

Dalton

IONOSONDE TYPE 4B - INDEX

TITLE	DRG. NO.	ISS
IONOSONDE TYPE 4B:		
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- SIMPLIFIED BLOCK DIAGRAM	CB-28Y1	
- MAIN POWER SUPPLY/BATTERY CHARGER	A1	CD-247Y1A
- CLOCK - BLOCK DIAGRAM	A3	CB-34Y1
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- " " - DIGITAL SECTION	A4,A1	CD-232Y1
- " " - R.F. SECTION	A4,A2	CD-232X2
- " " - BOARD LAYOUTS	A4,A1	CD-232Y3
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- TRANSMITTER - PWR AMP.A5,A3/2 & TX FAIL DET.	A6,A4	CD-476A3
- TRANSMITTER - INTCONNS. A6,A1,A5,A2/2,A6,A4	A5,A3/2	CD-477A3
- RECEIVER - BLOCK DIAGRAM	A7	CB-24Y1
- RECEIVER - BANDPASS FILTER	A7,A1	CD-253Y1
- RECEIVER - VFO AMP & 1ST MIXER	A7,A2/2	CD-253Y2
- RECEIVER - 1ST & 2ND PTS 70 MHz IF FILTER	A7,A3,A7,A4	CD-253Y3
- RECEIVER - 1ST IF AMP, 2ND MIXER, 2ND OSC.	A7,A5/2	CD-253Y4
- RECEIVER - 2ND IF AMP, 3RD MIXER, 3RD OSC.	A7, A5/2	CD-253Y5A
- RECEIVER - 1,6 MHz 3RD IF AMP & DETECTOR	A7, A7	CD-253Y6
- RECEIVER - AGC GEN. & PULSE SHAPING	A7, A8	CD-253Y7
- RECEIVER - AGC LEVEL MONITOR	A7, A9	CD-323Y1
- RECEIVER - BOARDS INTERCONNECTION	A7	CD-259Y1
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- DISPLAY & MONITOR -	A8 & A10	CD-230Y1
- DISPLAY & MONITOR - BOARD LAYOUTS	A8 & A10	CD-230Y2
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- TRANSISTORS, DIODES & VAC TUBES PIN CONNECTIONS		CD-264Y1
- REFERENCE LIST OF SYMBOLS FOR THE CIRCUIT DIAGRAMS		GC-11Y1

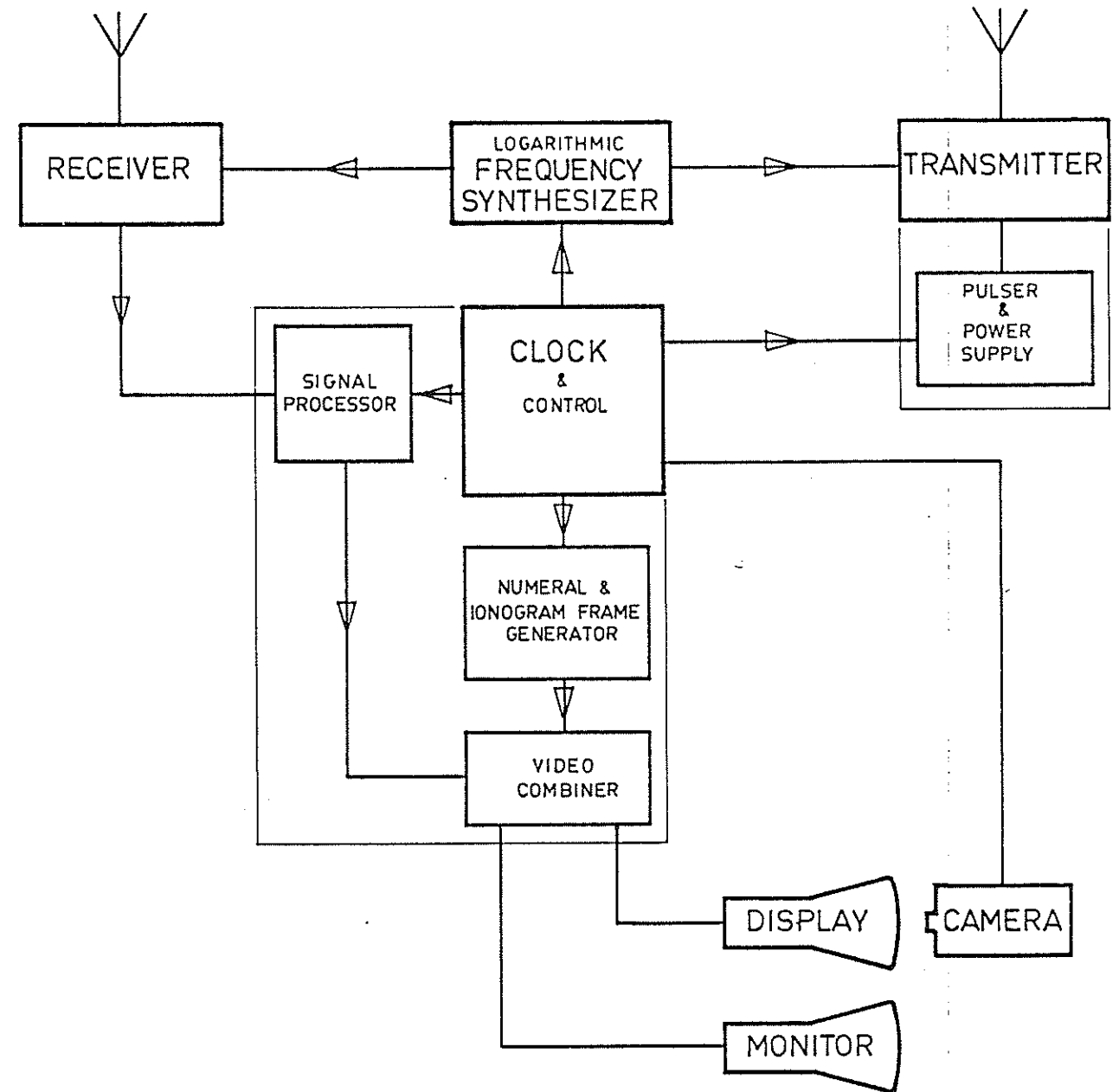
	TITLE	DRG. NO.	ISS	
Signal path diagrams	IONOSONDE TYPE 4B			
	- NUMERICAL SELECTION	BLOCK DIAGRAM	CB-30Y1	
	- CONTROL LOGIC	BLOCK DIAGRAM	CB-31Y1A	
	- MONITOR PROGRAM SWITCH OPERATION	BLOCK DIAGRAM	CB-32Y1	
Waveforms	- DISPLAY	BLOCK DIAGRAM	CB-33Y1	
	- GRATICULE GENERATOR	INPUT WAVEFORMS	GC-28Y1	
	- GRATICULE GENERATOR	INPUT WAVEFORMS	GC-28Y2	
	- GRATICULE GENERATOR	INPUT WAVEFORMS	GC-28Y3	
	- GRATICULE GENERATOR	INPUT WAVEFORMS	GC-29Y1	
	- SUMMARY OF IONOGRAM & A-SCAN WAVEFORMS		GC-30Y1	
	- SUMMARY OF N.I. & SET-UP DISPLAY WAVEFORMS		GC-30Y2	
	Wiring	- I/C POWER SUPPLY REGULATORS	A12,A2	CIRCUIT WIRING
		- HARNESS	A13,A1	CIRCUIT WIRING
				CW-24Y1
			CW-23Y1	

DIVISION OF GENERAL ASSEMBLY

ASSEMBLY	
MAIN POWER SUPPLY/BAT.CHGR.	A1
BATTERY	A2
CLOCK	A3
FREQUENCY SYNTHESIZER	A4
PROGRAM	A5
TRANSMITTER	A6
RECEIVER	A7
DISPLAY	A8
CAMERA	A9
MONITOR	A10
CABINET	A11
I/C POWER SUPPLY	A12
HARNESS	A13

SUB-ASSEMBLY REFERENCES FOLLOW ASSEMBLY REFERENCES,
e.g. A3.A5. is CLOCK-SECONDS

ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date	No	DEPARTMENT OF SCIENCE
	G.A.D.	R.H.	Redrawn on 'Y' size sheet.	D.H.	G.W.	12.8.75	1	IONOSPHERIC PREDICTION SERVICE
	G.A.D.	K.G.	4B Title change.	K.G.	C.N.	11/10/75	2	
								IONOSONDE TYPE 4B
								DIVISION OF GENERAL ASSEMBLY
								GENERAL FORM.
DRAWING NO							SHEET	
GF-11Y1							1 OF 1 SHEET	



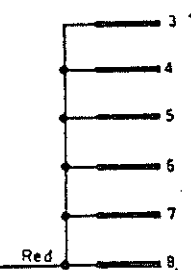
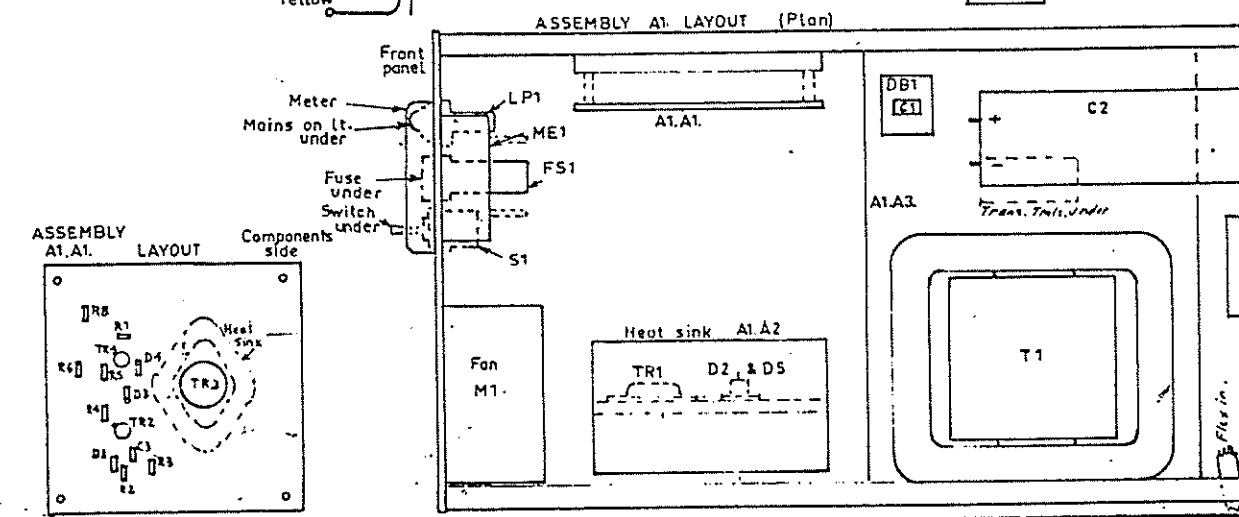
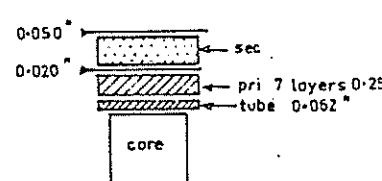
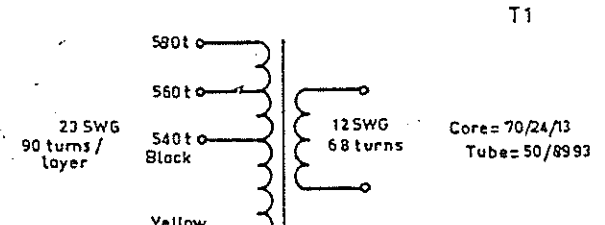
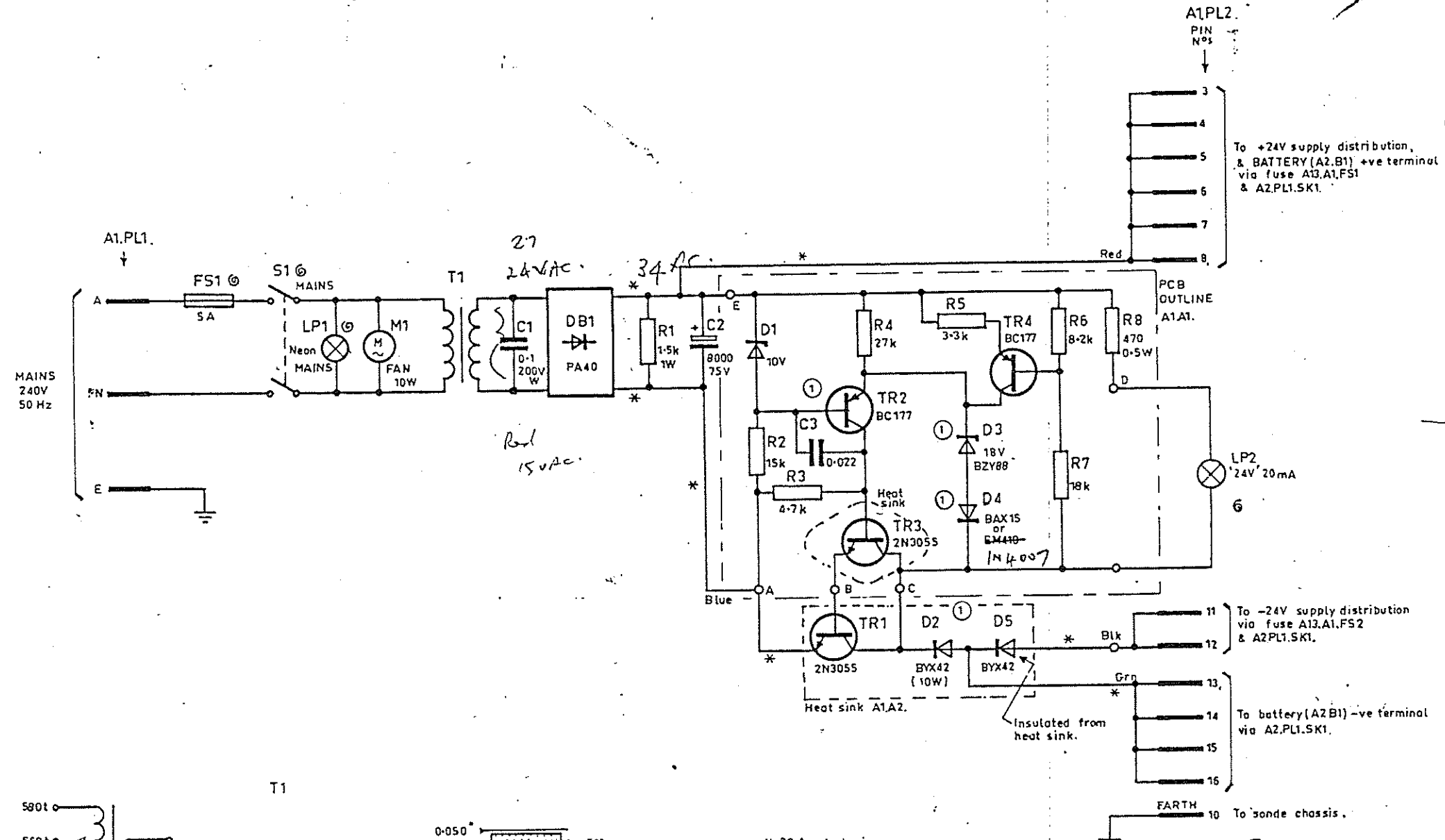
ISSUES						
Order	Drawn	Checked	AMENDMENTS	Examd	Apprd	Date
	GAD RAD	R.H. K.G.	Title changed to 4B	DH K.G.	G.W. G.W.	5.9.79 11.10.78
						1 2

