HCC

HARDWARE PROBLEM RECORD

UNIT REF # MAIN LOGIC CARD 90000420

DATE: NOV 8TH/83 TIME: ORIGINATOR: FRANCOIS CUILLERIER

PROBLEM SYMPTOMS:

PRE-PRODUCTION 1600. MAIN LOGIC CARD

MODIFY FLOPPY DISK INTERFACE TO ADD WRITE PRECOMPENSATION CIRCUITRY AS PER ECO # N00178.

THE FOLLOWING PARTS PER UNIT NEED TO BE ORDERED TO SATISFY CIRCUIT MODIFICATION

1 OF IC WD 2793
1 OF DIODE 1N 914
1 OF RESISTOR 1K .25W 10%
1 OF CAPACITOR VARIABLE 9-35 Pf.
1 OF CAPACITOR .22 uF 25V ELECTROLYTIC

CONTINUE ON REVERSE

DATE: TIME: ENGINEER:

PROBLEM DIAGNOSIS:

ECO No. N0012

NABU ENGINEERING CHANGE ORDER

CSA/UL AFFECTED? NO ☑ YES ☐

ECO REQUIRED ___
ECO No.

SHEET 1 OF 11

PRODUCT LINE	AFFECTED ITEM(S)	RELATED ECO
1600	MAIN LOGIC BOARD 90000420	-

MATERIAL EFFECTIVITY 13/06/85
WORK ORDER NO. ___

REWORK EFFECTIVITY ___
WORK ORDER NO. ___

REASON FOR CHANGE

To modify the floppy disk interface to add write precompensation circuitry.

TYPE OF CHANGE
1. MANDATORY REWORK
2. MFG. REWORK
3. DESIGN IMPROVEMENT
4. DOCUMENTS ONLY

DOCUMENT CONTROL
AUG 30 1985

DOCUMENT No.	REVISION OLD	REVISION NEW	DOCUMENT TITLE	DETAILS OF CHANGE (REFER ALSO TO ATTACHED SHEETS)
9,000,042,0-01,0	.05	.06	BOM	CHANGE BOM AS PER SHEETS 2-4
9,0,0,0,0,4,2,0-,06	.03	.04	LOGIC	CHANGE LOGIC AS PER SHEETS 5 & 6 UPDATE
				PAGE 1 APPROPRIATELY.
9,0,0,0,0,4,2,0,-,08	.04	.05	ASSY DWG	UPDATE ASSY DWG TO INCLUDE ALL CHANG
90,000,4,2,0,-,4,0	.03	.04	BLANK	UPDATE P DWG APPROPRIATELY SEE SHEET
9,0,0,0,0,4,2,0,-,4,2	.03	.04	P DWG	REWORK ALL BLANKS AS PER SHEET 8
				FOR ADJUSTMENT PROCEDURE SEE SHEET 7

REWORK INSTRUCTIONS

REWORK HRS/UNIT ___

Rework all blanks as per sheets 8-11
Put all wires on component side of board if possible.

PREPARED BY D. Allerton DATE 29/08/85

ECO APPROVALS

		DATE
PLANT ACCOUNTING	K. Allen	30/8/85
DESIGN AUTHORITY		02/9/85
CUSTOMER SERVICE	M. Hanes	03/9/85
PRODUCTION	M. Simpson	04/9/85
MAT'L CONTROL	G. Lucas	03/9/85
QUALITY ASSURANCE		
MFG SUPPORT		
PRODUCT SUPPORT		30/8/85
ECO CO-ORDINATOR		03/09/85

NABU FORM No. 007-005

05/1[illegible] 05/17/83 SINGLE LE[illegible] BILL OF MATERIAL 90000420-0[illegible]

PART NUMBER	DESCRIPTION	PC	PB	CTLR	ADDED	OBSOLETE
90000420-00	PWA 1600 MAIN LOGIC	F	05	30	05/17/83	

COMPONENT PART	CONFIG CODE	REMARK SEQUENCE	DESCRIPTION/REMARKS	PART CLASS	UM	PLANTONLY	
10021018-00	72		RESISTOR, 150 OHM, 1/4W 5%	P	EA	N	
10021022-00	75		RESISTOR, 1K, + OR -5%, 1/4W INCREASE QTY OF	P	EA	N	3.00 C
10021023-00	77		[illegible] ITEM 75	P	EA	N	
10021026-00	76		RESISTOR, 3.3K OHM	P	EA	N	
10021027-00	70		RESISTOR, 33 OHM, 1/4W, AXIAL	P	EA	N	
~~10021028-00~~	~~74~~		~~RESISTOR, 60 OHM, 1/4W, AXIAL~~ DELETE				
10021029-00	74		RESISTOR, 470 OHM, 1/4 WATT	P	EA	N	
10021030-00	78		RESISTOR, 12K OHM, 1/4W, AXIAL	P	EA	N	
~~10021031-00~~	~~72~~		~~RESISTOR, 2.2K OHM, 1/4W~~ DELETE				
10022002-00	85		RESISTOR, NETWORK, 100 OHM	P	EA	N	
10022003-00	84		RESISTOR, NETWORK, 3.3K OHM	P	EA	N	
10022004-00	83		RESISTOR, NETWORK, 2.2K OHM	P	EA	N	
10022005-00	82		RESISTOR, NETWORK, 2.2K OHM	P	EA	N	
10023000-00	50		DIODE, IN4148 INCREASE QTY TO 2.00 OF	P	EA	N	2.00 C
10023001-00	62		[illegible] ITEM 53	P	EA	N	
10030000-00	46		CONNECTOR, 25 PIN, R/A POST	P	EA	N	
10030001-00	47		CONNECTOR, 37 PIN, R/A POST	P	EA	N	
~~10030026-00~~	~~61~~		~~CONNECTOR, I.C. SOCKET, 16 PIN~~				
10030027-00	88		CONNECTOR, I.C. SOCKET, 28 PIN	P	EA	N	
10030028-00	87		CONNECTOR, I.C. SOCKET, 40 PIN	P	EA	N	
~~10030037-00~~	~~81~~		~~CONNECTOR, I.C. SOCKET 14 PIN~~				
10030039-00	94		CONNECTOR I.C. SOCKET 20 PIN DECREASE QTY TO 2	P	EA	N	2.00
10030048-00	95		CONNECTOR, JUMPER, 2 POSITION	P	EA	N	
~~10030064-00~~	~~61~~		~~CONNECTOR, I.C. SOCKET, 16 PIN~~				
10030066-00	A0		CONNECTOR, I.C. SOCKET, 84 PIN	P	EA	N	
10030083-00	51		CONNECTOR, VERT CARD, 2 X 15	P	EA		
~~10030084-00~~	~~50~~		~~CONNECTOR, VERT CARD, 2 X 25~~				
10031000-00	48		HEADER, 26 PIN (2X13) STRAIGHT	P	EA	N	
10031001-00	49		HEADER, 40 POST (2X20)	P	EA	N	
~~10031003-00~~	~~53~~		~~HEADER, 3 PIN, R/A POST~~				
10031007-00	52		HEADER, 4 PIN, R/A POST	P	EA	N	
10031011-00	86		HEADER, 20 PIN, DOUBLE ROW	P	EA	N	
~~10031012-00~~	~~90~~		~~HEADER, 2 PIN, STRAIGHT POST~~				
10032003-00	39		TERMINAL, PIN SOCKET, WIRE WRAP	P	EA	N	
10040000-00	30		CAPACITOR, 10.0UF, TANT, AXIAL	P	EA	N	
~~10041000-00~~	~~32~~		~~CAPACITOR, 12PF, 2%, RADIAL~~				
~~10041001-00~~	~~40~~		~~CAPACITOR, 47PF, 2%, 100V, NPO~~ DELETE				
~~10041002-00~~	~~41~~		~~CAPACITOR, 68PF, 5%, RADIAL~~ DELETE				
10041003-00	42		CAPACITOR, 56PF, 100V, RADIAL	P	EA	N	
10041004-00	43		CAPACITOR .01UF, RADIAL LEAD	P	EA	N	
10041016-00	69		CAPACITOR, .022UF, 50V, AXIAL	P	EA	N	
~~10042000-00~~	~~44~~		~~CAPACITOR, 0.56UF, 50V, AXIAL~~ DELETE				
10043001-00	45		CAPACITOR, 0.47UF, 50V, RADIAL	P	EA	N	
10050000-00	55		CRYSTAL 14.7456 MHZ	P	EA	N	

