B-C18/
XIDB4	4	O:3D3/19A-12/74LS244! O:3D6/20A-12/74LS244! O:3E7/4G-12/74F244! I:3E2/B-C16/
XIDB5	4	O:3D3/19A-14/74LS244! O:3D6/20A-14/74LS244! O:3E7/4G-14/74F244! I:3E2/B-A16/
XIDB6	4	O:3D3/19A-16/74LS244! O:3D6/20A-16/74LS244! O:3E7/4G-16/74F244! I:3E2/B-C15/
XIDB7	4	O:3D3/19A-18/74LS244! O:3D6/20A-18/74LS244! O:3E7/4G-18/74F244! I:3E2/B-A15/
XIDB8	4	O:3D2/17A-3/74LS244! O:3D4/18A-3/74LS244! O:3D7/5G-3/74F244! I:3E2/B-C20/
XIDB9	4	O:3D2/17A-5/74LS244! O:3D4/18A-5/74LS244! O:3D7/5G-5/74F244! I:3E2/B-A20/
XLA10	2	I:3G3/B-A29/ O:3F3/16G-7/74LS244!
XLA11	2	I:3G3/B-C29/ O:3F3/16G-9/74LS244!
XLA12	2	I:3G2/B-A28/ O:3F3/16G-12/74LS244!
XLA13	2	I:3G2/B-C28/ O:3F3/16G-14/74LS244!
XLA14	2	I:3G2/B-A27/ O:3F3/16G-16/74LS244!
XLA15	2	I:3G2/B-C27/ O:3F3/16G-18/74LS244!
XLA16	2	I:3G2/B-B27/ O:3F2/17G-3/74LS244!
XLA17	2	I:3G2/B-B26/ O:3F2/17G-5/74LS244!
XLA18	2	I:3G1/B-B23/ O:3F2/17G-7/74LS244!
XLA19	2	I:3G1/B-B24/ O:3F2/17G-9/74LS244!
XLA20	2	I:3G1/B-B25/ O:3F2/17G-12/74LS244!
XLA21	2	I:3G1/B-B30/ O:3F2/17G-14/74LS244!
XLA22	2	I:3G1/B-B28/ O:3F2/17G-16/74LS244!
XLA23	2	I:3G1/B-B29/ O:3F2/17G-18/74LS244!
XLCS~	2	O:3A4/16A-9/74LS244! I:3B4/B-A12/
XLShadow	2	O:3A4/16A-5/74LS244! I:3B4/B-B21/
XLUA0	2	O:3A3/22A-9/74LS244! I:3B3/B-C8/
XLUA1	2	O:3A3/22A-12/74LS244! I:3C2/B-A9/
XLUA10	2	O:3A2/23A-14/74LS244! I:3B1/B-C5/
XLUA11	2	O:3A2/23A-16/74LS244! I:3C1/B-A6/
XLUA12	2	O:3A2/23A-18/74LS244! I:3B1/B-A8/
XLUA2	2	O:3A3/22A-14/74LS244! I:3B2/B-C7/
XLUA3	2	O:3A3/22A-16/74LS244! I:3C2/B-A7/
XLUA4	2	O:3A3/22A-18/74LS244! I:3B2/B-A3/
XLUA5	2	O:3A2/23A-3/74LS244! I:3C2/B-C3/
XLUA6	2	O:3A2/23A-5/74LS244! I:3B1/B-A4/
XLUA7	2	O:3A2/23A-7/74LS244! I:3C1/B-C4/
XLUA8	2	O:3A2/23A-9/74LS244! I:3B1/B-A5/
XLUA9	2	O:3A2/23A-12/74LS244! I:3C1/B-C6/
XMOR~	2	O:3A4/16A-7/74LS244! I:3C4/B-B18/
KPILO	2	O:3A4/16A-18/74LS244! I:3B3/B-B9/
KPIL1	2	O:3A3/22A-3/74LS244! I:3C3/B-B10/
KPIL2	2	O:3A3/22A-5/74LS244! I:3B3/B-B12/
KPIL3	2	O:3A3/22A-7/74LS244! I:3C3/B-B11/
XS11#41	#41	2 B:41C5/TH1-4/217057GF! O:41C5/RN9-3/4610X_101_102! I:41C2/27A-2/74PCT244 B:41A1/STR2-2/STR2! - B:41A1/RN8-2/4610X_101_103!
XS116#41	#41	3 I:41C2/27A-2/74PCT244 B:41A1/STR2-2/STR2! B:41B1/RN8-3/4610X_101_103!
XS117#36	#36	2 O:36B6/25H-6/74F00T I:36C6/14G-5/74F08
XS117#41	#41	3 I:41C2/27A-4/74PCT244 B:41A2/STR3-2/STR2! B:41B1/RN8-3/4610X_101_103!

XS118#41	#41	3	I:41C2/27A-6/74PCT244 B:41A2/STR4-2/STR2! B:41B1/RN8-4/4610X 101_103!
XS119#41	#41	3	I:41C2/27A-8/74PCT244 B:41A2/STR5-2/STR2! B:41B1/RN8-5/4610X 101_103!
XS120#41	#41	3	I:41C2/27A-11/74PCT244 B:41A2/STR6-2/STR2! B:41B1/RN8-6/4610X 101_103!
XS120#42	#42	2	B:42F3/R7-1/220OHM! B:42F3/D4-1/1N4148!
XS121#41	#41	3	I:41C2/27A-13/74PCT244 B:41A2/STR7-2/STR2! B:41B1/RN8-7/4610X 101_103!
XS122#41	#41	3	I:41C2/27A-15/74PCT244 B:41A3/STR8-2/STR2! B:41B1/RN8-8/4610X 101_103!
XS123#41	#41	3	I:41C2/27A-17/74PCT244 B:41A3/STR9-2/STR2! B:41B1/RN8-9/4610X 101_103!
XS124#36	#36	2	B:36E5/13D-15/PAL16L8DT I:36F5/14G-2/74F08
XS125#36	#36	2	I:36F2/14C-1/74F00 B:36E1/R18-2/2.2KOHM!
XS127#25	#25	2	I:25F5/18F-9/PAL16R4D O:25E6/17F-8/74F10!
XS130#42	#42	4	B:42E5/R2-1/5.6KOHM! B:42E5/D5-1/1N4148! B:42E6/R3-1/2.2KOHM! I:42F6/7F-3/74F14
XS136#41	#41	2	I:41C5/25A-6/74PCT244 B:41A4/RN7-6/4610X 101_103!
XS14#38	#38	2	O:38D1/13C-6/74LS393! I:38E2/13C-13/74LS393
XS147#40	#40	5	B:40B1/T2-3/2N2907! B:40D2/C4-1/100nF! I:40C4/34A-16/MM58274 B:40C1/D2-2/1N4148! O:40C1/R16-2/10KOHM!
XS148#25	#25	2	B:25F6/RN14-2/4610X 101_102! B:25F7/LED1-1/RED!
XS156#50	#50	2	B:50D2/R22-2/330OHM! B:50D2/LED6-1/GREEN!
XS157#50	#50	2	B:50E2/LED7-1/YELLOW! B:50E2/R23-2/330OHM!
XS16#26	#26	2	O:26B4/RN9-6/4610X 101_102! I:26C5/24H-1/74F74
XS166#50	#50	2	B:50D2/LED6-2/GREEN! O:50D3/12G-4/74LS123!
XS167#50	#50	2	B:50E2/LED7-2/YELLOW! O:50E3/12G-12/74LS123!
XS168#40	#40	2	I:40C4/34A-1/MM58274 B:40B3/T1-3/2N2222!
XS174#40	#40	3	I:40A2/T3-2/2N2907 B:40A3/D3-2/4.3V_ZENER! O:40A2/R13-2/4.7KOHM!
XS175#40	#40	2	B:40A3/D3-1/4.3V_ZENER! I:40A3/R14-1/2.2KOHM
XS176#50	#50	3	I:50D3/12G-15/74LS123 O:50D2/R24-2/180KOHM! B:50D2/C13-1/2.2uF!
XS178#40	#40	2	B:40A2/T3-3/2N2907! I:40B3/R12-1/10KOHM
XS179#50	#50	3	I:50E3/12G-7/74LS123 B:50E2/C14-1/2.2uF! O:50E2/R25-2/180KOHM!
XS18#26	#26	2	O:26C4/RN9-7/4610X 101_102! I:26C5/24H-4/74F74
XS18#36	#36	2	O:36E5/13D-19/PAL16L8DT I:36F3/14C-10/74F00
XS184#40	#40	2	O:40B3/R12-2/10KOHM! I:40B3/T1-2/2N2222
XS19#36	#36	2	O:36E5/13D-12/PAL16L8D! I:36F4/14C-13/74F00
XS195#40	#40	2	I:40C2/BATT1-2/BATT1 B:40C1/D2-1/1N4148!
XS197#40	#40	2	I:40B1/T2-2/2N2907 I:40C1/R16-1/10KOHM
XS2#7	#7	2	I:7D2/3A-4/74F241 O:7C1/1F-6/74F04!
XS200#40	#40	2	B:40E4/TP7-1/TESTPOINT! O:40C4/34A-13/MM58274!
XS21#7	#7	2	I:7D4/2A-5/7438 O:7D5/8G-6/74F00!
XS26#38	#38	2	O:38B2/12F-6/74S132! I:38C1/11F-2/74S37
XS268#33	#33	3	I:33B7/28F-S17/ND DELILAH B:33A5/RN12-4/4610X_101_103! B:33A6/STR15-2/STR2!
XS269#33	#33	3	I:33B7/28F-R14/ND DELILAH B:33A5/RN12-3/4610X_101_103! B:33A6/STR14-2/STR2!
XS27#7	#7	2	O:7D4/1F-10/74F04! I:7D4/2A-1/7438
XS270#33	#33	3	B:33A6/STR13-2/STR2! I:33B7/28F-S16/ND_DELILAH B:33A5/RN12-2/4610X 101_103!
XS277#33	#33	2	I:33B7/28F-P7/ND DELILAH B:33A6/RN12-5/4610X 101_103!
XS278#33	#33	2	I:33B7/28F-S6/ND DELILAH B:33A6/RN12-6/4610X_101_103!
XS281#33	#33	2	I:33B7/28F-P13/N ^D DELILAH B:33A7/RN12-9/4610X_101_103!
XS295#33	#33	2	I:33B7/28F-Q5/ND DELILAH B:33A7/RN12-8/4610X_101_103!
XS3#33	#33	2	T:33A4/34G-9/74PCT374! I:33B7/28F-S13/ND DELILAH
XS3#42	#42	2	B:42B7/TH2-6/217057GF! I:42C6/33G-11/AM29C821
XS30#38	#38	5	I:38B3/12F-10/74S132 B:38A3/D1-1/3.3V_ZENER! I:38A4/R11-1/1KOHM B:38A4/C3-1/10nF! I:38B4/12F-12/74S132
XS310#48	#48	2	B:48E4/3F-18/PAL16L8D! I:48F4/7A-13/7407
XS32#40	#40	3	I:40C4/34A-15/MM58274 B:40C3/X2-1/32.768KHZ! B:40D3/C5-1/22pF!
XS321#48	#48	2	I:48C7/14F-4/AM29C821 O:48C7/14F-22/AM29C821!
XS322#48	#48	2	I:48C4/13F-3/AM29C821 O:48C4/13F-23/AM29C821!
XS323#48	#48	2	I:48C4/13F-5/AM29C821 O:48C4/13F-21/AM29C821!
XS327#48	#48	2	I:48C7/14F-6/AM29C821 O:48C7/14F-20/AM29C821!
XS328#48	#48	2	I:48C7/14F-7/AM29C821 O:48C7/14F-19/AM29C821!
XS329#48	#48	2	I:48C7/14F-8/AM29C821 O:48C7/14F-18/AM29C821!
XS33#40	#40	3	O:40C4/34A-14/MM58274! B:40C3/X2-2/32.768KHZ! B:40D3/C6-1/22pF!
XS340#45	#45	2	I:45E2/7G-1/PAL16R8B O:45C2/2D-9/74F74!
XS360#3	#3	6	I:3D6/20A-1/74LS244 I:3D6/20A-19/74LS244 I:3D4/18A-1/74LS244 I:3D4/18A-19/74LS244 B:3C5/STR17-1/STR1! O:3C4/RN13-4/4610X 101_102!
XS372#3	#3	6	I:3D7/5G-1/74F244 I:3D7/5G-19/74F244 I:3E7/4G-1/74F244 I:3E7/4G-19/74F244 B:3C7/STR18-1/STR1! O:3C6/RN13-5/4610X_101_102!
XS374#45	#45	3	O:45C1/RN18-7/4610X_101_102! I:45C2/2D-12/74F74 I:45C2/2D-10/74F74
XS375#45	#45	2	I:45E7/2D-4/74F74 O:45E6/RN18-6/4610X_101_102!
XS38#7	#7	2	I:7E7/2A-10/7438 O:7D7/9D-10/74F02!
XS382#45	#45	2	I:45G3/8K-10/HP5082_7433 O:45F2/8H-13/74LS248!

XS383#45	#45	2	I:45G3/8K-8/HP5082	7433	O:45F2/8H-12/74LS248!
XS384#45	#45	2	I:45G3/8K-5/HP5082	7433	O:45F2/8H-11/74LS248!
XS385#45	#45	2	I:45G3/8K-3/HP5082	7433	O:45F2/8H-10/74LS248!
XS386#45	#45	2	I:45G3/8K-2/HP5082	7433	O:45F2/8H-9/74LS248!
XS387#45	#45	2	I:45G3/8K-11/HP5082	7433	O:45F2/8H-15/74LS248!
XS388#45	#45	2	I:45G3/8K-9/HP5082	7433	O:45F2/8H-14/74LS248!
XS4#26	#26	2	I:26D4/27H-17/74PCT244		O:26C5/24H-6/74F74!
XS4#33	#33	2	T:33A4/34G-12/74PCT374!		I:33B7/28F-R12/ND DELILAH
XS4#42	#42	2	B:42B7/TH2-2/217057GF!		I:42C6/33G-10/AM29C821
XS428#47	#47	2	I:47C2/7C-8/74PCT374		B:47B1/RN4-4/4610X 101_222!
XS429#47	#47	2	I:47C2/7C-13/74PCT374		B:47B1/RN4-3/4610X 101_222!
XS44#41	#41	2	B:41E2/LED2-1/RED!		O:41E2/RN14-4/4610X 101_102!
XS45#41	#41	2	B:41E2/LED3-1/GREEN!		O:41E2/RN14-5/4610X 101_102!
XS453#3	#3	6	I:3D2/17A-1/74LS244		I:3D2/17A-19/74LS244
			I:3D3/19A-1/74LS244		I:3D3/19A-19/74LS244
			O:3C2/RN13-3/4610X	101_102!	B:3C2/STR16-1/STR1!
XS48#41	#41	2	O:41F4/29A-6/74F08!		I:41F4/14A-1/74LS38
XS48#7	#7	2	O:7D3/2B-3/74F00!		I:7E3/2B-4/74F00
XS5#33	#33	2	T:33A4/34G-15/74PCT374!		I:33B7/28F-N10/ND DELILAH
XS5#38	#38	2	O:38B2/12F-3/74S132!		I:38B2/12F-5/74S132
XS5#42	#42	2	B:42B7/TH2-5/217057GF!		I:42C6/33G-9/AM29C821
XS51#7	#7	2	I:7E3/2B-9/74F00		O:7E3/2B-6/74F00!
XS52#7	#7	2	I:7E3/2B-10/74F00		O:7E3/1F-8/74F04!
XS56#7	#7	2	I:7D5/8G-4/74F00		O:7C5/8G-3/74F00!
XS57#7	#7	2	I:7C5/8G-1/74F00		O:7C4/1F-12/74F04!
XS58#11	#11	3	I:11D5/6B-22/74AS646		I:11D4/7B-22/74AS646
			O:11F2/RN19-10/4610X	101_102!	
XS58#41	#41	2	O:41E4/28A-9/74LS273!		B:41E2/LED3-2/GREEN!
XS6#33	#33	2	T:33A4/34G-16/74PCT374!		I:33B7/28F-S12/ND DELILAH
XS6#38	#38	2	O:38B2/7F-8/74F14!		I:38B2/12F-4/74S132
XS6#41	#41	2	B:41C5/TH1-3/217057GF!		I:41C5/25A-11/74PCT244
XS6#42	#42	2	B:42B7/TH2-3/217057GF!		I:42C6/33G-8/AM29C821
XS611#44	#44	3	O:44B5/4H-14/AM29C821!		O:44B2/3H-14/AM29C821!
			B:44D4/5H-11/AM29861A!		
XS612#44	#44	3	O:44B5/4H-15/AM29C821!		O:44B2/3H-15/AM29C821!
			B:44D4/5H-10/AM29861A!		
XS613#44	#44	3	O:44B5/4H-16/AM29C821!		O:44B2/3H-16/AM29C821!
			B:44D4/5H-9/AM29861A!		
XS614#44	#44	3	O:44B5/4H-17/AM29C821!		O:44B2/3H-17/AM29C821!
			B:44D4/5H-8/AM29861A!		
XS615#44	#44	3	O:44B5/4H-18/AM29C821!		O:44B2/3H-18/AM29C821!
			B:44D4/5H-7/AM29861A!		
XS616#44	#44	3	O:44B5/4H-19/AM29C821!		O:44B2/3H-19/AM29C821!
			B:44D4/5H-6/AM29861A!		
XS617#44	#44	3	O:44B5/4H-20/AM29C821!		O:44B2/3H-20/AM29C821!
			B:44D4/5H-5/AM29861A!		
XS618#44	#44	3	O:44B5/4H-21/AM29C821!		O:44B2/3H-21/AM29C821!
			B:44D4/5H-4/AM29861A!		
XS619#44	#44	3	O:44B5/4H-22/AM29C821!		O:44B2/3H-22/AM29C821!
			B:44D4/5H-3/AM29861A!		
XS62#40	#40	2	B:40D7/X3-2/4MHz!		I:40D7/35C-6/MC68705U3
XS620#44	#44	3	O:44B5/4H-23/AM29C821!		O:44B2/3H-23/AM29C821!
			B:44D4/5H-2/AM29861A!		
XS622#44	#44	2	I:44D4/5H-1/AM29861A		B:44D2/R15-2/2.2KOHM!
XS63#40	#40	3	B:40D7/X3-1/4MHz!		B:40D7/C7-1/22pF!
			I:40D7/35C-5/MC68705U3		
XS65#41	#41	2	I:41F4/14A-2/74LS38		O:41F4/11B-6/74LS04!
XS69#41	#41	2	I:41F5/14A-10/74LS38		O:41F5/11B-8/74LS04!
XS7#33	#33	2	T:33A4/34G-19/74PCT374!		I:33B7/28F-Q10/ND DELILAH
XS7#41	#41	2	B:41C5/TH1-5/217057GF!		I:41C5/25A-13/74PCT244
XS72#2	#2	5	I:2B6/13B-1/74F04		I:2B7/13B-3/74F04 1:2B7/13B-5/74F04
			I:2B7/13B-9/74F04		O:2A5/R8-2/1KOHM!
XS73#38	#38	2	O:38B4/12F-11/74S132!		I:38C4/29H-12/74F32
XS76#36	#36	2	I:36B6/25H-10/74F00		O:36B6/32C-6/74F32!
XS768#46	#46	2	I:46E5/8J-15/74LS112		O:46D5/14G-11/74F08!
XS77#36	#36	2	I:36B6/25H-4/74F00		O:36B6/32C-3/74F32!
XS786#46	#46	2	I:46E7/8J-14/74LS112		O:46D7/14G-8/74F08!
XS790#46	#46	5	I:46E5/8J-3/74LS112		I:46E5/8J-4/74LS112
			I:46E7/8J-11/74LS112		I:46E7/8J-10/74LS112 O:46E4/RN14-8/4610X 101_102!
XS792#46	#46	2	O:46E5/8J-6/74LS112!		B:46F5/LED4-2/RED!
XS793#46	#46	2	B:46D5/LEDS-1/RED!		O:46D5/RN14-7/4610X 101_102!
XS795#46	#46	2	B:46F5/LED4-1/RED!		O:46F4/RN14-9/4610X 101_102!
XS8#33	#33	2	I:33A4/34G-11/74PCT374		O:33A5/7F-6/74F14!
XS8#38	#38	2	O:38B1/10F-12/74F10!		I:38C1/11F-1/74S37
XS8#41	#41	2	B:41C5/TH1-2/217057GF!		I:41C5/25A-15/74PCT244
XS80#42	#42	2	B:42B7/TH2-4/217057GF!		O:42B6/RN9-2/4610X 101_102!
XS83#17	#17	4	I:17E5/32G-1/AM29841		I:17D2/29H-5/74F32
			I:17D1/29H-2/74F32		O:17D6/11F-11/74S37!
XS85#42	#42	2	O:42C5/RN7-4/4610X	101_103!	I:42C6/33G-7/AM29C821
XS87#17	#17	2	O:17D1/29H-3/74F32!		I:17E2/30H-14/74F373
XS88#17	#17	2	O:17D2/29H-6/74F32!		I:17E2/30H-17/74F373
XS9#41	#41	2	B:41C5/TH1-6/217057GF!		I:41C5/25A-17/74PCT244
XS91#42	#42	2	I:42B3/32H-21/SC2661		O:42A1/11B-2/74LS04!
XS92#41	#41	3	O:41G3/11B-4/74LS04!		I:41G3/2A-12/7438

I:41G3/2A-13/7438
XS93#36 #36 2 O:36F2/9D-4/74F02! I:36F2/9D-3/74F02
XTAL1 #38 3 I:38D1/13C-1/74LS393 O:38A1/X4-3/39.3216MHZ!
I:38B1/10F-1/74F10
XTAL2 #38 2 O:38A2/X1-3/35MHZ! I:38B2/12F-2/74S132
XTR 5 B:2E2/RN1-5/4610X 101 102! O:2D3/A-B4/! O:2D3/A-C23/!
B:42B3/32H-25/SC2661! B:42B3/32H-9/SC2661!

SIGNAL TYPE: " " HIERARCHICAL BETWEEN BLOCKS
----- "+n" INTERPAGE ONLY ON BLOCK NO. n
"#m" INTRAPAGE ONLY ON PAGE NO.

P SITE
MODS

Printed by: Chris-Cherring Date: 1987-09-08
Subject: REGISTER FILE MARGINALITIES
Document name: REGISTER FILE MARG-7277457:TEXT
Letter created: 1987-09-08 15:05:33
Sent by: Lasse-Bockelie
Address : HQRD-BOA

Hi Chris!

The problem encountered on almost all of the C-print is when IDBS,REG is used in combination with CONDENABLE in the following cycle providing the test condition is a result of the ALU operation. These cycles must be 100ns.

This occurs at least 44 times in the microcode (I gave up!!). Hence the probability of oversight is too high, and we may face a performance decrease if we insert dummy cycles, or use 175ns cycles (COMM,SLOW).

I have however another solution:

~~19F17~~
Connect ~~17F19~~ to 15D19 (RRF~)
Connect 15D13 to 14D13 (SLCOND~)

Replace 44403~~B~~ with 44403~~C~~
Replace 44404~~B~~ with 44404~~C~~

The pals are on KAA, and include only additions, ie. we can reblow the same devices.

The equations are:

SLCOND = ACOND * CSECOND ALU CONDITION USED IN THE NEXT CYCLE FOR
 + ACOND * CSLOOP MICROCODE SEQUENCING.

This is then added to DLY1 in 44404 like this:

DLY1 = previous equations
 + RRF * SLCOND

The cycle time will be 75ns if SLCOND is active (terms also included in DLY0), and 100ns if IDBS=REG in combination with this.

Lasse.

Printed by: Chris-Cherring Date: 1987-09-04
Subject: CONTROL STORE WRITE
Document name: CONTROL STORE WRIT-21133265:TEXT
Letter created: 1987-09-03 13:05:05
Sent by: Lasse-Bockelie
Address : HQRD-BOA

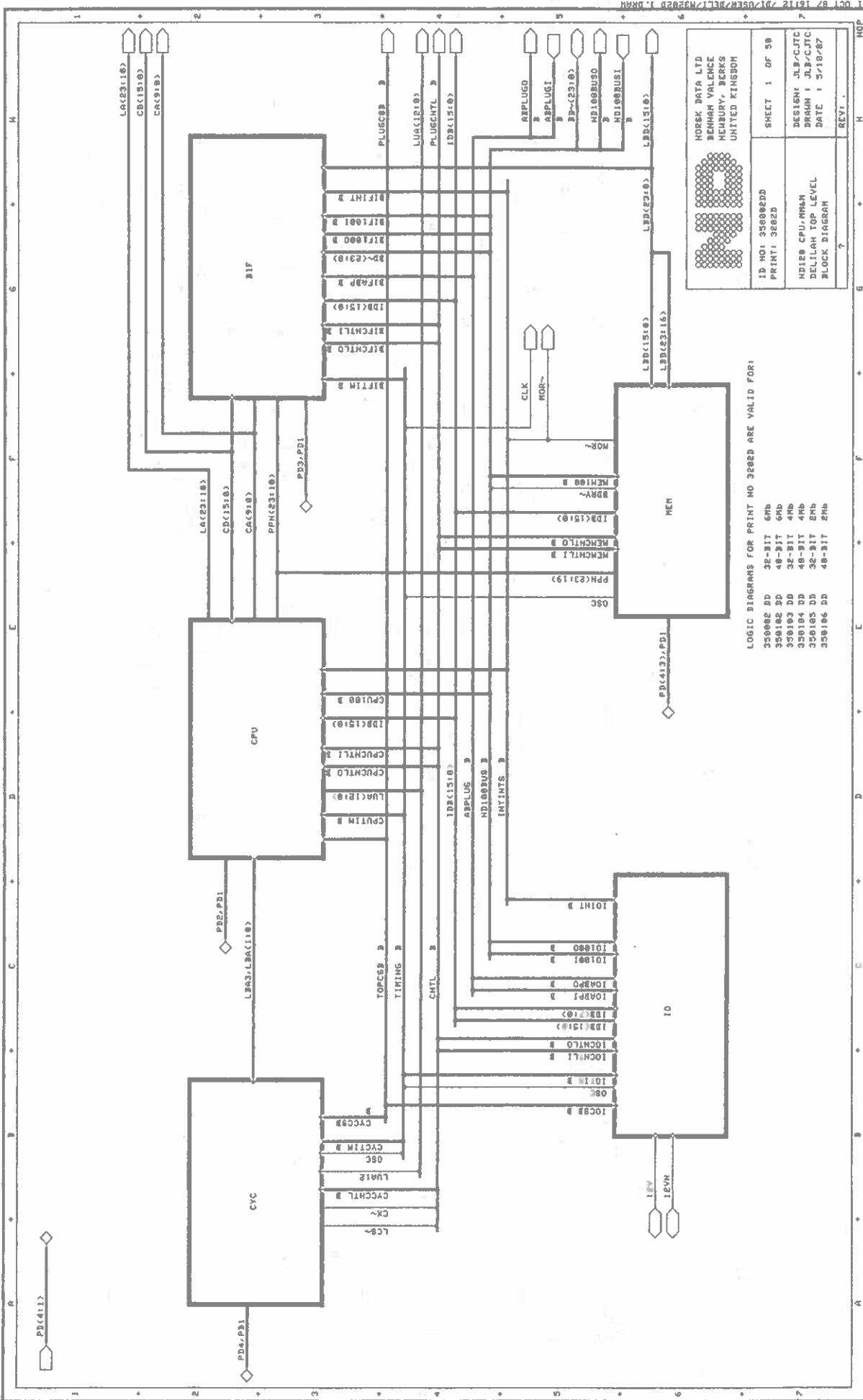
Hi Chris!

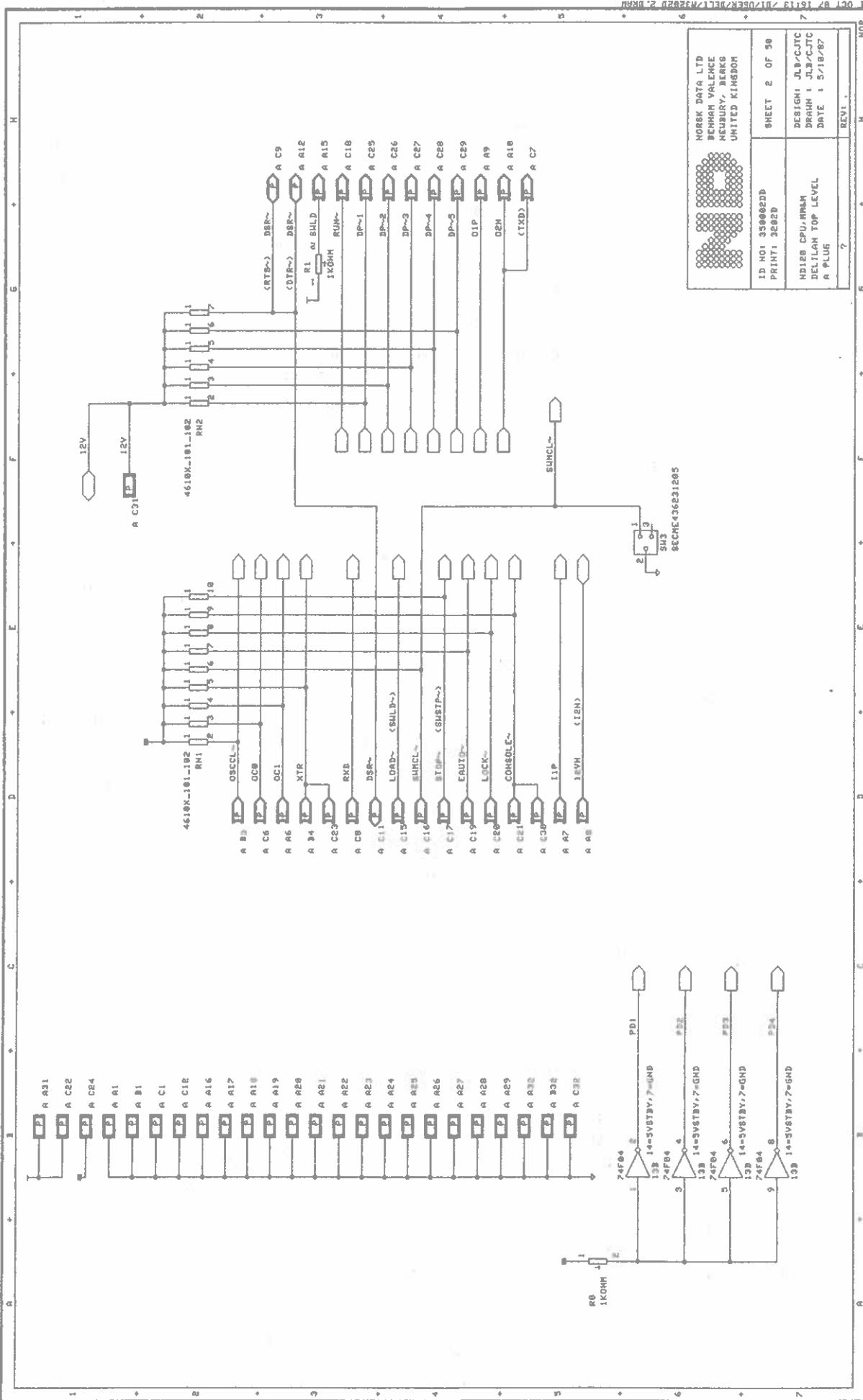
The solution to the write control store problem is a new pal 44305D on the DELILAH user on KAA.