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
SIMPLIFIED BLOCK DIAGRAM

DRAWING N°
CB-28Y1

SHEET
1 OF 1 SHEET



* 20 A rated wire.
 Ⓞ On FRONT PANEL
 Set at 7 AMPS. (0.0 AMPS)

NOTES

- All resistors 0.25 watt unless otherwise stated. current, R5 sets max current, R7 sets foldback voltage point. = 27V at batt. and 26V to sonde.
- R4 sets S/C
- ① = output volts = 10 + 18V - BC177 + BAX15 - BYX42

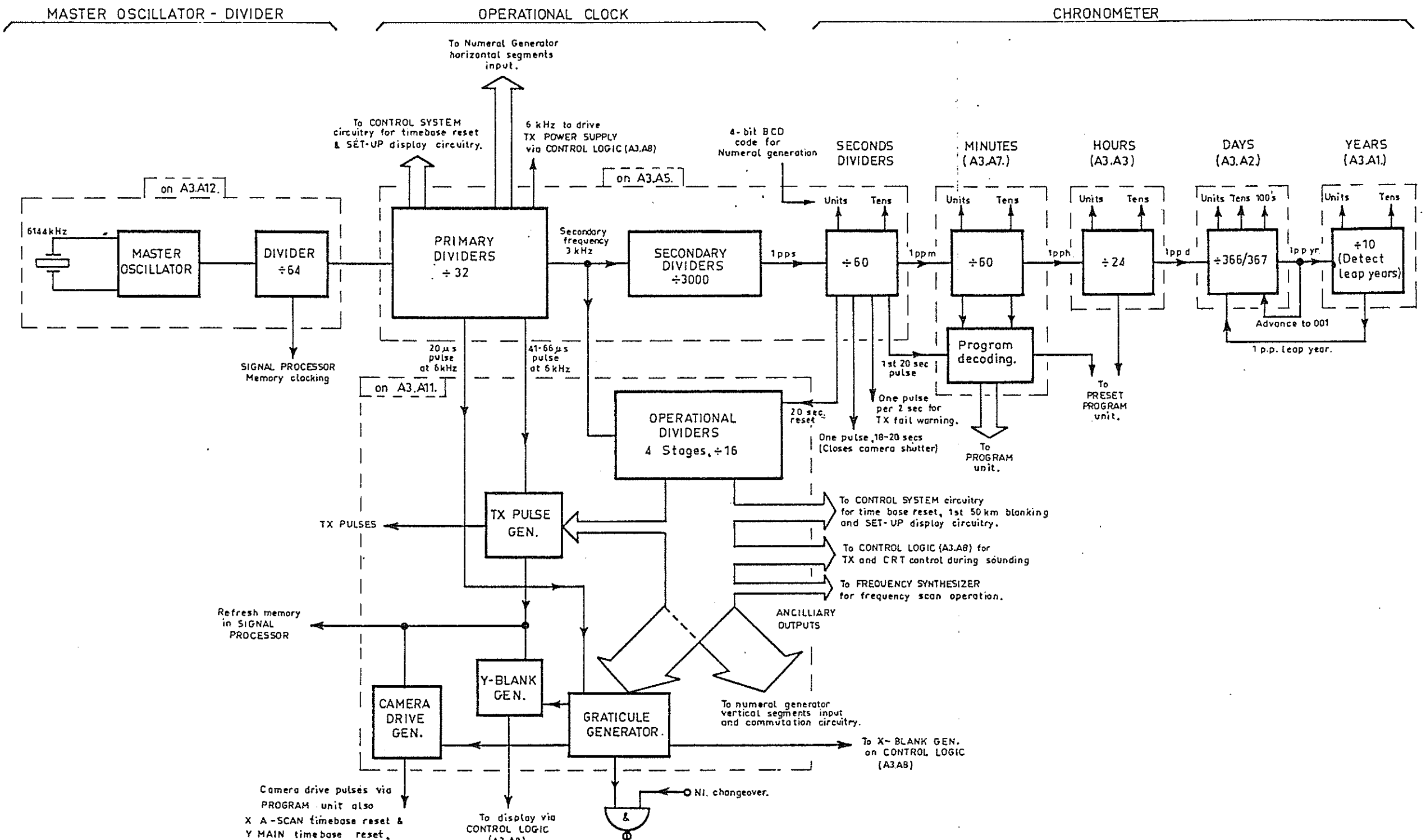
ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date
	GAD	DH	Layout A1, PL1. Designation added to A1, PL2.	R.H.	G.W.	21.5.75
	GAD	DH	" " D1 & D3 Interchanged.	R.H.	G.W.	14.7.75
	GAD	DH	" " D1 & D3 Interchanged.	R.H.	G.W.	24.8.75
	GAD	K.G.	AB mode Charging Lt. deleted, ME1 added.	K.G.	G.W.	27.2.79
	GAD	K.G.	Charging Lt. added, Ammeter deleted.	K.G.	G.W.	28.9.79
	GAD	K.G.	C2 Voltage added.	K.G.	G.W.	16.5.79
	GAD	K.G.	S1, LP1, LP2 notation modified.	K.G.	G.W.	21.5.79

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 IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
 MAIN POWER SUPPLY / BATTERY
 CHARGER - ASSEMBLY A1.
 CIRCUIT DIAGRAM.**

DRAWING N°
 CD-247Y1A

SHEET
 1 OF 1 SHEETS



NOTES

Camera drive pulses via PROGRAM unit also X A-SCAN timebase reset & Y MAIN timebase reset.

GRATICULE To display via CONTROL LOGIC

ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date
	G.A.D	R.H.		D.H.	G.M.	21.5.71
	G.A.D	R.H.		D.H.	G.W.	24.11.71
	G.A.D	R.H.	X-blank Gen. - Add'd To Graf Gen. - Y Blank Gen. mod To supporting line.	D.H.	G.W.	28.5.72
	G.A.D	K.G.	Notation on Graf Gen. & Pri. Divs Mod's. Title change To 4B	K.G.	G.W.	12.10.72

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
CLOCK - ASSEMBLY A3
BLOCK DIAGRAM

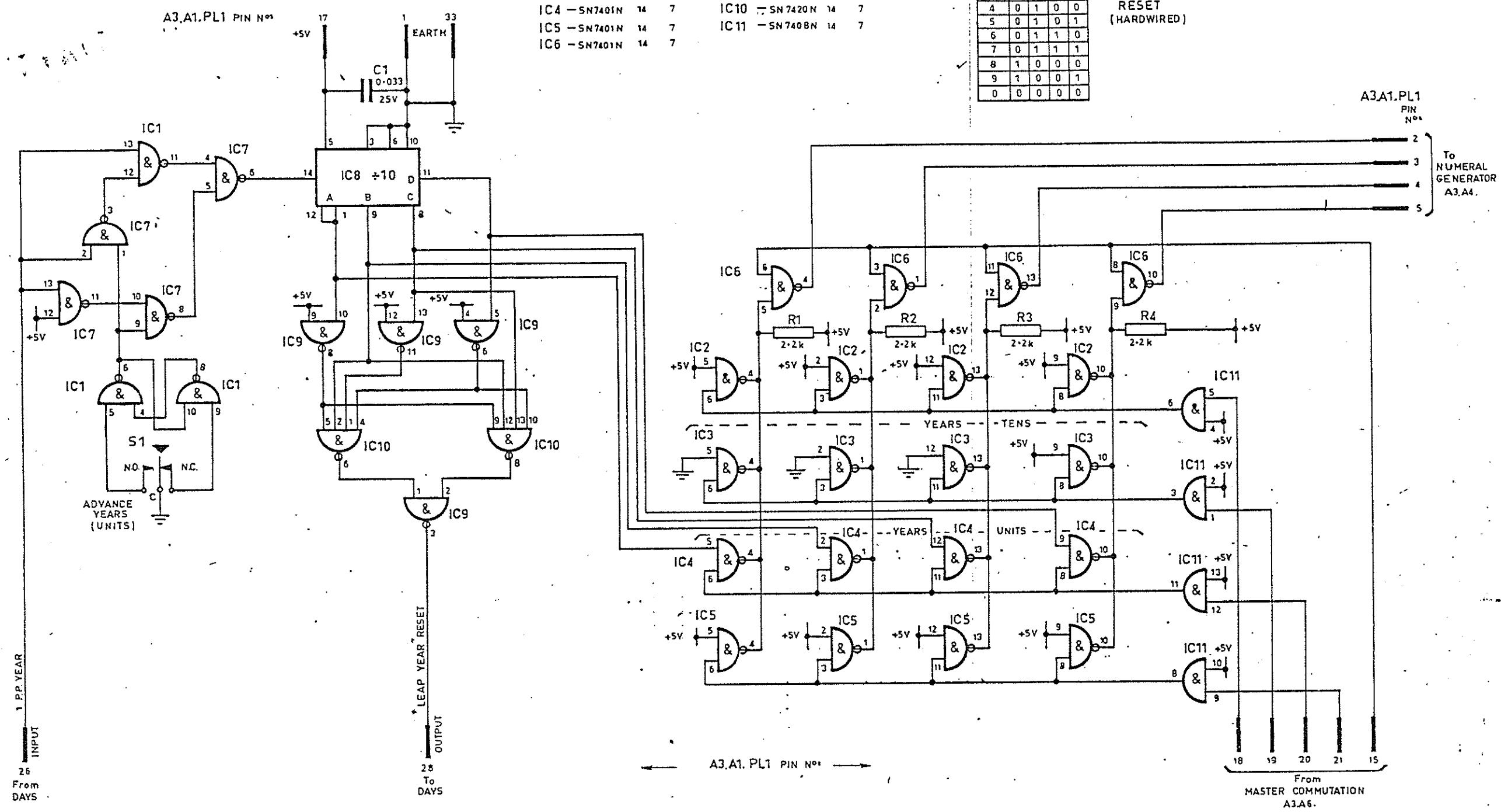
DRAWING N° CB-34Y1	SHEET 1 OF 1 SHEETS
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IC TYPES

PIN N°s	VCC	EARTH	PIN N°s	VCC	EARTH
IC1 - SN7400N	14	7	IC7 - SN7400N	14	7
IC2 - SN7401N	14	7	IC8 - SN7490N	5	10
IC3 - SN7401N	14	7	IC9 - SN7400N	14	7
IC4 - SN7401N	14	7	IC10 - SN7420N	14	7
IC5 - SN7401N	14	7	IC11 - SN7408N	14	7
IC6 - SN7401N	14	7			

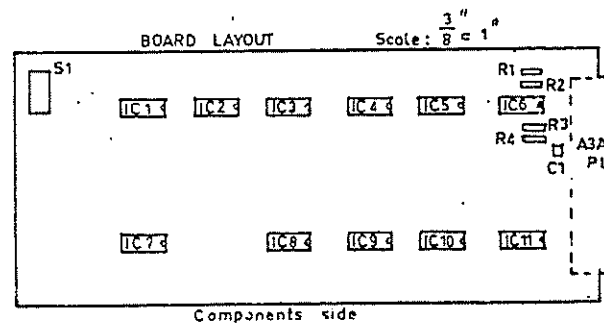
TABLE FOR YEARS TENS RESET (HARDWIRED)

SET YRS. TENS	IC3 pins 9	12	2	5	CODE
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
0	0	0	0	0	