ECO #100178
PAGE 2 OF 2
DRAWN BY DA
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PART NUMBER	DESCRIPTION	PC	PS	CTLR	ADDED	OBSOLETE
900[illegible]0-00	PWA 1600 MAIN LOGIC	F	05	30	09/17/82	

COMPONENT PART	CONFIG CODE	REMARK SEQUENCE	DESCRIPTION/REMARKS	PART CLASS	UM	PHANTOM?
10000406-00	05		I.C. 7406, HEX INVERTER	P	EA	N
10000488-00	23		I.C. SN75188 LINE DRIVER	P	EA	N
10000489-00	24		I.C. SN75189N, QUAD RECEIVER	P	EA	N
10001123-00	12		I.C. SN74LS123N, MULTIVIBRATOR	P	EA	N
10001138-00	14		I.C. SN74LS138N, LINE DECODER	P	EA	N
10001157-00	16		I.C. SN74LS157N, SELECTOR	P	EA	N
10001193-00	17		I.C. UP/DOWN COUNTER SN74LS193	P	EA	N
10001244-00	18		I.C. SN74LS244N DRIVERS	P	EA	N
10001280-00	20		I.C. SN74LS280N GENERATOR	P	EA	N
10001373-00	22		I.C. SN74LS373N D-TYPE LATCH	P	EA	N
10001400-00	02		I.C. SN74LS00N NAND GATE	P	EA	N
10001402-00	03		I.C. SN74LS02N NOR GATE	P	EA	N
10001404-00	04		I.C. SN74LS04N HEX INVERTER	P	EA	N
10001408-00	06		I.C. SN74LS08N AND GATE	P	EA	N
10001410-00	07		I.C. SN74LS10N NAND GATE	P	EA	N
10001414-00	68		I.C. SN74LS14 SCHMITT TRIGGER	P	EA	N
10001420-00	10		I.C. SN74LS20N NAND GATE	P	EA	N
10001427-00	65		I.C. SN74LS27N NOR GATE	P	EA	N
10001430-00	08		I.C. SN74LS30N NAND GATE	P	EA	N
10001432-00	09		I.C. SN74LS32N OR GATE	P	EA	N
10001474-00	11		I.C. SN74LS74AN FLIP-FLOP	P	EA	N
~~10001629-00~~	~~13~~		~~I.C. SN74LS629N OSCILLATOR~~ DELETE	P	EA	N
10002138-00	67		I.C. 745138 DECODER/DEMULTI	P	EA	N
10002153-00	15		I.C. 74S153 SELECTOR/MUX	P	EA	N
10002400-00	66		I.C. 74S00 2-INPUT NAND GATE	P	EA	N
10002474-00	64		I.C. 74S74 D-TYPE FLIP-FLOP	P	EA	N
10003645-00	19		I.C. SN74ALS645N, TRANSCEIVER	P	EA	N
10010864-00	37		I.C. 4364, DYNAMIC RAM	P	EA	N
10011086-00	20		I.C. 8086, PROCESSING UNIT	P	EA	N
10011237-00	29		I.C. 82374, DMA CONTROLLER	P	EA	N
10011251-00	30		I.C. 8251, COMMS INTERFACE	P	EA	N
10011253-00	31		I.C. 8253, INTERNAL TIMER	P	EA	N
10011255-00	32		I.C. 8255, PERIPH. INTERFACE	P	EA	N
10011259-00	33		I.C. 8259, INTER.CONTROLLER	P	EA	N
10011284-00	34		I.C. 8284, CLOCK GENERATOR	P	EA	N
10011288-00	35		I.C. 8288 BUS CONTROLLER	P	EA	N
10011289-00	36		I.C. 8289, BUS ARBITER	P	EA	N
~~10011691-00~~	~~25~~		~~I.C. 1691, SUPPORT LOGIC~~ DELETE	P	EA	N
~~10011793-00~~	~~26~~		~~I.C. 1793 DISC CONTROLLER~~ DELETE	P	EA	N
10020000-00	54		SWITCH, MOMENTARY, PUSHBUTTON	P	EA	N
~~10021000-00~~	~~57~~		~~RESISTOR, VARIABLE 100K~~ DELETE	P	EA	N
10021001-00	60		RESISTOR, VARIABLE 50K	P	EA	N
~~10021043-00~~	~~80~~		~~RESISTOR 47K OHM 5% 1/4W~~ DELETE	P	EA	N
10021017-00	81		RESISTOR 100K OHM	P	EA	N

ECO # N00178
PAGE 2 OF 12
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05/[redacted] 05/17/83 SINGLE L[redacted]ILL OF MATERIAL 90000420-00

PART NUMBER	DESCRIPTION	PC	PS	CTLR	ADDED	OBSOLETE
90000420-00	PWA 1600 MAIN LOGIC	F	05	30	09/17/82	

COMPONENT PART	CONFIG CODE	REMARK SEQUENCE	DESCRIPTION/REMARKS	PART CLASS	UM	PHANTOM?
10050001-00	56		CRYSTAL, 8.0 MHZ	P	EA	N
10050002-00	57		DELAY LINE, LPSLDM-70	P	EA	N
10058193-00	A3		DIODE, L.E.D., RED	P	EA	N
10060002-00	73		SCREW,4-40X3/8",PAN HEAD	P	EA	N
10061003-00	91		NUT, HEX, 4-40, STEEL	P	EA	N
10061004-00	93		WASHER,INSULATING,BLACK FIBRE	P	EA	N
10061005-00	92		WASHER,LOCK,SPLIT,NO.4	P	EA	N
90000420-06	98		SCHEMATIC DWG. 1600 MAIN LOGIC	P	EA	N
90000420-08	99		ASSY DWG. 1600 MAIN LOGIC	P	EA	N
90000420-42	01		PWB-1600 CPU MAIN LOGIC	P	EA	N
90020380-00	27		FIRMWARE, 1600 MONITOR PROM 1	P	EA	N
90020381-00	A2		FIRMWARE, 1600 MONITOR PROM 2	P	EA	N