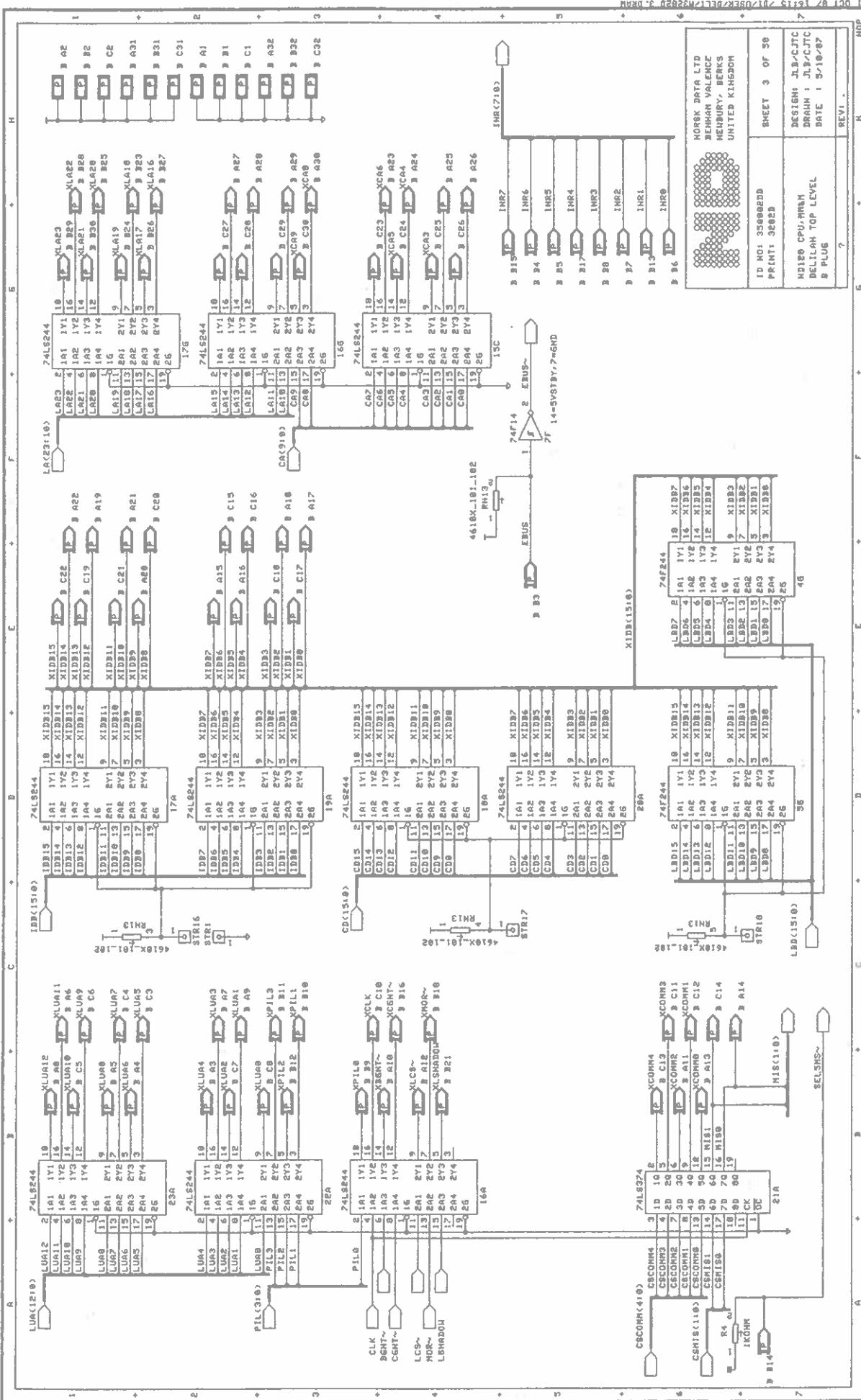
The problem was that the write pulse WCSTB starts before ELOW has gone inactive, and in some cases we are writing in both the upper and the lower CS.

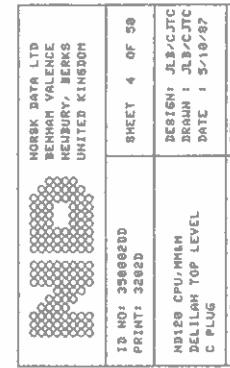
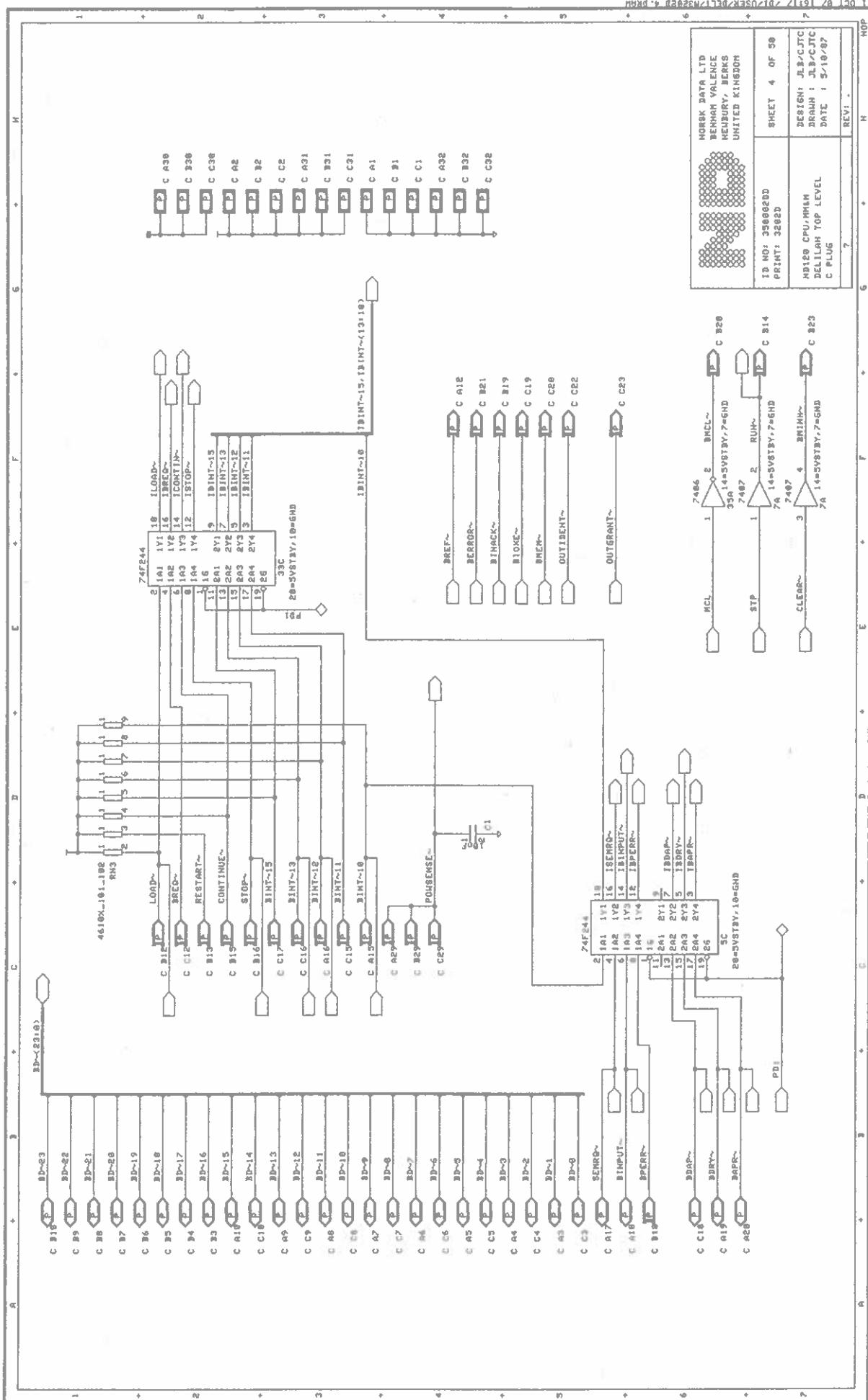
Lasse











TD NO: 258802D
PRINT: 2202D

DESIGN: J.B./C.JTC
DRAWN: J.B./C.JTC
DATE: 5/10/87

SHEET 4 OF 59

HOP

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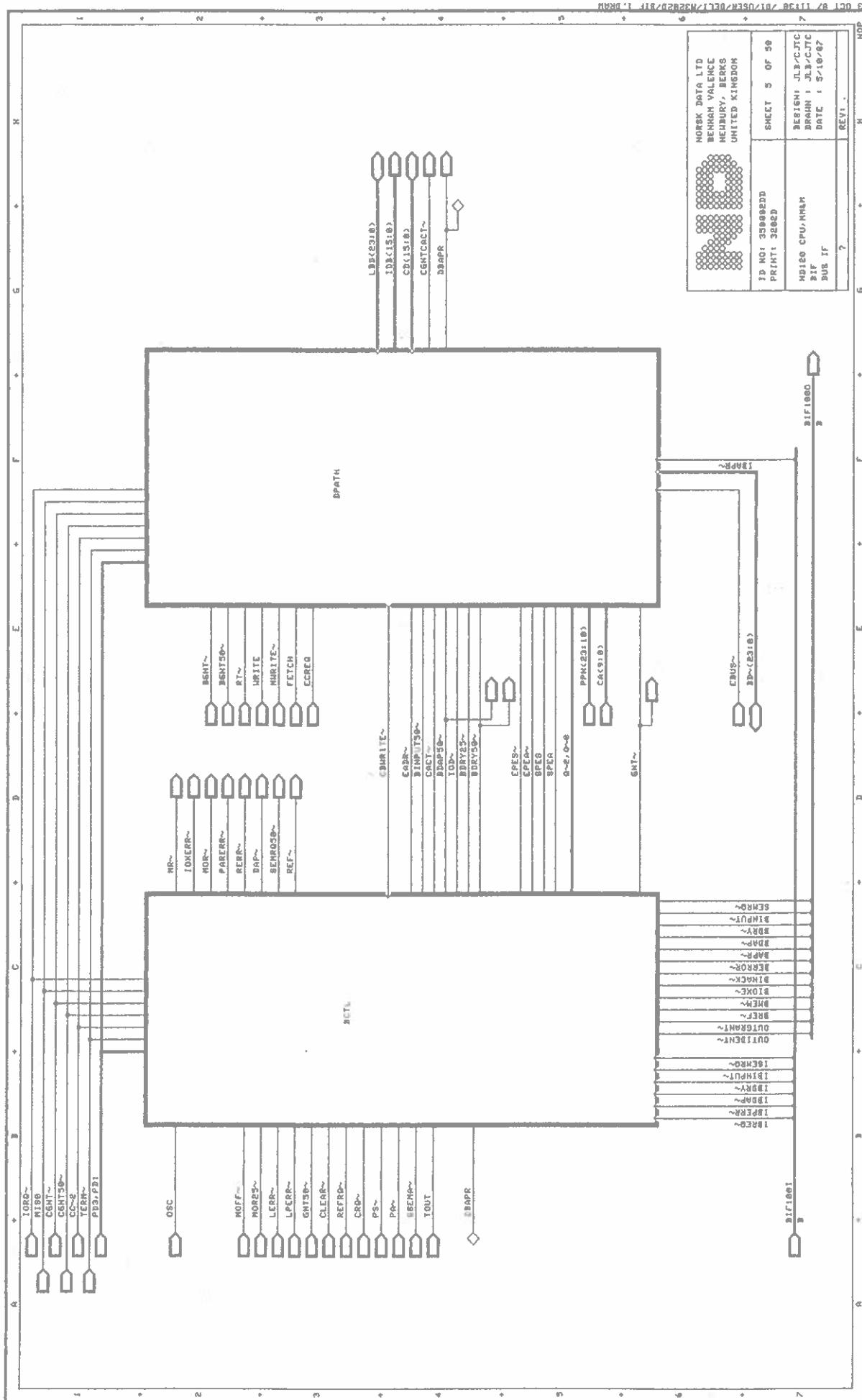
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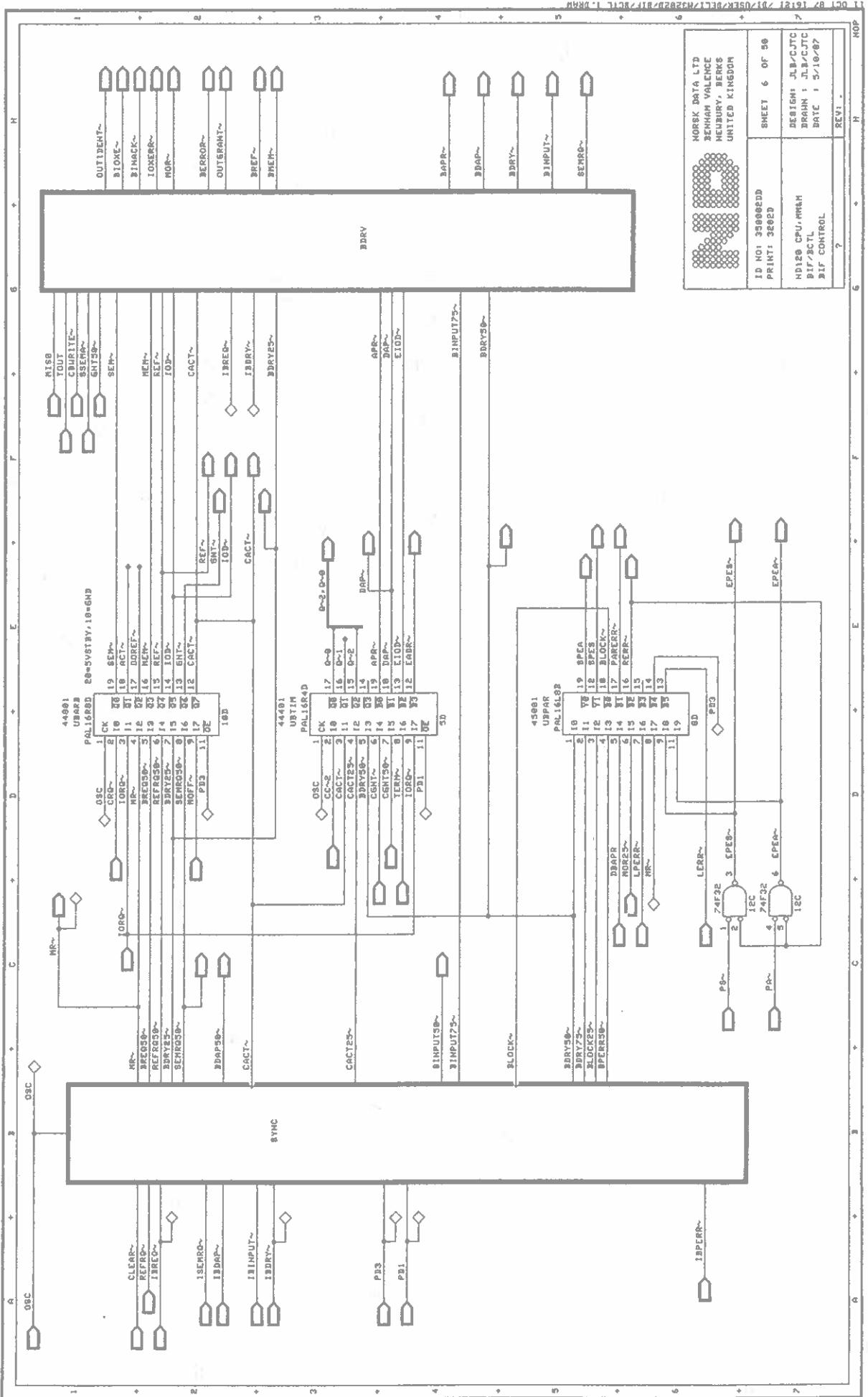
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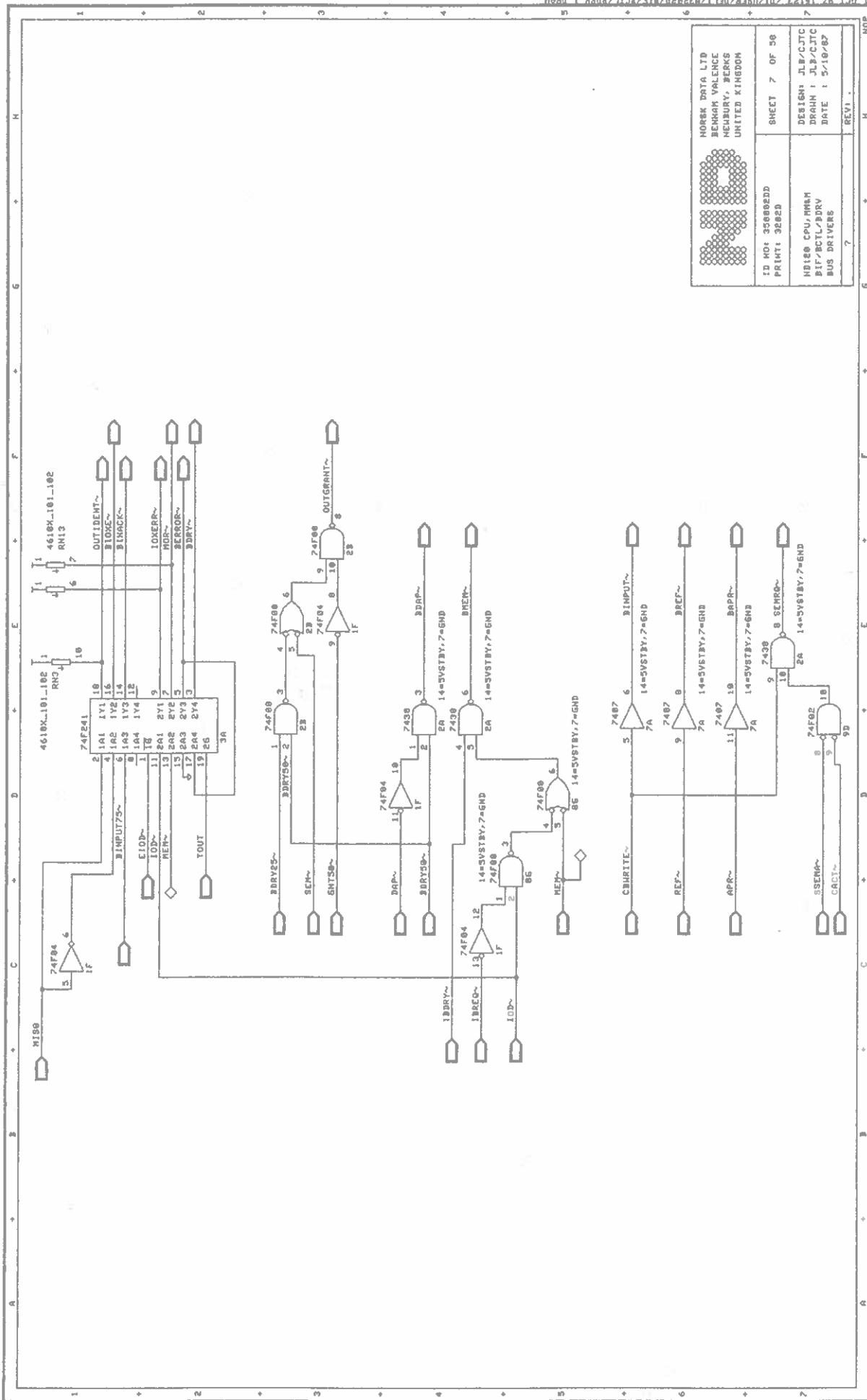
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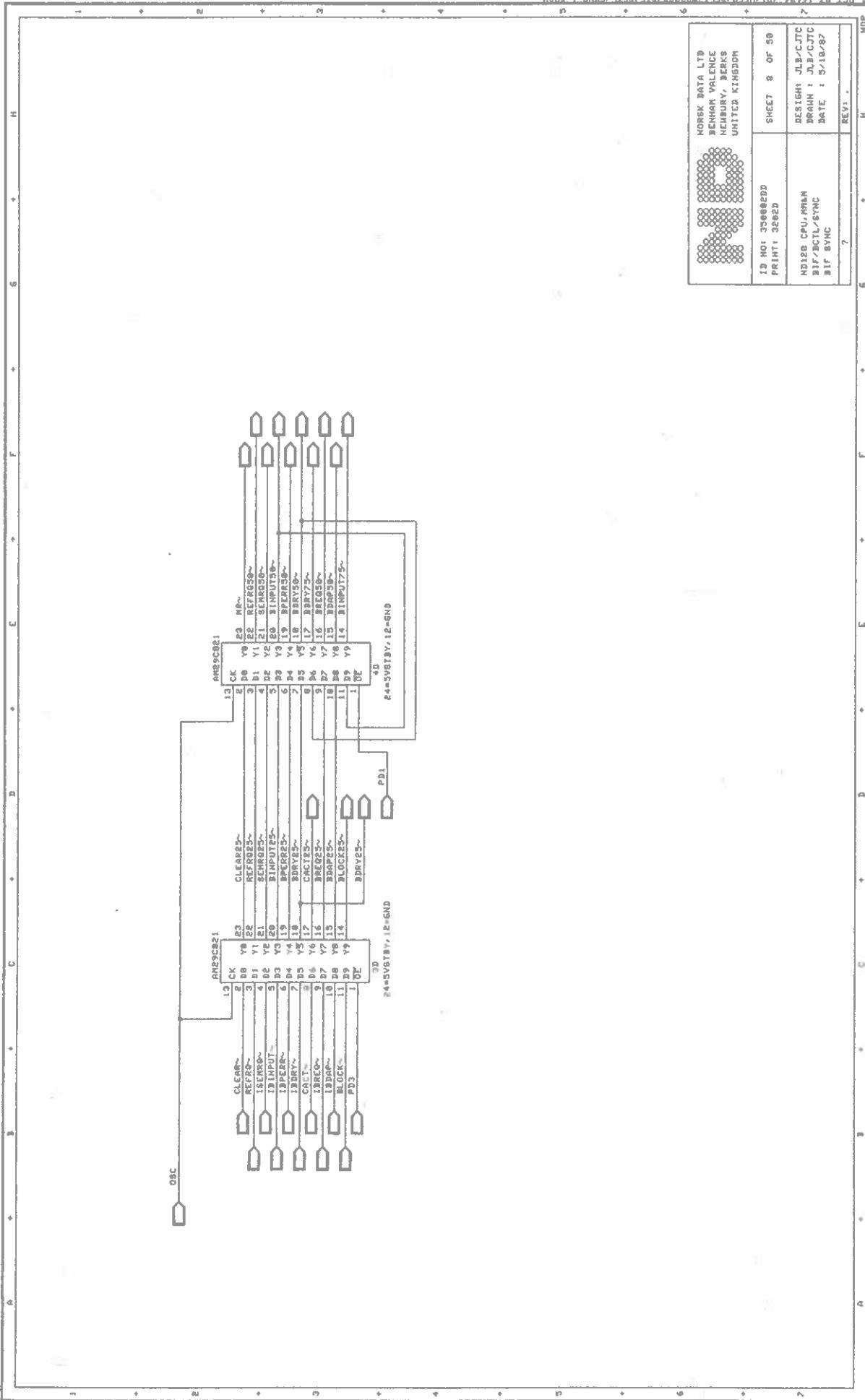
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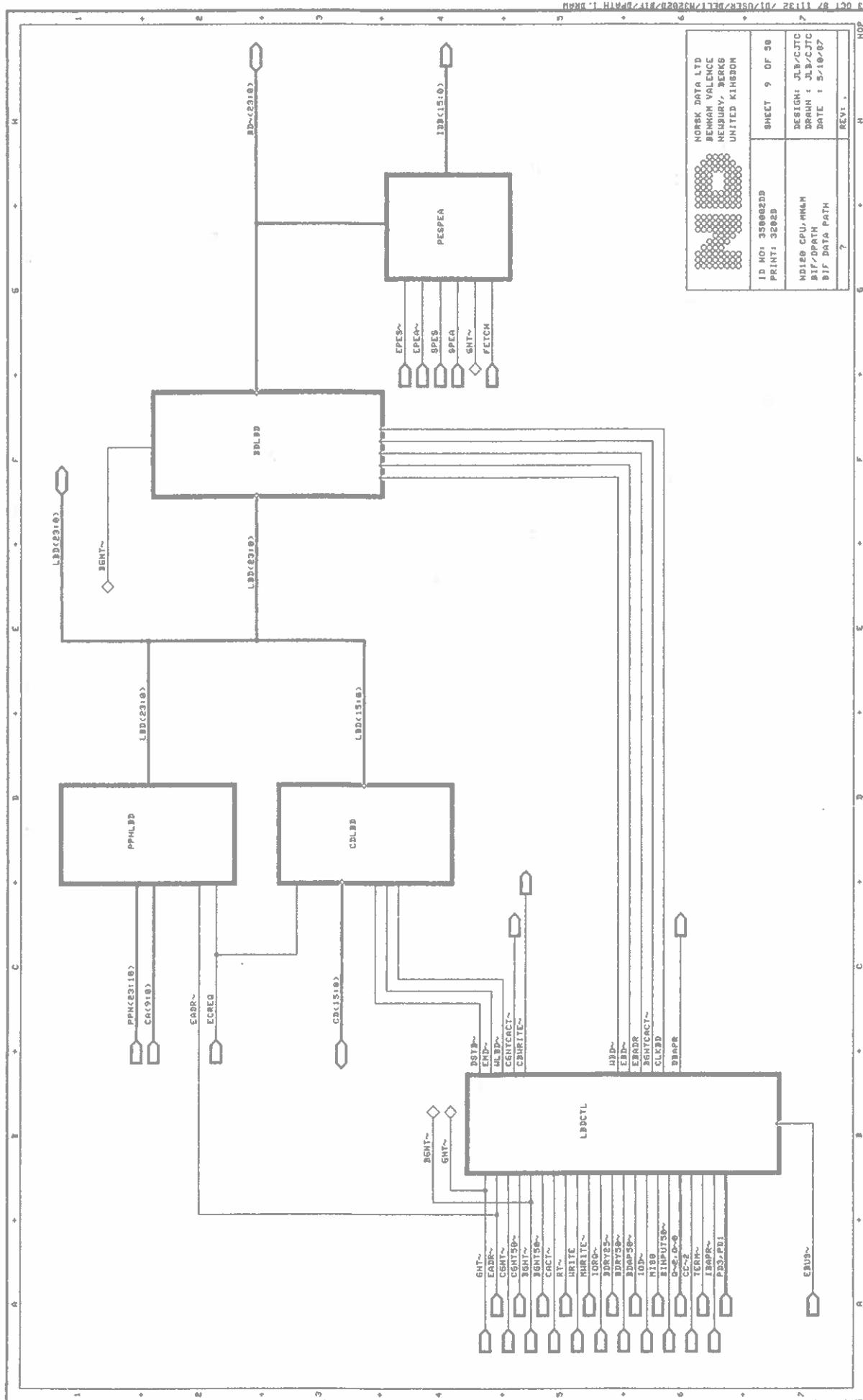
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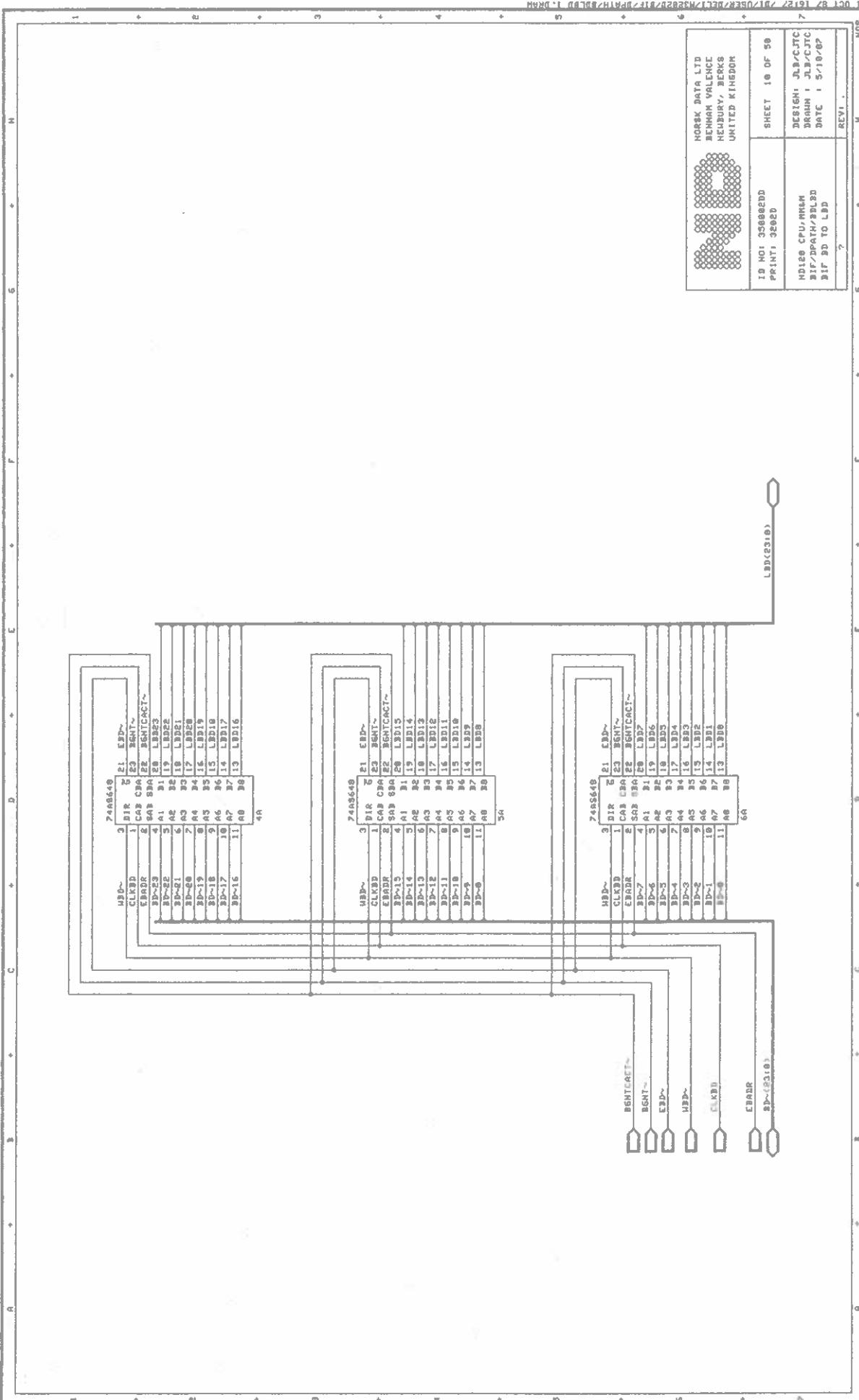


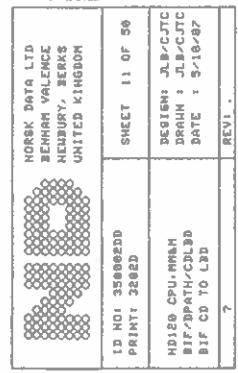
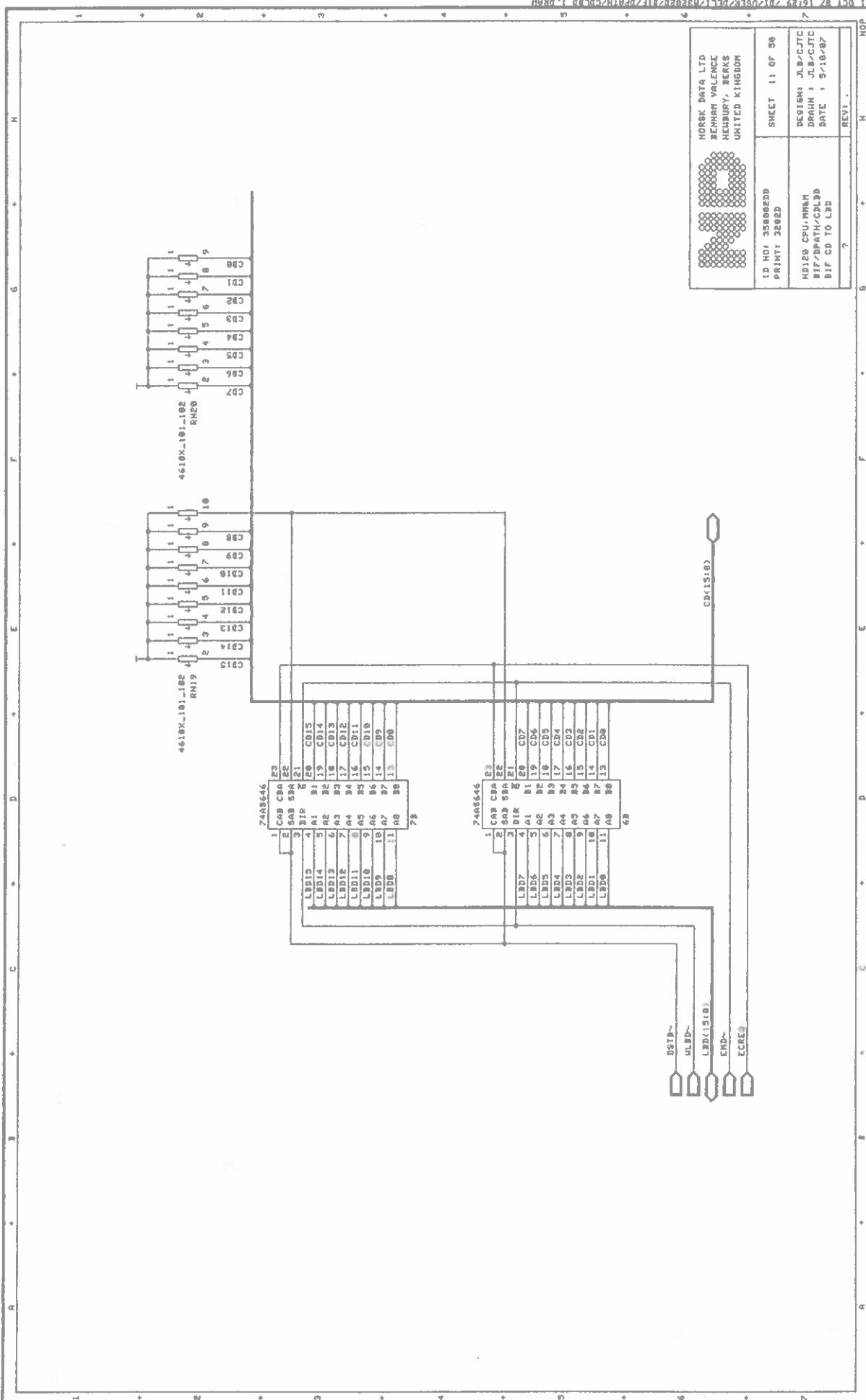