1. All resistors 1/4 watt.

NOTES



ISSUES

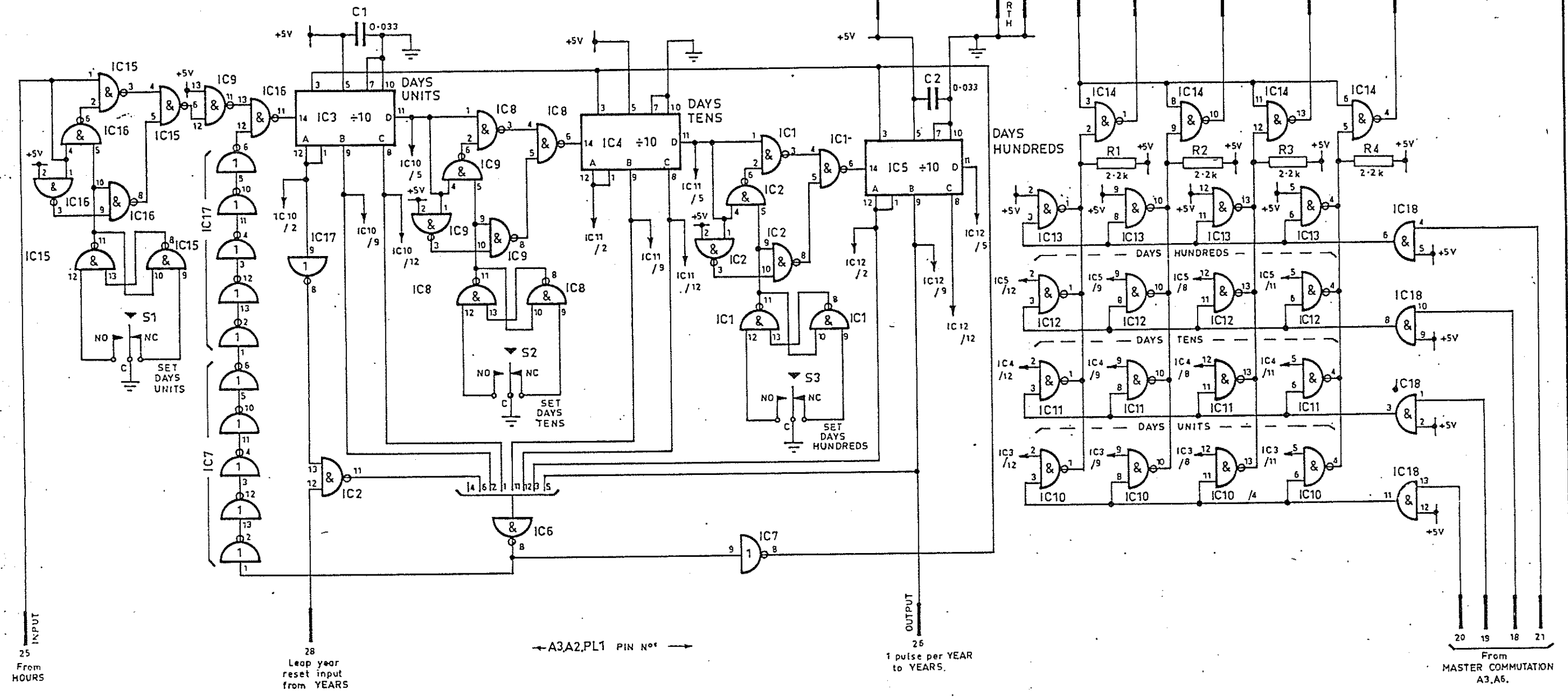
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd.	Date	No.
	GAD	L.P.		D.H.	G.W.	23.11.73	1
	GAD	L.P.	+5V added to Ics 2, 5, 7, 9, 11.	D.H.	G.W.	23.1.74	2
	GAD	L.P.	Title change.	D.H.	G.W.	5.5.75	3
	G.A.D.	K.G.	Title changed to 4B For 1980's	K.G.	G.W.	13.11.76	4
	GAD	K.G.	IC3 Yrs. Tens pins 5, 2, 12 Gndd., Pin 9 To +5V	K.G.	G.W.	12.9.80	5

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
CLOCK-YEARS-ASSEMBLY A3.A1.
CIRCUIT DIAGRAM

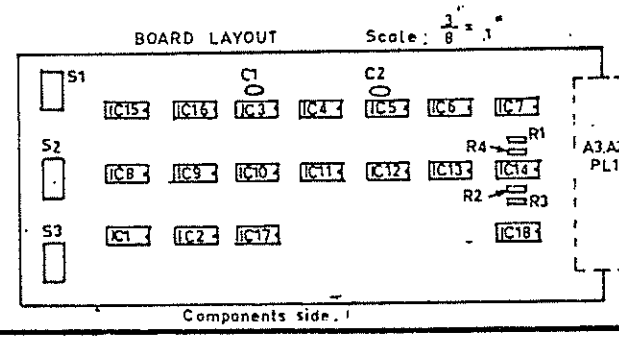
DRAWING No CD-218Y1 SHEET 1 OF 1 SHEET

PIN Nos		VCC EARTH		PIN Nos		VCC EARTH		PIN Nos		VCC EARTH	
IC1	-SN7400N	14	7	IC7	-SN7404N	14	7	IC13	-SN7401N	14	7
IC2	-SN7400N	14	7	IC8	-SN7400N	14	7	IC14	-SN7401N	14	7
IC3	-SN7490N	5	10	IC9	-SN7400N	14	7	IC15	-SN7400N	14	7
IC4	-SN7490N	5	10	IC10	-SN7401N	14	7	IC16	-SN7400N	14	7
IC5	-SN7490N	5	10	IC11	-SN7401N	14	7	IC17	-SN7404N	14	7
IC6	-SN7430N	14	7	IC12	-SN7401N	14	7	IC18	-SN7408N	14	7



1. All resistors $\frac{1}{4}$ watt. 2. All capacitors 25V.

NOTES.



ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd.	Date
	GAD	Z.P		D.H.	G.M.	30.11.73
	GAD	Z.P	Added to ICs 2, 9, 13, 15, 16, 18.	D.H.	G.W.	29.1.74
	GAD	Z.P	Title altered. Layout made.	D.H.	G.W.	16.4.76
	GAD	K.G.	Title changed to 4B.	K.G.	G.M.	11.10.77

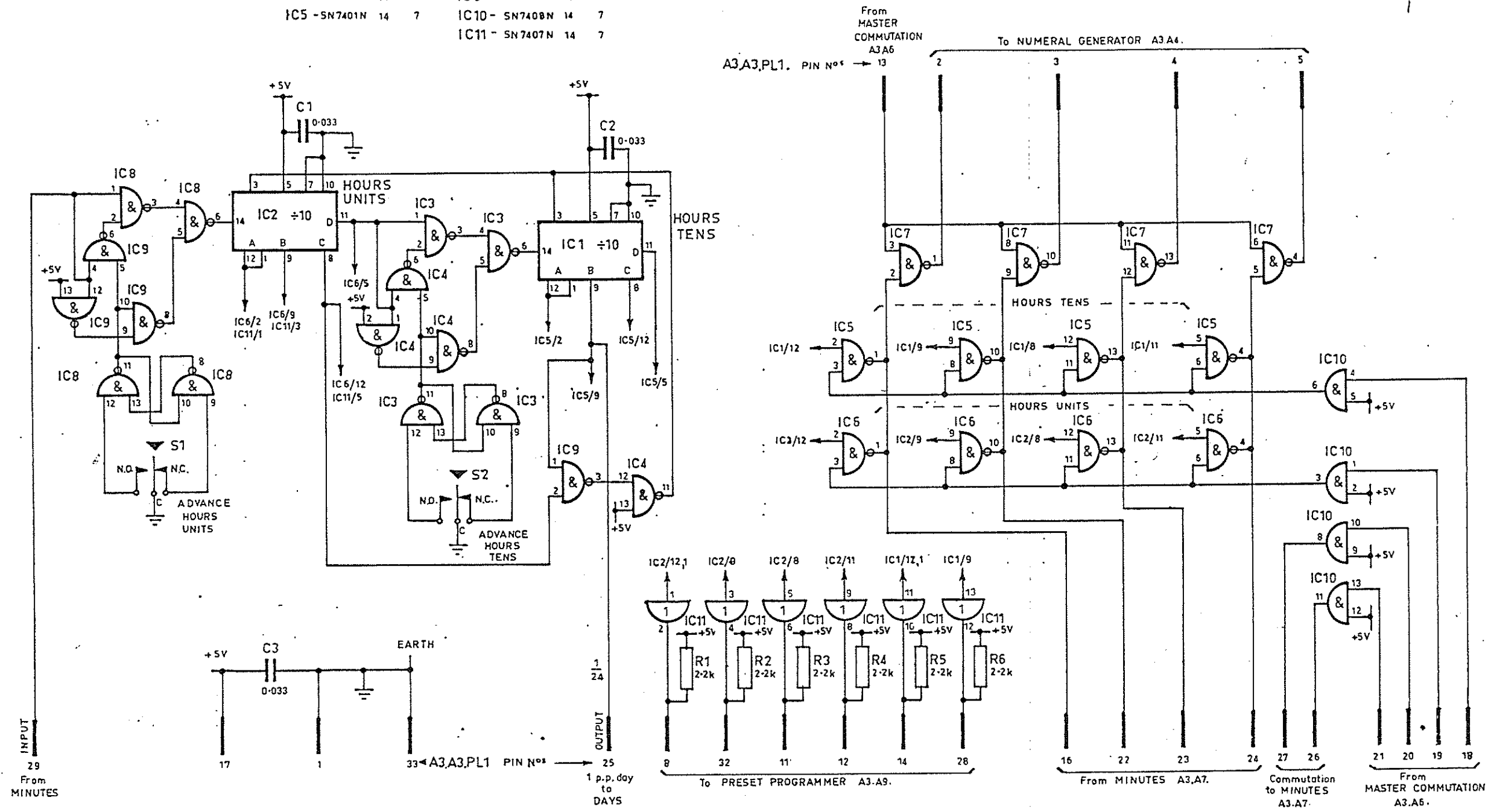
AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
CLOCK - DAYS - ASSEMBLY A3.A2.
CIRCUIT DIAGRAM**

DRAWING No CD-220Y1	SHEET 1 OF 1 SHEETS
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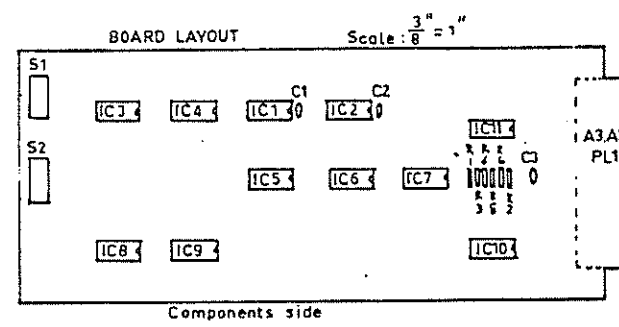
IC TYPES

PIN No's		VCC EARTH		PIN No's		VCC EARTH	
IC1	-SN7490N	5	10	IC6	-SN7401N	14	7
IC2	-SN7490N	5	10	IC7	-SN7401N	14	7
IC3	-SN7400N	14	7	IC8	-SN7400N	14	7
IC4	-SN7400N	14	7	IC9	-SN7400N	14	7
IC5	-SN7401N	14	7	IC10	-SN7408N	14	7
				IC11	-SN7407N	14	7



1. All capacitors 25V.
2. All resistors 0.25 watt.

NOTES

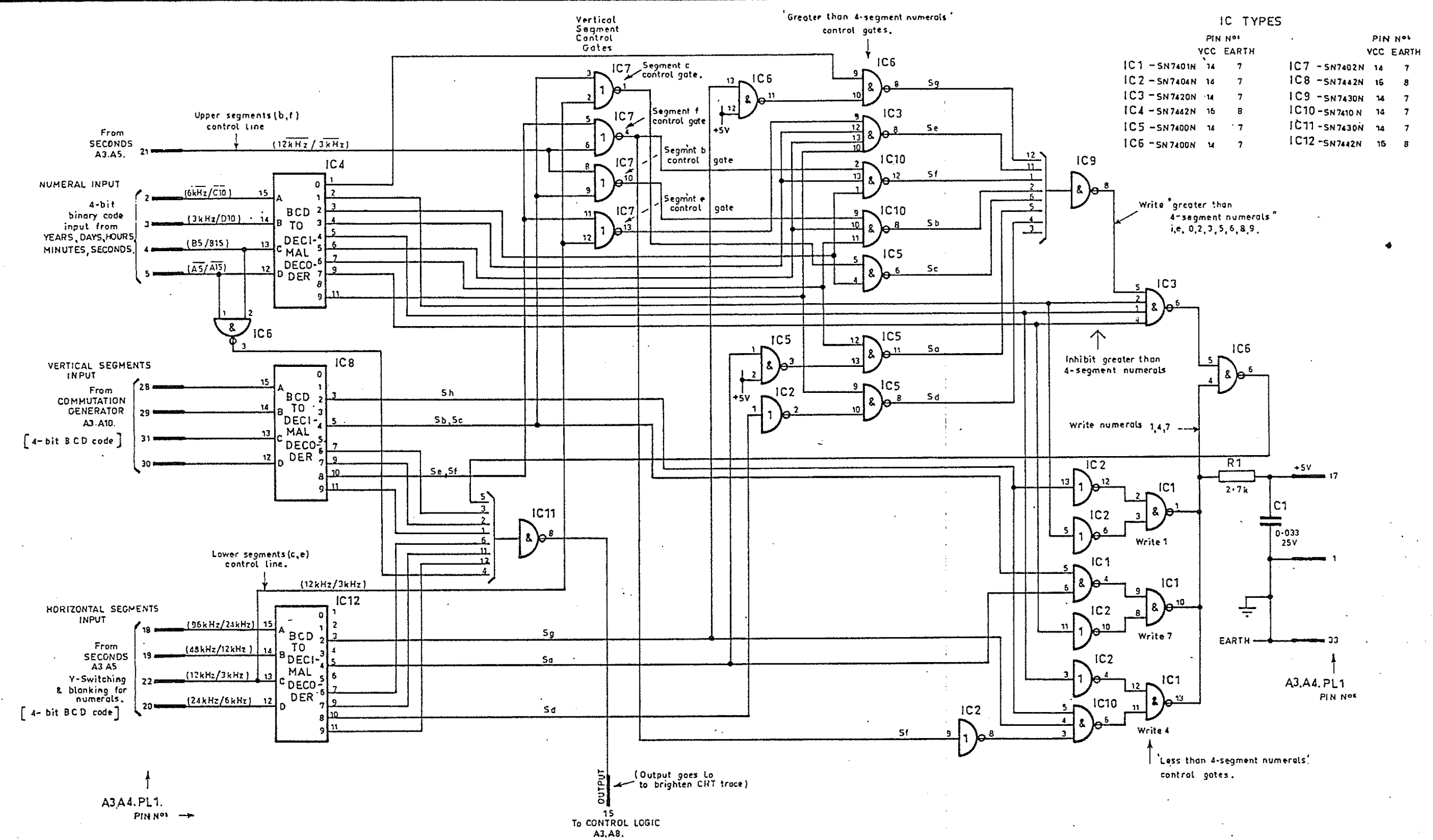


ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd.	Date
	GAD	L.P.	IC11 added, R1 → RC Added, Layout modified.	D.H.	G.M.	30.11.75
	ZAD	L.P.	+5V added to ICs 4, 7, 10.	D.H.	G.M.	29.1.76
	GAD	J.H.	Title changed.	D.H.	G.M.	2.5.75
	GAD	KG	Title changed to 4B.	R.G.	G.M.	12.10.75

AUSTRALIAN GOVERNMENT
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IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
CLOCK - HOURS - ASSEMBLY A3.A3.
CIRCUIT DIAGRAM.