END OF REPORT

ADD

10012793-00	26	WD2793 FORMATTER/CONTROLLER	P	EA	1.000
10045014-00	#4	CAPACITOR 0.22 µf	A	EA	1.00
10041040-00	25	CAPACITOR VARIABLE 9/35pf	P	EA	1.000

ECO # N0017B
PAGE 4 OF 12
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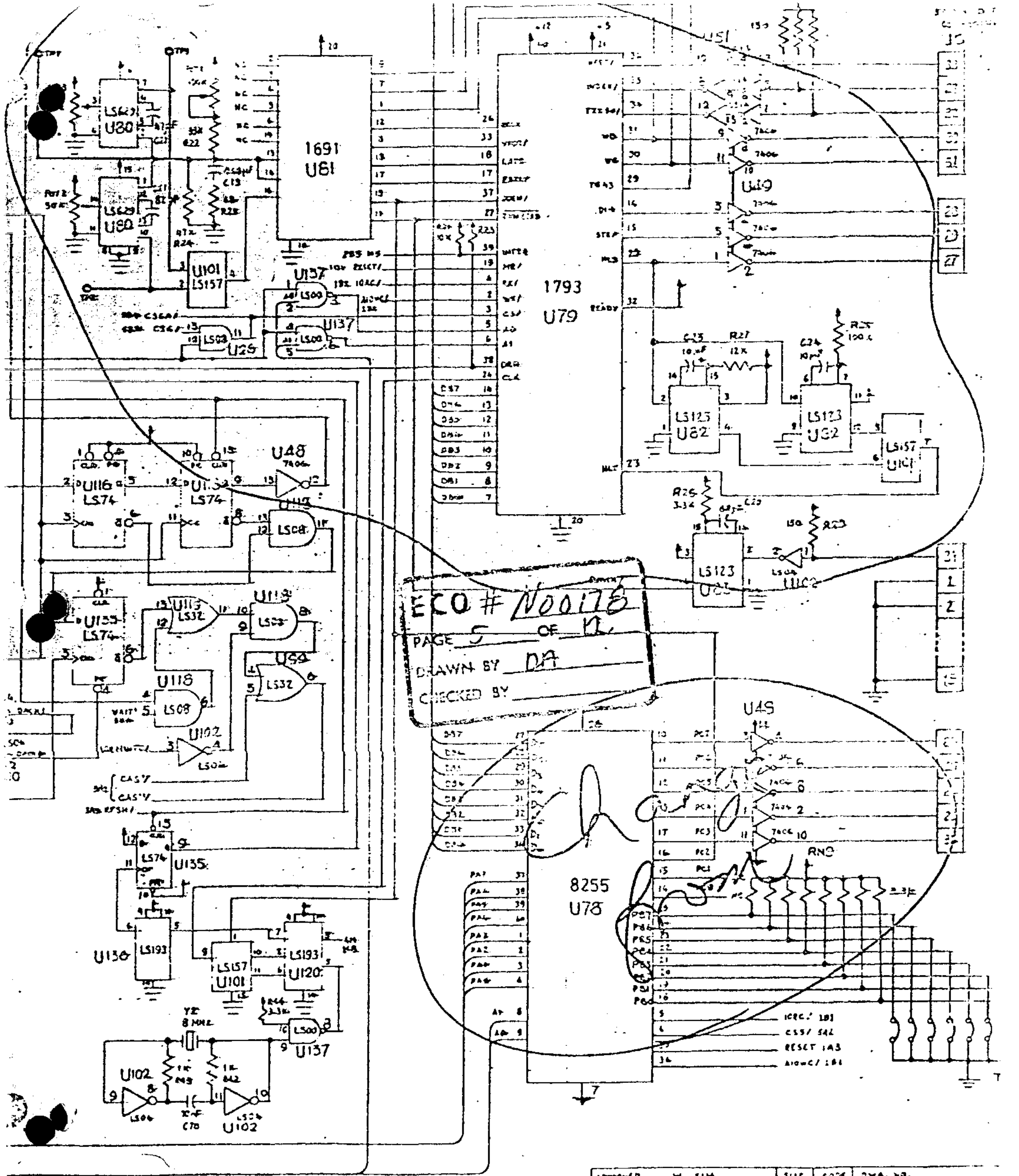
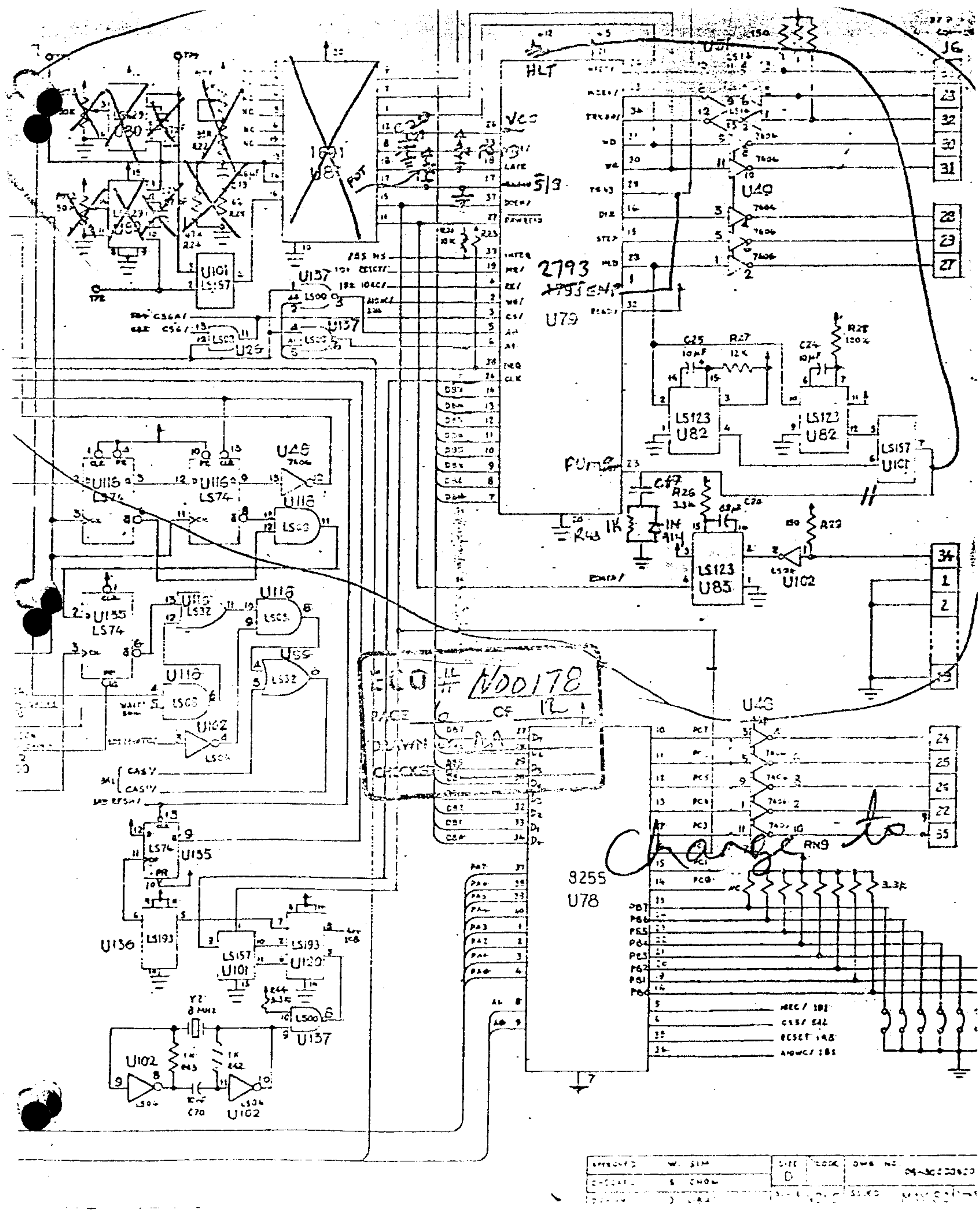