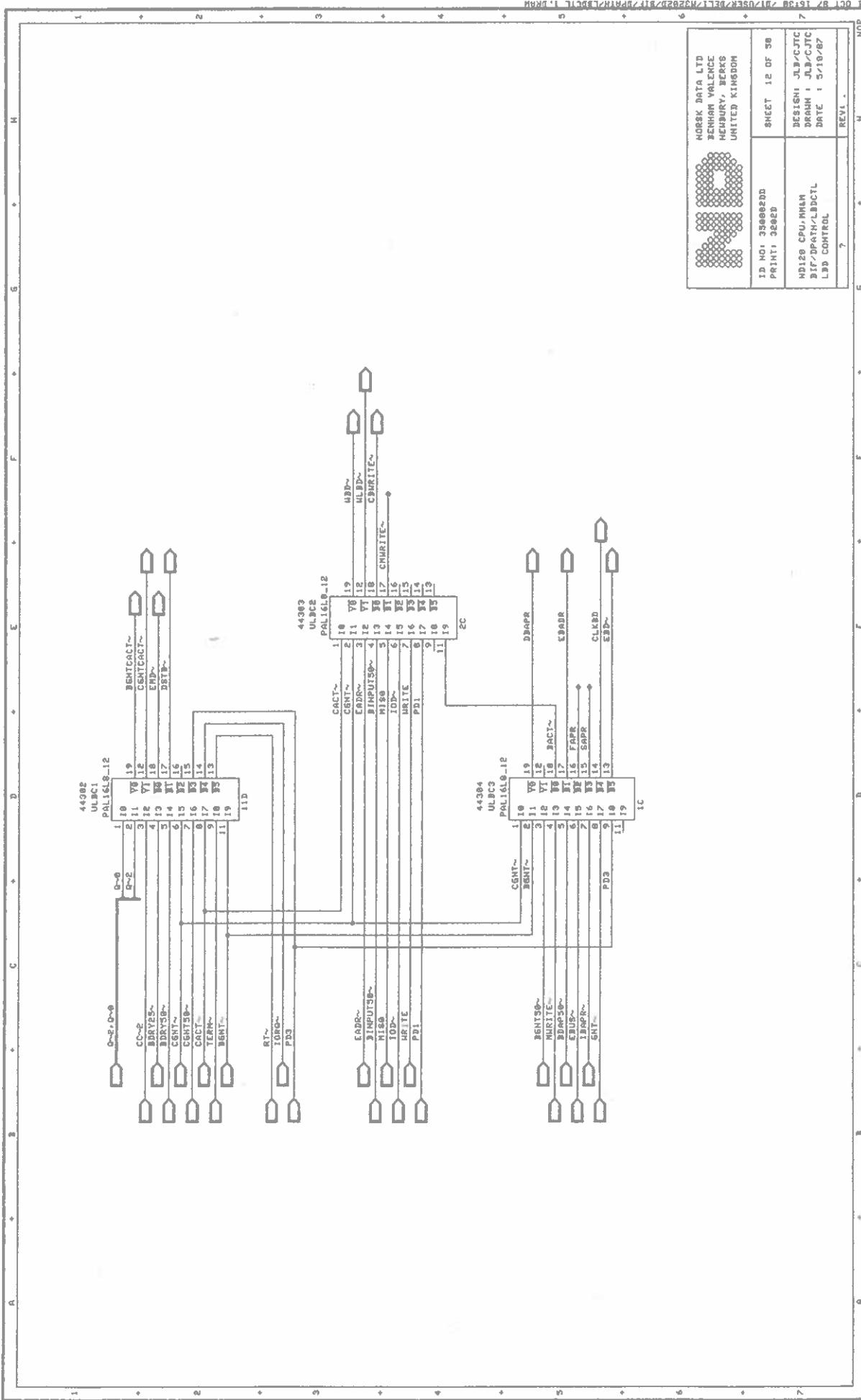


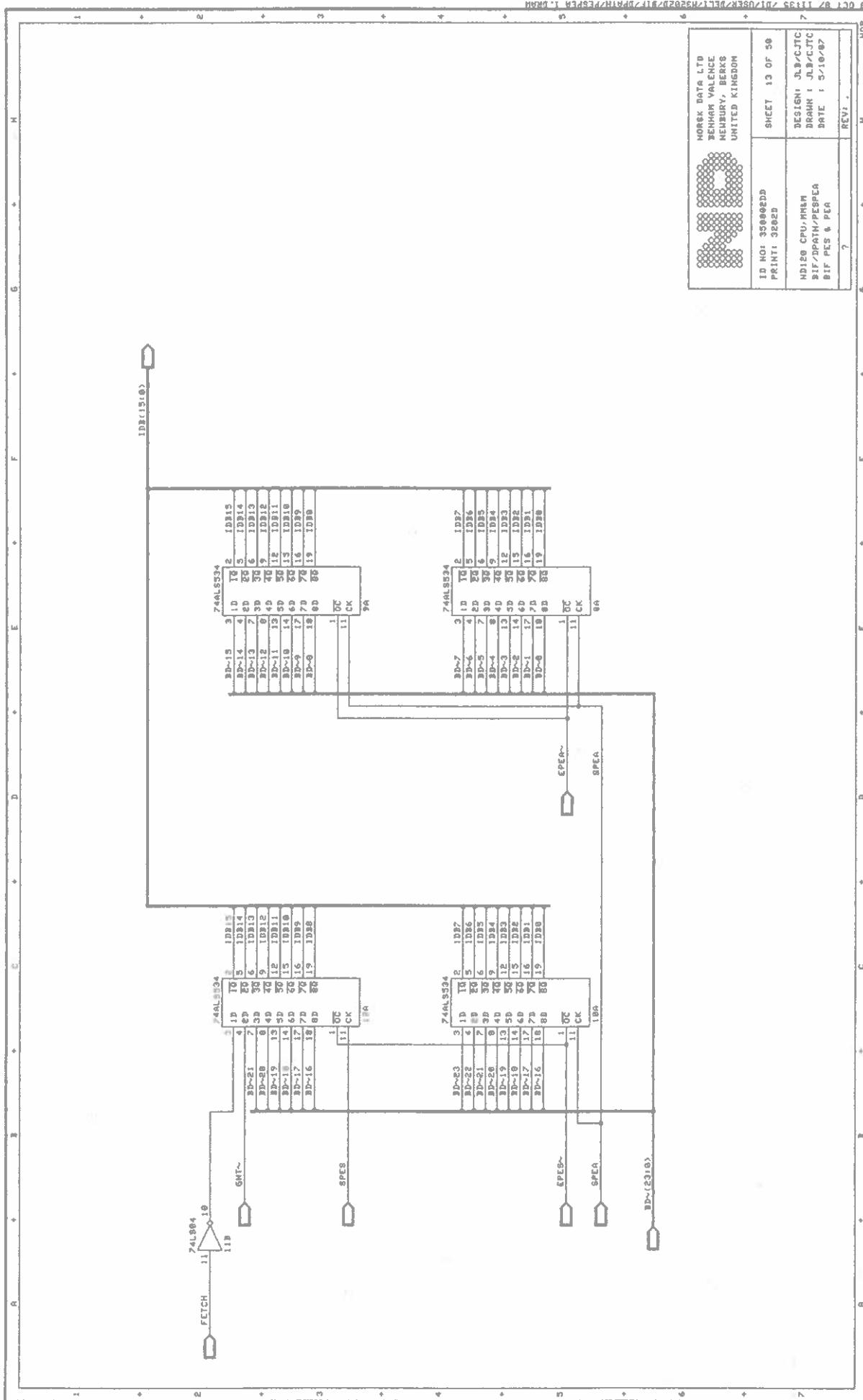


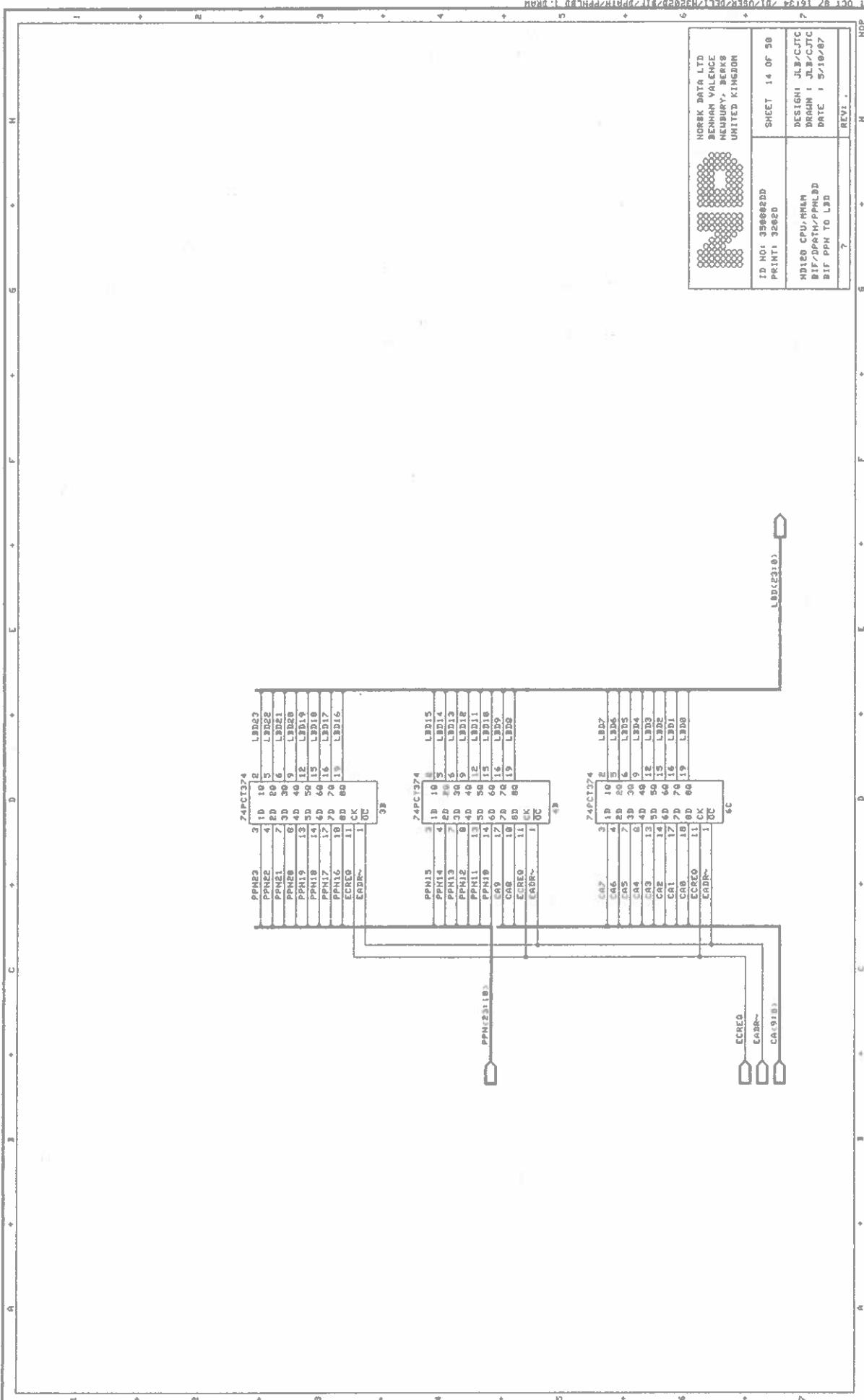


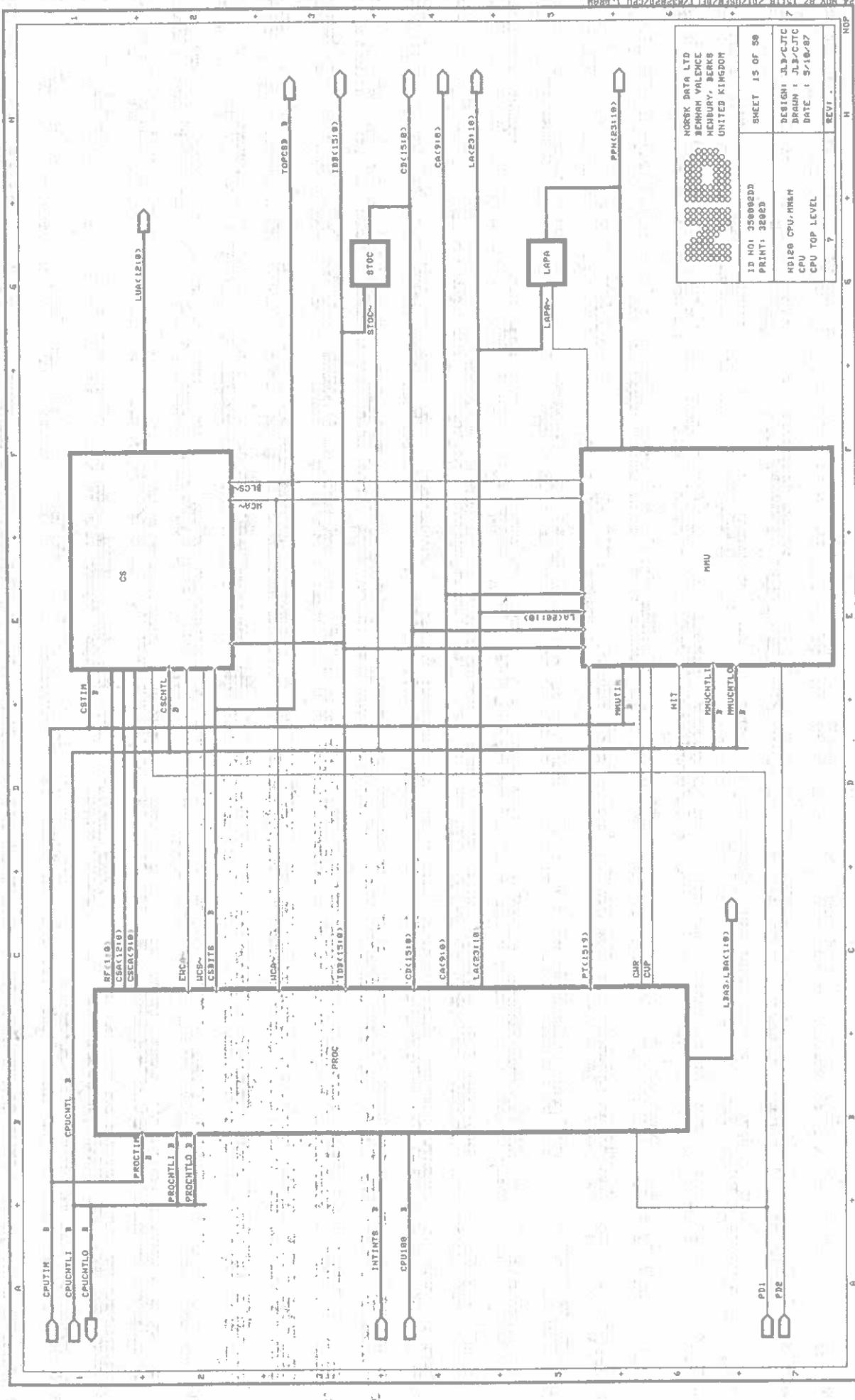


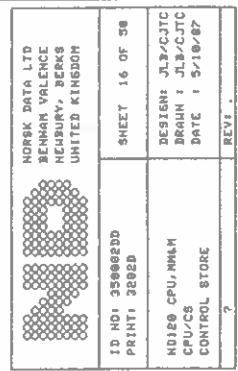
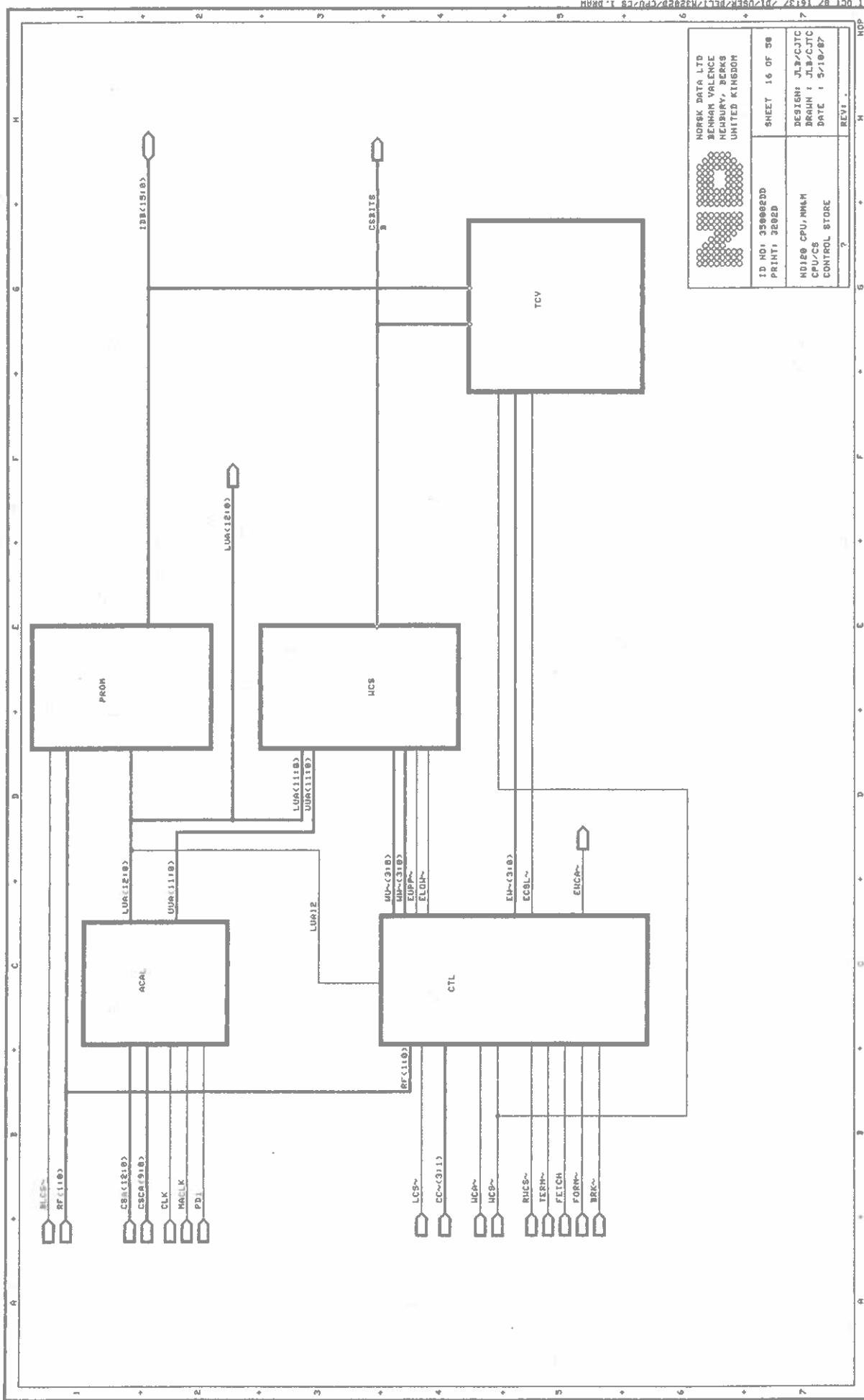
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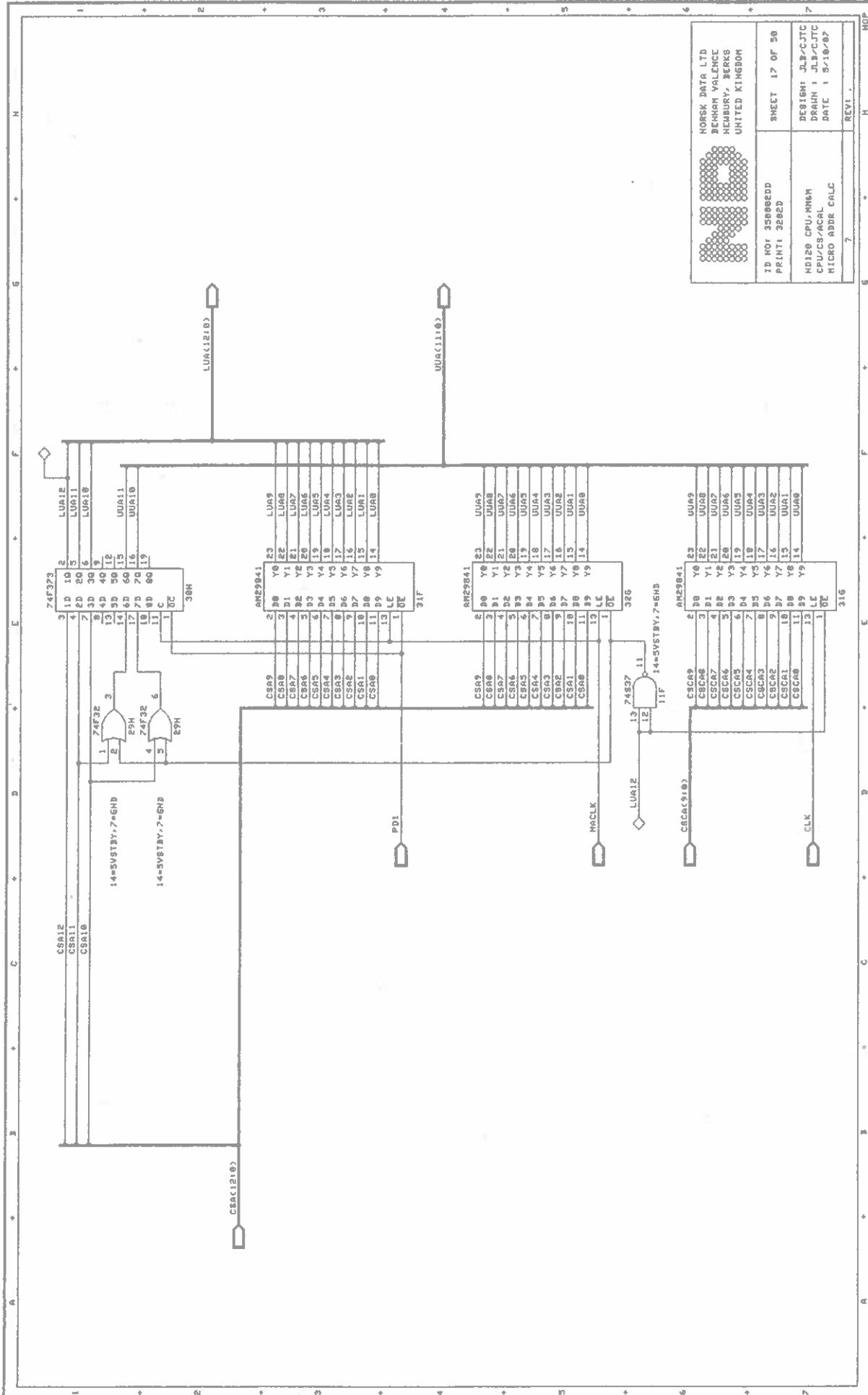