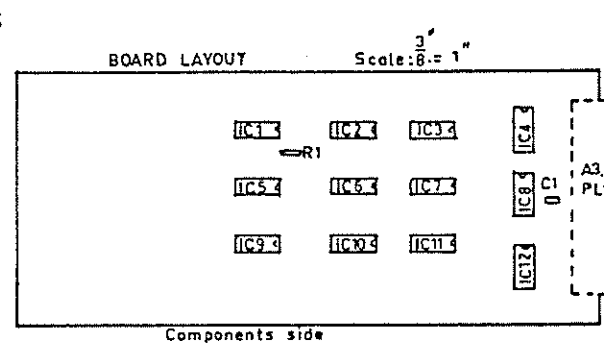
DRAWING No CD-221Y1	SHEET 1 OF 1 SHEET
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IC TYPES

IC No.	YCC	EARTH	IC No.	PIN No.	VCC	EARTH	
IC1	-SN7401N	14	7	IC7	-SN7402N	14	7
IC2	-SN7404N	14	7	IC8	-SN7442N	16	8
IC3	-SN7420N	14	7	IC9	-SN7430N	14	7
IC4	-SN7442N	16	8	IC10	-SN7410N	14	7
IC5	-SN7400N	14	7	IC11	-SN7430N	14	7
IC6	-SN7400N	14	7	IC12	-SN7442N	16	8

- NOTES
- Resistor $\frac{1}{4}$ watt.
 - Numerical segments reference.



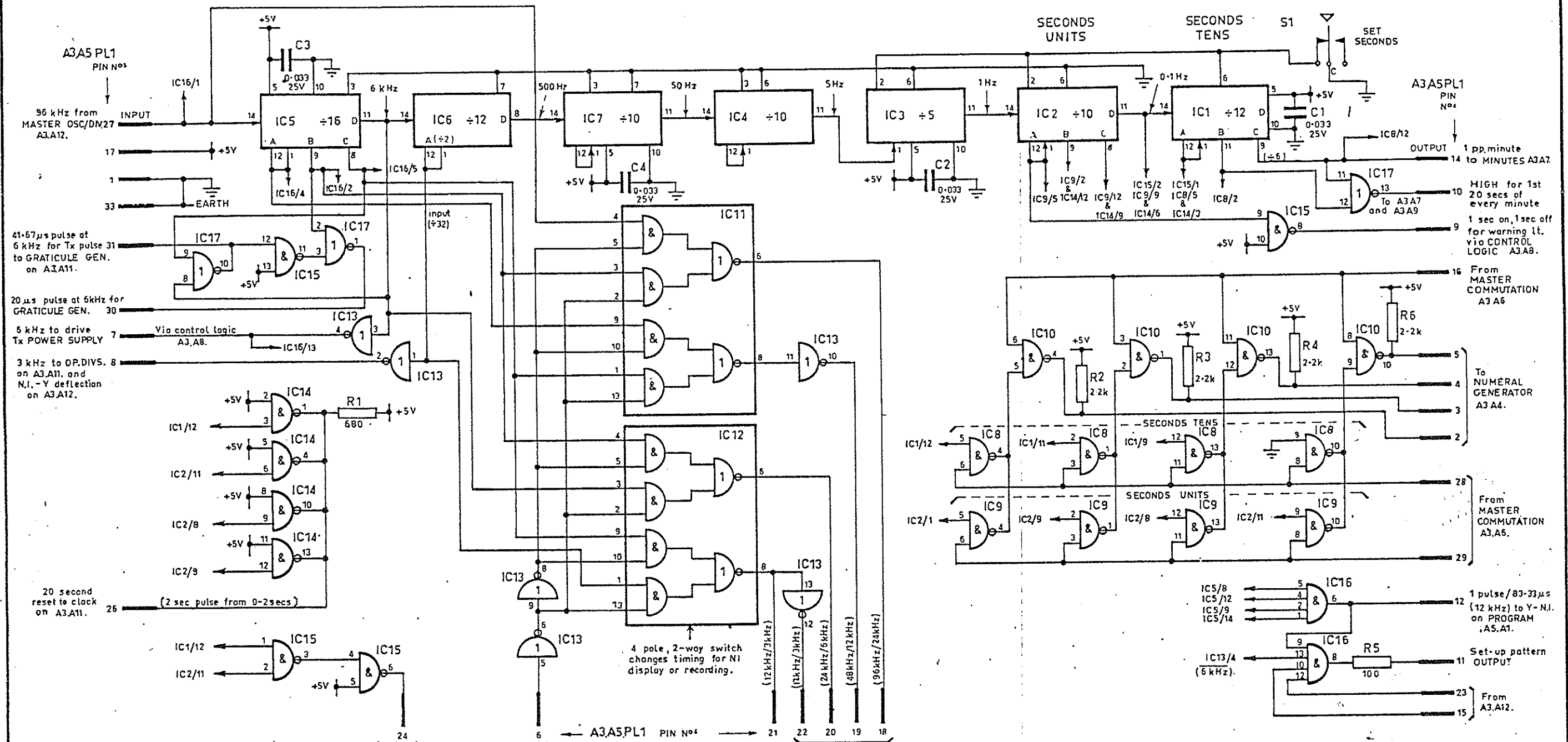
ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd.	Date
	G.A.D.	L.P.	+5V added to IC5 & IC12 added to layout. 4 PLI	D.H.	G.M.	20.6.75
	G.A.D.	L.P.	Pin 32 changed to 15	D.H.	G.M.	10.1.76
	G.A.D.	D.H.	Title changed.	D.H.	G.W.	12.5.75
	G.A.D.	R.H.	IC4, IC8, IC12 Function changed. Their input notation changed. IC7 gates notation	D.H.	S.W.	15.5.76
	G.A.D.	K.G.	Title changed to 4B	R.G.	G.W.	12.8.76

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DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
CLOCK-NUMERAL GENERATOR
 ASSEMBLY A3.A4.-CIRCUIT DIAGRAM

DRAWING No
CD-222Y1

SHEET
 1 OF 1 SHEETS

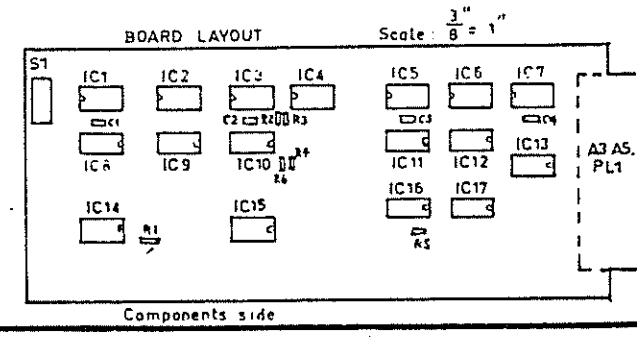


IC TYPES

PIN No	VCC	EARTH	PIN No	VCC	EARTH
IC1	-SN7492N	5 10	IC10	-SN7401N	14 7
IC2	-SN7490N	5 10	IC11	-SN7451N	14 7
IC3	-SN7490N	5 10	IC12	-SN7451N	14 7
IC4	-SN7490N	5 10	IC13	-SN7404N	14 7
IC5	-SN7493N	5 10	IC14	-SN7401N	14 7
IC6	-SN7492N	5 10	IC15	-SN7400N	14 7
IC7	-SN7490N	5 10	IC16	-SN74H21N	14 7
IC8	-SN7401N	14 7	IC17	-SN7402N	14 7
IC9	-SN7401N	14 7			

- All resistors 1/4 watt.
- Construction note C2 C3 C4 C5 located near respective ICs.

NOTES



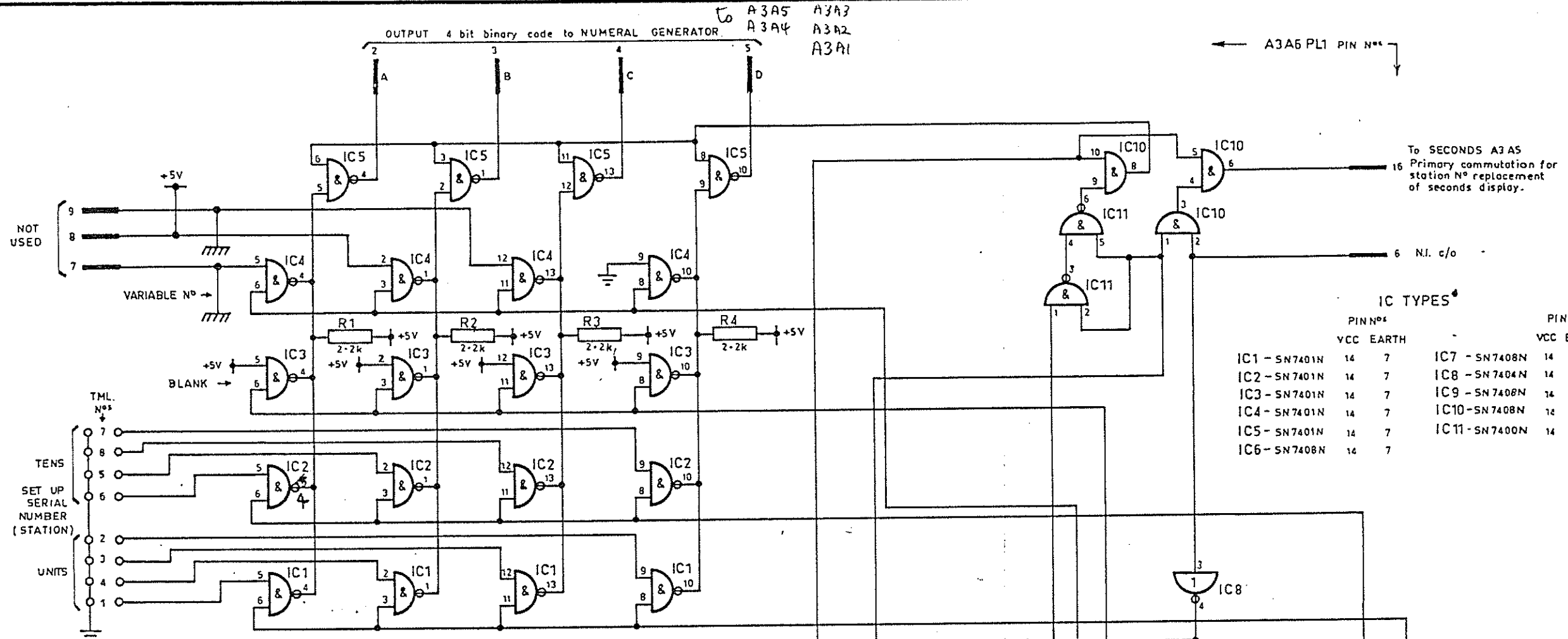
ISSUES

Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd	Date	No.
G.A.D.	L.P.		Major circuit modification.	D.H.	G.W.	20.6.73	1
G.A.D.	L.P.		16, 12, 15 & 13 Tml Destn'n. mod.	D.H.	D.H.	4.2.74	2
G.A.D.	D.H.		IC16 changed from SN7421N to SN74H21N	J.H.	G.W.	15.3.74	3
G.A.D.	D.H.		Title changed. R1 value changed.	D.H.	G.W.	28.5.74	4
G.A.D.	L.H.		Resistors R1-R6 added to layout.	J.H.	G.W.	12.5.75	5
G.A.D.	R.H.		Output pins 22, 20, 19, 18, changed notation	D.H.	G.W.	16.10.71	6
G.A.D.	K.G.		Title changed to AB.	D.H.	G.W.	25.5.71	7
				K.G.	G.M.	13.11.78	8

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4 B
CLOCK-SECONDS-ASSEMBLY A3.A5.
CIRCUIT DIAGRAM.