APPROVED	W. SIM	SIZE D	CODE	DWG. NO. 06-3000[illegible]
CHECKED	S. CHON			
DRAWN	J. LIBAUDE	SCALE NONE	ISSUED	MAY 82 SHEET

4 3 2 1


HLT
VCO
2793
U79
8255
U78
U82
LS123
U85
U102
U49
U137
U101
LS157
U135
LS74
U136
LS193
U120
Y2
8 MHz
J6
ECO # N00178
PAGE 6 OF 12
Change to
APPROVED W. SIM
CHECKED S. CHOW
SIZE D

NABU

ENGINEERING CHANGE ORDER

1600 MAIN LOGIC BOARD 6600042
REWORK INSTRUCTIONS

REMOVE:

		ITEMS
1.	IC U79 - WD1793 P/N 1001793-02	24
2.	IC U80 - 74LS629 P/N 1001629-00	12
3.	IC U81 - WD1691 P/N 1001691-00	25
4	SOCKET IN LOCATION U81 P/N 1003339-00	03
5	CAP C19 - 0.1 µf P/N 1002000-00	44
6.	CAP C21 - 30 pf P/N 1001003-03	01
7	CAP C23 - 47 pf P/N 1001004-00	48
8	RES R22 - 33 Kohm P/N 1002031-00	79
9.	RES R24 - 47 Kohm P/N 1002047-00	80
10	RES R25 - 6.8 ohm P/N 1002068-00	71
11	RES POT1 - 100 Kohm P/N 1002000-00	59

CUT:

1. TRACK AT 1179-40 (solder side - 2 places)
2. TRACK AT 1179-23 (component side)

ADD: (ADD WIRES TO COMPONENT SIDE IF POSSIBLE)

1. WIRE FROM 1120-14 TO 1121-12
2. WIRE FROM 1120-3 TO 1121-8
3. WIRE FROM 1179-40 TO FEEDTHROUGH FROM 1179-23
4. DIODE IN914 P.N 1002300 IN POSITION R25 AS SHOWN. SHOWN.
5. RESISTOR 1Kohm P/N 1002102-00 IN POSITION SHOWN. THE RESISTOR MUST BE SOLDERED ACROSS THE DIODE IN SUCH A MANNER THAT THE DIODE AND THE RESISTOR CAN BOTH BE IDENTIFIED
6. CAPACITOR 0.22 µf P/N 1002204-00 IN LOCATION C19 AS POSITION SHOWN.
7. WIRE FROM 1121-13 TO 1179-22
8. WIRE FROM 1191-10 TO 1120-2
9. IC WD2793 P/N 1001793-02 IN LOCATION U79 CONNECTOR J1

NABU

ENGINEERING CHANGE ORDER

ECO NO. N00178

SHT 9 OF 12

continued

10. Install variable capacitor IN LOCATION U80 pin 7 & 10. The leads of the capacitor must be reduced in diameter by applying pressure with pliers.

11. Add wire from U81-12 to U80-10

12. Add wire from U80-7 to U80-8.

ECO #

PAGE 9 OF 12

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assembly drawing to reflect logic & BOM changes

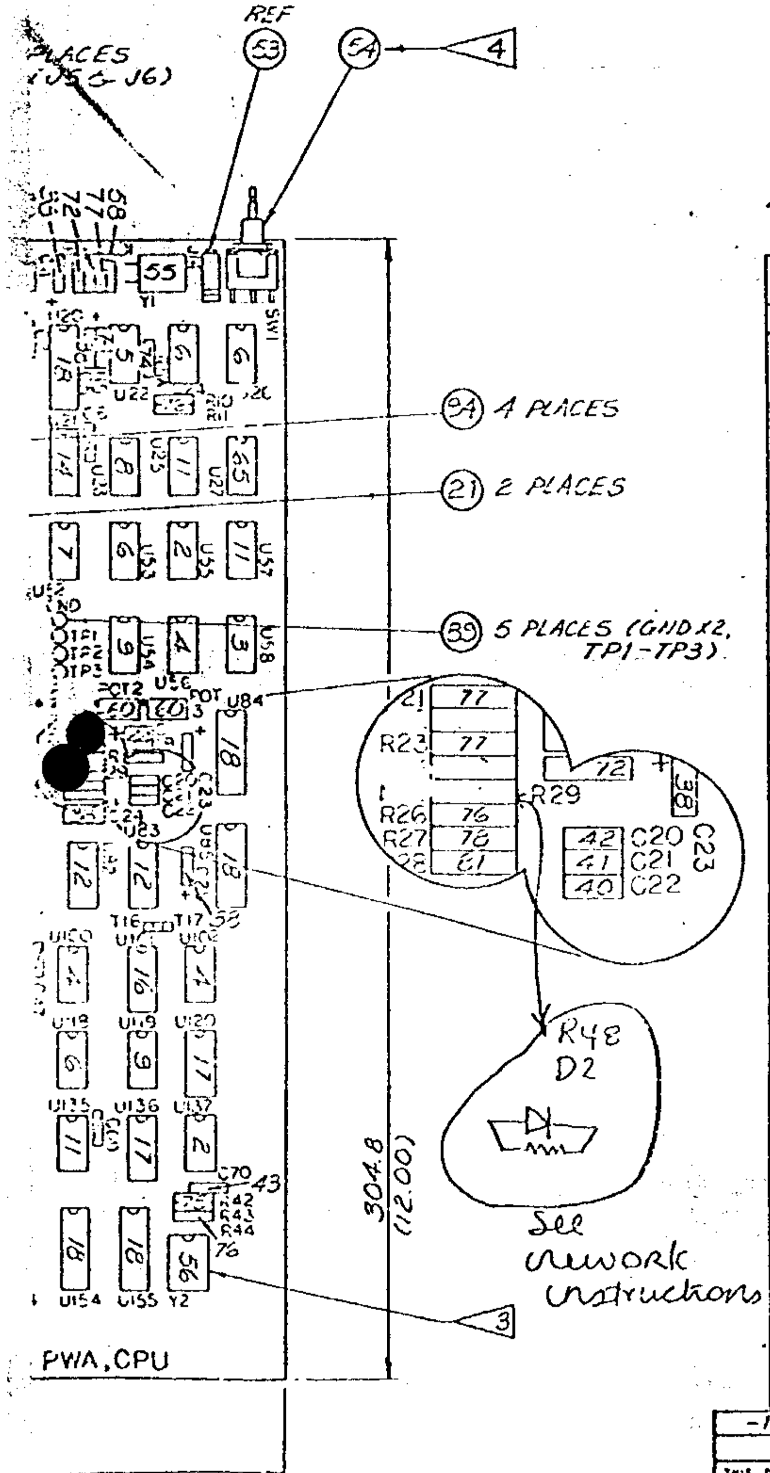
4-- REMOVE CAP PRIOR TO WAVE SOLDER AND INSTALL ON ASSY DO-90000640