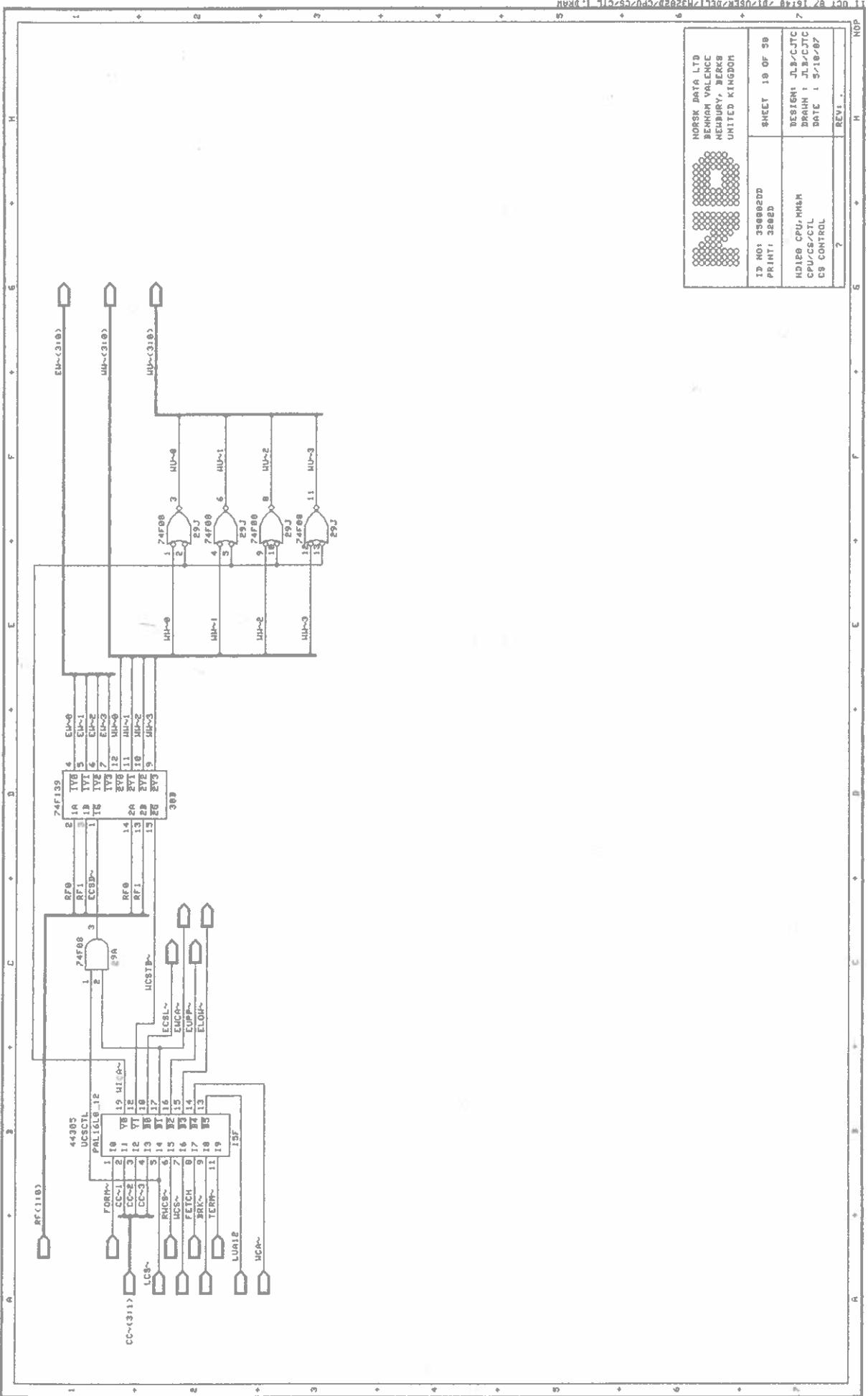


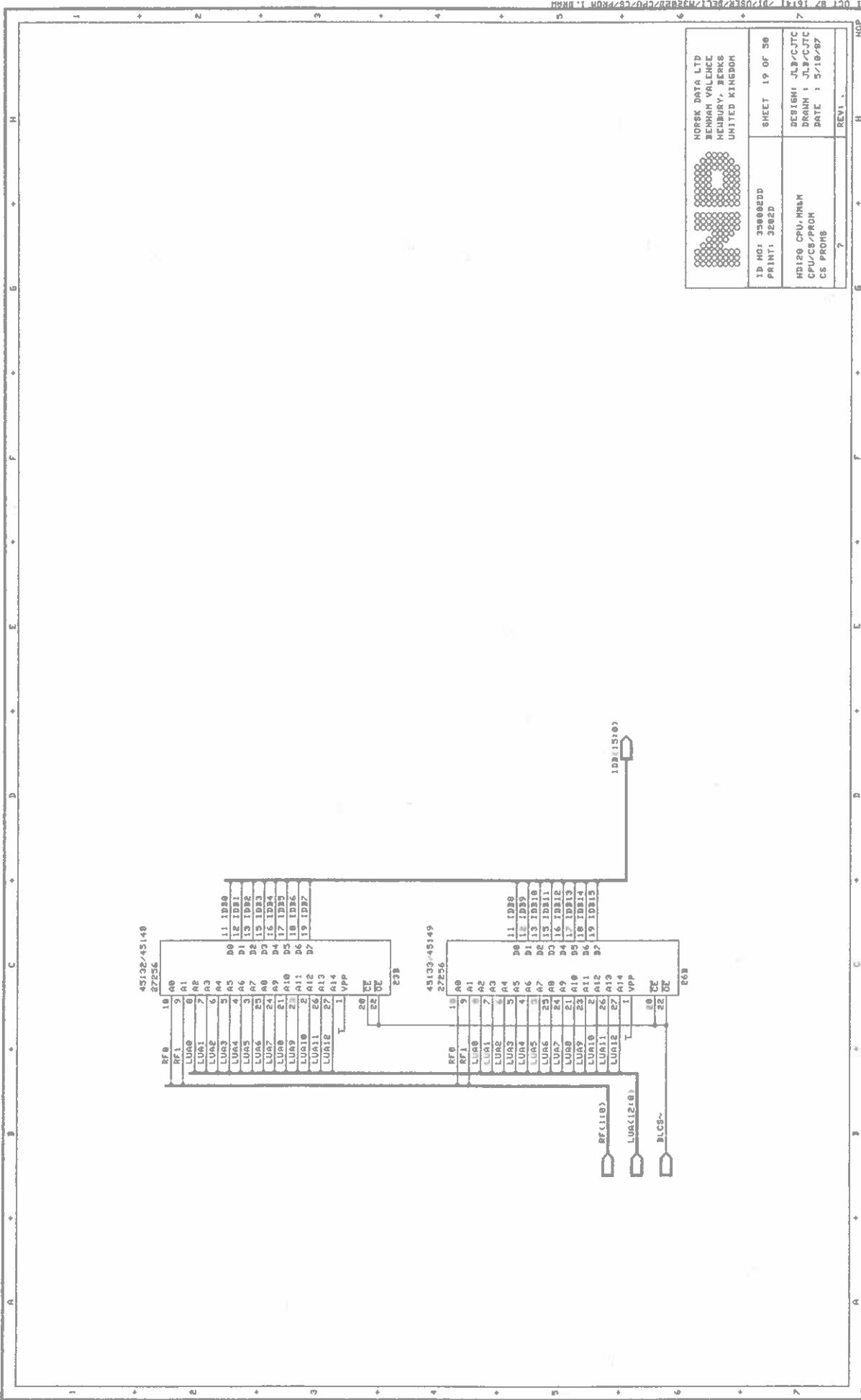


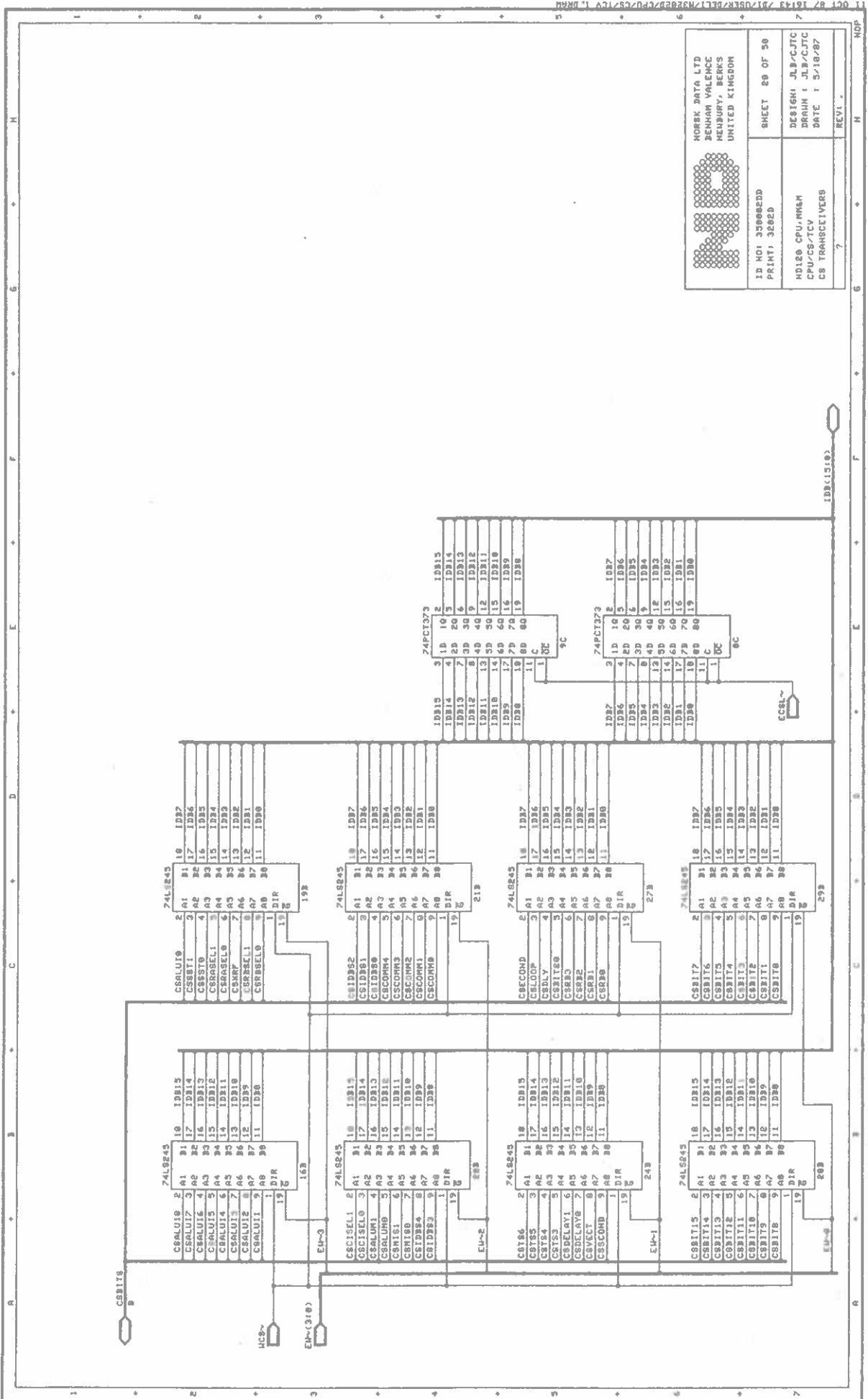


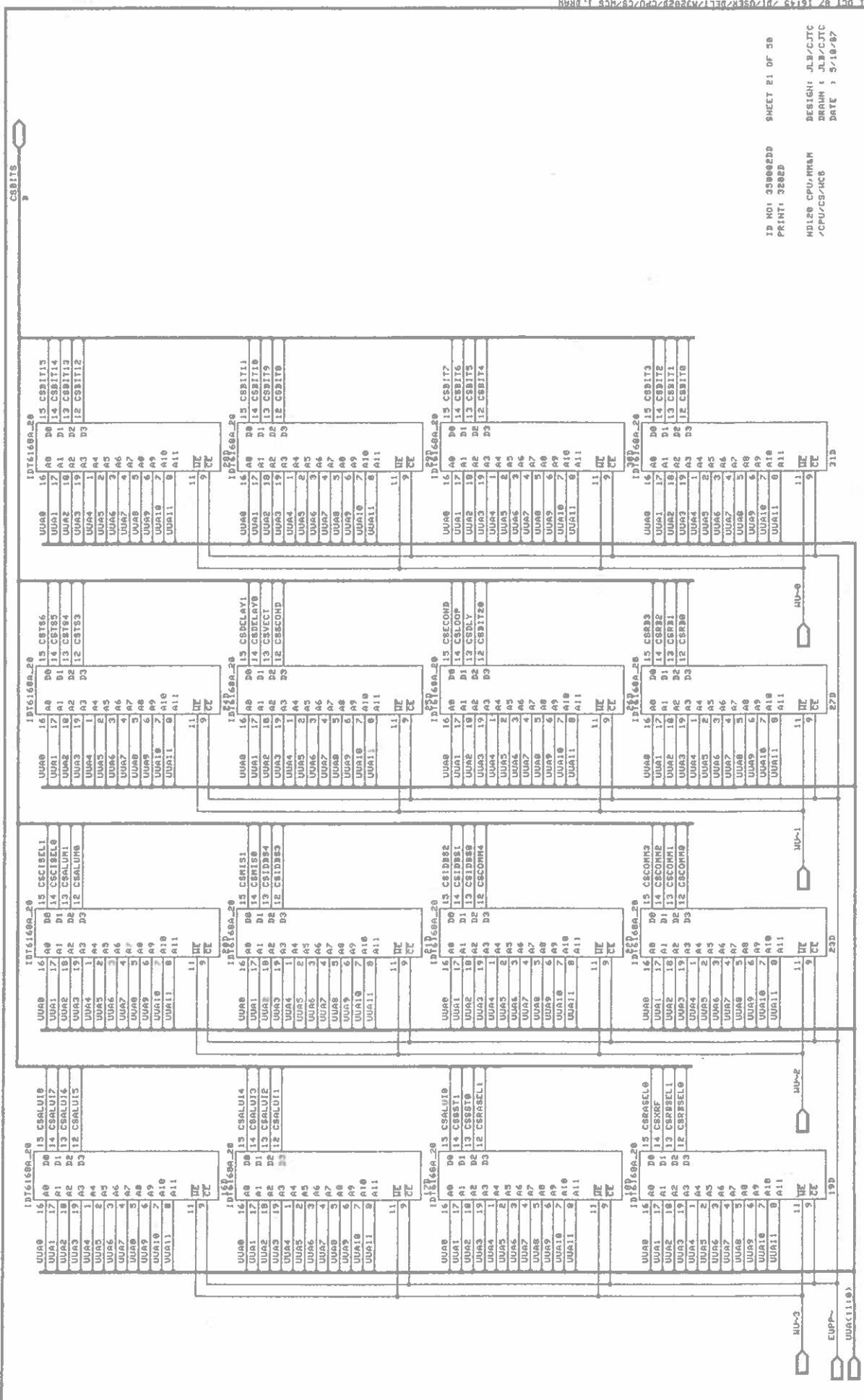


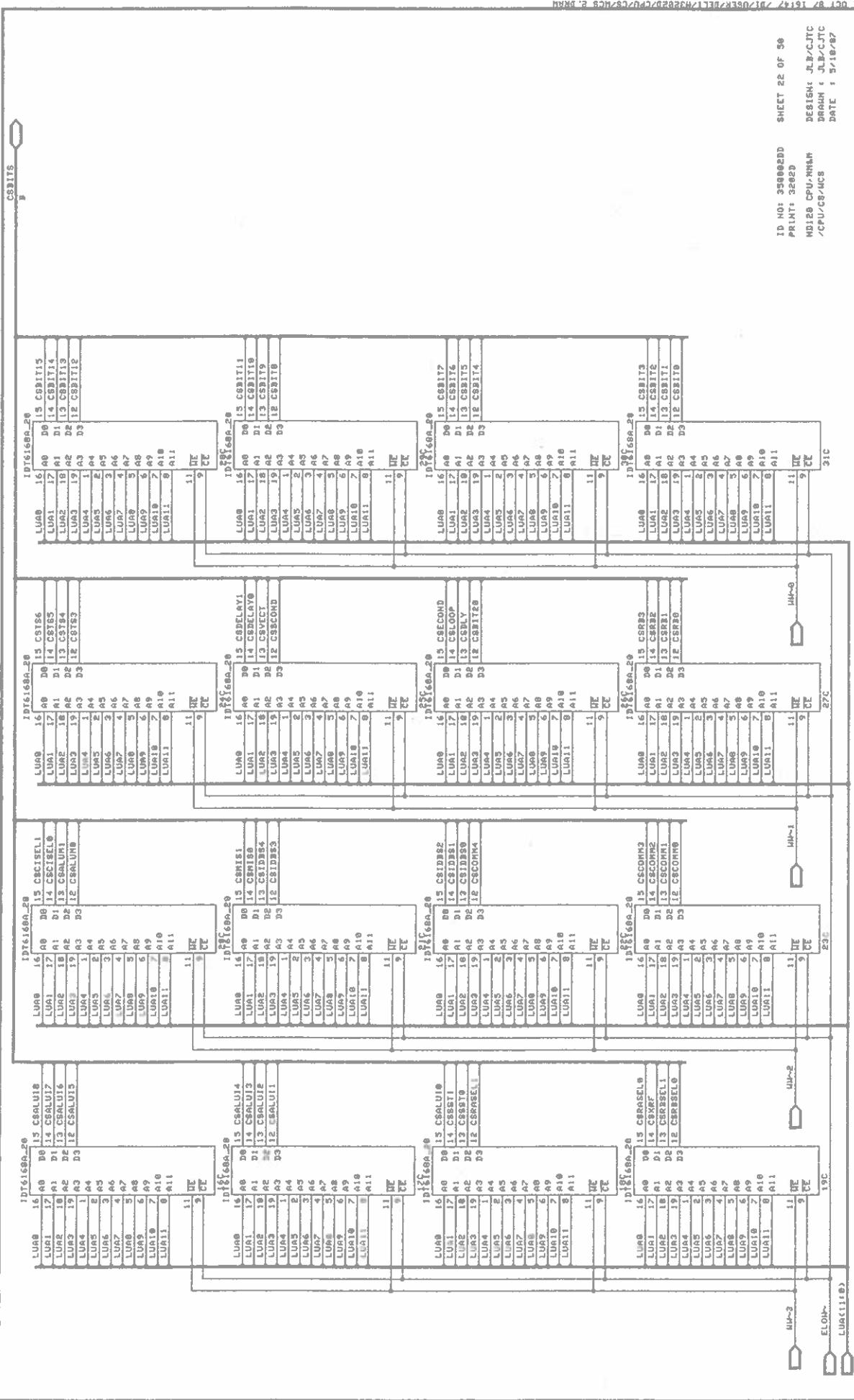












11 OCT 87 16149 /UI/USER/DELL/M3282/CP0/LRPA 1.0MM



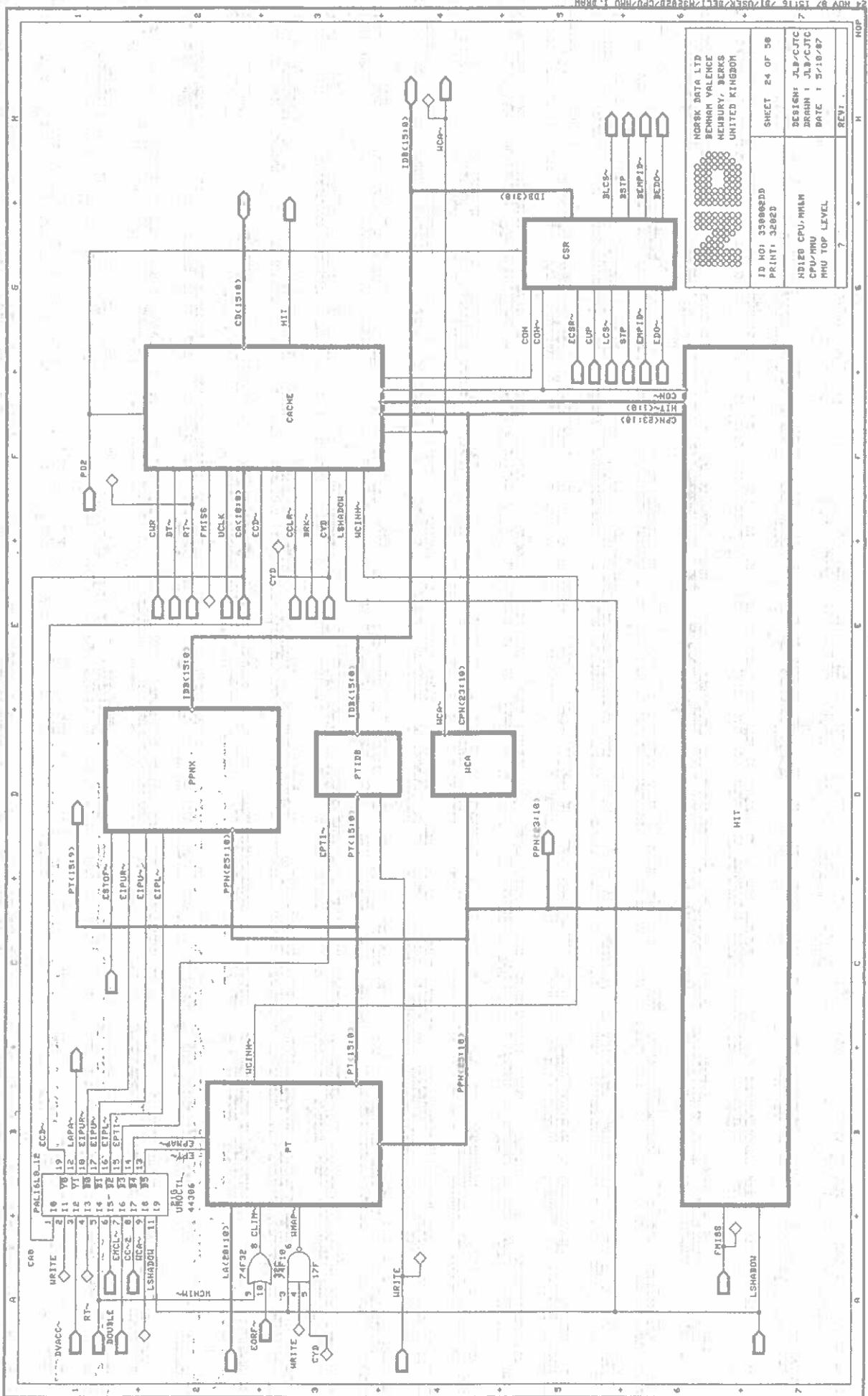
WORX DATA LTD
SEWHAM VALENC
NEWBURY, BERK
UNITED KINGDO

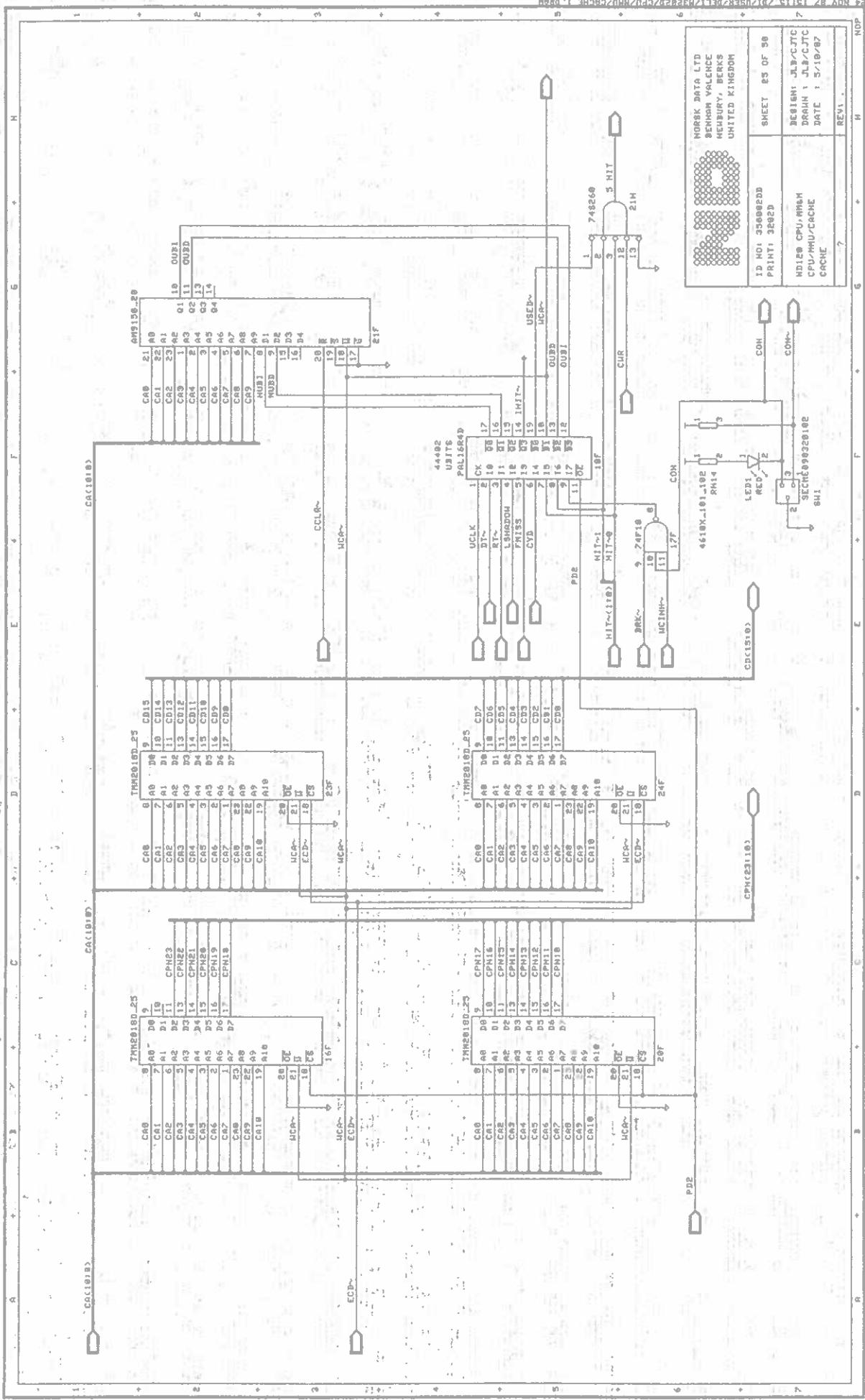
ID NO:	35000220	SHEET	23 OF 59
PRINT:	32820		
MOTOR CPU, MMAM	MM100 CPU, MMAM	DESIGN:	JL-B-CJTC
CPU/LPNA	CPU/LPNA	DRAWN:	JL-B-CJTC
LA TO LPNA	LA TO LPNA	DATE:	5/16/02
BUFF	BUFF		
			REV:
			?

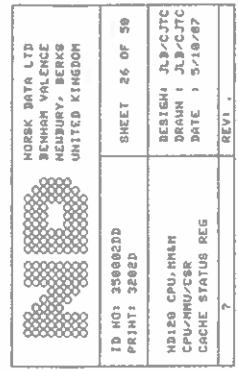
LAPC1244

- LAPC1244-1
 - LA10: PPN12, Y1-Y4
 - LA11: PPN15, Y1-Y4
 - LA12: PPN16, Y1-Y4
 - LA13: PPN17, Y1-Y4
 - LA14: PPN18, Y1-Y4
 - LA15: PPN19, Y1-Y4
- LAPC1244-2
 - LA20: PPN12, Y1-Y4
 - LA21: PPN15, Y1-Y4
 - LA22: PPN16, Y1-Y4
 - LA23: PPN17, Y1-Y4
 - LA24: PPN18, Y1-Y4
 - LA25: PPN19, Y1-Y4
 - LA26: PPN20, Y1-Y4
 - LA27: PPN12, Y1-Y4