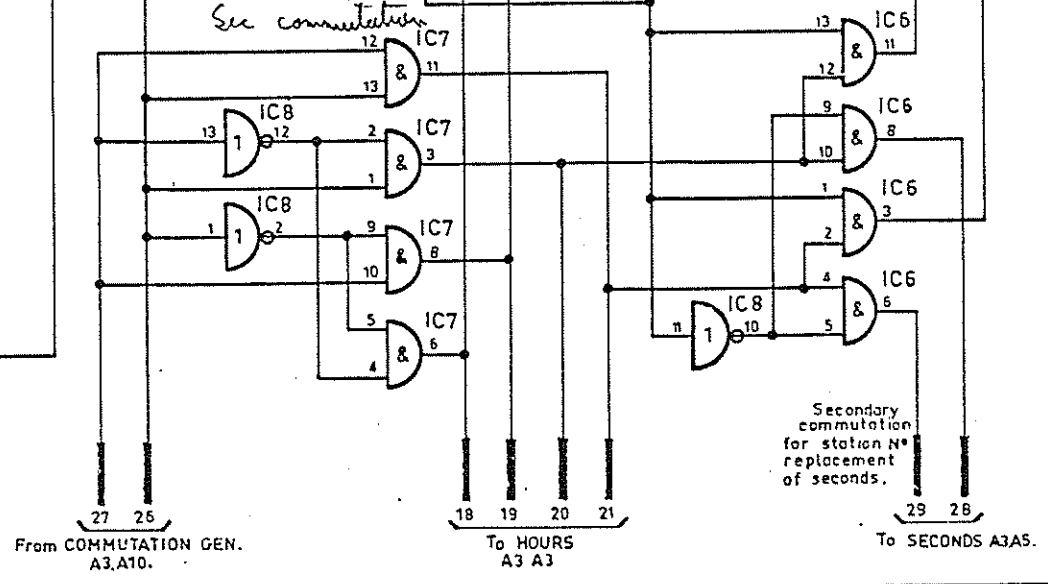
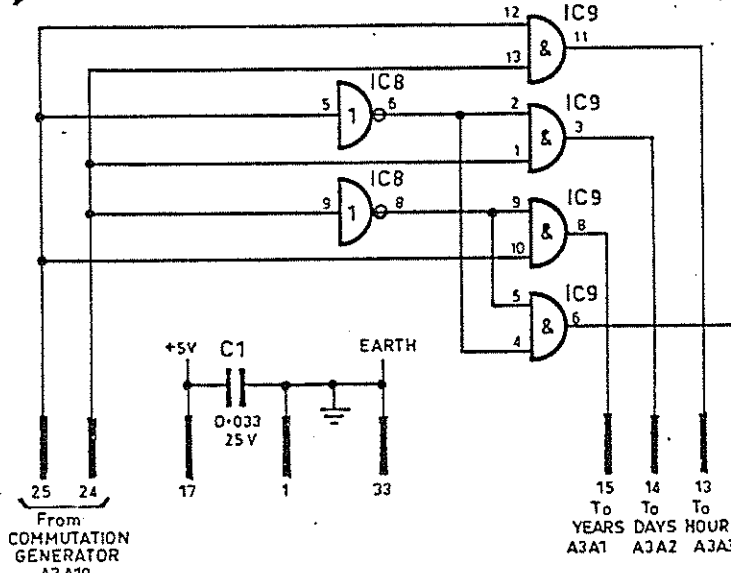
DRAWING No CD-227Y1 SHEET 1 OF 1 SHEETS



TO SET UP SERIAL N° (STATION)

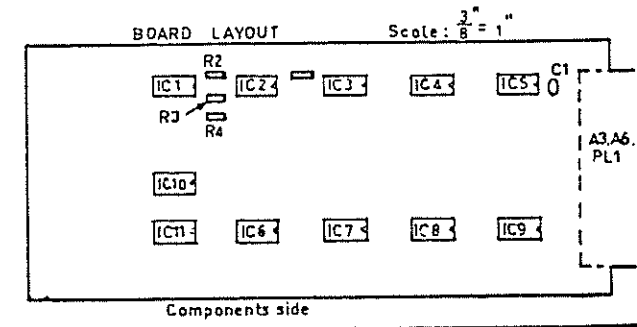
TENS	TML. N°s	UNITS	TML. N°s
1	earth 5,7,8	1	earth 2,3,4
2	" 6,7,8	2	" 1,2,3
3	" 7,8	3	" 2,3
4	" 5,6,7	4	" 1,2,4
5	" 5,7	5	" 2,4
6	" 6,7	6	" 1,2
7	" 7	7	" 2
8	" 8 or 6,8 or 5,6,8	8	" 3 or 1,3 or 1,3,4
9	" 5,8	9	" 3,4
0	" 5,6,7,8	0	" 1,2,3,4

PRIMARY COMMUTATION CIRCUIT



NOTES

1. All resistors 1/4 watt.



ISSUES							
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd.	Date	No.
	GAD.	L.P.	IC9 Pins 2 & 12 corrected. & PL1 pins 8 & 9 conn. deleted.	D.H.	G.W.	20.6.71	1
	GAD.	L.P.		D.H.	G.W.	22.1.74	2
	GAD.	J.H.	Title changed. Layout added	D.H.	G.W.	16.9.75	3
	GAD.	G.H.	Setup Serial No(station) Table added.	J.H.	G.W.	5.12.75	4
	GAD.	K.G.	Title changed to 4B.	K.G.	G.W.	12.10.75	5
	GAD.	K.G.	changes display 1st digit from '7' to '2', To indicate change over from LT. To UT.	K.G.	B.P.	13.6.96	6

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE.

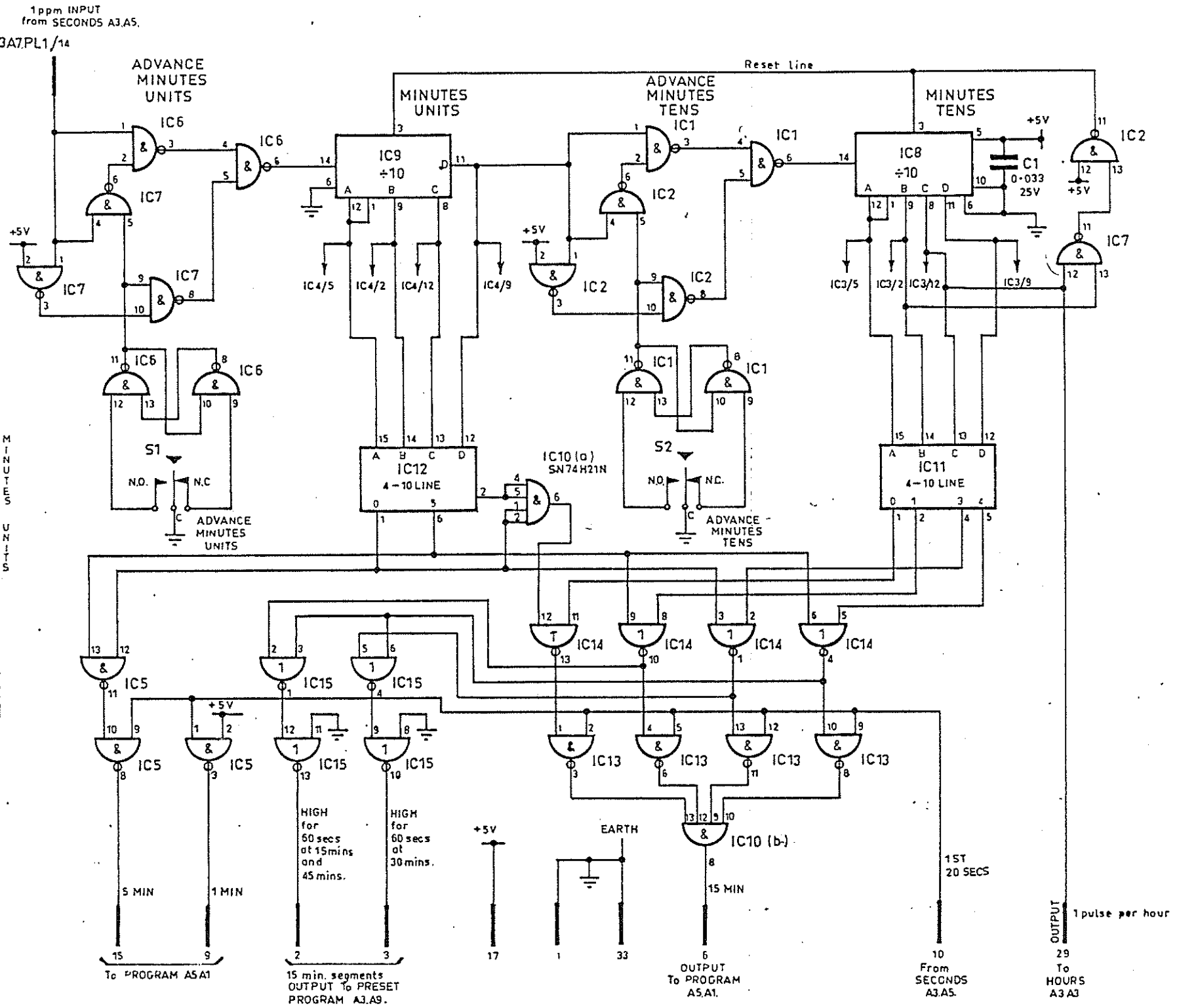
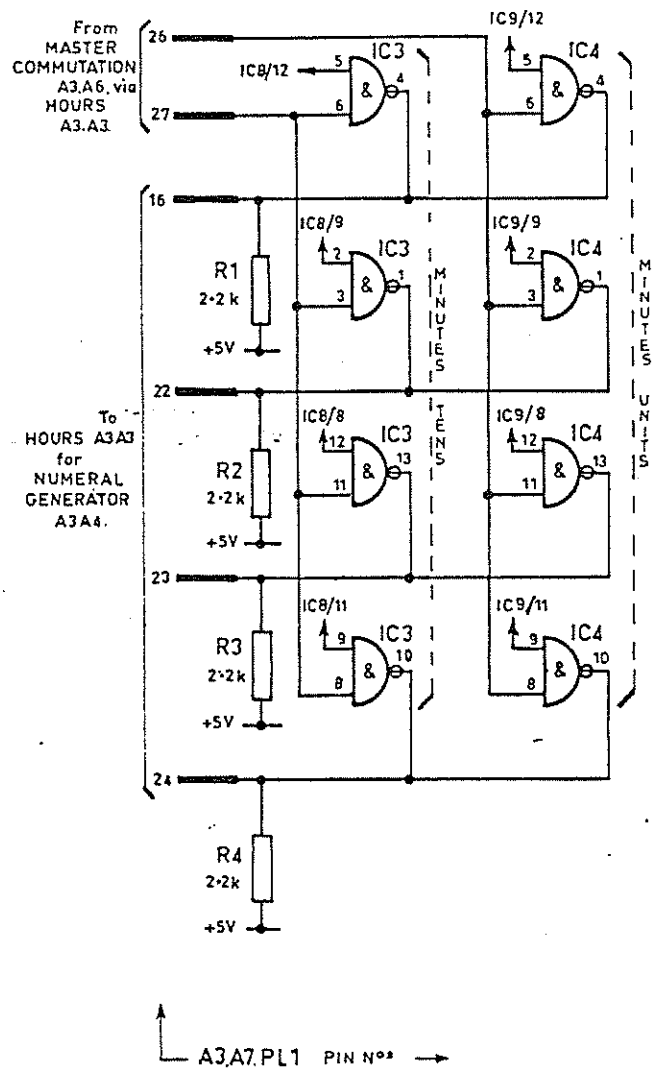
IONOSONDE TYPE 4B
CLOCK - STATION SERIAL N° & MASTER COMMUTATION
ASSEMBLY A3.A6.-CIRCUIT DIAGRAM

DRAWING No
CD-223Y1

SHEET
1 OF 1 SHEETS

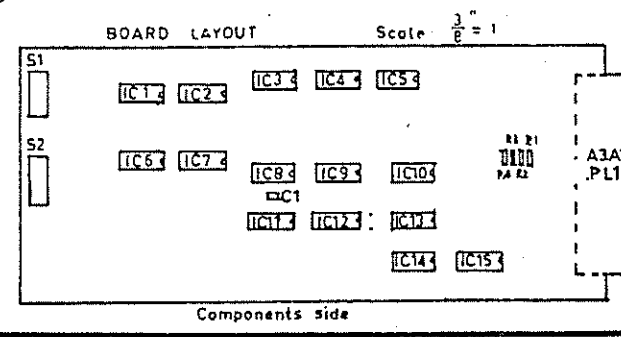
IC TYPES

IC No.	Part No.	PIN No. VCC	PIN No. EARTH
IC1	SN7400N	14	7
IC2	SN7400N	14	7
IC3	SN7401N	14	7
IC4	SN7401N	14	7
IC5	SN7400N	14	7
IC6	SN7400N	14	7
IC7	SN7400N	14	7
IC8	SN7490N	5	10
IC9	SN7490N	5	10
IC10	SN74H21N	14	7
IC11	SN7442N	16	8
IC12	SN7442N	16	8
IC13	SN7400N	14	7
IC14	SN7402N	14	7
IC15	SN7402N	14	7