3-- INSTALL CRYSTAL Y2 (ITEM 56) AFTER G.P. TEST

2- ALL CAPACITORS DESIGNATED BY THE SYMBOL ARE .022 μF CAPACITORS (ITEM 69)

1- FOR ALL CORRESPONDING FIND NUMBERS SEE COMPONENT MATRIX TABLE.

NOTES . REF SYMBOL



COMPONENT MATRIX TABLE

FIND	REF DESCRIPTION
2	U47, U55, U73, U137
3	U58
4	U29, U43, U56, U100 U102
5	U22, U37, U48, U49
6	U24, U26, U30, U53, U36, U118, U132
7	U28, U52, U75
8	U23, U31
9	U33, U54, U71, U99, U114, U119, U133
10	U50
11	U25, U45, U57, U76, U116, U117, U135
12	U82, U83
14	U19, U21
15	U95, U112, U130, U147
16	U101
17	U120, U136
18	U16, U20, U64, U66, U69, U84, U85, U96, U97, U146, U149, U150, U152, U153, U154, U155
19	U40, U42, U44, U46, U63, U65
20	U113, U131
22	U59, U60, U61, U62 U151
23	U1, U4, U7, U10
24	U2, U5, U8, U11
25	C20
26	U73
27	U67, U68
28	U38
29	U115
30	U3, U6, U9, U12
31	U13, U14
32	U78
33	U35, U36
34	U18
35	U15
36	U17
37	U86-U94 U103-U111 U121-U129 U138-U146

FIND	REF DESIGNATION
38	C4, C5, C15, C16, C24, C25, C23, C66
39	C3
42	C20
43	C70
44	C19
45	C26 - C43, C48 - C65
55	Y1
56	Y2
57	U41, U72
58	D1, D2
60	POT2, POT3
62	Q1
63	LED1
64	U32, U34
65	U27
66	U74
67	U70
68	U51
69	C1, C2, C6-C14, C17, C18, C44-C47, C67-C69
70	R30-R37, R16-R19, R20A
72	R1, R2, R4, R9, R12, R13, R29, R38, R39 R45, R46
74	R5, R5A, R6, R14
75	R42, R43, R48
76	R7, R8, R10, R11, R15, R20, R26, R40, R41, R44
77	R3, R21, R23, R47
78	R27
81	R28
82	RN6, RN8, RN9
83	RN1, RN4, RN5
84	RN2, RN3
85	RN7

-1 AS SHOWN

PART NUMBER AND VARIANT DESCRIPTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

MATERIAL

SPEC

FINISH

ORIGINALLY DESIGNED FOR 1600

CONSOLIDATED COMPUTER INC. OTTAWA CANADA

PWA
CPU MAIN LOGIC

SCALE 1/1 SHEET 1 of 1 D 90000420-05

ECO# N00178
Sheet 12 of 12

NASU

ENGINEERING CHANGE ORDER

ECO NO. 00178
SHT 7 OF 12

ADJUSTMENT PROCEDURE

1. POWER ON SYSTEM.
2. SET PIN 22 OF U79 HIGH.
3. STROBE PIN 19 LOW. (U79)
4. SET PIN 22 OF U79 LOW.
5. PROBE U79-31.
6. ADJUST POT 3 SO THAT THE PULSE WIDTH ON U79-31 IS ~~150~~ 200ns. THIS SETS THE WRITE PRECOMP VALUE.
7. PROBE U79-29.
8. ADJUST POT 2 SO THAT THE PULSE WIDTH ON U79-29 IS 500 ns. THIS SETS THE READ PULSE WIDTH.
9. PROBE U79-16.
10. ADJUST VARIABLE CAPACITOR ON U79-26 FOR 250KHz. (4 microseconds). THIS ADJUSTS THE DATA RATE.
11. SET PIN 22 OF U79 HIGH.
12. RUN MONITOR TEST A;TW AND A;T FOR AT LEAST 2 (EACH) ERROR FREE PASSES. ENSURE THAT A DISKETTE WILL BOOT FROM DRIVE.

ECO #
PAGE 7 OF 12
DRAWN BY DA
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ECO No. N00121

NABU ENGINEERING CHANGE ORDER

CSA/UL AFFECTED? NO ☐ YES ☐

FCO REQUIRED NO

FCO No.

SHEET 1 OF 3

PRODUCT LINE: 1600

AFFECTED ITEM(S): 90000420-00 CPU PWA

RELATED ECO

MATERIAL EFFECTIVITY 83 / 07 / 04 (Y / M / D)

WORK ORDER NO.

REWORK EFFECTIVITY (Y / M)

WORK ORDER NO.

REASON FOR CHANGE

TO CORRECT ECO N00178. THIS ECO ELIMINATES CALIBRATION PROBLEM OF 2793 VCO.