PPN423:161





ID NO: 25000200
PRINT: 3002D

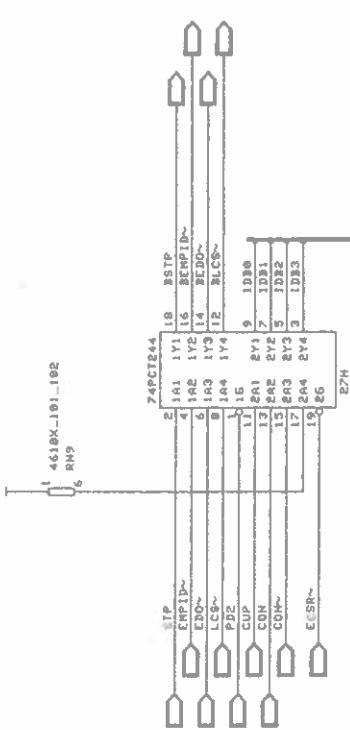
SHEET 26 OF 50

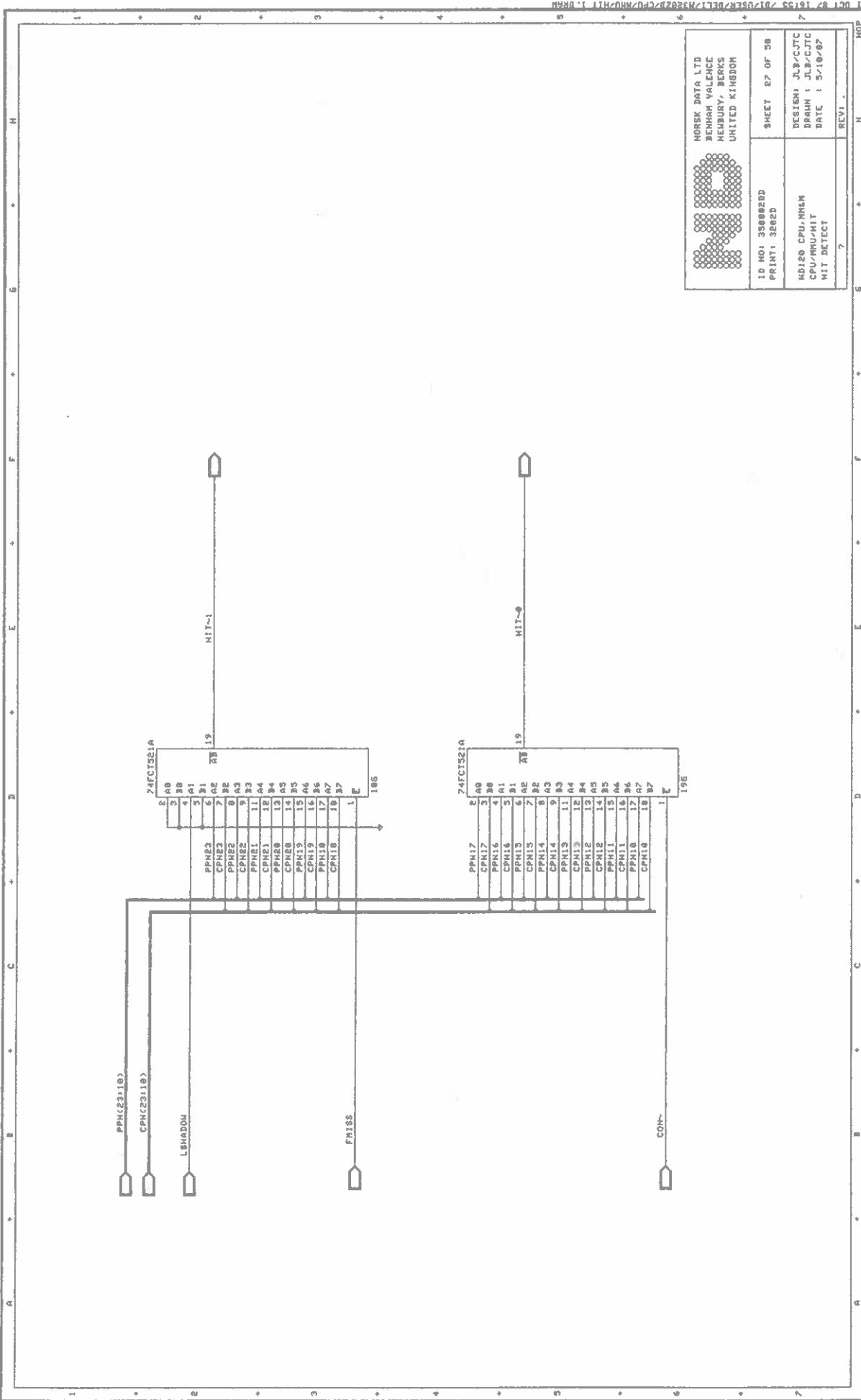
DESIGN: J.L./CITC

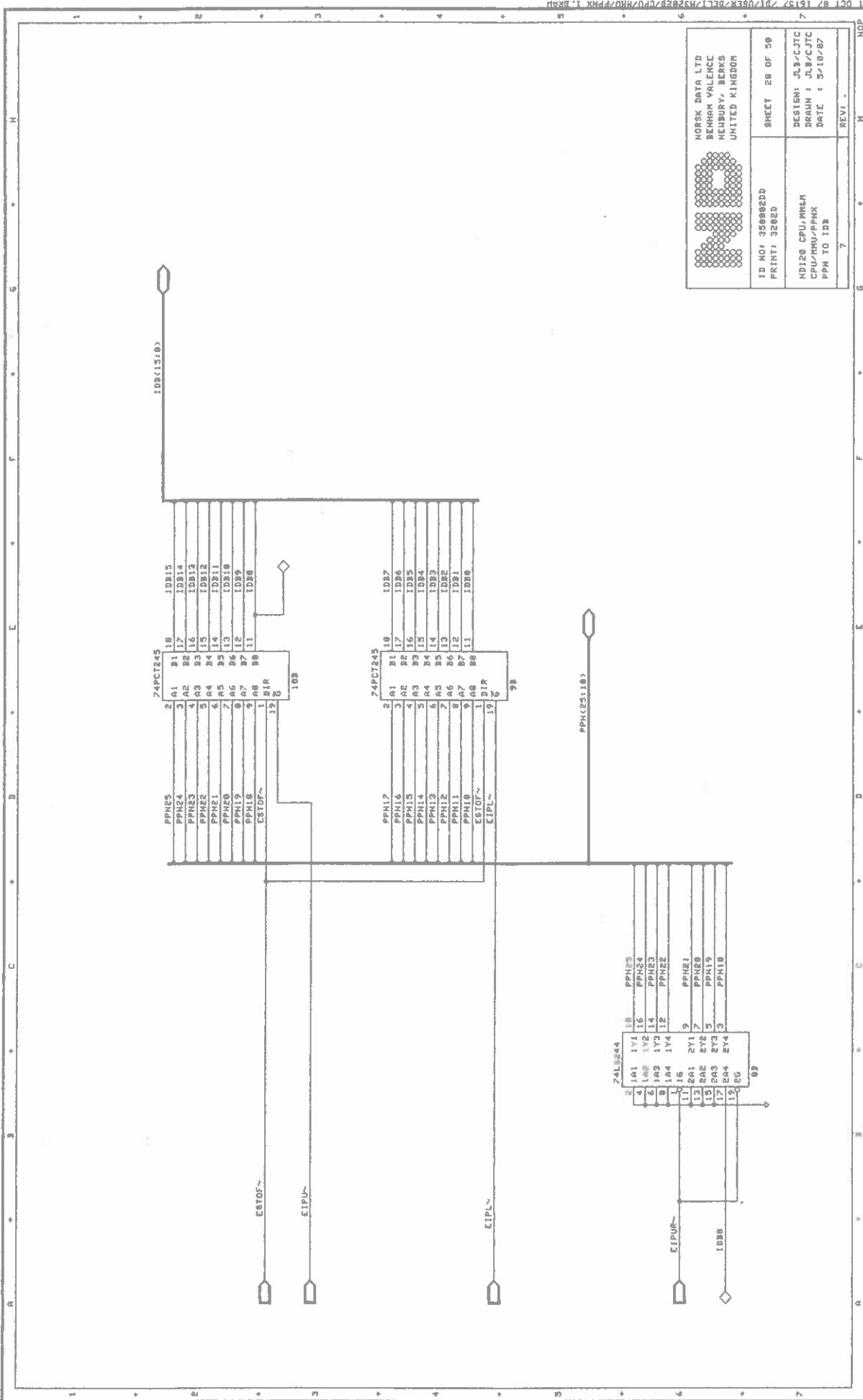
DRAWN: J.L./CITC

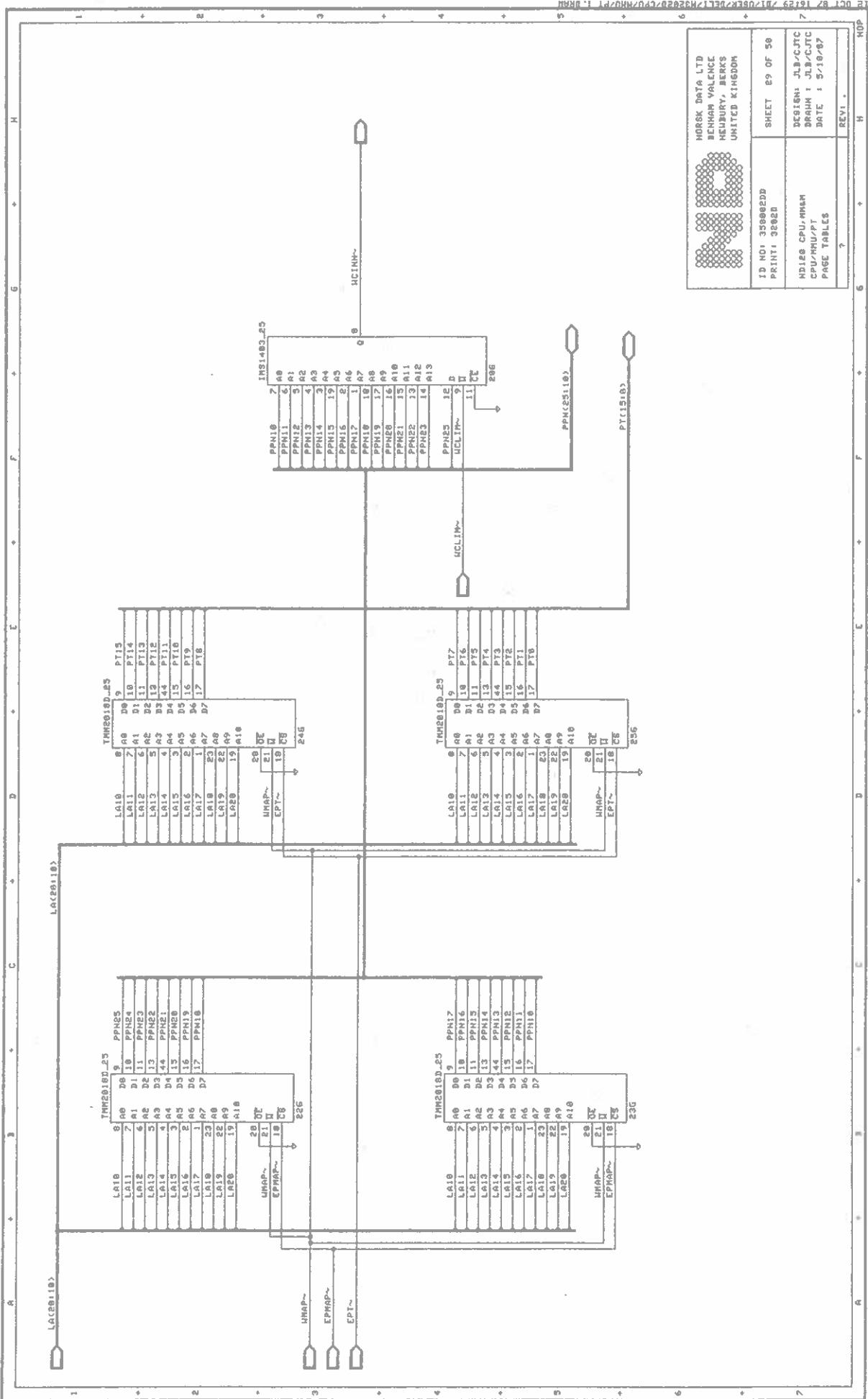
DATE: 5/10/87

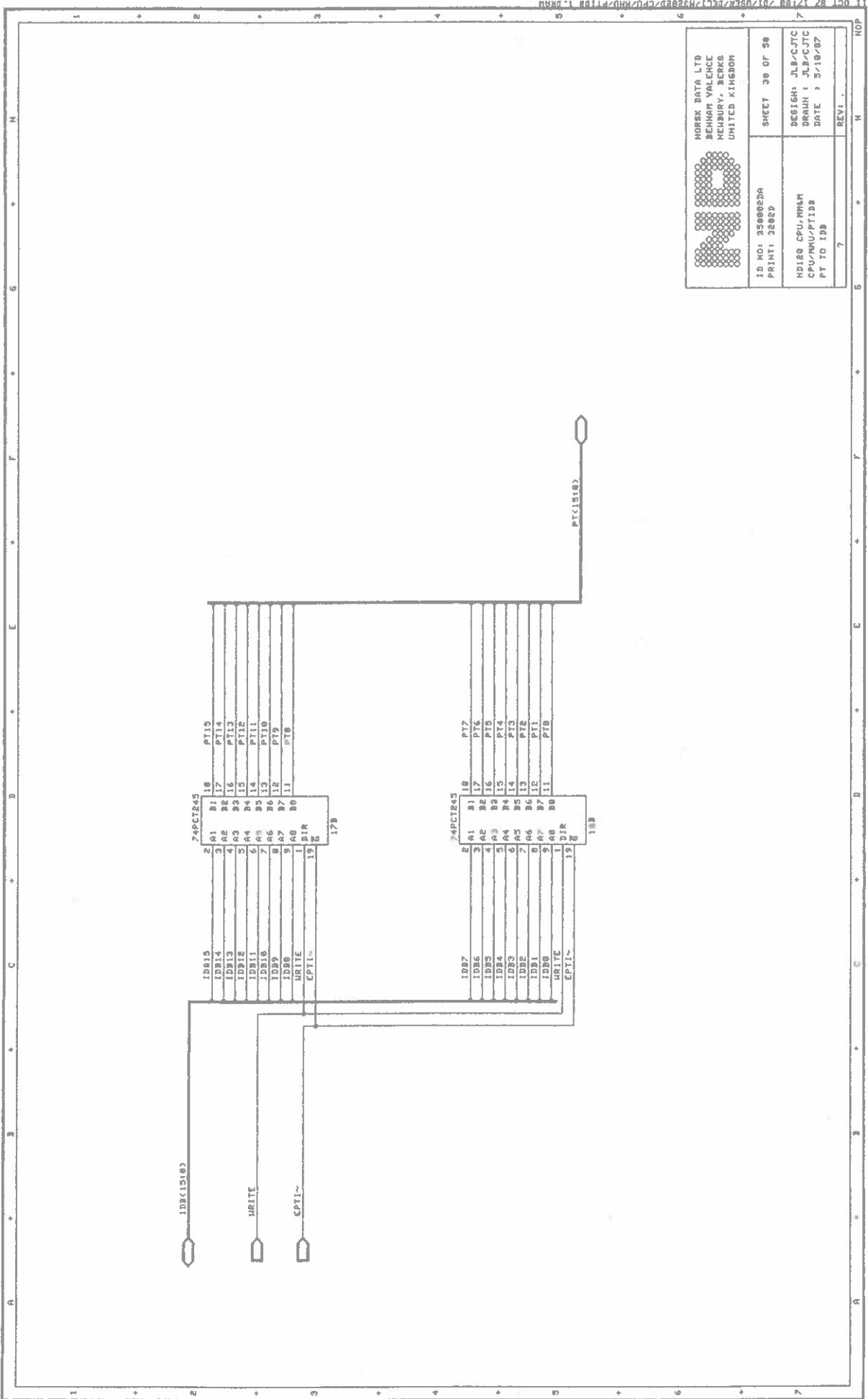
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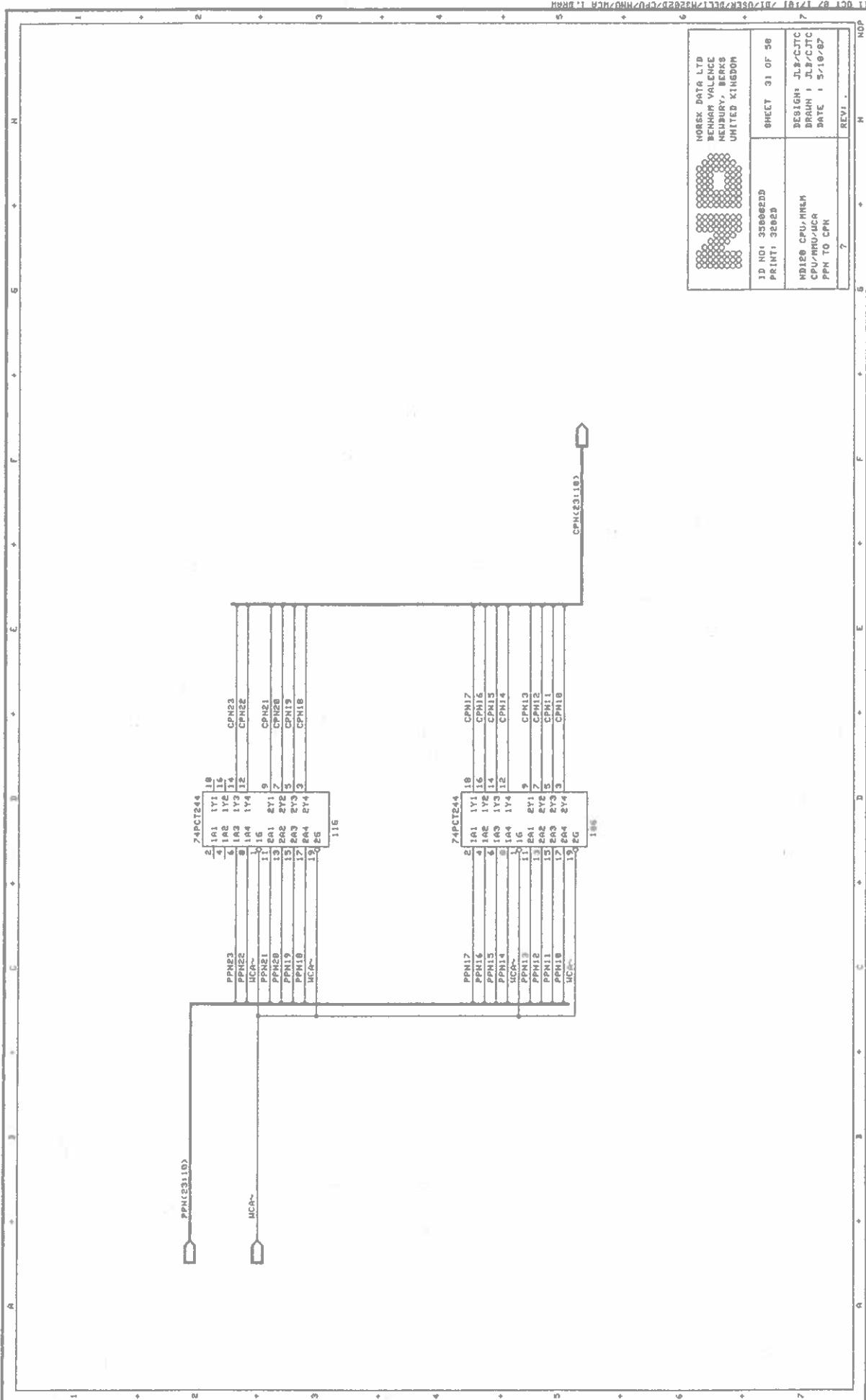