1. All resistors 0.25 watt.

NOTES

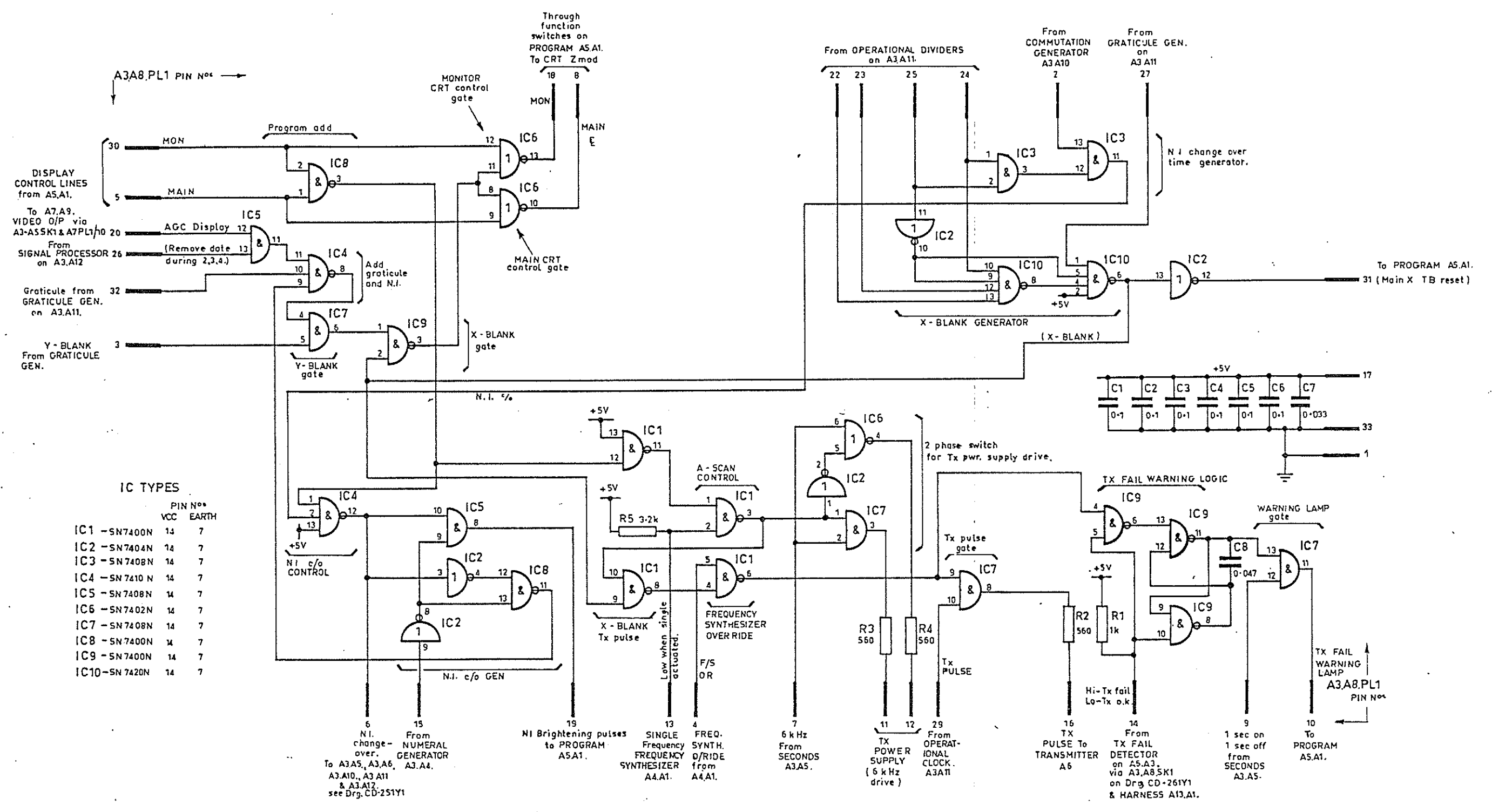


Order		Drawn	Checked	AMENDMENTS	Exam'd	App'd	Date	No.
		GAD	L.P.	Major Modification.	D.H.	G.W.	21.6.73	1
		GAD	L.P.	Mod to IC3 & IC4 Tnd. Destinations.	D.H.	G.W.	4.2.74	2
		GAD	DH	Title changed - layout mod.	D.H.	G.W.	15.3.74	3
		GAD	DH	IC10 changed from SN7421N to SN74H21N	D.H.	G.W.	23.5.74	4
		GAD	DH.	Title changed - layout mod.	D.H.	G.W.	12.5.75	5
		GAD	DH.	IC5 pins 4,12,13 gate changed to NAND.	D.H.	G.W.	24.7.75	6
		GAD	K.G.	Title changed to 4B.	K.G.	G.M.	16.10.75	7
		GAD	K.L.	IC10 (a) added. (Extra sounding 1min past hr.)	K.G.	G.M.	1.9.82	8

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE
IONOSONDE TYPE 4B
CLOCK-MINUTES ASSEMBLY A3.A7.
CIRCUIT DIAGRAM

DRAWING-No
CD-224Y1

SHEET
1 OF 1 SHEETS

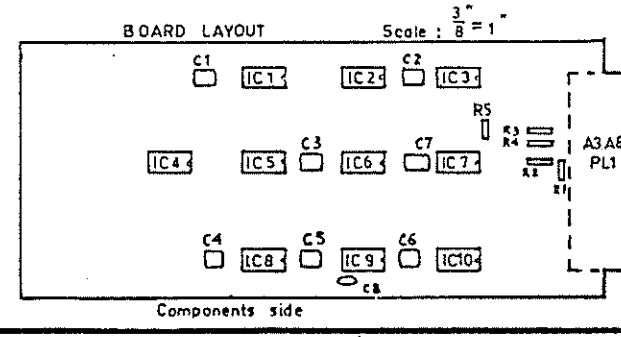


IC TYPES

IC	PIN No*	VCC	EARTH
IC1	-SN7400N	14	7
IC2	-SN7404N	14	7
IC3	-SN7408N	14	7
IC4	-SN7410N	14	7
IC5	-SN7408N	14	7
IC6	-SN7402N	14	7
IC7	-SN7408N	14	7
IC8	-SN7400N	14	7
IC9	-SN7400N	14	7
IC10	-SN7420N	14	7

NOTES

1. Resistors 0-25 watts.

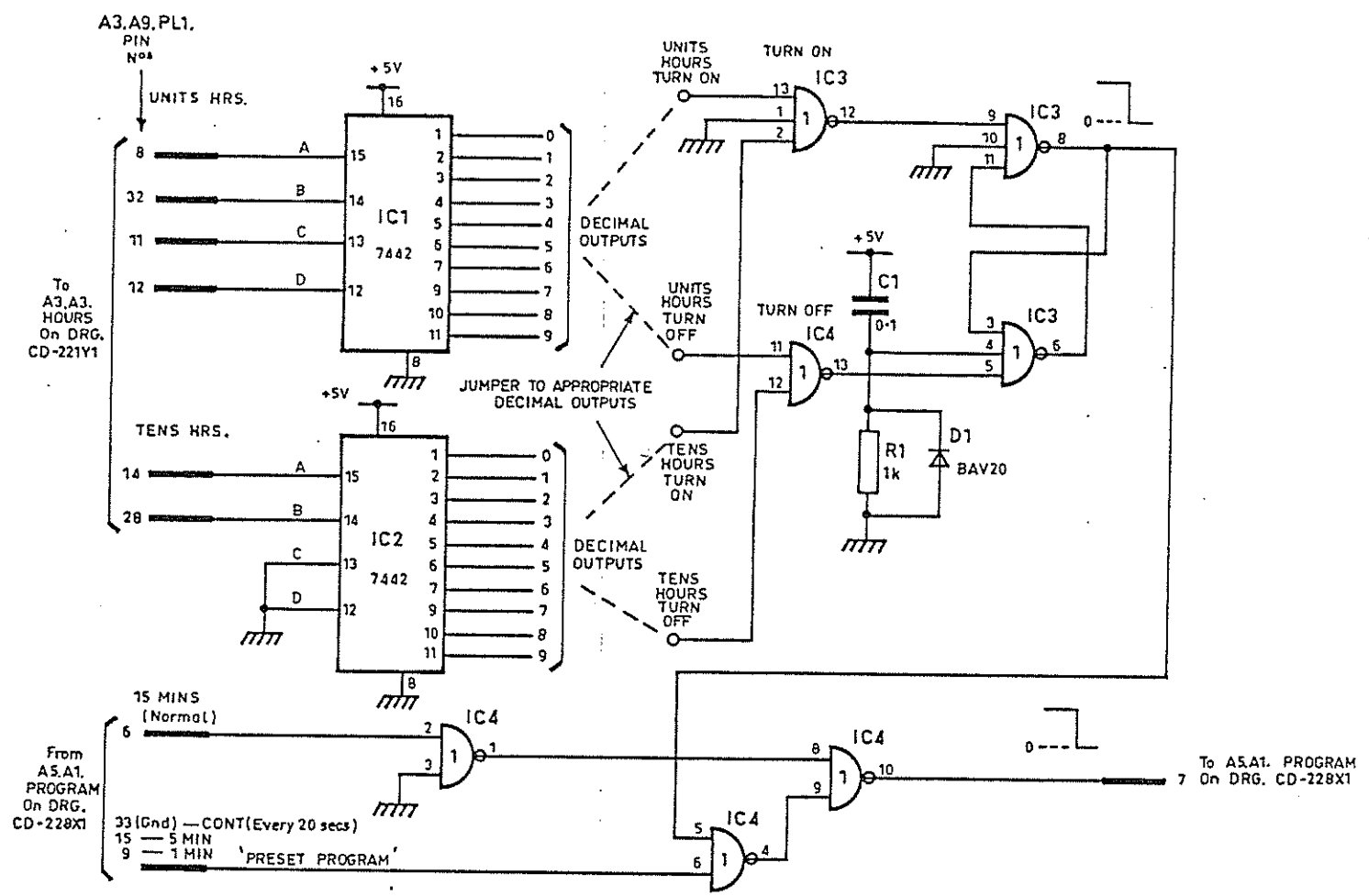


ISSUES						
Order	Drwn	Chkd	AMENDMENTS	Exmd	Appd	Date
	GAD	D.H.	IC10 to +5V. C2 added. Mods to IC1	D.H.	G.W.	4.2.74
	GAD	D.H.	pin 26 designation changed.	D.H.	G.W.	12.5.75
	GAD	R.H.	Pin 26 +5 designation changed.	J.H.	G.W.	12.8.75
	GAD	G.S./C.J.	AGC Display circuitry added. & TX pulse delay gate added.	D.H.	G.W.	12.5.77
	GAD	K.G.	4B mods IC5 pin no mod. R2 value mod. Tx pulse delay gate removed.	K.G.	G.W.	4.11.78
	GAD	E.J.	IC1 pin 2, R5 added.	K.C.	G.W.	24.8.83

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

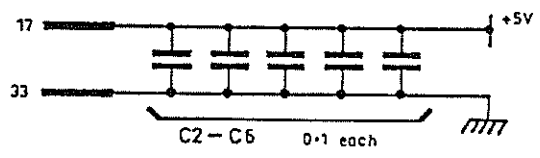
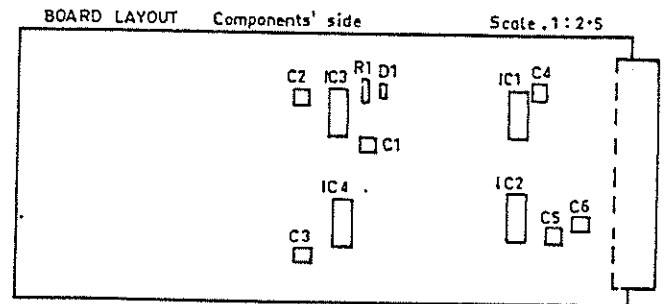
**IONOSONDE TYPE 4B
CLOCK**
- VIDEO, NUMERIC,
INDICATOR GENERATOR - TX CONTROL LOGIC.
ASSEMBLY A3.A8 - CIRCUIT DIAGRAM.

DRAWING No CD-250 Y1	SHEET 1 OF 1 SHEETS
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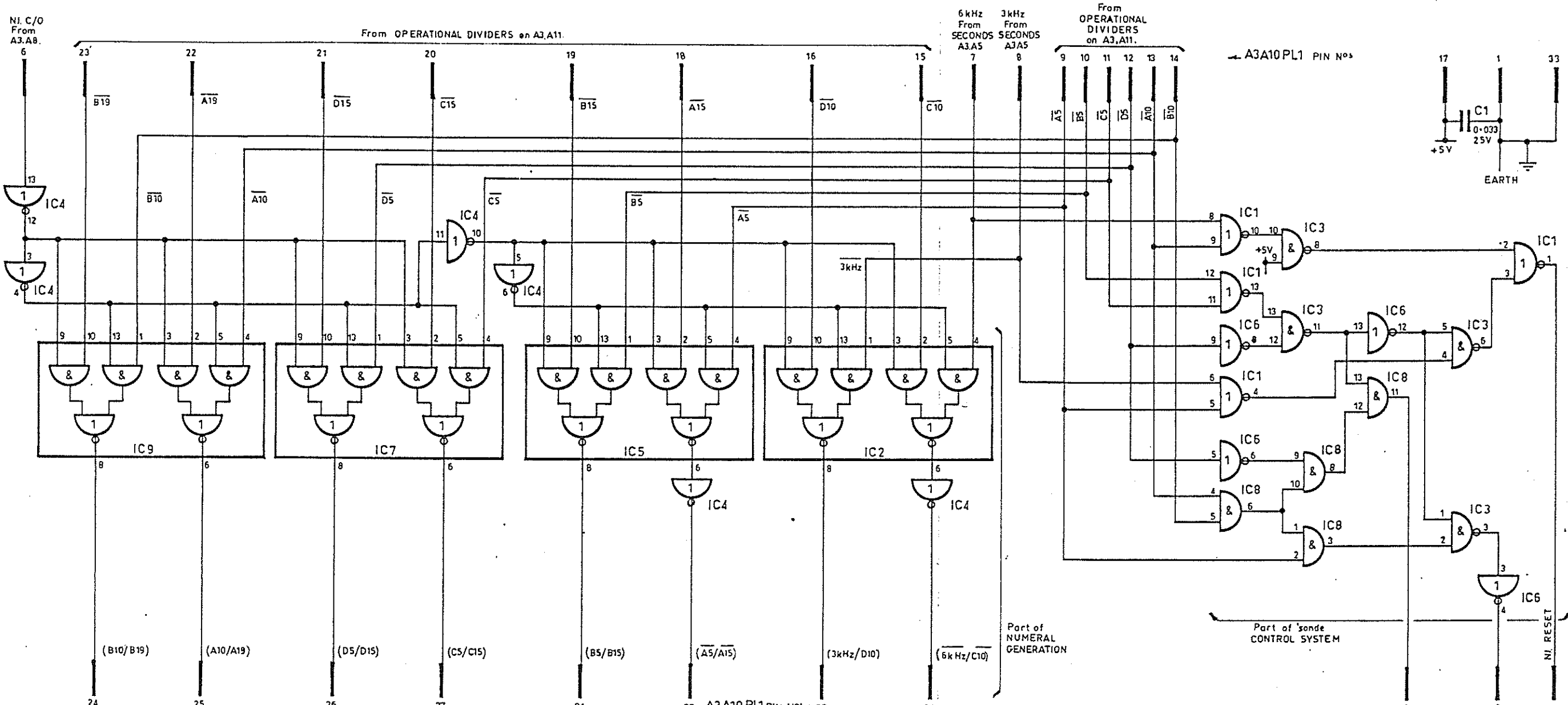
IC DATA