TYPE OF CHANGE
1. MANDATORY REWORK ☐
2. MFG. REWORK ☐
3. DESIGN IMPROVEMENT ☐
4. DOCUMENTS ONLY ☐

DOCUMENT No.	REVISION OLD	REVISION NEW	DOCUMENT TITLE	DETAILS OF CHANGE (REFER ALSO TO ATTACHED SHEETS)
90,000,420-06	04	05	LOGIC DWG	MAKE CHANGE AS PER SHEET 2.
90,000,420-00	07	08	B.O.M.	" " " " "

JUL 13 1983

REWORK INSTRUCTIONS

REWORK HRS/UNIT

ALL PWA'S 90000420-00 ADD THE FOLLOWING REWORK:

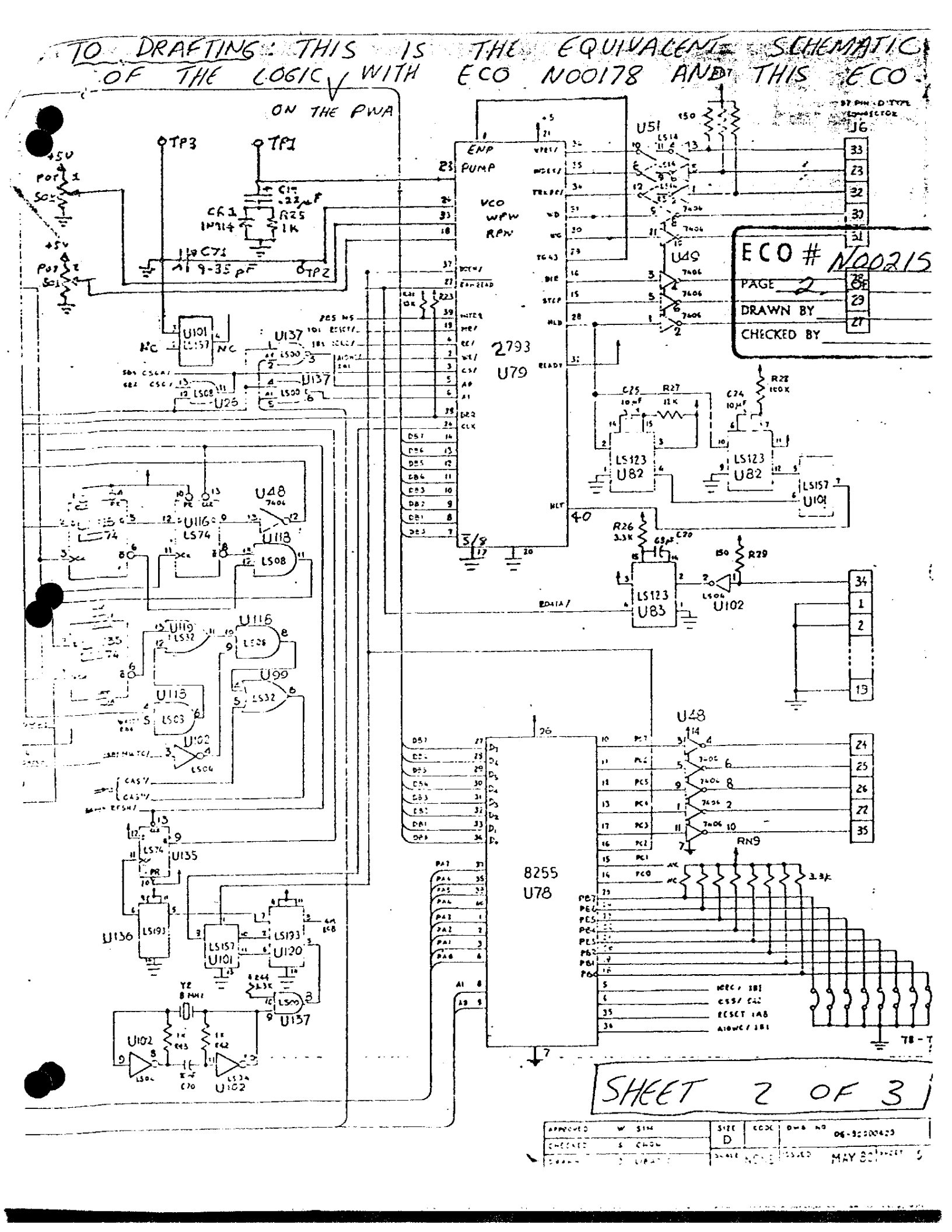
1. CUT TRACK ON COMPONENT SIDE AT U101.2.

PREPARED BY L. McDaniel DATE 83-07-04

ECO APPROVALS

PLANT ACCOUNTING		
DESIGN AUTHORITY		
CUSTOMER SERVICE		
PRODUCTION		
MAT'L CONTROL		
QUALITY ASSURANCE		
MFG SUPPORT		
PRODUCT SUPPORT		
ECO CO-ORDINATOR		