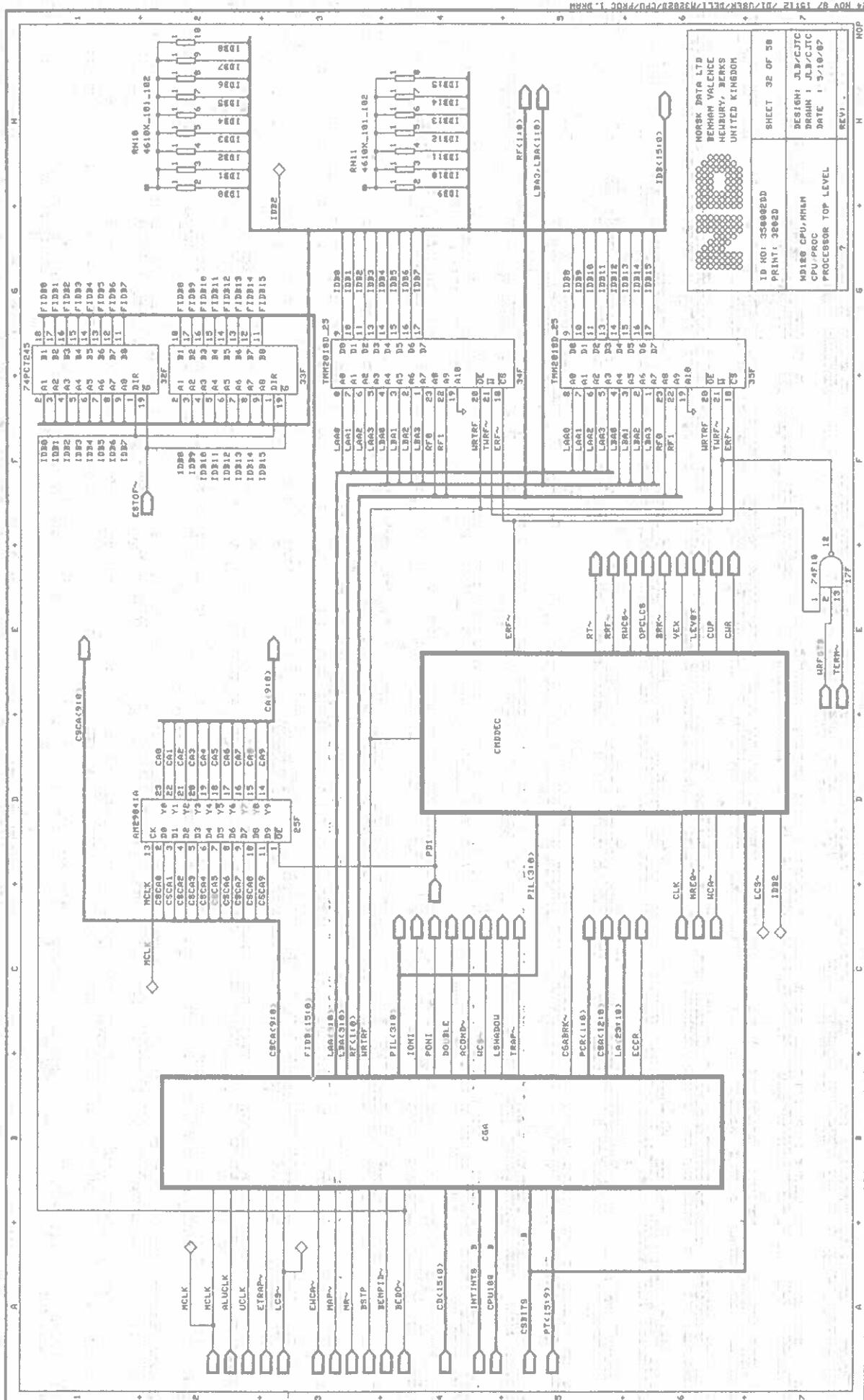


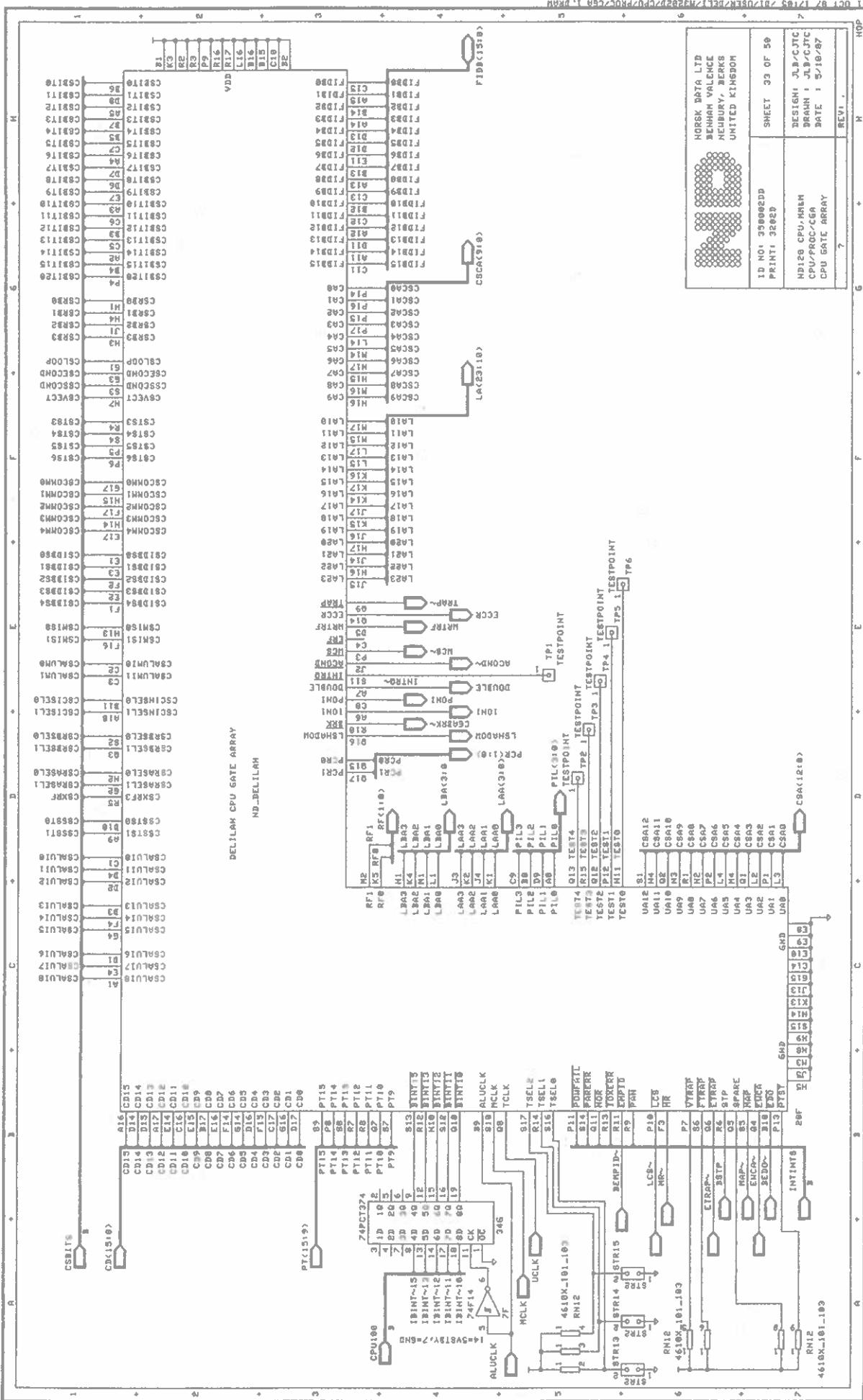


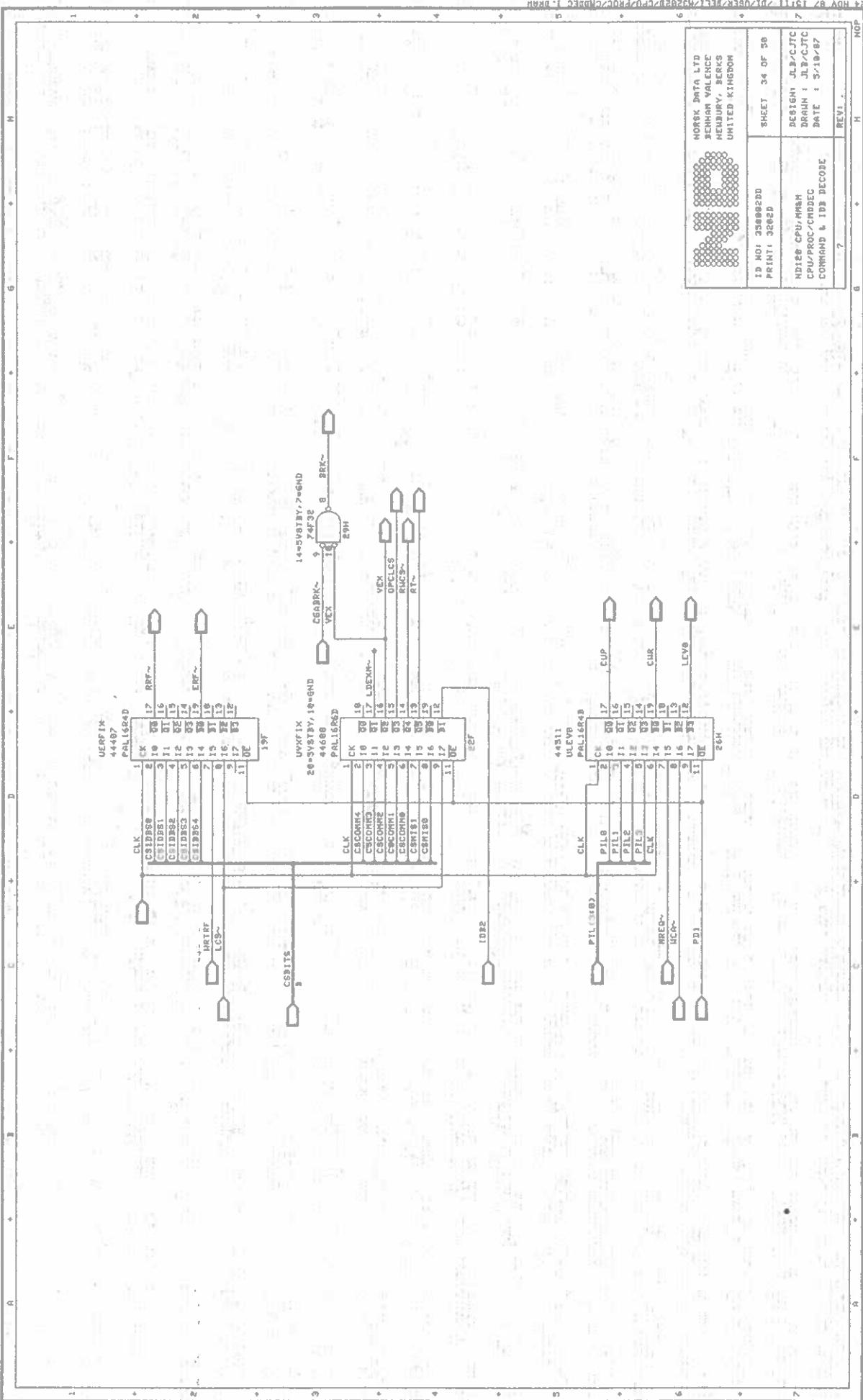


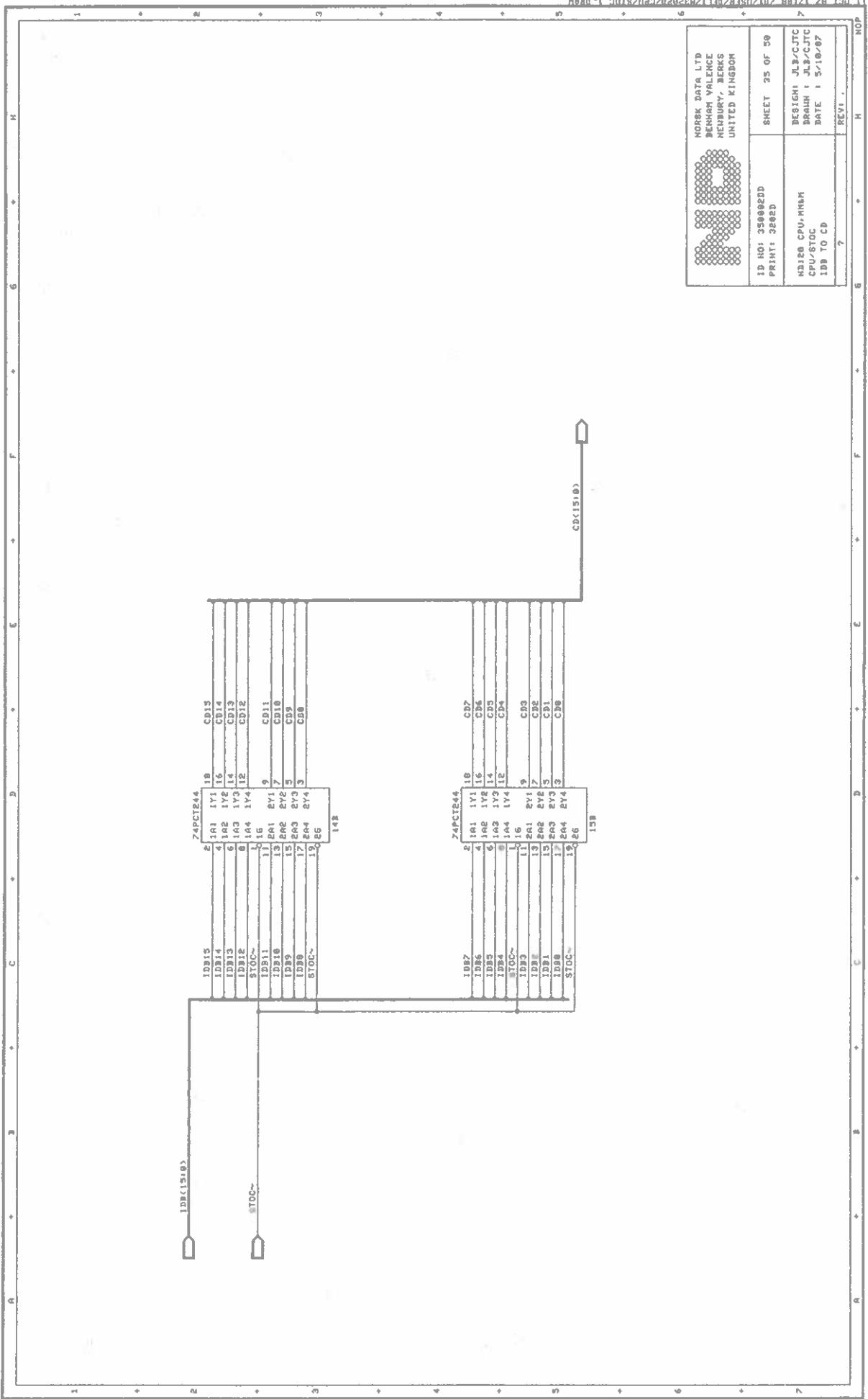


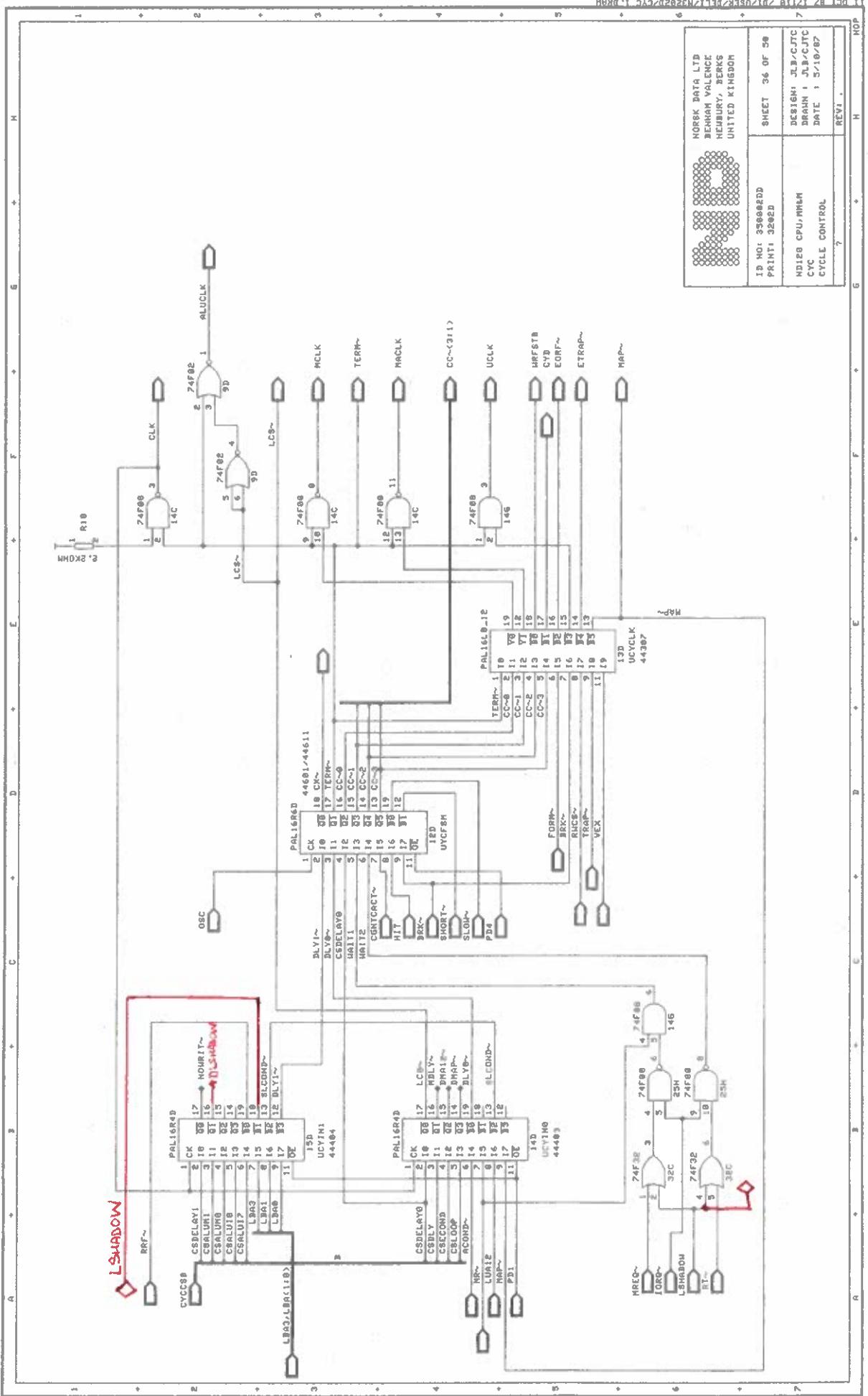


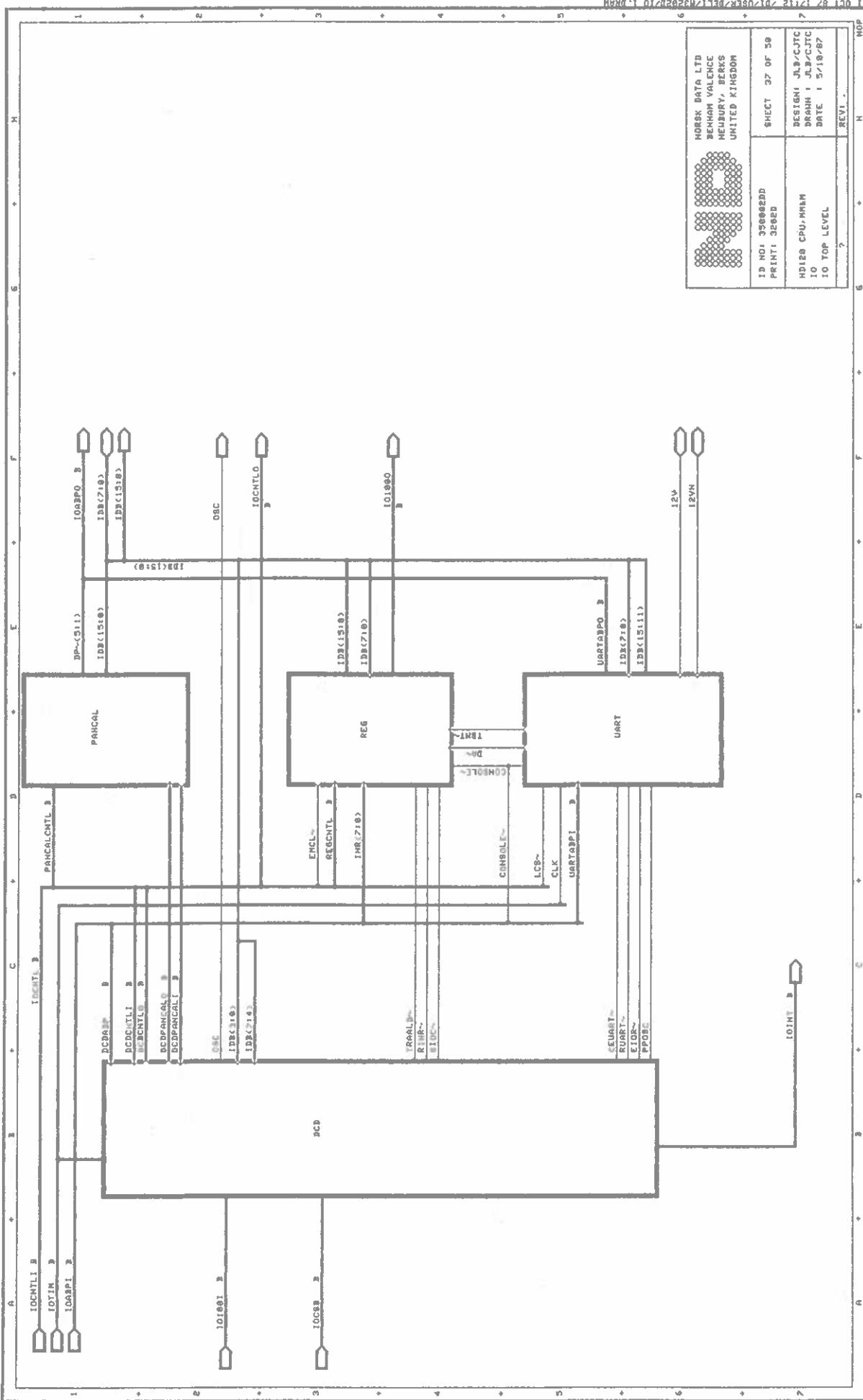


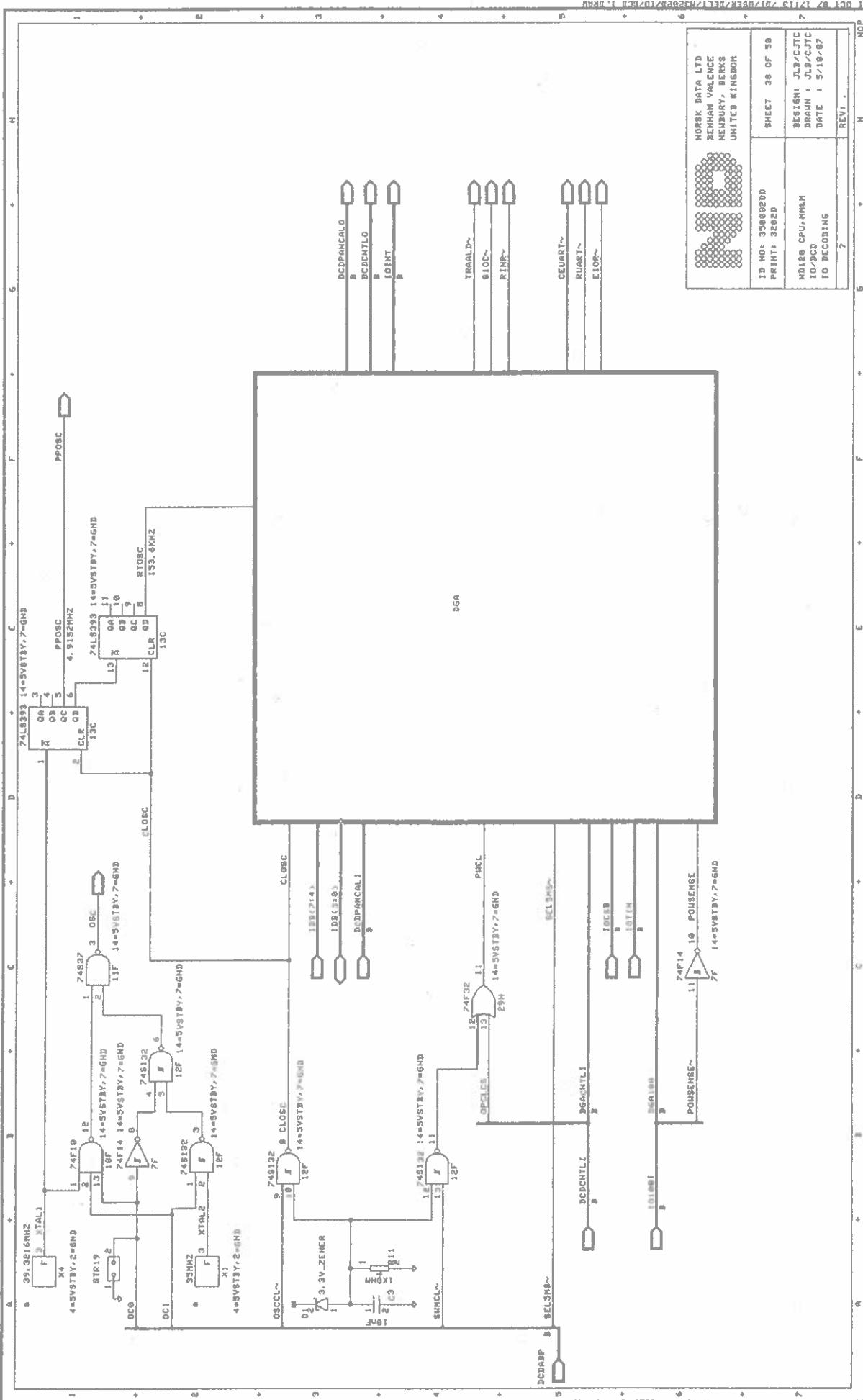


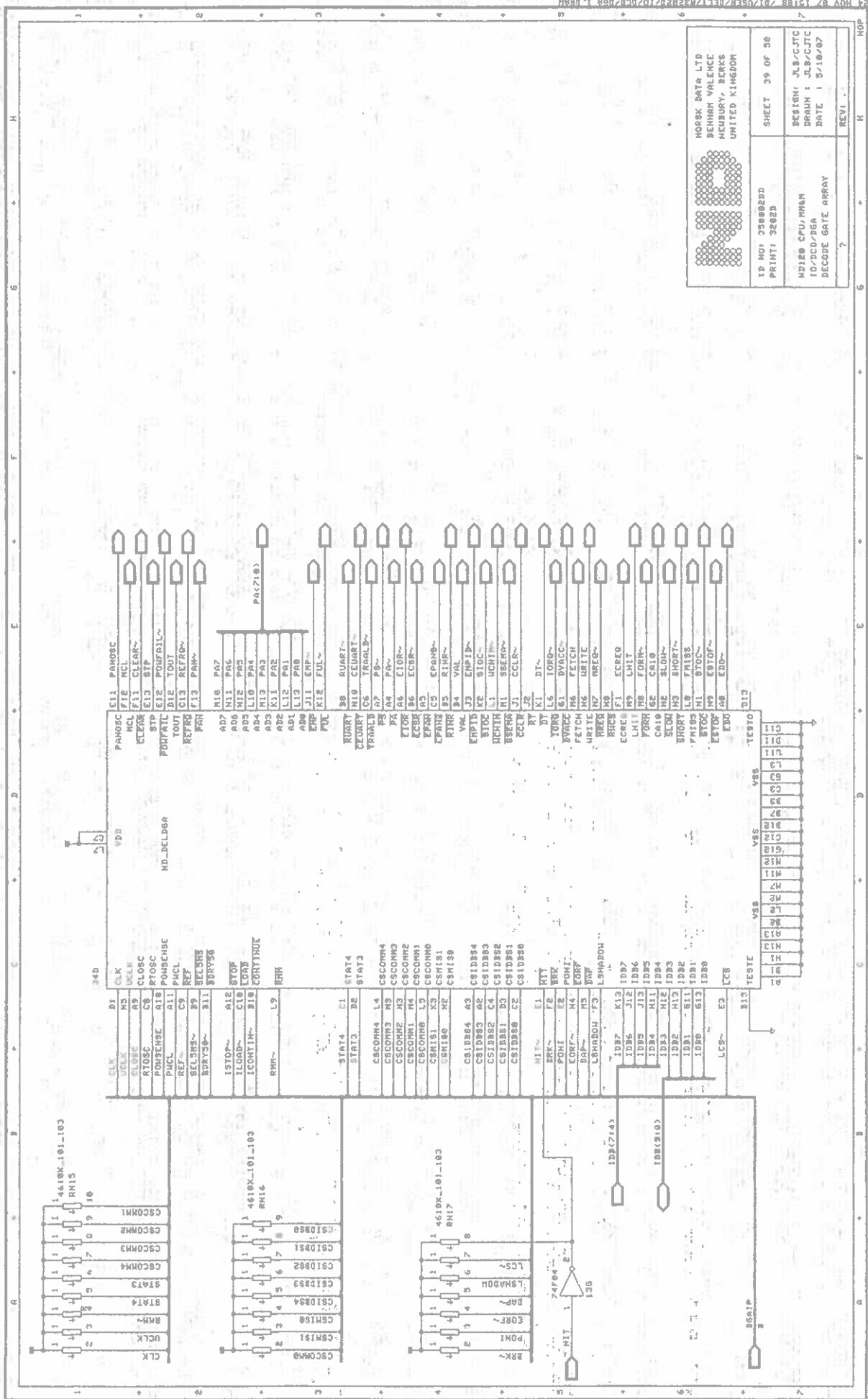


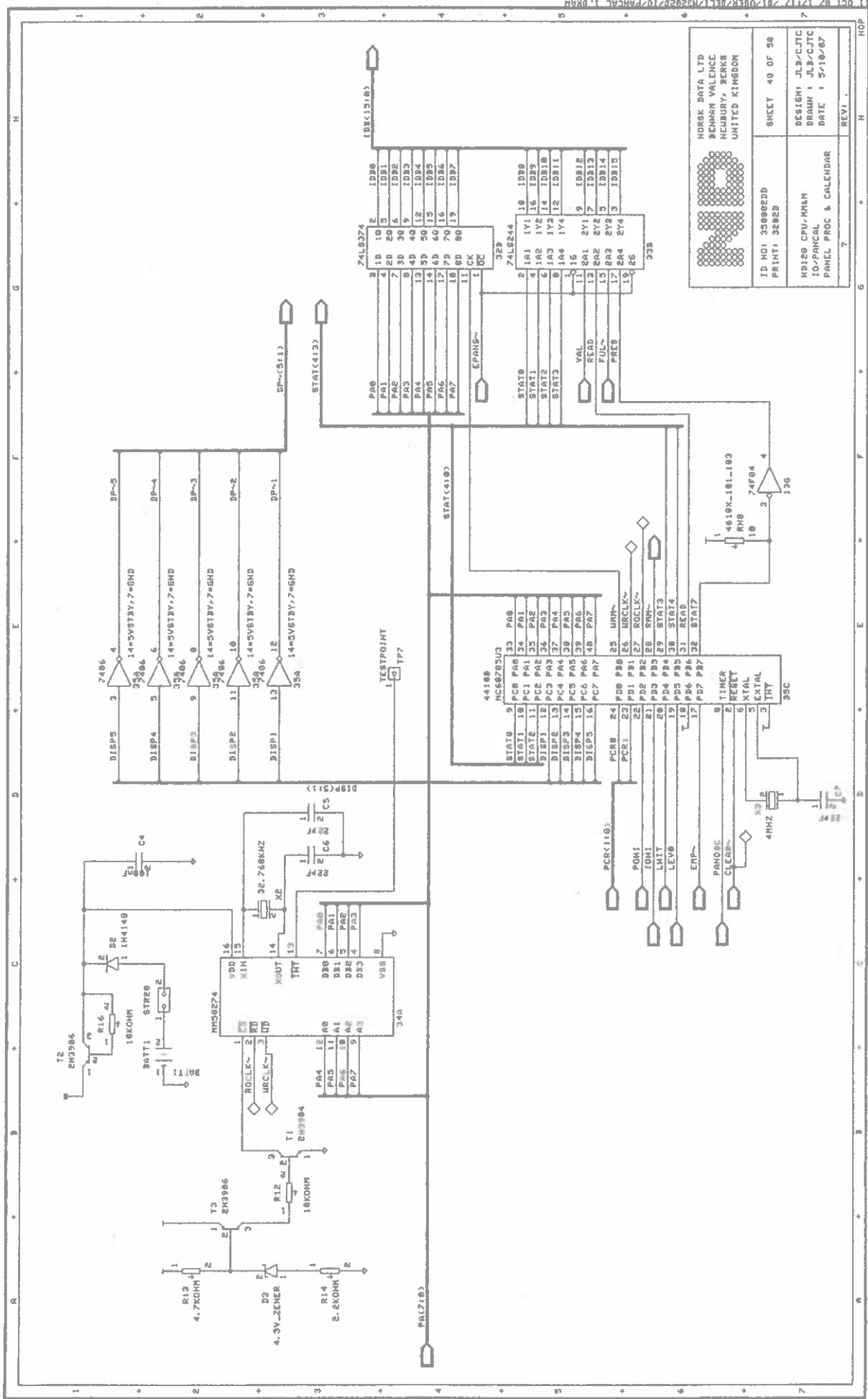


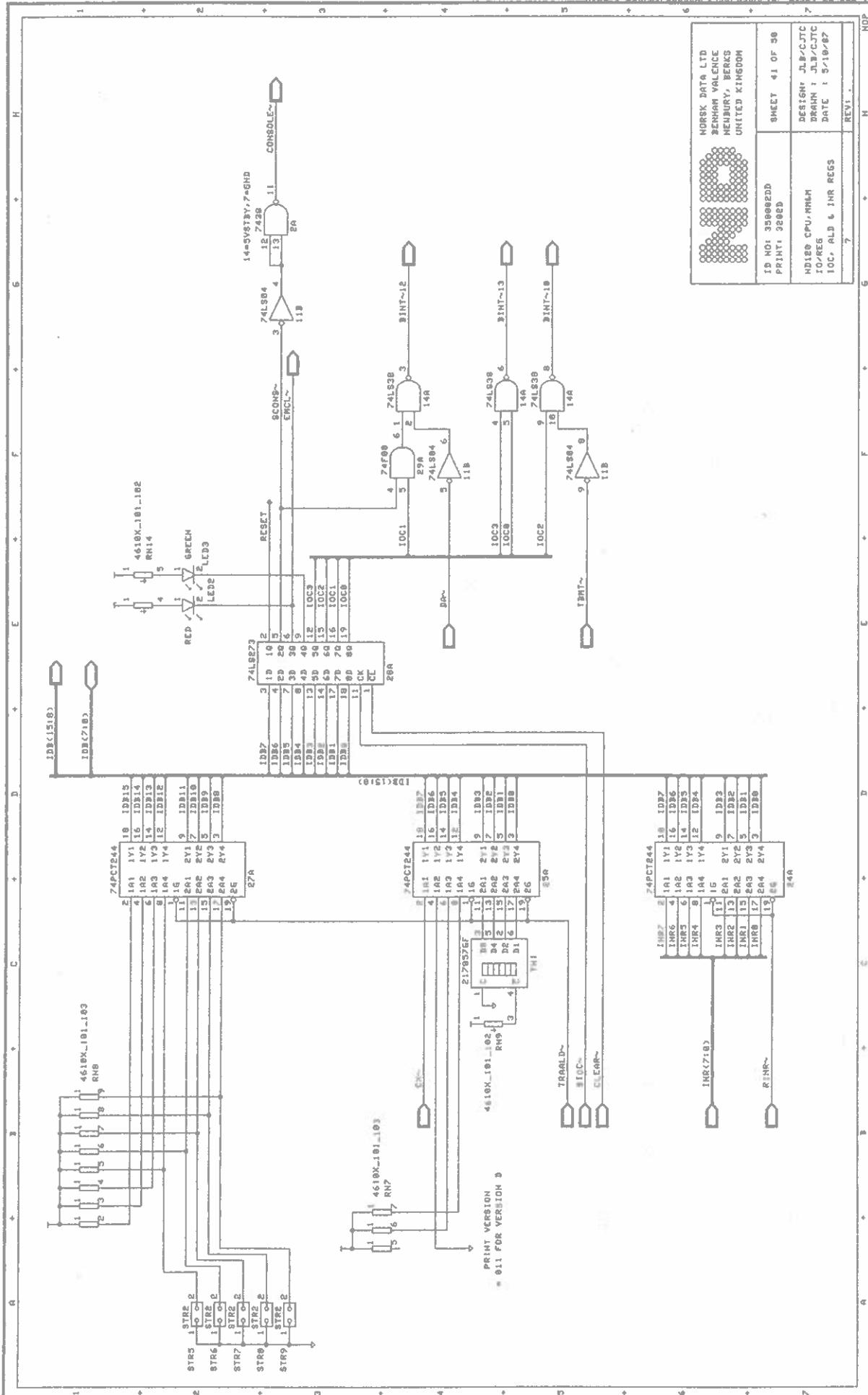


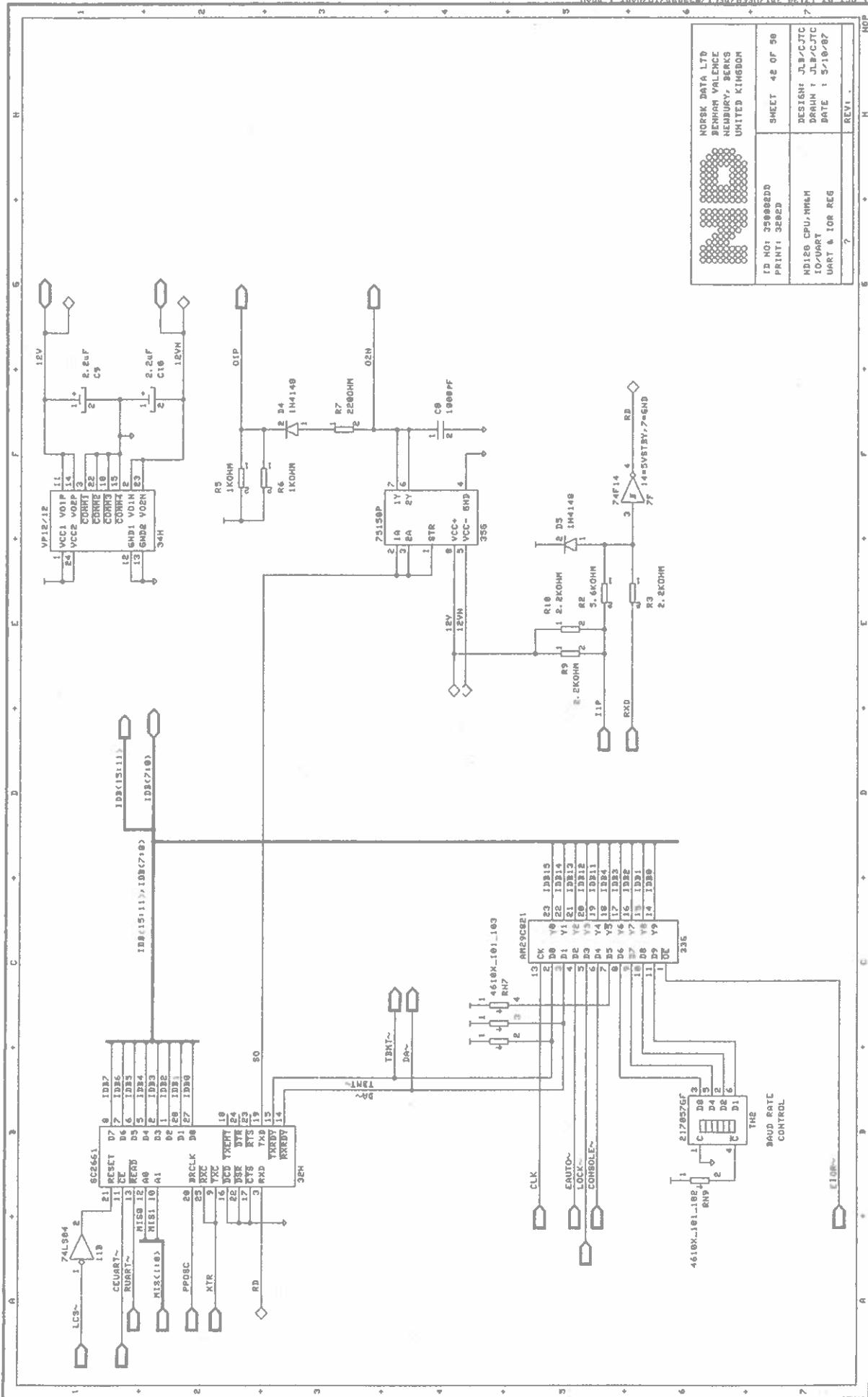


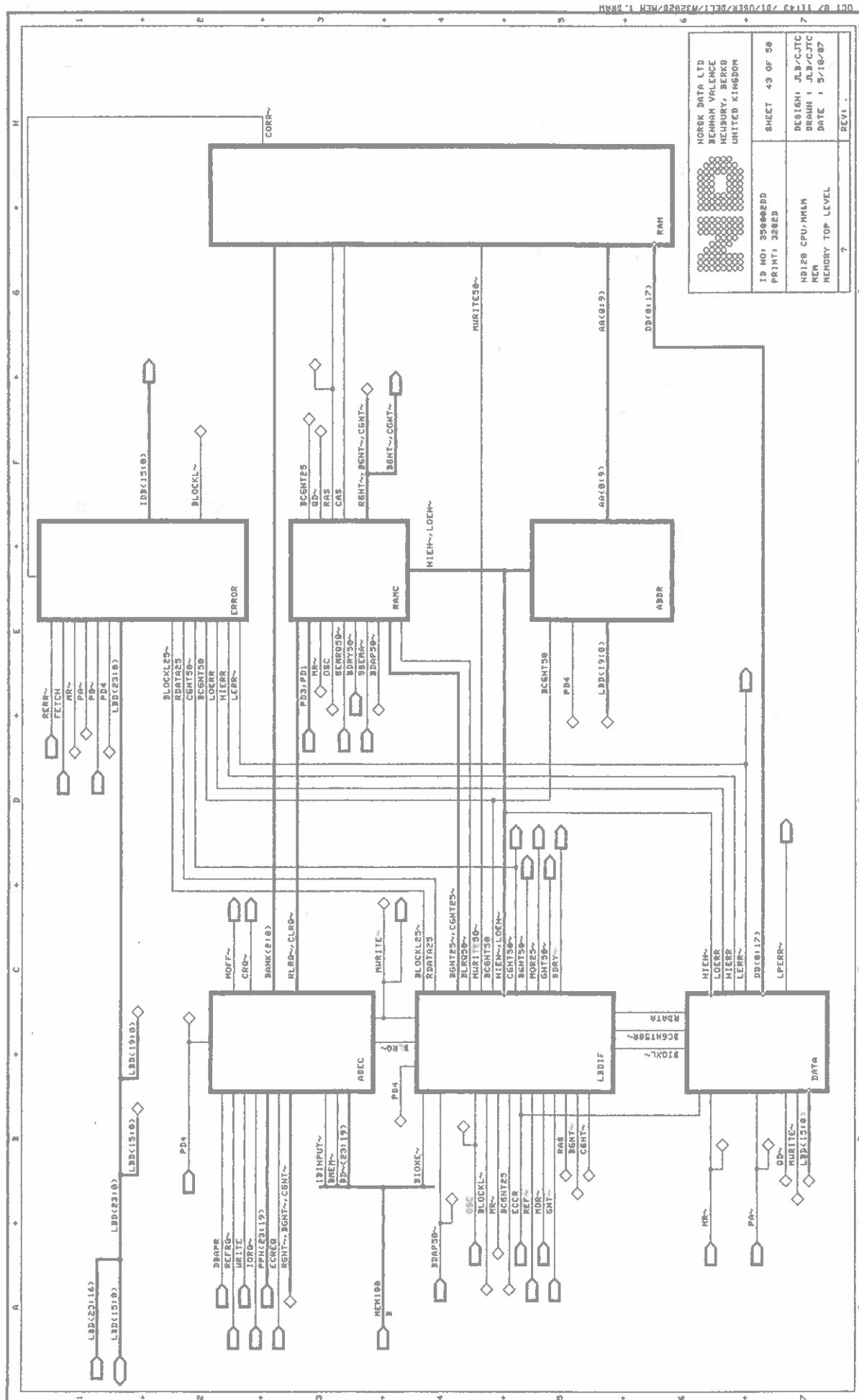


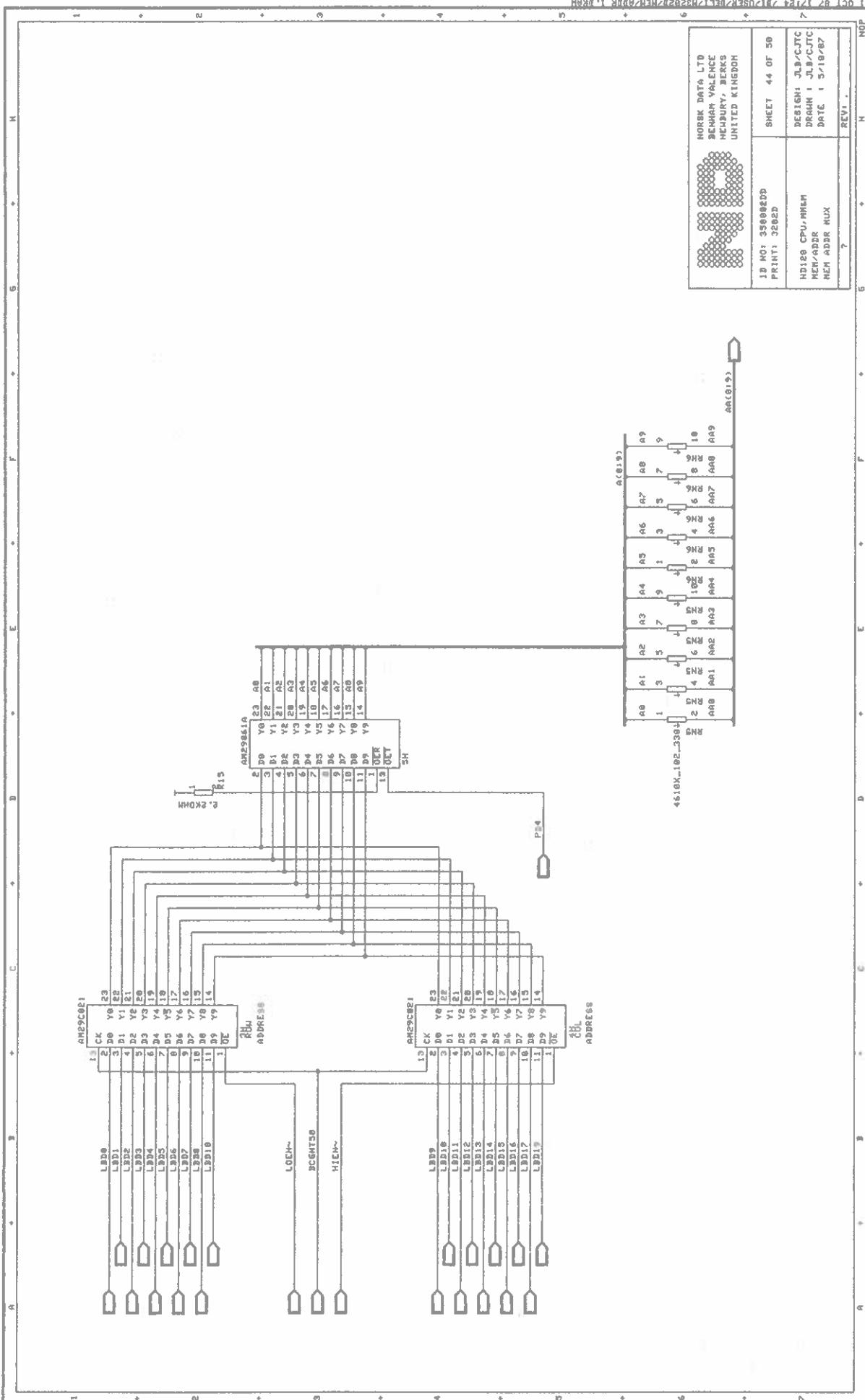


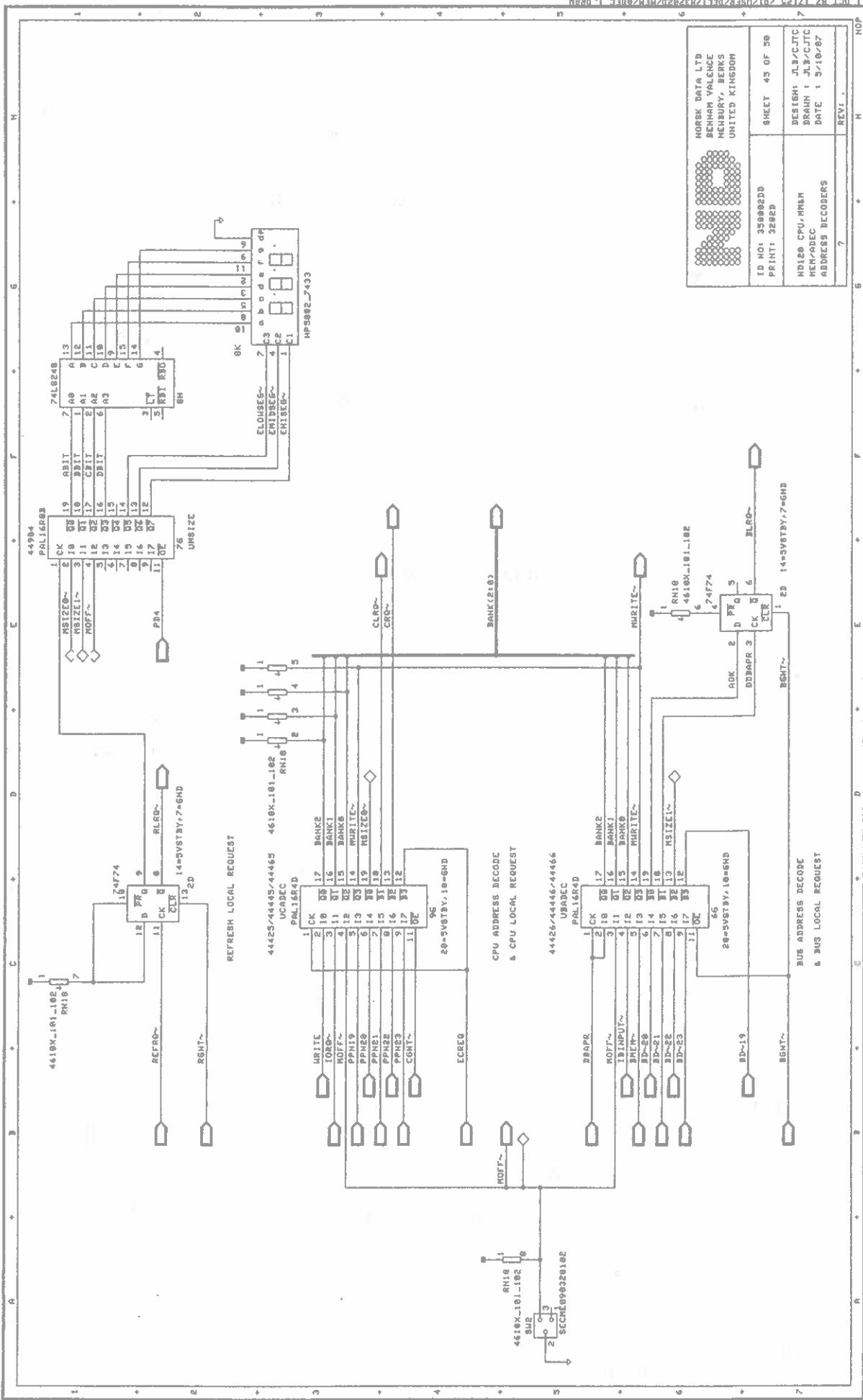


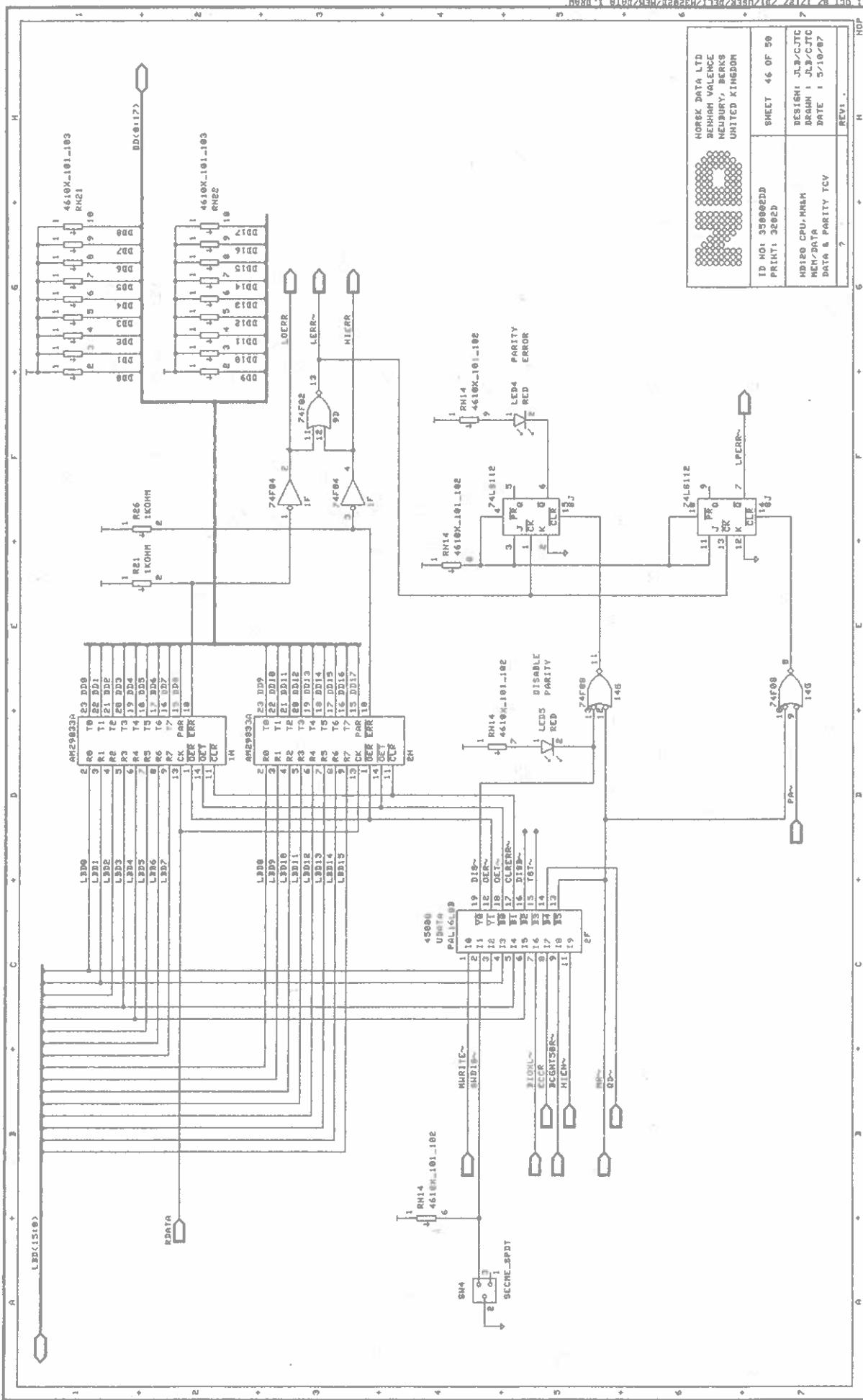


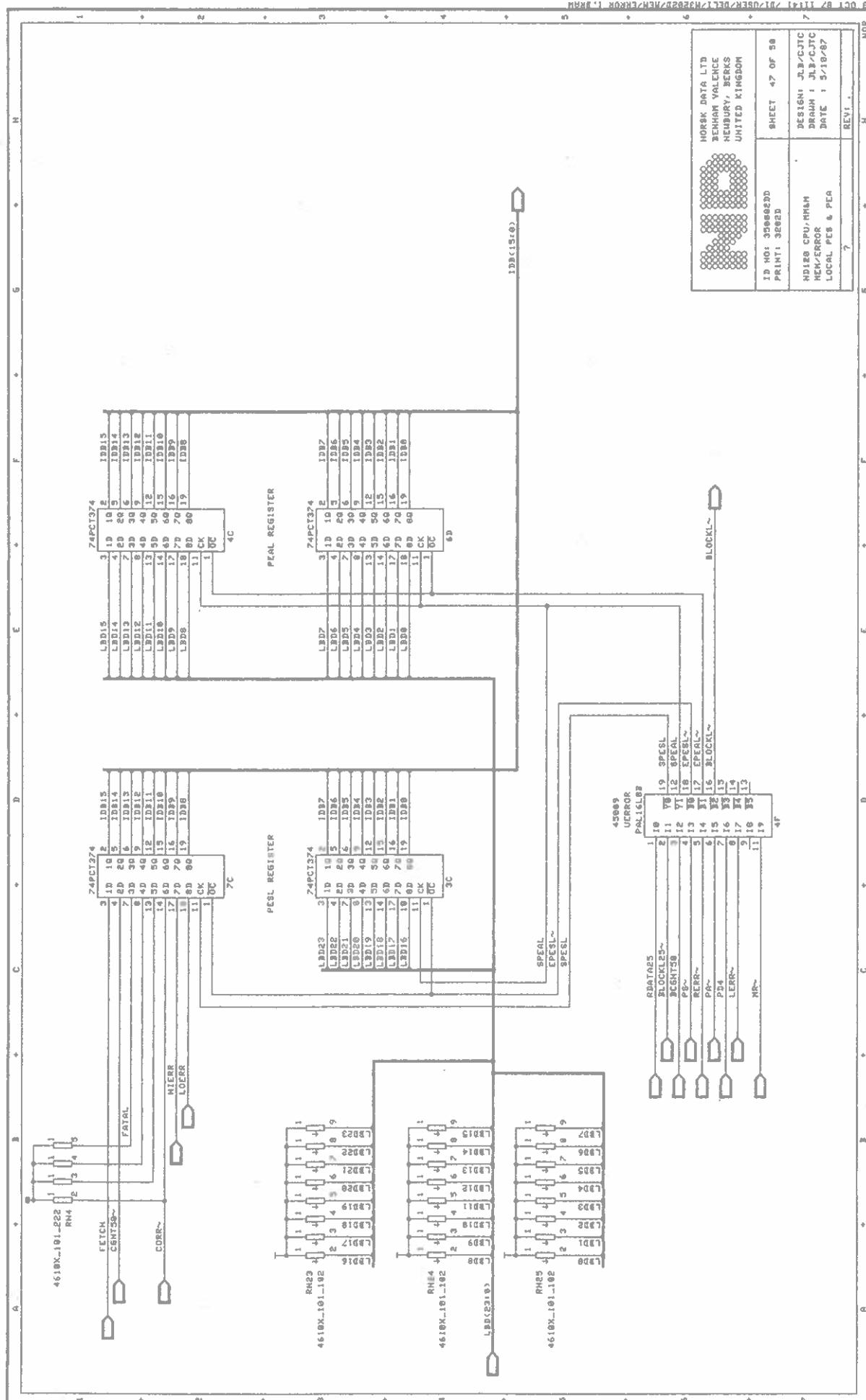


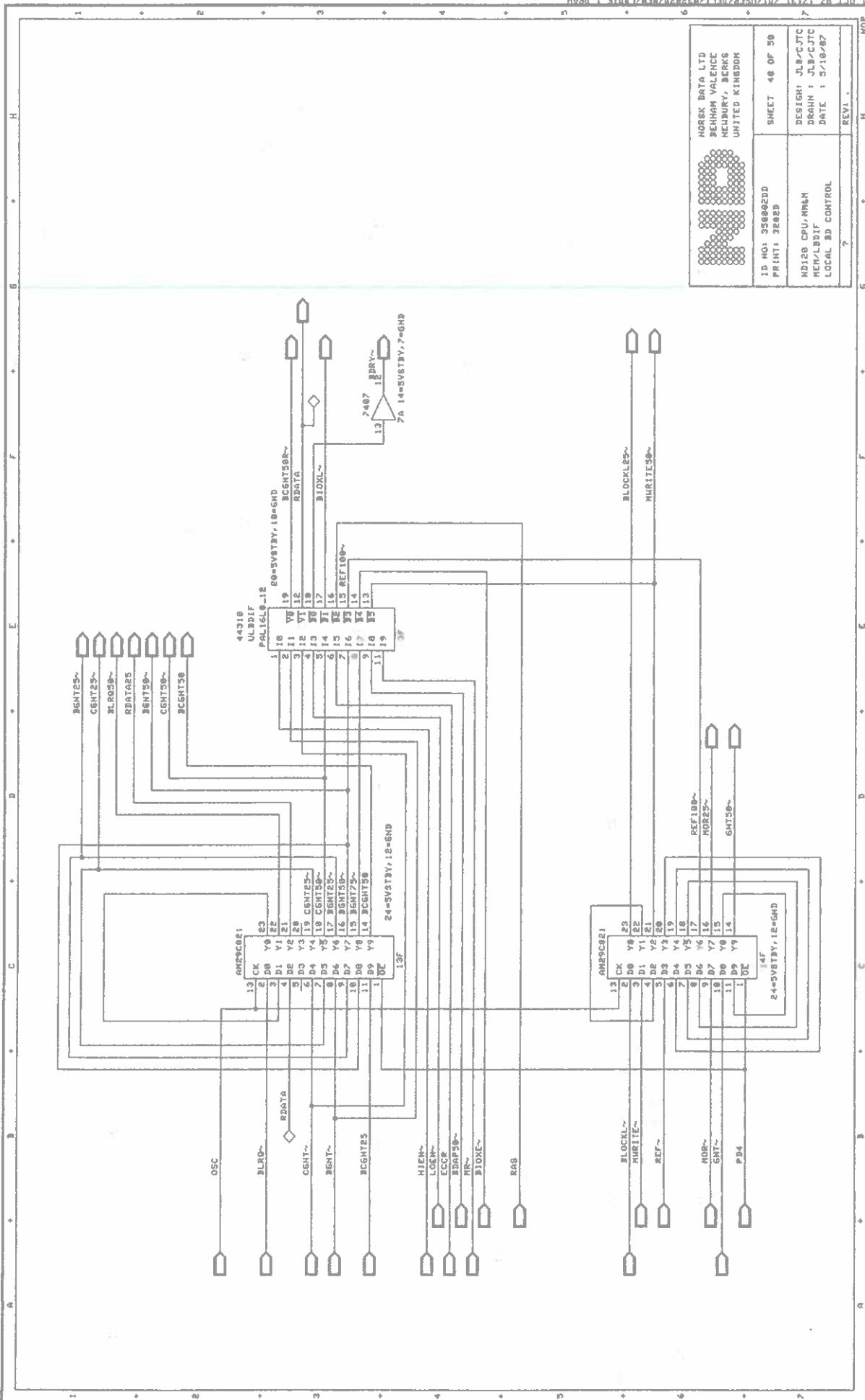


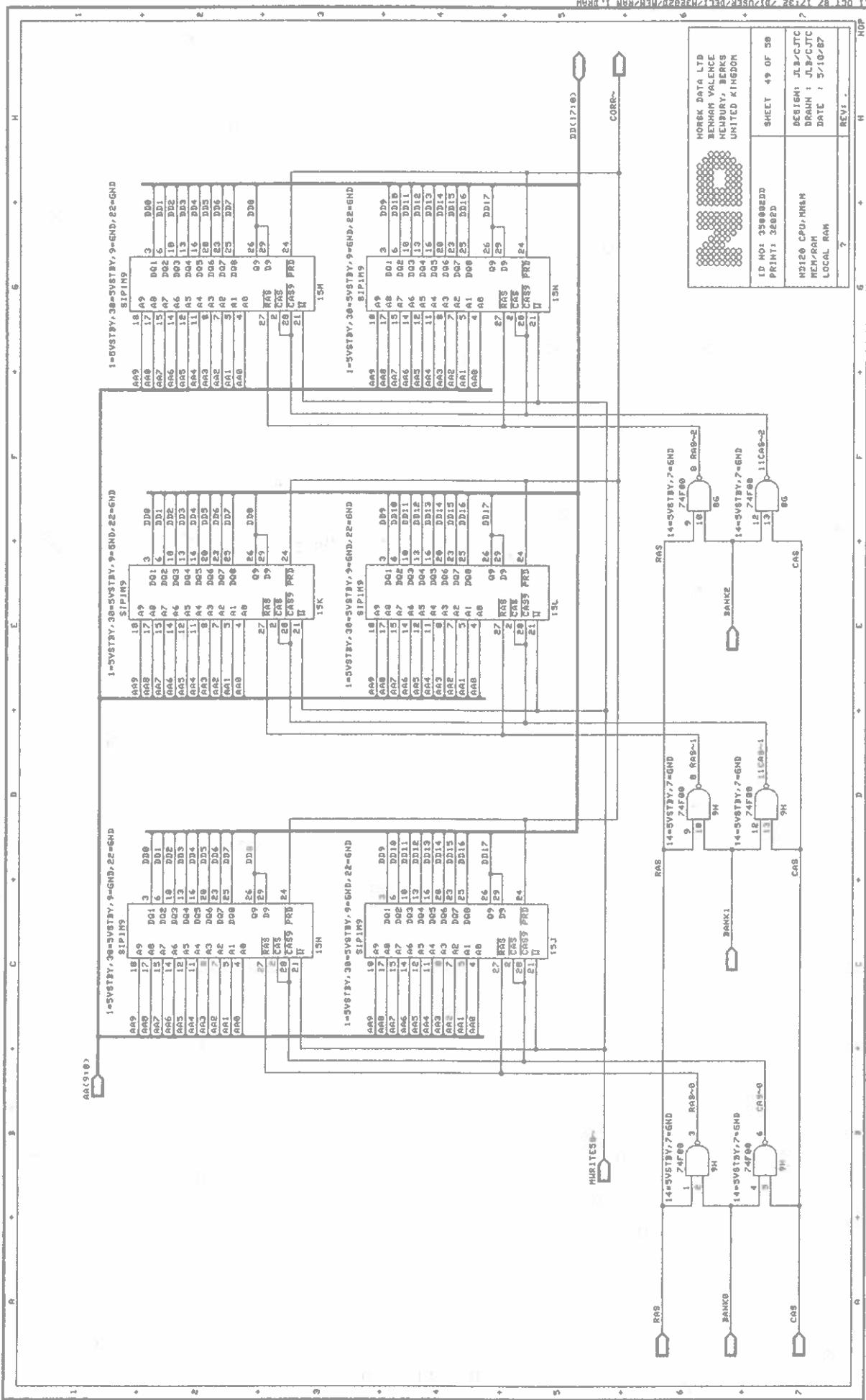


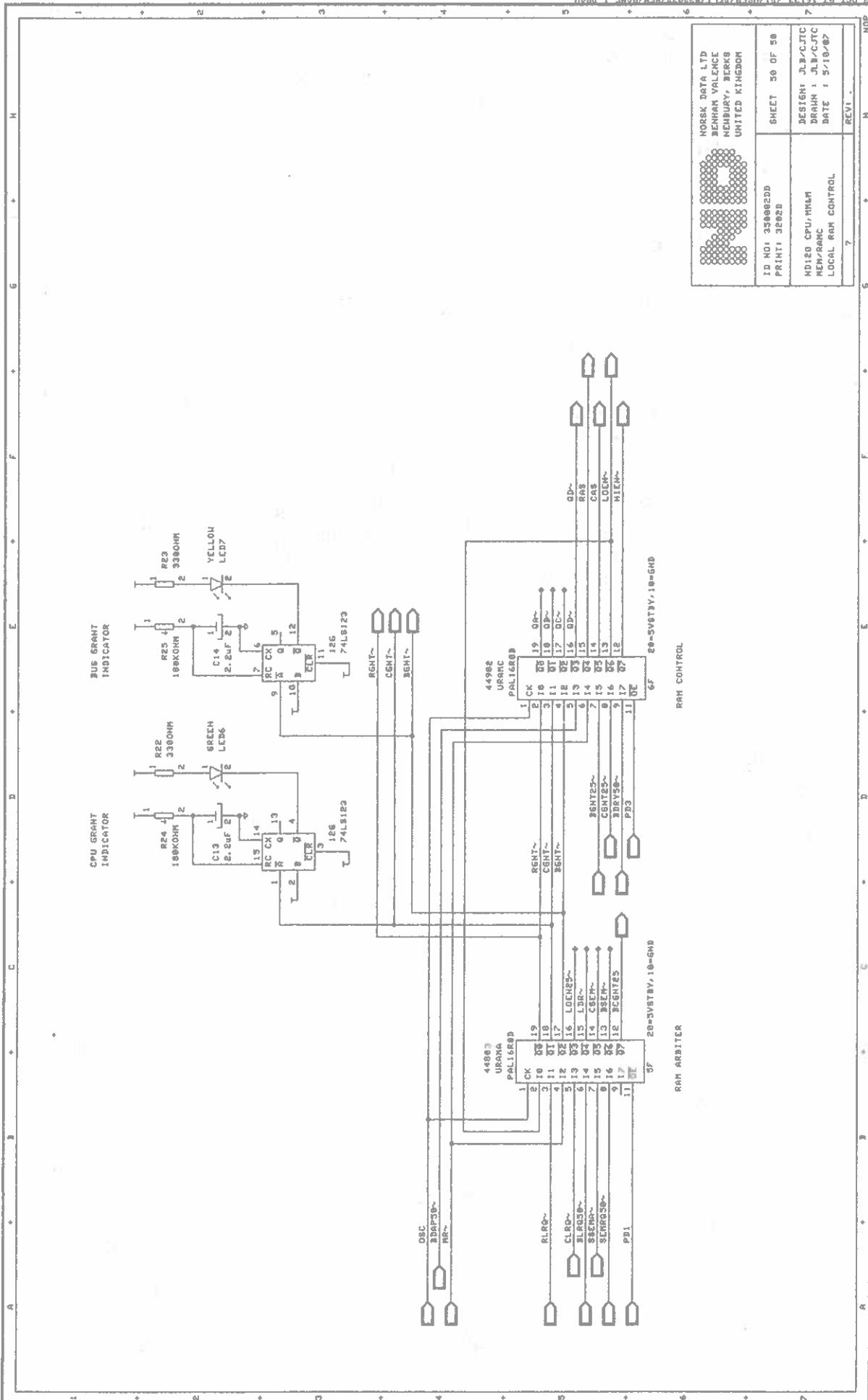












H3202A
DC SPECCS

PAL16R8

SIZEIND CJTC:8/4/87

/MOFF

CLK /SO /S1 ~~D04~~ NC5 NC6 NC7 NC8 NC9 GND
 /OE /EHI /EMID /ELOW ~~CSEG ADSEG ESEG FSEG GSEG~~ VCC

DBIT CBIT BBIT ABIT

; MEMORY SIZE INDICATOR FOR 0, 2, 4 OR 6 MB MEMORY ARRAYS

EHI := EMID + ELOW * EHI + /ELOW * /EHI ; ENABLE DIGIT 3

EMID := ELOW * /EMID * /EHI ; ENABLE DIGIT 2

ELOW := /ELOW * /EMID * EHI ; ENABLE DIGIT 1

ADSEG := /S1 * SO * EMID ; A & D SEGMENTS OFF

CSEG := S1 * /SO * EMID ; C SEGMENT OFF

ESEG := SO * EMID ; E SEGMENT OFF

FSEG := S1 * EMID + SO * EMID ; F SEGMENT OFF

GSEG := /S1 * EMID + EHI + ELOW ; G SEGMENT OFF

DESCRIPTION

MEMORY SIZE	S1	SO
2 Mb	MOFF	F
4 Mb	2MB	F
6 Mb	4MB	T
8Mb	6MB	F
		T
		T

LO → MID → HI

/ABIT := MOFF + /MSIZE1, MSIZE0, EMID + EHI + ELOW

/BBIT := MOFF + /MSIZE1, MSIZE0, EMID + EHI + ELOW

/CBIT := VCC

/DBIT := VCC

*entered
18/1/87*

PCB V2

PAL16L8
JLB/CJTC 14AUG86
44302D, LBC1

Q2 Qφ N~~NC1~~ N~~C7~~

```
/BDRY50 /CC2 /BDRY25 /Q2 /Qφ /CGNT /CGNT50 /RT /IORQ /DSTB /BGNT /EMD /BGNTCACT VCC
```

- ; 060387 JLB: EMD WAS HOLDING IN ADDRESS PART OF IOX CYCLES AFTER BUFFERED WRITE CYCLES.
- ; EMD - ENABLE DATA PATH BETWEEN CD AND LBD
- ; 270387 CJTC: NEW SIGNAL DSTB TO SAMPLE DATA AT LBD/CD BUFFERS ON CPU FROM BUS READ, AT BDRY.
- ; 040487 JLB: DSTB MUST NOT CLOCK DATA BEFORE CACT GOES OFF IN IOXES. (NEGATIVE SETUP OF DATA IN BUS SPECS.)

IF (VCC) EMD = Q2 * Q0 * CACT	;	CPU CYCLE TO BUS SET
+ EMD * CACT	;	" HOLD
+ CGNT * CGNT50	;	CPU CYCLE TO MEM SET
+ EMD * RT * CC2 * /TERM	;) HOLD TERMS FOR
+ EMD * IORQ * CC2 * /TERM	;) CPU READ, FETCH AND
	;) MAP CYCLES

IF (VCC) CGNTCACT = CGNT + CACT

IF (VCC) BGNTCACT = BGNT + CACT

IF (VCC) DSTB = CGNT + CACT * /BDRY50 * /BDRY25 * /IORQ
+ CACT * IORQ * CC2 ; IOX CYCLE

DESCRIPTION

Pinout:

*Qφ /Q2 /CC2 /BDRY25 /BDRY50 /CGNT /CGNT50 /CACT /TERM GND
/BGNT /CGNTCACT /RT /IORQ NC15 NC16 ~~REPT~~ /EMD /BGNTCACT VCC
/DSTB*

*Version E
18/5/87*

PCB v2

PAL16L8
JLB/CJTC 15AUG86
44303A,LBC2 - LOCAL DATA BUS CONTROL PAL

/CACT /CGNT /EADR /BINPUT50 MISO /IOD WRITE NC8 NC9 GND
/BACT /WLBD NC13 NC14 NC15 NC16 /CMWRITE /CBWRITE /WBD VCC

; LBD TO BD TRANSCEIVER
; -----

; WBD - DIRECTION FROM LBD TO BD

IF (VCC) WBD = EADR ; ADDRESS FROM CPU TO BUS
+ CBWRITE ; CPU WRITE CYCLE TO BUS
+ IOD * MISO * /BINPUT50 ; OUTPUT PART OF IOX
+ BACT ; DMA OUTPUT CYCLE

; (CBWRITE) - CPU TO BUS WRITE. STARTS ONLY WHEN THE BUS IS GRANTED.
; LASTS UNTIL THE END OF THE BUS CYCLE.

IF (VCC) CBWRITE = WRITE * CACT
+ CBWRITE * CACT

; CD TO LBD TRANSCEIVER
; -----

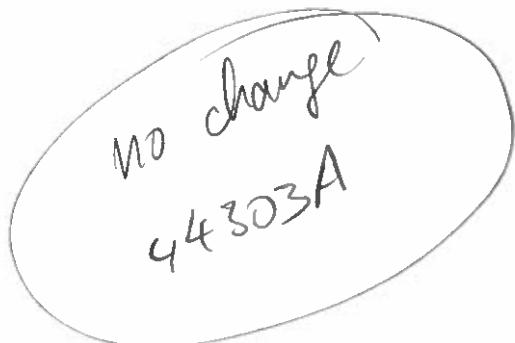
; WLBD - DIRECTION FROM CD TO LBD

IF (VCC) WLBD = CBWRITE ; CPU WRITE CYCLE TO BUS
+ CMWRITE ; CPU WRITE CYCLE TO LOCAL MEMORY
+ IOD * MISO * /BINPUT50 ; OUTPUT PART OF IOX

; (CMWRITE) - CPU WRITE TO LOCAL MEMORY. LASTS UNTIL END OF MEMORY CYCLE
; ON BUFFERED WRITE.

IF (VCC) CMWRITE = WRITE * CGNT
+ CMWRITE * CGNT

DESCRIPTION



PCB V2.

PAL16L8

CJTC 02SEP86

44304E, LBC3 - LOCAL DATA BUS CONTROL PAL

/IBAPR

/CGNT /BGNT /BGNT50 /MWRITE /BDAP50 /EBUS /BAPR /GNT NC9 GND
NC11 DONTUSE2 /EBD FAPR SAPR EBADR APR /BACT DONTUSE VCC

NC12

DBAPR

DBAPR

DBAPR

; 200387 CJTC: NEED TO SLOW DOWN APR TO AS648 BUS TCVRS. PUT IT
; THROUGH THIS PAL INSTEAD OF F04
; 200387 JLB: EBADR COMES ON AT BAPR TO AVOID SPIKE ON LBD.
; NEW INPUT CGNT
; 230387 JLB: APR DELAYED 3XPAL DELAY
; 240387 JLB: EBD MUST NOT CHANGE WHEN DATA IS CLOCKED IN.

; BACT - BUS ACTIVITY. LASTS FOR COMPLETE DMA TO LOCAL MEMORY
; CYCLE (ONLY ON MEMORY READ)

IF (VCC) BACT = BGNT50 * /MWRITE ; ENABLE FOR DATA ONLY AFTER ADDRESS
+ BACT * BDAP50 ; HOLD AFTER BDAP FINISHED

; EBD - ENABLE BUS DATA. ENABLE LBD TO BD TRANSCEIVER
; SHOULD BE DISABLED DURING CGNT * /BACT, IE DISABLE WHEN CPU
; IS ACCESSING LOCAL MEMORY, EXCEPT WHEN TRANSCEIVER IS BEING USED
; AS A REGISTER TO HOLD DATA FROM A PREVIOUS DMA MEMORY READ.

IF (VCC) EBD = EBUS * /CGNT * /GNT
+ EBUS * GNT * BGNT
+ EBUS * BACT

; EBADR - ENABLE ADDRESS FROM BUS TO LOCAL MEMORY

IF (VCC) /EBADR = /BAPR * BGNT50 ; TURN ON AT BAPR WITH GNT
+ /BAPR * /EBADR ; HOLD UNTIL BGNT50 OR IN
+ /GNT ; W.C. UNTIL GNT GOES OFF.

; PIN CALLED DONTUSE - USED TO BE EBADR, BUT NEEDED TO BE FEEDBACK
; TERM IN MQD. SHIFTED TO PIN EBADR TO PIN 16 - DONT USE PIN 19 !!!!

; SLOW INVERSION

IF (VCC) /FAPR = /BAPR

IF (VCC) /SAPR = /FAPR

IF (VCC) /DBAPR = /SAPR

/DBAPR

DESCRIPTION

PIN LIST

/CGNT /BGNT /BGNT50 /MWRITE /BDAP50 /EBUS /BAPR
/GNT NC9 GND

NC11 /EBD NC44 SAPR FAPR EBADR /BACT
NC12 /EBD DBAPR VCC

44304F
18/5/87

PCB V2

OK.

PAL16L8
JLB 26NOV86
44305B,CSCTL

/FORM /CC1 /CC2 /CC3 /LCS /RWCS /WCS FETCH /BRK GND
/TERM /WCSTB LUA12 /WCA /ELOW /EUPP /EWCA /ECSL /WICA VCC

; 130387 JLB: ELOW ALWAYS ENABLED ON TERM IF LUA12 IS LOW.
; MAY SPEED UP NON FETCH CYCLES.

; CONTROL STORE CONTROL

IF (VCC) WICA = WCA * FETCH * /TERM ;WRITE PULSE TO MICROINSTRUCTION CACHE
IF (VCC) WCSTB = /CC3 * CC1 * WCS * RWCS ;WRITE PULSE TO WRITEABLE CONTROL STORE
+ CC3 * CC2 * CC1 * LCS ;WRITE PULSE DURING LOAD CONTROL STORE
IF (VCC) ECSL = RWCS * /WCS * CC3 * /TERM ;READ CONTROL STORE HOLD