TYPE	V _{cc}	PIN NOS
IC3 - 74LS27	-14	-7
IC4 - 7402	-14	-7



not in unit

NOTES	DRN	AMENDMENT	CHE'X'D	APPR'VD	DATE	ISS	IONOSONDE TYPE 4B PRESET PROGRAM (A3.A9.) 1 MIN., 5 MIN., or CONT., 'PRESET PROGRAM' BETWEEN PRESET HOURS - 15 MIN., (NORMAL) CIRCUIT DIAGRAM		AUSTRALIAN GOVERNMENT DEPARTMENT OF SCIENCE AND THE ENVIRONMENT IONOSPHERIC PREDICTION SERVICE	
1. Between 'Turn on' & 'Turn off' times, (set by appropriate jumper cans where shown) the 'preset program' (set on IC4 pin 6) controls soundings; outside this period, the normal (15 min. interval) program (on IC4 pin 2) is operative.	G.A.B.		K.G.	G.W.	22.2.77	1	DRG. NO	CD-409A3	SHEET	1 OF 1



Part of NUMERAL GENERATION

Part of 'sonde CONTROL SYSTEM

Not used

To MASTER COMMUTATION A3.A6 (Primary commutation)

To MASTER COMMUTATION A3.A6 (Secondary commutation)

To NUMERAL GENERATOR X-Direction switching and change-over.

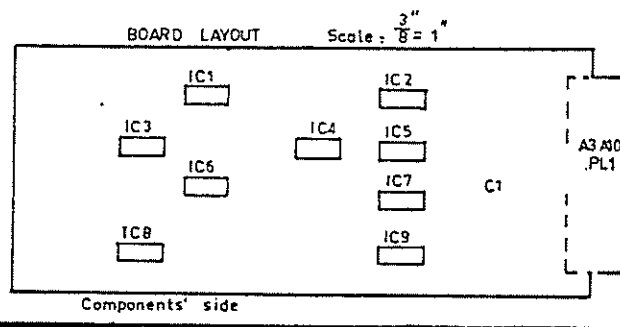
To CONTROL LOGIC on A3.A8.

To X-NI on PROGRAM AS.A1.

IC TYPES

IC	Part No.	Pin 14	Pin 7	Pin 14	Pin 7		
IC1	-SN7402N	14	7	IC6	-SN7404N	14	7
IC2	-SN7451N	14	7	IC7	-SN7451N	14	7
IC3	-SN7400N	14	7	IC8	-SN7408N	14	7
IC4	-SN7404N	14	7	IC9	-SN7451N	14	7
IC5	-SN7451N	14	7				

NOTES

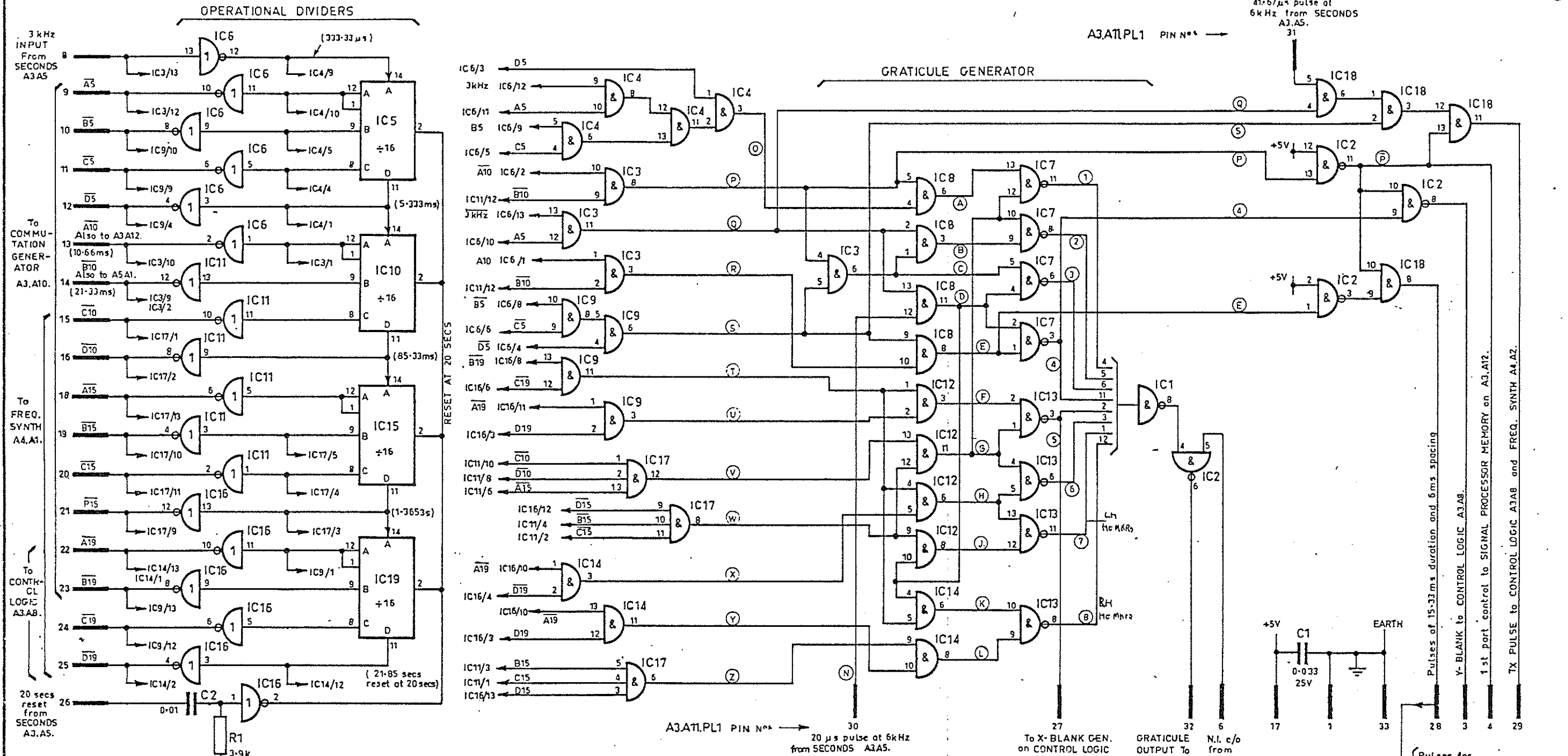


ISSUES						
Order	Drawn	Chkd.	AMENDMENTS	Exmd	Appd	Date
	G.A.D.	D.H.		D.H.	G.W.	1.2.79
	G.A.B.	D.H.	Pins 12, 13 added, C1 added.	D.H.	G.W.	11.5.75
	J.R.I.	R.H.	Pin 23 notation mod.	D.H.	G.W.	21.3.74
	G.A.D.	K.G.	Title changed to AB.	K.G.	G.W.	11.10.71

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
CLOCK - COMMUTATION GEN.
ASSEMBLY A3.A10 - CIRCUIT DIAGRAM.

DRAWING N° CD-249Y1	SHEET 1 OF 1 SHEETS
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A3.A11 PL1

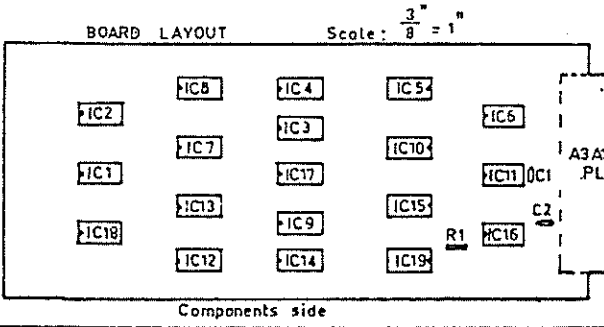
PIN N°s	PIN N°s VCC EARTH	PIN N°s VCC EARTH	PIN N°s VCC EARTH	PIN N°s VCC EARTH	PIN N°s VCC EARTH
IC1 - SN7430N	14 7	IC5 - SN7493N	5 10	IC9 - SN7408N	14 7
IC2 - SN7400N	14 7	IC6 - SN7404N	14 7	IC10 - SN7493N	5 10
IC3 - SN7408N	14 7	IC7 - SN7400N	14 7	IC11 - SN7404N	14 7
IC4 - SN7408N	14 7	IC8 - SN7408N	14 7	IC12 - SN7408N	14 7

IC TYPES

PIN N°s VCC EARTH	PIN N°s VCC EARTH	PIN N°s VCC EARTH	PIN N°s VCC EARTH
IC13 - SN7400N	14 7	IC17 - SN7411N	14 7
IC14 - SN7408N	14 7	IC18 - SN7408N	14 7
IC15 - SN7493N	5 10	IC19 - SN7493N	5 10
IC16 - SN7404N	14 7		

NOTES

1. Pins 15 to 25 inclusive also go to FREQUENCY SYNTHESIZER A4.A1. (See Drg. N° CD-232Y1)
2. For letters & numbers in circles reference, see Handbook Section 3-1
3. For waveforms see Drg. N° GC-28Y1, GC-28Y2, GC-28Y3, GC-29Y1.



ISSUES

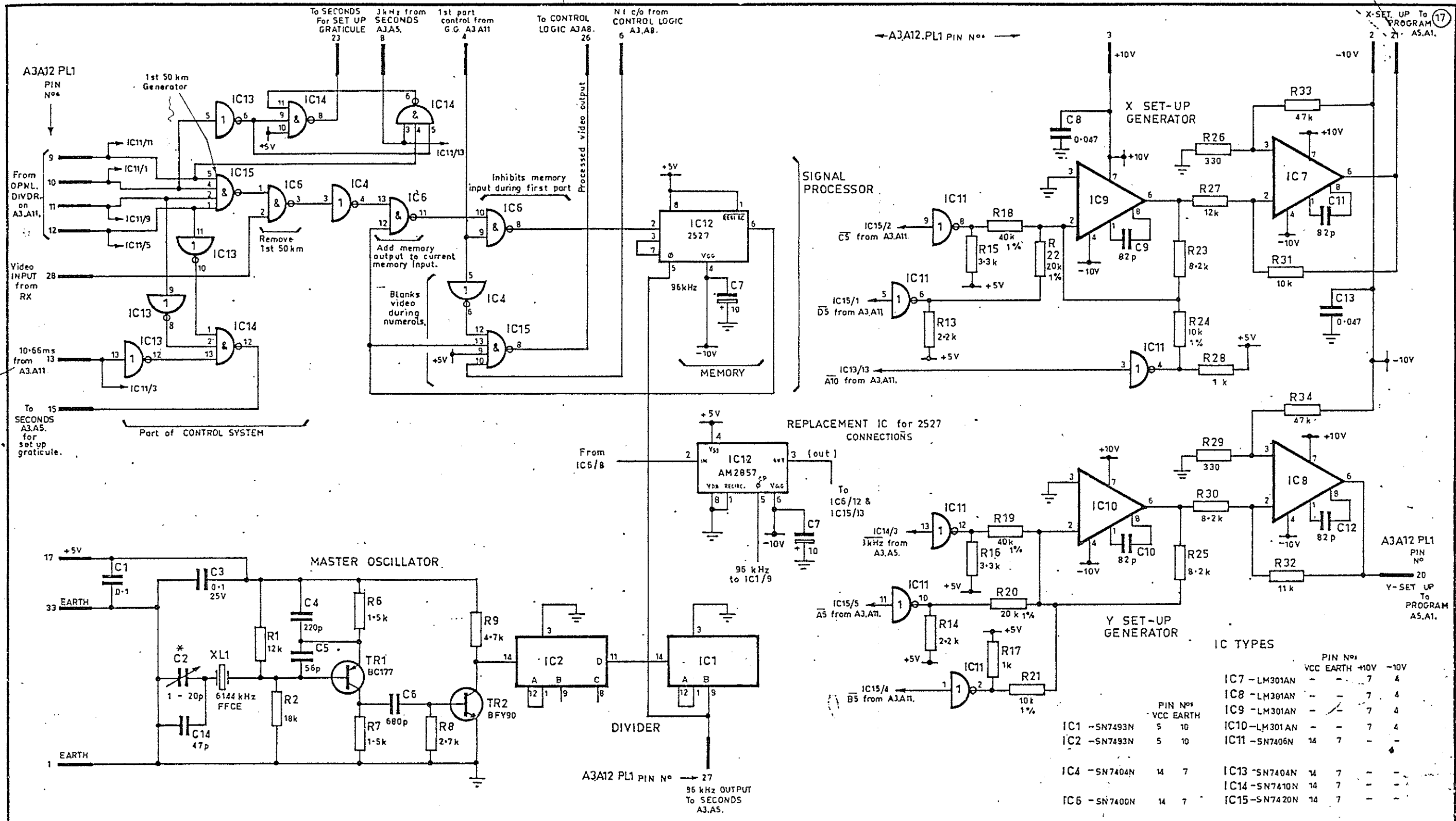
Order	Drawn	Checked	AMENDMENTS	Examd.	App'd.	Date	No.
	GAD	L.P.		D.H.	G.M.	3.8.74	1
	GAD	D.H.	Made to 10/10/74	D.H.	G.M.	22.7.74	2
	GAD	D.H.	C1 added, IC6, IC11, IC16 Symbol change, R1 C10 C2 References reversed.	D.H.	G.M.	15.7.75	3
	GAD	D.H.	Made in accordance with W.R.E. Prod'n	D.H.	G.M.	26.2.75	4
	GAD	R.H.	Pin 30 notation changed Note 3 added Pins 22, 23, 24, 25 notation changed.	D.H.	G.M.	22.5.75	5
	GAD	K.G.	Title changed to 4B.	D.H.	G.M.	14.10.75	7
	GAD	C.J.	Pin 28 notation changed	K.G.	G.M.	3.4.75	8