TO DRAFTING: THIS IS THE EQUIVACENT SCHEMATIC OF THE LOGIC WITH ECO N00178 AND THIS ECO ON THE PWA



SHEET 3 OF

CATHY — N A B U MANUFACTURING — PAGE 2

06/29/83 — 06/29/83 — SINGLE LEVEL BILL OF MATERIAL — .90000420-00

PART NUMBER	DESCRIPTION	PC	PS	CTLR	ADDED	OBSOLETE	RESP
90000420-00	PWA 1600 MAIN LOGIC	F	06	30	09/17/82		

COMPONENT PART	CONFIG CODE	REMARK SEQUENCE	DESCRIPTION/REMARKS	PART CLASS	UM	PHANTOM?	QTY PER
10021027-00		70	RESISTOR, 33 OHM,1/4W,AXIAL	P	EA	N	13.0000
10021029-00		74	RESISTOR, 470 OHM, 1/4 WATT	P	EA	N	4.0000
10021036-00		78	RESISTOR,12K OHM,1/4W,AXIAL	P	EA	N	1.0000
10022002-00		85	RESISTOR,NETWORK,150 OHM	P	EA	N	1.0000
10022003-00		84	RESISTOR,NETWORK,3.3K OHM	P	EA	N	2.0000
10022004-00		83	RESISTOR,NETWORK,3.3K OHM	P	EA	N	3.0000
10022005-00		82	RESISTOR,NETWORK,3.3K OHM	P	EA	N	3.0000
10023000-00		58	DIODE, IN914B	P	EA	N	2.0000
10023001-00		62	TRANSISTOR, MPS A13	P	EA	N	1.0000
10030000-00		46	CONNECTOR, 25 PIN, R/A POST	P	EA	N	2.0000
10030001-00		47	CONNECTOR, 37 PIN, R/A POST	P	EA	N	2.0000
10030026-00		61	CONNECTOR, I.C. SOCKET, 16 PIN	P	EA	N	36.0000
10030027-00		88	CONNECTOR, I.C. SOCKET, 28 PIN	P	EA	N	8.0000
10030028-00		87	CONNECTOR, I.C. SOCKET, 40 PIN	P	EA	N	5.0000
10030037-00		91	CONNECTOR, I.C. SOCKET 14 PIN	P	EA	N	2.0000
10030039-00		94	CONNECTOR I.C. SOCKET 20 PIN	P	EA	N	2.0000
10030040-00		95	CONNECTOR, JUMPER, 2 POSITION	P	EA	N	21.0000
10030064-00		81	CONNECTOR, I.C. SOCKET, 18 PIN	P	EA	N	1.0000
10030066-00		80	CONNECTOR, I.C. SOCKET, 24 PIN	P	EA	N	2.0000
10030083-00		51	CONNECTOR, VERT CARD, 2 X 15	P	EA	N	1.0000
10030084-00		50	CONNECTOR, VERT CARD, 2 X 22	P	EA	N	2.0000
10031000-00		78	HEADER, 26 PIN (2X13) STRAIGHT	P	EA	N	2.0000
10031001-00		79	HEADER, 40 POST (2X20) STRAIGHT	P	EA	N	1.0000
10031003-00		75	HEADER, 2 PIN, R/A POST	P	EA	N	2.0000
10031007-00		73	HEADER, 4 PIN, R/A POST	P	EA	N	1.0000
10031011-00		89	HEADER, 28 PIN, DOUBLE ROW	P	EA	N	2.0000
10031012-00		90	HEADER, 2 PIN, STRAIGHT POST	P	EA	N	2.0000
10032003-00		69	TERMINAL,PIN SOCKET,WIRE WRAP	P	EA	N	51.0000
10040000-00		68	CAPACITOR, 10.0UF, TANT, AXIAL	P	EA	N	8.0000
10041000-00		67	CAPACITOR 12PF,2%,RADIAL	P	EA	N	1.0000
10041003-00		66	CAPACITOR, 68PF, 100V, RADIAL	P	EA	N	1.0000
10041004-00		65	CANCELLED	P	EA	N	1.0000
10041016-00		64	CAPACITOR, 0.022UF, 50V, RADIAL	P	EA	N	20.0000
10041040-00		63	CAPACITOR, VARIABLE, 9-35PF	P	EA	N	1.0000
10043001-00		57	CAPACITOR, 0.47UF, 50V, RADIAL	P	EA	N	36.0000
10045014-00		71	CAPACITOR, 0.22 UF, 35V, TANTAL	P	EA	N	1.0000
10050000-00		55	CRYSTAL 14.7456 MHZ	P	EA	N	1.0000
10050001-00		54	CRYSTAL, 8.0 MHZ	P	EA	N	1.0000
10050002-00		53	DELAY LINE, LPSLDM-70	P	EA	N	2.0000
10050193-00		93	DIODE, L.E.D., RED	P	EA	N	1.0000
10060002-00		92	SCREW,4-40X3/8",PAN HEAD	P	EA	N	8.0000
10061003-00		91	NUT, HEX; 4-40; STEEL	P	EA	N	8.0000
10061004-00		93	WASHER,INSULATING,BLACK FIBRE	P	EA	N	8.0000
10061005-00		92	WASHER,LOCK,SPLIT,NO.4	P	EA	N	8.0000

ECO # N00215
PAGE 3 OF
DRAWN BY
CHECKED BY

DELETE

10041074-00 — 25 — CAPACITOR, VARIABLE 9-35 pF — 1.0000

ADD

ECO No. 0887

NABU CCI ENGINEERING CHANGE ORDER

CSA/UL AFFECTED? NO ☒ YES ☐

FCO REQUIRED NO

FCO No.

SHEET 1 OF 3

PRODUCT LINE: SERIES-2

AFFECTED ITEM(S): 138311 PWA CHANNEL CONTROLLER

RELATED ~~ECO~~: ECR 202

MATERIAL EFFECTIVITY 93/07/13 (Y M D)

WORK ORDER NO.

REWORK EFFECTIVITY (Y M D)

WORK ORDER NO.

REASON FOR CHANGE

ISOLATE FOIL SHORT TO REFLECT LOGIC.

REV: D PWB BLANKS ONLY

TYPE OF CHANGE
1. MANDATORY REWORK ☒
2. MFG. REWORK ☐
3. DESIGN IMPROVEMENT ☐
4. DOCUMENTS ONLY ☐

DOCUMENT No.	REVISION OLD	REVISION NEW	DOCUMENT TITLE	DETAILS OF CHANGE (REFER ALSO TO ATTACHED SHEETS)
138313 -	E	F	ARTWORK	SEE SHEETS 2 & 3
138313011 -	E	F	PWB	
-				
-				
-				
-				
-				
-				

REWORK INSTRUCTIONS

REWORK HRS/UNIT ____

REWORK: ALL REV D PWA IN PLANT AND MANUFACTURERS Follow 1) REMOVE IC at location C2 IF ALREADY INSTALL. 2) REFER TO SHEET 2 AND CUT TRACK AS SHOWN. (3 PLACES ON COMPONENT SIDE) 3) USING 26 AWG 2 IN WIRE P/N 904/9000 CONNECT D2-2 TO FEEDTHROUGH CLOSED TO CAPACITOR C24 (SEE SHEET 3) 4) REINSTALL IC IN REGARDS TO STEP 1

PREPARED BY E. JOCELYN DATE JUN 24/

ECO APPROVALS

	DATE
PLANT ACCOUNTING	
DESIGN AUTHORITY	93/5/4
CUSTOMER SERVICE	
PRODUCTION	93/07/
MAT'L CONTROL	93/07/
QUALITY ASSURANCE	
MFG SUPPORT	93/07/
PRODUCT SUPPORT	93/07/
ECO CO-ORDINATOR	93/07/