IF (VCC) EWCA = RWCS * /CC3 * /TERM ;ENABLE WCA REG. IN MIC ONTO MA
IF (VCC) EUPP = LUA12 ;NORMAL ADDRESSING
+ WCA * FETCH ;WRITE INTO MICROINSTRUCTION CACHE
+ FETCH * /CC1 * /CC2 * /CC3 * /TERM;
IF (VCC) ELOW = /LUA12 * /FETCH ;NORMAL ADDRESSING. ON FETCH EITHER MICROI
+ /LUA12 * TERM ;ENABLE ACCORDING TO LUA12 BEFORE FETCH V
+ FORM * /BRK * CC2 * /TERM ;OR A MAP IS USED.
+ FORM * /BRK * CC3 * /TERM ;DO A MAP
+ /LUA12 * BRK * CC2 * /TERM ;ON BRK: USE BANK SELECTED BY LUA12.
+ /LUA12 * BRK * CC3 * /TERM ;

DESCRIPTION

44305B
18/5/87
NO CHANGE.

PCB V2

OK

PAL16L8
JLB 26NOV86
44306B,MMUCTL

44306B
18/5/87
No Change

CAO WRITE /DVACC /RT /WCHIM DOUBLE /EMCL /CC2 /WCA GND
LSHADOW /LAPA /EPT /EPMAP /EPTI /EIPL /EIPU /EIPUR /ECD VCC

; 25/2/87 JLB EQUATION FOR EPT MISSING

; MEMORY MANAGEMENT CONTROL

IF (VCC) ECD = WCA * /LSHADOW ;DISABLE CACHE ON SHADOW ACCESSES
+ RT * /LSHADOW * /CC2 ;ENABLE WHEN WRITING IN CACHE
;ENABLE IN THE FIRST PART OF READ/FETCH CYC

ES

IF (VCC) LAPA = DVACC * /LSHADOW * /WCHIM ;LA TO PPN WHEN VIRTUAL ACCESSES ARE DISA
;WE ARE NOT ACCESSING SHADOW MEMORY OR WR
;CACHE INHIBIT MAP

LED
TIN
WAY

IF (VCC) EIPUR = /DOUBLE * LSHADOW * WRITE ;WRITING IN SHADOW IN REX MODE WILL MASK
;THE PROTECT BITS

IF (VCC) EIPU = WCHIM ;PASS PAGE NUMBER TO BE INHIBITED FROM ID
+ DOUBLE * LSHADOW * CAO ;SHADOW ACCESSES IN SEX MODE
+ DOUBLE * LSHADOW * WRITE ;WRITING IN SHADOW IN SEX MODE WILL WRITE
;BIT PAGE NUMBER

IF (VCC) EIPL = WCHIM ;PASS PAGE NUMBER TO BE INHIBITED FROM ID
+ DOUBLE * LSHADOW * CAO ;SHADOW ACCESSES IN SEX MODE
+ LSHADOW * WRITE ;WRITING LOWER BYTE (SAME FOR REX AND SEX)

IF (VCC) EPTI = LSHADOW * /EMCL * WRITE ;DISABLE DURING EMCL TO AVOID JAMMING THE
+ LSHADOW * /EMCL * /DOUBLE ;ENABLE ONLY WHEN IN SHADOW
+ LSHADOW * /EMCL * /CAO ;DISABLE WHEN IN SEX MODE WE ARE READ/FET

IF (VCC) EPMAP = /WCHIM * /DVACC * /WRITE ;DISABLE WHEN WRITING THE CACHE INHIBIT
+ /WCHIM * /DVACC * /LSHADOW ;DISABLE WHEN VIRTUAL ACCESS IS DISABLE
+ /WCHIM * /DVACC * /DOUBLE ;ACCESSING SHADOW MEMORY EITHER.
+ /WCHIM * /DVACC * CAO ;DISABLE ON SHADOW MEMORY WRITE IN SEX
+ /WCHIM * LSHADOW * /WRITE ;ADRESSES.
+ /WCHIM * LSHADOW * /DOUBLE
+ /WCHIM * LSHADOW * CAO

IF (VCC) EPT = /WRITE * /EMCL ;DISBALE ON EMCL OR
+ /LSHADOW * /EMCL ;WRITING IN OTHER HALF
+ /DOUBLE * /EMCL ;WHEN IN SEX MODE
+ /CAO * /EMCL

F

DB

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ODE

PCB V2 [44307H] 2/4/87

/ETRAP

PAL16L8
JLB 26NOV86
44307G, CYCLK

/TERM /CC0 /CC1 /CC2 /CC3 /FORM /BRK /RWCS /TRAP GND
VEX /MACLK /MAP /ETRAP UCLK /EORF /CYD WRFSTB /MCLK VCC

; CYCLE CONTROL CLOCK GENERATOR.

; 280287 JLB: ECREQ TO LOCAL MEMORY GIVES TWO CGNTS. A SHORTER EORF,
; I.E. ONLY ON e AND NOT ON f, WILL MAKE ECREQ GO OFF 25NS SOONER
; AND HOPEFULLY CURE THIS.

; 010387 JLB: ETRAP NEW OUTPUT. WILL DISABLE TRAP ON t AND a.

; 080387 JLB: REMOVED UCLK ON CACHE HIT CYCLES.

; 160387 JLB: REMOVED TERM IN MCLK AND MACLK TO PROVIDE SYMMETRICAL
; CLOCKS IN 50 NS CYCLES.

; 170387 JLB/CJTC: REMOVED MREQ - NEEDED THE INPUT FOR NEW SIGNAL VEX.
; VEX SHOULD DISABLE TRAPS.

; 180387 JLB: EORF ON d ONLY. MACLK ON e + f ON MAP.

IF (VCC) MCLK = RWCS * /CC3 ; BECAUSE THE CONTROL STORE ADDRESS
+ RWCS * CC2 ; IN PRESENTED ONTO MA. THEN THE ADD
; STORE LOCATION TO BE EXECUTED IS P

IF (VCC) /WRFSTB = CC3 ; b ON 75NS CYCLES TO PROVIDE A WRIT
+ CC2
+ CC1
+ /CC0
+ TERM

IF (VCC) CYD = /CC3 * /CC2 * CC1 * /CC0 * /TERM ; d USED TO START WRITE PULSE TO

IF (VCC) EORF = /CC3 * /CC2 * CC1 * /CC0 * /TERM ; d MISC WRITE PULSE.

IF (VCC) /UCLK = CC3 ; ON c ON ALL MEMORY REQUESTS.
+ CC2 ; USED TO UPDATE USED BITS AND CLOCK
+ /CC1
+ /CC0
+ TERM ; EXPERIMENT TO SEE IF UCLK ON TERM WAS DANGEROUS.

IF (VCC) MAP = FORM * /BRK * CC2 * /TERM ; MUST NOT COME BEFORE ALL SHORT CYC

IF (VCC) MACLK = MAP * /CC3 * CC2 * CC1 ; e+f CAPTURE CD FROM MEMORY THROU
+ TRAP * /CC3 * CC1 * /CC0 ; d+e CAPTURE TRAP VECTOR
+ RWCS * /CC3 ; CAPTURE MICROADDRESS AFTER E
+ RWCS * CC2 * /CC1 ; TURNED OFF

IF (VCC) /ETRAP = TERM ; t UNSTABLE TRAP IN THIS
+ /CC3 * /CC2 * /CC1 * /CC0 ; a PERIOD CAN DESTROY MA !
+ VEX ; DISBALE TRAPS DURING
ETRAP = TERM .NEX. (CC3 + CC2 + CC1 + CC0) ; VIRTUAL EXAMINES

DESCRIPTION

PCB V2

PAL16L8
ADGD 12AUG86
~~44309A, ERROR~~

4500AC 50 NC7 /LERR NCP
RDATA /BLOCKL25 BCGNT²⁵ /PS /RERR /PA - /MR /PERRO /PERRI GND
/MR SPEAL /NC13 /NC14 /NC15 /BLOCKL /EPEAL /EPESL SPESL VCC
; 2/1-87JLB: RDATA PIN 1.

IF (VCC) /SPESL = /RDATA + BLOCKL25 + EPEAL +EPESL + MR ;RDATA USED AS WRITE
;PULSE WHEN NOT BLOCK

IF (VCC) /SPEAL = /BCGNT^{SO}₁₅ + BLOCKL₁ + EPEAL + MR ;BCGNT USED AS WRITE
;PULSE

IF (VCC) EPESL = PS * /RERR ;ENABLE IF NOT ERROR IN REMOTE MEMORY

IF (VCC) EPEAL = PA * /RERR

IF (VCC) BLOCKL = ~~RDATA * /EPEAL * /EPESL * MOR * /MR~~ ;LOCKS AT AN ERROR
+ ~~RDATA * /EPEAL * /EPESL * PERR0 * /MR~~ ;SET UNTIL PEA IS REA
 ~~LERR~~
+ ~~RDATA * /EPEAL * /EPESL * PERR1 * /MR~~
+ BLOCKL * ~~/EPEAL * /MR~~

DESCRIPTION

PCB V2

PAL16L8
ADGD 13/8/86
44310B,LBDIF

/HIEN /BGNT /CGNT /LOEN /CGNT50 ECCR /BGNT50 /BGNT75 /BDAP GND
/MR RDATA /MWRITE50 /BIOXE /REF100 /RGNT /BIOXL /BDRY /BCGNT50R VCC
;280287 JLB: ECCR WRONG POLARITY, RESPONDS WITH BDRY TO ALL NON-
;EXISTING IOX-ES.
;280287 JLB: NEW INPUT REF~, TO GENERATE A REF PULSE OF 175-200NS
;DURATION BY GENERATING BDRY~.

DC
YC
EED
S

IF (VCC) BCGNT50R = /MWRITE50 * BGNT * BGNT50 ;FROM 50NS AFTER GNT ON RE
+ /MWRITE50 * CGNT * CGNT50 ;LASTS FOR THE REST OF THE

IF (VCC) BDRY = /MWRITE50 * BDAP * /BGNT50 * BGNT75 ;BUS READ FROM LOCAL MEM.
+ MWRITE50 * BGNT * BDAP * /LOEN * /HIEN ;BUS WRITE TO LOCAL MEMORY
+ BIOXL * ECCR ;IOX=ECCR
+ /MR * BDRY * BDAP ;HOLD TERM FOR MEMORY CYCL
+ /MR * BDRY * BIOXE ;HOLD TERM FOR IOX CYCLE
+ REF100

IF (VCC) BIOXL = BIOXE * /BGNT * /CGNT

IF (VCC) /RDATA = MWRITE50 ;INDICATES DATA READY ON READ CYCLES
+ LOEN
+ HIEN
+ RGNT

DESCRIPTION

44310b
18/5/87
no sharp

PCB v2.