SHEET 2

ECO # G1852
PAGE 2 OF 3
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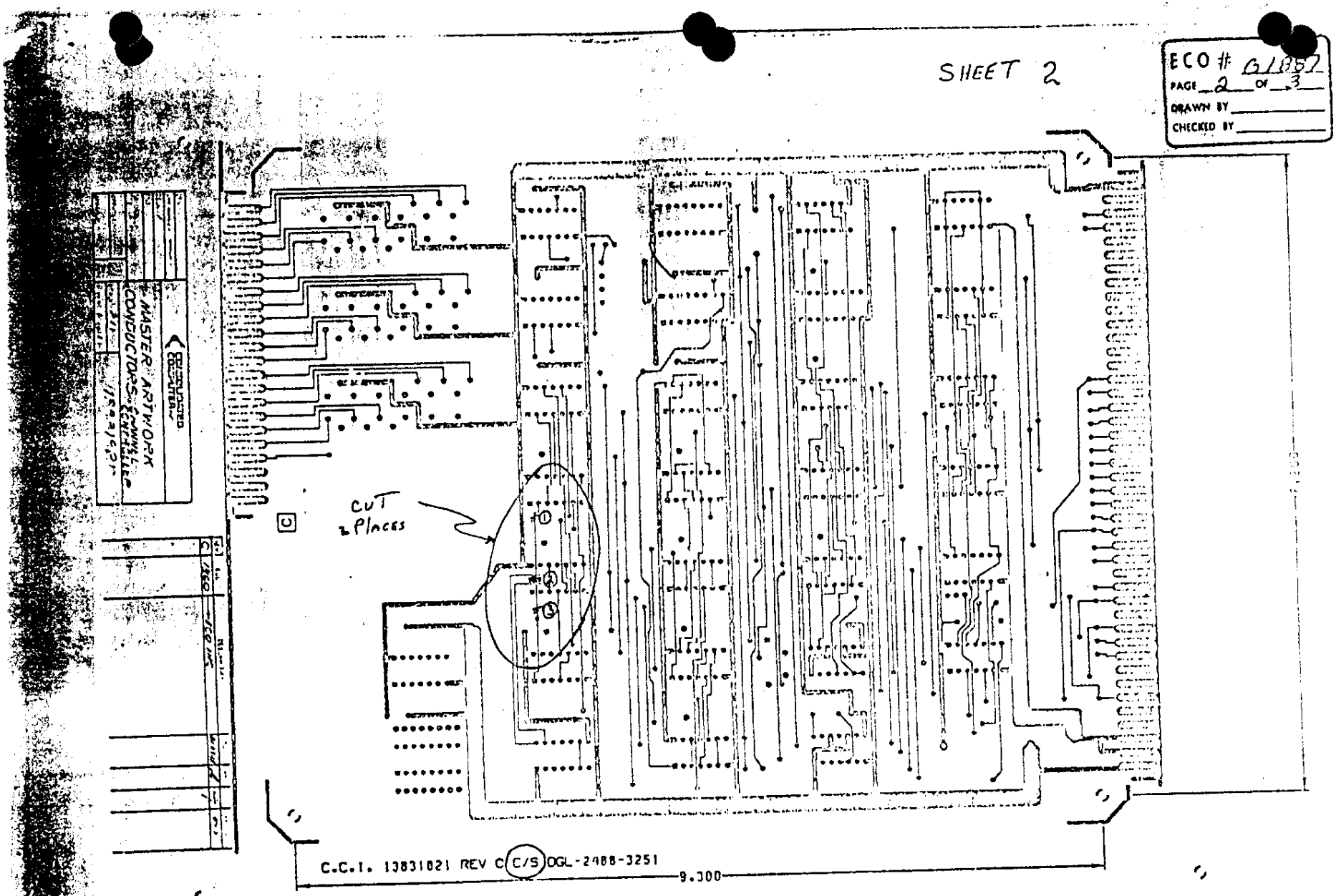

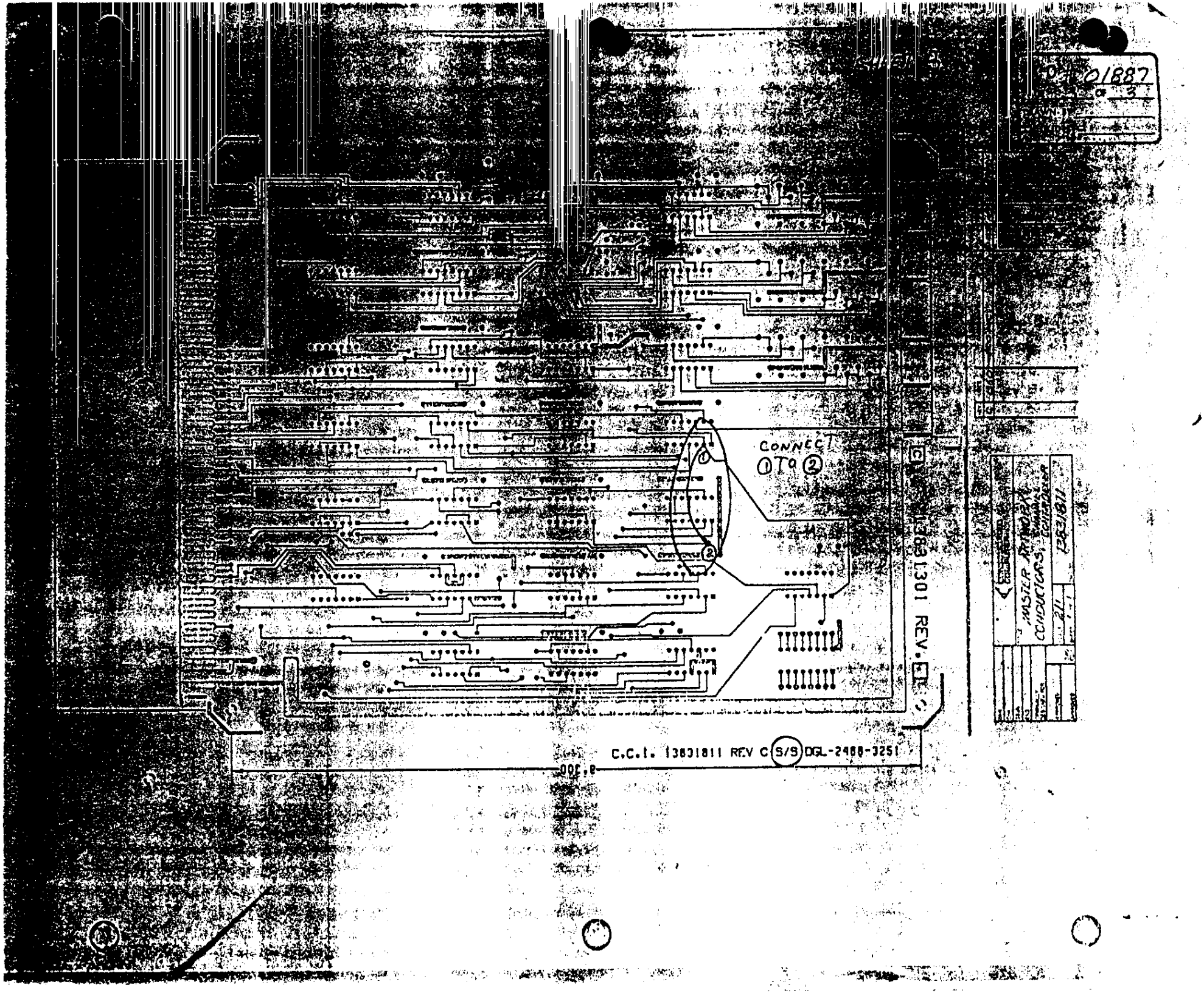
CONNECT
01 TO 2
C.C.I. 13631811 REV C S/S DGL-2488-3251
13631301 REV.

ECO # A/80129
PAGE 11 OF 12
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CHECKED BY

25-90000420-02

SOLDER SIDE

ANDICOM NABU 1200 25-90000420-02 31/JULY/82

SOLDER SIDE

ANDICOM NABU 1200 25-00000420-02 31/JULY/82

solder side

Add
Add
R/W
Add
Add
R/W
Add

22-50000420-02
Composant side
COMPONENT SIDE
Agd