PAL16R4
JLB 12AUG86
44401D,BTIM
BTIM.PAL

OSC /CC2 /CACT /CACT25 /BDRY50 /CGNT /CGNT50 /TERM /IORQ GND
/OE /EADR /EIOD /NC14 /02 /01 /00 /DAP /APR VCC

; 010387 JLB: EIOD TOO SOON, ONLY 15NS SETUP FOR BD BEFORE BIOXE.
; WOULD NOT LOAD FROM FLOPPY. EIOD FRONT FLANK DELAYED 25NS.
; SAME WITH DAP. DAP HELD FOR THE REST OF THE CYCLE UNTIL TERM
; ON IORQ.
; 060387 JLB: DAP HELD INTO ADDRESS PART OF IOX CYCLES AFTER A
; BUFFERED WRITE CYCLE. SWAPPED IOD FOR IORQ IN EIOD.
; USING CC2 (NEW INPUT) TO QUALIFY DAP AND EIOD
; STATE MACHINE

$$Q_0 := CACT * /Q_2 * /Q_1 * /Q_0 * /CACT25 \\ + /Q_2 * /Q_1 * Q_0 \\ + Q_2 * Q_1$$

$Q_1 := /Q_2 * Q_0$
 $+ Q_1 * /Q_0$

Q2 := Q1 * /Q0
+ Q2 * 00

IF (VCC) APR = /Q2 * Q1 * CACT

```

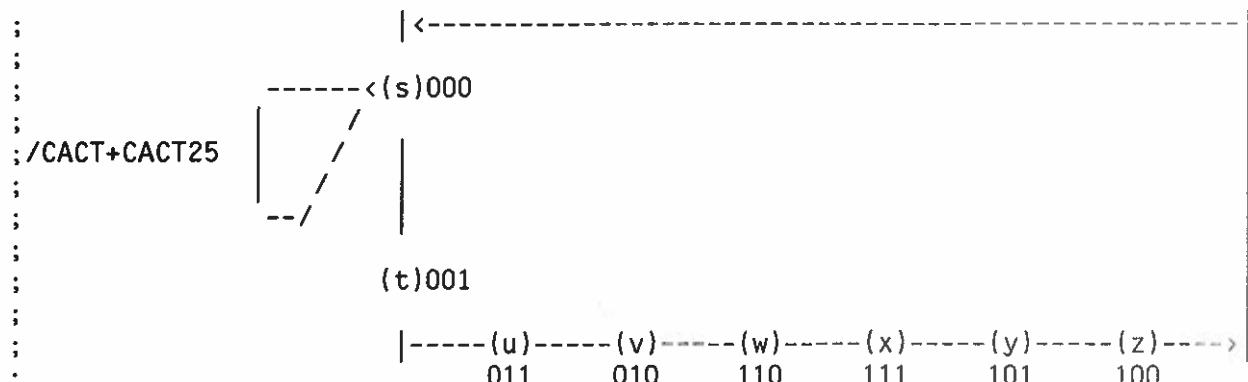
IF (VCC) EADR = /Q2 * Q0 * CACT ; t + u
    + /Q2 * Q1 * CACT ; u + v
    + Q1 * /Q0 * CACT ; v + w
    + /Q2 * /Q1 * /Q0 * CACT * /CACT25 ; s
    + CGNT * /CGNT50 ; address part for CPU cyc

```

IF (VCC) DAP = /Q2 * /Q1 * /Q0 * CACT * CACT25
+ DAP * /TERM * IOR0 * CC2

IF (VCC) EIOD = IORQ * /Q2 * /Q1 * /Q0 * CACT * CACT25 * /BDRY50 * CC2
;STARTS WHEN THE s STATE HAS BEEN REACHED AFTER COMPLETING THE LOOP.

DESCRIPTION



PCB V2

44403A

27/4/87

PAL16R4
JLB 26NOV86
44403A, CYINO

OK

CLK CSDELAYO CSDLY CSECOND CSLOOP /ACOND /MR LUA12 /MAP GND
/OE /NC12 /NC13 /DMAP /DMA12 ~~MDLY~~ /LCS /NC18 /DLY0 VCC

~~SLD~~

; CYCLE CONTROL INPUT GENERATOR. PART 0.

IF (VCC) DLY0 = MDLY ;25NS DELAY ON MICROCODE REQUEST
+ CSDELAYO ;25NS DELAY OF PREVIOUS CYCLE ON MICROCODE REQUE
+ ACOND * CSECOND ;CONDITIONAL MICROSEQUENCING
+ ACOND * CSLOOP ;USING ALU RESULT
+ LUA12 * /DMA12 ;
+ /LUA12 * DMA12 ;CHANGING FROM LOWER TO UPPER CONTROL STORE AND
+ DMAP * LUA12 ;

LCS := MR ;LCS FROM MR AND UNTIL MA12 HAS GONE HIGH AND T
+ /DMA12 * /LUA12 * LCS ;I.E. LMA COUNTED FROM 0 TO 8K.
+ DMA12 * LUA12 * LCS
+ /DMA12 * LUA12 * LCS

MDLY := CSDLY

DMA12 := LUA12

DMAP := MAP

DESCRIPTION

PCB r2

PAL16R4
JLB 26NOV86

OK.

44404B
18/5/87

44404A, CYIN1
CLK CSDELAY1 CSALUM1 CSALUM0 CSALUI8 CSALUI7 LBA3 LBA1 LBA0 GND
/OE ~~MDT /DEFI~~ /NC14 /NC15 /NC16 /NOWRIT /NC18 /NC19 VCC
~~NC12~~
; CYCLE CONTROL INPUT GENERATOR. PART 1.

IF (VCC) DLY1 = CSDELAY1 * /LBA3 * LBA1 * LBA0 * /NOWRIT ;25NS DELAY OF PREVIOUS CYC
; ON MICROCODE REQUEST IN A
; DLY0. NB..! MUST ALSO HAVE
; OF LONG COMPUTATION TIME.
; THIS DELAY IS ONLY USED W
; IS WRITTEN INTO AND ONE 0
; FOR ADDRESS COMPUTATION I
NOWRIT := /CSALUM1 * /CSALUI8 * /CSALUI7
+ /CSALUM0 * /CSALUI8 * /CSALUI7

DESCRIPTION

can be changed to 16RG if needed.

PCB V2

PAL16R4

JLB 25.FEB87 ERFFIX.PAL
44407A,ERFFIX.PAL

CLK IDBS0 IDBS1 IDBS2 IDBS3 IDBS4 WRTRF /LCS NC9 GND
/OE /NC12 /NC13 /NC14 /NC15 /NC16 /RRF /NC18 /ERF VCC

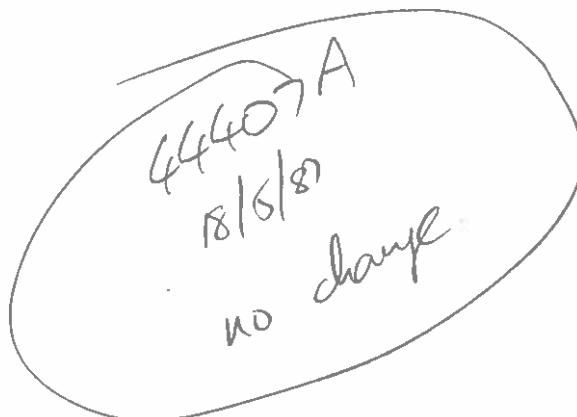
; IDBS = REG FILE = 5

RRF := /LCS * /IDBS4 * /IDBS3 * IDBS2 * /IDBS1 * IDBS0

; ERF

IF (VCC) ERF = RRF
+ WRTRF

DESCRIPTION



PCB V2

PAL16R4
JLB/CJTC 8AUG86
44412D,UBITS

UCLK /DT /RT LSHADOW /TERM /CYD /HITO /HIT1 /EWC GND
/OE OUBI OUBD /IHIT ~~CUP~~ NUBD NUBI /WCA /USED VCC
;B 050387 JLB: USED BITS INVERTED TO ACTIVE HIGH.
;C 060387 JLB: SHOULD NOT PRODUCE WCA WHEN IN SHADOW.
;D 120387 JLB: HIT PATH IMPROVED
; CACHE USED BIT CONTROL

Nc15

IHIT := HIT1 * HITO * OUBI * RT * /DT * /WCA ;FETCH
+ HIT1 * HITO * OUBD * RT * DT * /WCA ;READ

IF (VCC) USED = OUBI * RT * /DT * /WCA ;FETCH
+ OUBD * RT * DT * /WCA ;READ

IF (VCC) WCA = /RT * DT * EWC * CYD * /TERM * /LSHADOW ;WRITE OUTSIDE SHADOW
+ RT * /IHIT * EWC * CYD * /TERM * /LSHADOW ;FETCH/READ WITHOUT HIT
+ WCA * /TERM ;OUTSIDE SHADOW

~~/CUP := GND~~

~~;CACHE UPDATED ALWAYS~~

/NUBI := DT * /OUBI ; READ OR WRITE KEEP OLD VALUE
+ /RT * DT * HITO * HIT1 ; CLEAR IF WRITE WITH HIT

/NUBD := RT * /DT * /OUBD ; IF FETCH KEEP OLD VALUE

DESCRIPTION

44412E
18/5/87

PCB V2

PAL16R4

ADGD 18/8/86

44425B, CADEC

CPU ADDRESS DECODER FOR 2MB MEMORY

CK WRITE /IORQ /MOFF ~~NC5~~ PPN19 PPN20 PPN21 PPN22 PPN23 GND

/CGNT ECREQ /CRQ /MWRITE ~~MA20~~ /NC16 /NC17 CLRQ ~~NC19~~ VCC

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.

; 150387 JLB: WRITE WAS WRONG POLARITY.

; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

PPN19

BANK \emptyset BANK1 BANK2

/MSIZE \emptyset

~~ZMA20 := /PPN20~~

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ; EACH LI

; TO ALLO

; IN THE

; THE 4MB

; NEED NO

IF (VCC) CRQ = ECREQ * IORQ

; ECREQ WILL HOLD

+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21
+ ECREQ * PPN20

DESCRIPTION

BANK \emptyset := /PPN21 * /PPN20

BANK1 := /PPN21 * PPN20

BANK2 := PPN21 * /PPN20

For 2 Mb : MSIZE \emptyset = ~~1MOFF~~ GND

44425C

18/5/87

PCB V2.

PAL16R4
ADGD 18/8/86
44426B, BADEC

DMA ADDRESS DECODE FOR 2MB MEMORY
~~APR /BINPUT /BMEM /MOFF NC5 /BD20 /BD21 /BD22 /BD23 GND~~
~~/BGNT /BGNT APR /MWRITE MA20 /NC16 /NC17 DDAPR AOK VCC~~

BANK0 BANK1 BANK2

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED
; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.
; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !
; CHANGED TO AOK

~~MA20 := /BD20~~

MWRITE := BINPUT

IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + BD20 + MOFF ; 2 MB

IF (VCC) /DDAPR = /APR

DESCRIPTION

$$\left(\begin{array}{l} \text{BANK0} := /BD21 * /BD20 \\ \text{BANK1} := /BD21 * BD20 \\ \text{BANK2} := BD21 * /BD20 \end{array} \right)$$

(2Mb) MSIZE1 = GND

PIN LIST DBAPR DBAPR /MOFF /BINPUT /BMEM /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BLRQ /MSIZE1 /MWRITE BANK0 BANK1 BANK2 DDAPR AOK VCC
/BD19

PCB V2

44445C

18/5/87

PAL16R4

ADGD 18/8/86
44445A, CADEC

PPN19

BANK0 BANK1 BANK2

CPU ADDRESS DECODER FOR 4MB MEMORY

CK WRITE /IORQ /MOFF ~~N25~~ PPN20 PPN21 PPN22 PPN23 GND

/CGNT ECREQ /CRQ /MWRITE MA20 /NC16 /NC17 /CLRQ ~~NC19~~ VCC

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, PPN18 AND PPN19 REMOVED.

; 150387 JLB: WRITE WAS WRONG POLARITY.

; 150387 JLB: SPIKE GENERATOR REMOVED FROM CRQ.

/MSIZE~~∅~~

~~MA20 := /PPN20~~

MWRITE := WRITE

IF (VCC) CLRQ = ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * /PPN20 * /MOFF ; EACH LI

; TO ALLO

+ ECREQ * /IORQ * /PPN23 * /PPN22 * /PPN21 * PPN20 * /MOFF ; IN THE

; THE 4MB

; NEED NO

IF (VCC) CRQ = ECREQ * IORQ ; ECREQ WILL HOLD

+ ECREQ * MOFF
+ ECREQ * PPN23
+ ECREQ * PPN22
+ ECREQ * PPN21

DESCRIPTION

$$\begin{cases} \text{BANK} \emptyset := \text{PPN21} * \text{PPN20} \\ \text{BANK 1} := \text{PPN21} + \text{PPN20} \\ \text{BANK 2} := \text{PPN21} * \text{PPN20} \end{cases}$$

For 4 Mb:

~~MSIZE~~∅~~~~ = ~~VCC~~ VCC

For 6Mb ; 44465R

$$\begin{aligned} \text{CLRQ} = & \quad - \\ & + \quad - \\ & + \text{ECREQ} * \text{IORQ} * \text{PPN23} * \text{PPN22} * \text{PPN21} * \text{PPN20} * \text{MOFF} \end{aligned}$$

$$\begin{aligned} \text{CRQ} = & \text{ECREQ} * \text{IORQ} \\ & + \text{ECREQ} * \text{MOFF} \\ & + \text{ECREQ} * \text{PPN23} \\ & + \text{ECREQ} * \text{PPN22} \\ & + \text{ECREQ} * \text{PPN21}, \text{PPN20} \end{aligned}$$

6Mb:

~~MSIZE~~∅~~~~ / ~~GND~~

$$\text{MSIZE} \emptyset = \text{VCC} \text{ GND}$$

44465C

18/5/87

PCB V2

4446C

18/5/87.

PAL16R4

ADGD 18/8/86

4446B, BADEC

DMA ADDRESS DECODE FOR 4MB MEMORY

~~APR /BINPUT /BMEM /MOFF NC5 /BD20 /BD21 /BD22 /BD23 GND
/BGNT /BGNT APR /MWRITE MA20 /NC16 /NC17 DDAPR AOK VCC~~

BANK0 BANK1 BANK2

} Pin List As Per
4446B

; 2/1-86JLB: BOTH SIDES OF MWRITE EQUATION INVERTED

; 8/1-87JLB: NEW INPUT /MOFF TO DISABLE THE WHOLE MEMORY, BD18 AND BD19 REMOVED.

; 300387 JLB: BLRQ ASSUMED DATA HOLD TIME AFTER TRAILING EDGE OF BAPR !

; CHANGED TO AOK

/MA20 := /BD20

MWRITE := BINPUT

IF (VCC) /AOK = /BMEM + BD23 + BD22 + BD21 + MOFF ; 4 MB

IF (VCC) /DDAPR = /APR

DESCRIPTION

BANK0 := /BD21 * /BD20
BANK1 := /BD21 * BD20
BANK2 := BD21 * /BD20

MSIZE1 = ~~VCC~~ GND

For 6MB

4446B

4446C

18/5/87

IF (VCC) /AOK = /BMEM + BD23 + BD22
+ (BD21 * BD20) + MOFF ; 6MB

MSIZE1 = ~~VCC~~ VCC

PCB V2. C44601K OSC /DLY1 /DLY0 CSDELAY0 WAIT1 WAIT2 /CGNTCACT HIT /BRK GND
/OE /SHORT /CC3 /CC2 /CC1 /CC0 /TERM /CX /SLOW VCC

PAL16R6
JLB 26NOV86
44601K,CYCFM

~~CLK /DLY1 /DLY0 /SHORT WAIT1 WAIT2 /CGNTCACT /SLOW /BRK GND
/OE HIT /CC3 /CC2 /CC1 /CC0 /TERM /NC18 CSDELAY0 VCC~~

; CYCLE CONTROL STATE COUNTER. FAST VERSION.

; 060387 JLB: MOD'S FROM SLOW VERSION IMPLEMENTED.
; 060387 JLB: 100 NS CYCLE MIN. NO BUFFERED WRITE.
; 070387 JLB: 75 NS CYCLE MIN. NO BUFFERED WRITE.
; 120387 JLB: IMPROVED HIT PATH. FORM^ REMOVED. HIT INPUT ON PIN 12.
; SHORT IN ON PIN 4.
; 120387 JLB: 50 NS CYCLE ON SHORT
; 180387 JLB: MR GATED WITH WAIT1 OUTSIDE. NEW INPUT CSDELAY0.
; 180387 JLB: BUFFERED WRITE.
; 180387 JLB: 175NS SLOW & BRK CYCLES.
; 210387 JLB: 200NS SLOW CYCLES, 175NS BRK CYCLES.

TERM := /CC3 * /CC2 * /CC1 * /CC0 * SHORT * /TERM * /DLY0 * /CSDELAY0 ;50NS CYCLE
+ /CC3 * /CC2 * /CC1 * CC0 * SHORT * /BRK * /DLY1 * /TERM ;75NS CYCLE
+ /CC3 * /CC2 * /CC1 * CC0 * HIT * /BRK * /DLY1 * /TERM ;75NS CYCLE
+ /CC3 * /CC2 * CC1 * CC0 * SHORT * /BRK * /TERM ;100NS CYCLE
+ /CC3 * /CC2 * CC1 * CC0 * HIT * /BRK * /TERM ;100NS CYCLE
+ /CC3 * CC2 * CC1 * CC0 * BRK * /TERM ;BRK CYCLE ()
+ /CC3 * CC2 * CC1 * CC0 * SLOW * /TERM ;SLOW CYCLES INCL
+ CC3 * /CC2 * /CC1 * /CC0 * /TERM ;UART,LCS,RWCS CY

CC3 := CC2 * /CC1 * /CC0 * /TERM ;h+i+j+k+l+m+n+o
+ CC3 * CC1 * /TERM
+ CC3 * CC0 * /TERM

CC2 := /CC3 * CC2 * CC1 * /TERM ;e+f+g+h+i+j+k
+ CC2 * /CC1 * /TERM
+ CC2 * CC0 * /TERM
+ /CC3 * /CC2 * CC1 * /CC0 * CGNTCACT * /TERM
+ /CC3 * /CC2 * CC1 * /CC0 * /WAIT1 * /TERM
+ /CC3 * /CC2 * CC1 * /CC0 * BRK * /TERM ;d WAIT FOR BUS IF
; d WAIT1 AND NOT
; d BRK

CC1 := /CC3 * /CC2 * CC0 * /TERM ;b+c+d+e+j+k+l+m
+ CC3 * CC2 * CC0 * /TERM
+ CC1 * /CC0 * /TERM

CC0 := /CC3 * /CC2 * CC1 * /TERM ;a+b+f+i+j+m+n
+ /CC3 * CC2 * CC1 * CC0 * /TERM
+ CC3 * CC2 * /CC1 * /TERM
+ CC3 * /CC2 * CC1 * /TERM
+ /CC3 * CC2 * CC1 * /CC0 * CGNTCACT * /TERM
+ /CC3 * CC2 * CC1 * /CC0 * BRK * /TERM
+ /CC3 * CC2 * CC1 * /CC0 * /WAIT2 * /TERM ;e WAIT FOR BUS OR LOC
; e MEM CYCLE TO FINISH
; e IF WAIT2 AND NOT BR

+ /CC3 * /CC2 * CC1 * CC0 * CGNTCACT * /BRK * /TERM ;c PREV WRITE.

DESCRIPTION

200
FE
ES

Modded 27/6/87

PCB V2

PAL16R4
JLB/CJTC 17MAR87
44701B, VEXFIX

44701B

18/5/87

CLK C4 C3 C2 C1 CO M1 MO /LCS GND
/OE IDB2 NC13 NC14 ~~MAC~~ ^{VEX} /LDEXM NC18 NC19 VCC

; 090487 JLB: VEX INVERTED TO FIX TRAP BUG IN CGA

; TO FIX VIRTUAL EXAMINE BUG IN CGA

LDEXM := C4 * /C3 * /C2 * /C1 * CO * M1 * MO * /LCS ; COMMAND 21.3

{ VEX := LDEXM * IDB2 * /LCS ; SET
+ /LDEXM * VEX * /LCS ; HOLD }
/MAC := /C4 + /C3 + /C2 + /C1 + CO + /M1 + MO + LCS ; COMMAND 36.2
/0 ~~LCS~~

DESCRIPTION

/VEX := LDEXM . /IDB2 .
+ /LDEXM . /VEX
+ LCS.

PCB V2.

44801B

18/5/87.

PAL16R8
JLB/CJTC 11AUG86
44801A, BARB

25

OSC /CRQ /IORQ /MR /BRQ50 /REFRQ50 /BDRY50 /SEMRQ50 NC GND
/OE /CACT /GNT /IOD /REF /MEM /DOREF /ACT /SEM VCC

; 26/2-87JLB: WRONG HOLD TERM IN IOD.

; PRIORITY:

- ; 1. REFRESH
- ; 2. CPU REQUEST AFTER A REFRESH
- ; 3. BUS REQUEST
- ; 4. CPU REQUEST

; CACT - CPU IS ACTIVE ON THE ND100 BUS

CACT := CRQ * /REFRQ50 * /BRQ50 * /REF * /GNT * /SEM * /BDRY~~25~~* /MR ; 4
+ CRQ * /REFRQ50 * DOREF * /REF * /GNT * /SEM * /BDRY~~25~~* /MR ; 2
+ CACT * /BDRY~~25~~* /MR ; HOLD
+ CRQ * SEM * /GNT * /BDRY~~25~~* /MR ; SEMAPHORE

; REF - REFRESH GRANT ON ND100 BUS

REF := REFRQ50 * /CACT * /GNT * /SEM * /BDRY~~25~~* ; 1
+ REF * /BDRY~~25~~ ; HOLD
+ REFRQ50 * MR ; ALWAYS GRANT REFRESH DURING MR

; GNT - GRANT ND100 BUS TO A DMA DEVICE OR EXTERNAL BUS CONTROLLER

GNT := BRQ50 * /REFRQ50 * /CRQ * /REF * /CACT * /SEM * /BDRY~~25~~* /MR ; 3
+ BRQ50 * /REFRQ50 * /DOREF * /REF * /CACT * /SEM * /BDRY~~25~~* /MR ; 3
+ GNT * /BDRY~~25~~* /MR ; HOLD
+ BRQ50 * SEM * GNT * /MR ; SEMAPHORE

; IOD - IO SIGNAL TO LAST FOR THE ENTIRE BUS CYCLE

IOD := IORQ * CRQ * /REFRQ50 * /BRQ50 * /REF * /GNT * /SEM * /BDRY~~25~~* /MR ; 4
+ IORQ * CRQ * /REFRQ50 * DOREF * /REF * /GNT * /SEM * /BDRY~~25~~* /MR ; 2
+ IOD * /BDRY~~25~~* /MR ; HOLD
+ IORQ * CRQ * SEM * /GNT * /BDRY~~25~~* /MR ; SEMAPHO

; MEM - MEM SIGNAL TO LAST FOR ENTIRE BUS CYCLE

; GENERATES BMEM WHICH IS PRESENT ON REFRESH, CPU MEMORY AND DMA CYCLES

MEM := BRQ50 * /IORQ * /IOD * /BDRY~~25~~* /MR
+ BRQ50 * /CRQ * /IOD * /BDRY~~25~~* /MR
+ BRQ50 * /DOREF * /IOD * /BDRY~~25~~* /MR
+ CRQ * /IORQ * /IOD * /BDRY~~25~~* /MR
+ REFRQ50 * /IOD * /BDRY~~25~~* /MR
+ REFRQ50 * MR
+ MEM * /BDRY~~25~~* /MR

; SEM - SEMAPHORE GRANT SIGNAL

SEM := SEMRQ50 * /MR * BDRY~~25~~
+ SEM * /MR * /ACT

; ACT - BUS IS ACTIVE

ACT := CACT * /BDRY~~25~~ * /MR
+ GNT * /BDRY~~25~~ * /MR
+ REF * /BDRY~~25~~ * /MR

; DOREF - INDICATES THAT LAST BUS CYCLE WAS A REFRESH

DOREF := REF * /MR * BDRY~~25~~
+ DOREF * /MR * /CACT * /GNT * /REF

DESCRIPTION

PCB V2

44802F

18/5/87

PAL16R8
ADGD 13/8/86
44802E, RAMC

l=6
/MR

OSC /RGNT /CGNT /BGNT /BDAP50 /BGNT25 /CGNT25 /BDRY50 ~~GND~~ GND
/OE /HIEN /LOEN CAS RAS /QD /QC /QB /QA VCC

;190387 JLB: RAS & CAS INVERTED.
;190387 JLB: BGNT25 NEW INPUT. USED TO DELAY STATE MACHINE TURN ON 25NS ON
; BUS CYCLES.
;230387 CJTC: CGNT25 NEW INPUT. USED TO DELAY STATE MACHINE TURN ON 25NS ON
; CPU CYCLES.
; 020487 JLB: BDRY50 WILL GET US OUT OF THE WAIT STATE ON TIMEOUT.

TS)
PE)

QA := /QD * /QC * /QB ;0)1110 IDLE UNIT NEXT GNT OF ANY TYPE
+ QD * /QC * QB ;1)1010
;2)1011 PAUSE UNTIL BDAP OCCURS (ONLY ON BG
; NO WAIT STATE ON CPU TO MEMORY WRIT

QB := QC ;3)1001
+ QB * /QA ;4)1000
+ /QD * QA ;5)0000
+ QB * BGNT25 * /BDAP50 * /MR * /BDRY50 ;6)0001
;7)0011
QC := /QD * QC ;8)0010
+ QC * /QB ;OTHER STATES WILL GO TO IDLE AFTER 1 OS
+ QC * QA
+ /QD * QB * /QA
+ QC * /RGNT * /CGNT25 * /BGNT25

QD := QC ;RAS=1,2,3,4,5,6
+ QB * /QA
+ QD * QA

/RAS := QC ;RAS=1,2,3,4,5,6
+ /QD * QA
+ /QD * QB

LOEN := /QC * /QB * /QA ;LOEN=3,4,5,6
+ QD * /QC * QA

HIEN := QD * QB * /QA ;HIEN=0,1,2,8
+ /QD * /QC * QB

/CAS := QB * /QA * /RGNT ;CAS=4,5,6,7,8
+ QD * QB * /RGNT ;CAS ON REFRESH=1,2,3,4,5
+ QC * /QB
+ QC * QA
+ /QD * RGNT

DESCRIPTION

PCB V2

44803D

18/5/87

PAL16R8
ADGD/13/86
44803C, RAMA

OSC /LOEN /RLRQ /MR /CLRQ /BLRQ50 /SSEMA /SEMRQ50 MCL GND
/OE BCGNT25 /BSEM /CSEM /LDR /LOEN25 /BGNT /CGNT /RGNT VCC

NC9

; 270387 CJTC: INCREASE PERIOD BETWEEN SUCCESSIVE GRANTS BY 25NS BY
; INTRODUCING NEW SIGNAL MFREE25~ AND NOT GRANTING ANYTHING UNTIL
; THIS IS TRUE
; 020487 JLB: MFREE NOT NEEDED, BUT TO AVOID POWER UP PROBLEMS MCL~ ADDED.

RGNT := RLRQ * /CSEM * /BSEM * /RGNT * /CGNT * /BGNT ;RLRQ HIGHEST PRIORITY
+ RGNT * /LOEN * /LOEN25 ;HOLD TO END OF DRAM CYCLE
+ RGNT * LOEN * LOEN25
+ RGNT * LOEN * /LOEN25

CGNT := /MCL * /CSEM * /BSEM * CLRQ * /BLRQ50 * /RLRQ * /RGNT * /CGNT * /BGNT ;CLRQ ALONE
+ /MCL * /CSEM * /BSEM * LDR * /RLRQ * CLRQ * /RGNT * /CGNT * /BGNT ;CLRQ * LAST DONE

+ /MCL * CSEM * /BSEM * CLRQ * /RGNT * /CGNT * /BGNT ;CLRQ WITH SEM

+ CGNT * /LOEN * /LOEN25 * /MCL
+ CGNT * LOEN * LOEN25 * /MCL MR
+ CGNT * LOEN * /LOEN25 * /MCL MR

BGNT := /MCL * /CSEM * /BSEM * /RLRQ * /CLRQ * BLRQ50 * /RGNT * /CGNT * /BGNT ;BLR

+ /MCL * /CSEM * /BSEM * /LDR * /RLRQ * BLRQ50 * /RGNT * /CGNT * /BGNT ;BLR

+ /MCL * /CSEM * BSEM * BLRQ50 * /RGNT * /CGNT * /BGNT ;BLRQ

+ BGNT * /LOEN * /LOEN25 * /MCL MR
+ BGNT * LOEN * LOEN25 * /MCL MR
+ BGNT * LOEN * /LOEN25 * /MCL MR

LDR := RGNT ;SET ON REFRESH
+ LDR * /CGNT * /BGNT ;HOLD UNTIL NEXT B OR C-GNT

CSEM := /MCL * SSEMA * CGNT ;SET ON SSEMA * CGNT
+ /MCL * CSEM * LOEN25 * LOEN ;HOLD UNTIL END OF 2ND. CGNT
+ /MCL * CSEM * LOEN25 * /LOEN
+ /MCL * CSEM * /LOEN25 * /LOEN

BSEM := /MCL * SEMRQ50 * BGNT ;SET IN SEMRQ50 * BGNT
+ /MCL * BSEM * LOEN25 * LOEN ;HOLD UNTIL END OF 2ND. BGNT
+ /MCL * BSEM * LOEN25 * /LOEN
+ /MCL * BSEM * /LOEN25 * /LOEN

LOEN25 := LOEN

/BCGNT25 := /BGNT * /CGNT

use MR instead of
MCL throughout,

DESCRIPTION

- PRIORITY: 1. REFRESH
2. CPU * LAST DONE REFRESH
3. BUS
4. CPU

PCB V2.

4500IB.
18/5/87.

PAL16L8
JLB 7JAN87
45001A, LEVO

NC1 PILO PIL1 PIL2 PIL3 NC6 NC7 NC8 NC9 GND
/NC11 /NC12 LEVO /NC14 /NC15 /NC16 /NC17 /NC18 /NC19 VCC
LEVO /NC3

; LEVEL ZERO

IF (VCC) /LEVO = PIL3
+ PIL2
+ PIL1
+ PILO

DESCRIPTION

PCB V2

PAL16L8
JLB/CJTC 11AUG86
45002D, BPAR

/BDRY50 /BDRY75 BLOCK25 /BPERR50 DBAPR BDATA /LPERR /PERR1 /EPES GND
/EPEA SPEA /MR NC15 /RERR /PARERR /BLOCK SPEA VCC

; 260387 CJTC: NEED TO USE DELAYED BAPR (DBAPR) INSTEAD OF BAPR~ IN
; PRODUCING SPEA. POLARITY CHANGE.
; 260387 JLB: BLOCK SIGNAL MUST NOT BE PRODUCED ON LOCAL MEMORY ERROR.
; IT WILL ONLY BE UNLOCKED ON PEA READ FROM REMOTE ERROR PEA.
; 260387 JLB: PERR HANDLING CHANGED.
; 070487 JLB: RERR MUST LATCH UP ON MOR ALSO.

; STROBE PARITY ERROR STATUS WORD

IF (VCC) /SPES = /BDRY50 * /BDRY75
+ BDRY50 * BDRY75
+ /BDRY50 * BDRY75
+ BLOCK25
+ EPEA
+ EPES
+ MR

; STROBE PARITY ERROR ADDRESS

IF (VCC) /SPEA = /DBAPR + BLOCK25 + EPEA + MR

; BLOCK SIGNAL FOR PES AND PEA STROBE - BLOCK ON ERROR, RELEASE ON PEA READ

IF (VCC) BLOCK = BDRY50 * /BDRY75 * /EPEA * /EPES * MOR~~25~~ * /MR
+ BDRY50 * /BDRY75 * /EPEA * /EPES * BPERR50 * /MR
+ BLOCK * /EPEA * /MR

; PARITY ERROR SIGNALS FROM BUS AND LOCAL MEMORY

IF ~~(BDRY50 * /BDRY75 * BPERR50)~~ PARERR = BDRY50 * /BDRY75 * BPERR50 * /MR
+ LERR

; REMOTE ERROR - LAST ERROR WAS FROM MEMORY ATTACHED TO THE ND100 BUS
; WILL BE OVERRIDEN BY AN ERROR FROM LOCAL MEMORY (PERR1 AND PERRO)

IF (VCC) RERR = BPERR50 * /MR	SET REMOTE ERROR ON BUS PARITY
+ RERR * /LPERR * /MR	; HOLD UNTIL A LOCAL MEMORY ERRO
+ MOR 25 * /MR	;=> LOCAL ERROR HAS PRIORITY

DESCRIPTION

45002E

18/5/87

PCB V2.

45008D
18/5/87.

PAL16L8
ADGD 18/8/86
45008C, DATA

/SWDIS
/MWRITE /EPEAL LBDO LBD1 LBD3 LBD4 /BIOXL ECCR /BCGNT50R GND
/HIEN /OER /MR /EPEAL /TST /DISB /CLRERR /OET /NE19 VCC
/DIS

; 200387 CJTC: LOGICAL ERRORS IN EQUATIONS FOR DISB AND TST
; 260387 CJTC: CHANGED PIN 2 /EPESL TO /EPEAL - CIRCUIT CHANGE ONLY!!!
; 260387 JLB: CLRERR COMES IMMEDIATELY TO MAKE PERIOD PULSES ONLY!!!

IF (VCC) OET = MWRITE

; ON WRITE TO MEMORY

IF (VCC) OER = BCGNT50R

; ON READ FROM MEMORY AFTER THE ADDRESS

+ TST * MWRITE

; ON WRITE IN TEST MODE BOTH OER AND O

IF (VCC) CLRERR = MR

; CLEAR PARITY ERROR ON MR, READING EP

+ SWDIS

+ /BCGNT50R

+ DISB

IF (VCC) DISB = LBD3 * BIOXL * ECCR
+ /MR * DISB * /BIOXL
+ /MR * DISB * /ECCR

; SET IF LDB3=1 AND IOX=ECCR

; HOLD UNTIL NEXT IOX=ECCR

IF (VCC) TST = LBDO * BIOXL * ECCR
+ LBD1 * BIOXL * ECCR
+ LBD4 * BIOXL * ECCR
+ /MR * TST * /BIOXL
+ /MR * TST * /ECCR

; SET IF ANY OF LBDO,1,4 AND IOX=ECCR

; HOLD UNTIL IOX=ECCR

IF (VCC) DIS = DISB + SWDIS

DESCRIPTION