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE

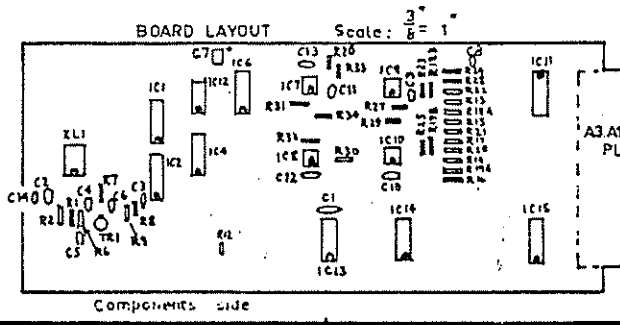
IONOSONDE TYPE 4B
 CLOCK-OPERATIONAL & GRATICULE
 DIVIDERS & GENERATOR
 ASSEMBLY A3.A11- CIRCUIT DIAGRAM

DRAWING No
CD-225Y1

SHEET
 1 OF 1 SHEETS



- NOTES**
- All resistors 0.25 watt.
 - * C2 Adjustable through front panel.
 - R18 & R19 Resistors comprised of a 1k & a 39k in series (ports R18A & R18B etc.)

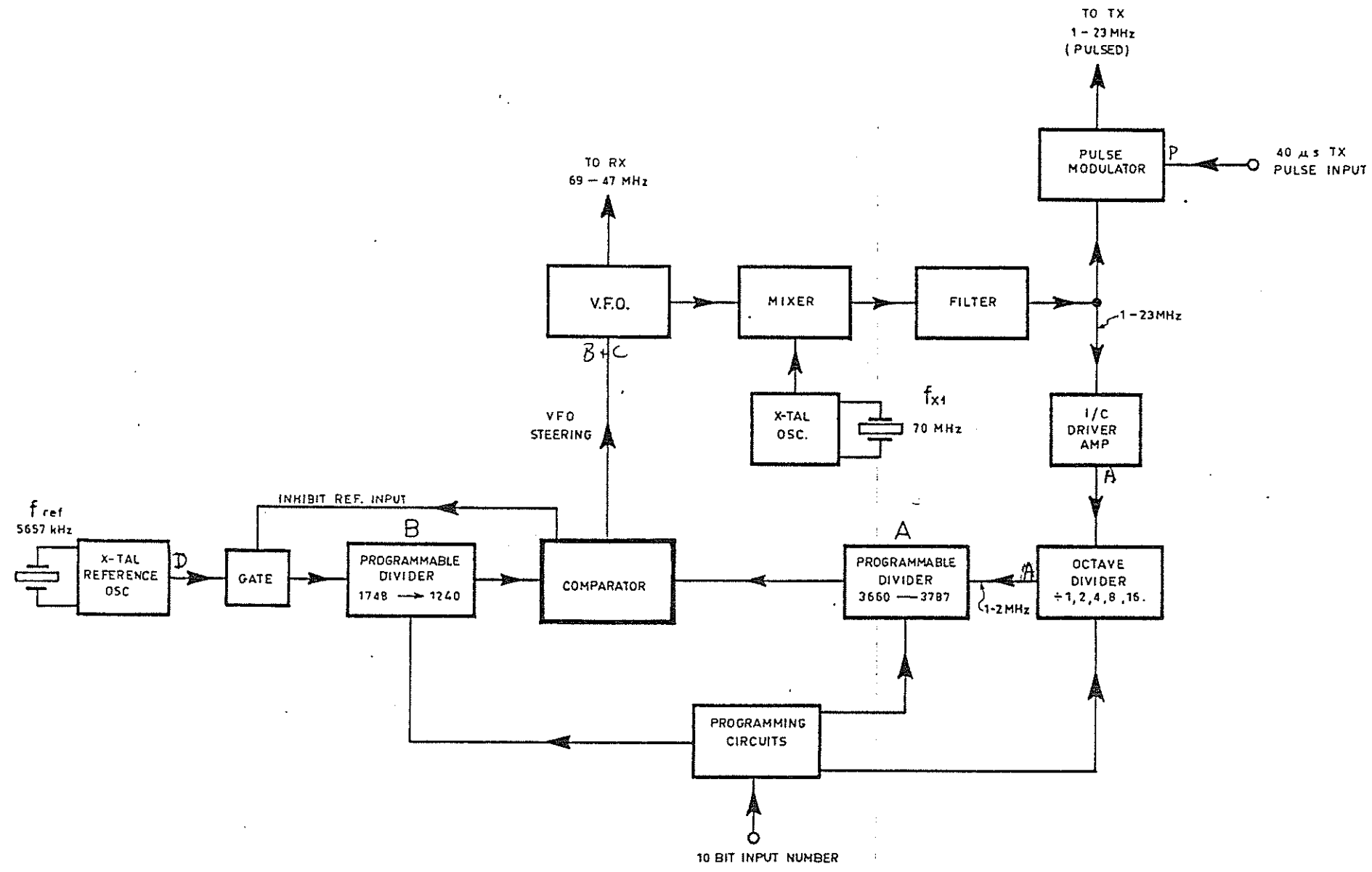


ISSUES							
Order	Drawn	Checked	AMENDMENTS	Examd	App'd.	Date	No.
	GAD	DH	Made to values of R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34	DH	GW	21.5.75	1
	GAD	DH	TR2 mod (internal)	DH	GW	24.8.75	2
	GAD	G.S.	C3 added, C2 Value changed.	DH	GW	2.4.77	3
	GAD	R.G.	AB mod. Signal Processor section.	HC	GW	10.5.78	4
	GAD	R.G.	TR2 Type changed - R5 deleted - Capacitors' ref. Nos changed - Board layout adjustd. - Notes added.	XG	GW	10.1.75	5
	GAD	KG	Replacement for IC12 scans added.	MC	GW	1-10-75	6

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
CLOCK — CLOCK OSCILLATOR
ASSEMBLY A3.A12 - CIRCUIT DIAGRAM

DRAWING No CD-229Y1	SHEET 1 OF 1 SHEETS
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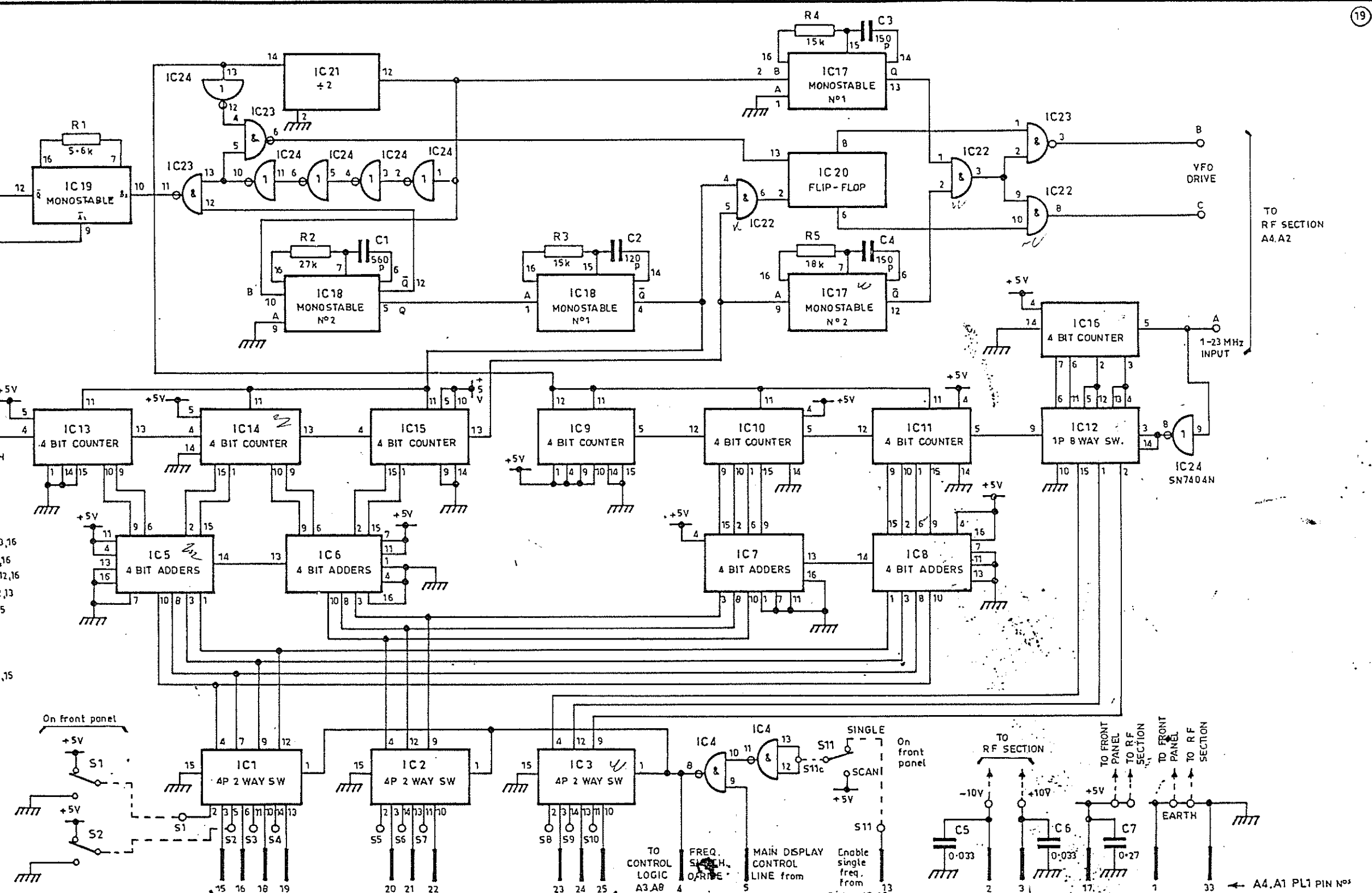


ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Checked	AMENDMENTS	Exam'd	Apprd	Date	N°	DEPARTMENT OF SCIENCE
	GAD	K.G.	Title changed to 4B	D.H.	G.W.	10-5-75	1	IONOSPHERIC PREDICTION SERVICE
	GAD	K.G.		K.G.	G.W.	16.10.75	2	IONOSONDE TYPE 4B FREQUENCY SYNTHESIZER-ASSY. A4. BLOCK DIAGRAM.
							DRAWING N°	SHEET
							CB-29 Y1	1 OF 1 SHEETS

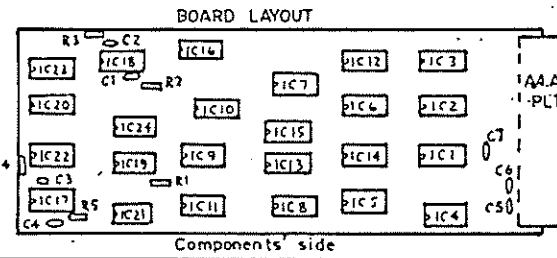
F
74S151

IC TYPES

IC No.	Part No.	VCC	EARTH
IC1	- SN9322N	-16	-8,15
IC2	- "	-16	-8,15
IC3	- "	-16	-8,15
IC4	- SN7400N	-14	-7
IC5	- SN7483N	-4,5,11	-7,12,13,16
IC6	- "	-5,7,11	-1,4,12,16
IC7	- "	-4,5	-1,7,11,12,16
IC8	- "	-4,5,16	-7,11,12,13
IC9	- SN74193N	-1,8,9,10,16	-8,14,15
IC10	- "	-4,16	-9,14
IC11	- "	-4,16	-8,14
IC12	- SN8211N	-16	-8,10
IC13	- SN74193N	-5,16	-1,8,14,15
IC14	- "	-5,16	-8,14
IC15	- "	-5,10,15	-8,9,14
IC16	- 74HC193	-4,16	-8,14
IC17	- SN74123N	-16	-8,1
IC18	- "	-16	-8,1
IC19	- "	-16	-8
IC20	- SN7472N	-14	-7
IC21	- SN7493N	-5	-2,10
IC22	- SN7400N	-14	-7
IC23	- SN7400N	-14	-7
IC24	- SN7404N	-14	-7



- NOTES
- All resistors 0.25watt.
 - Connections to 3 of 11 front panel switches shown; others similar to S1 & S2
 - VCC & earth connections shown on IC's are signal path only



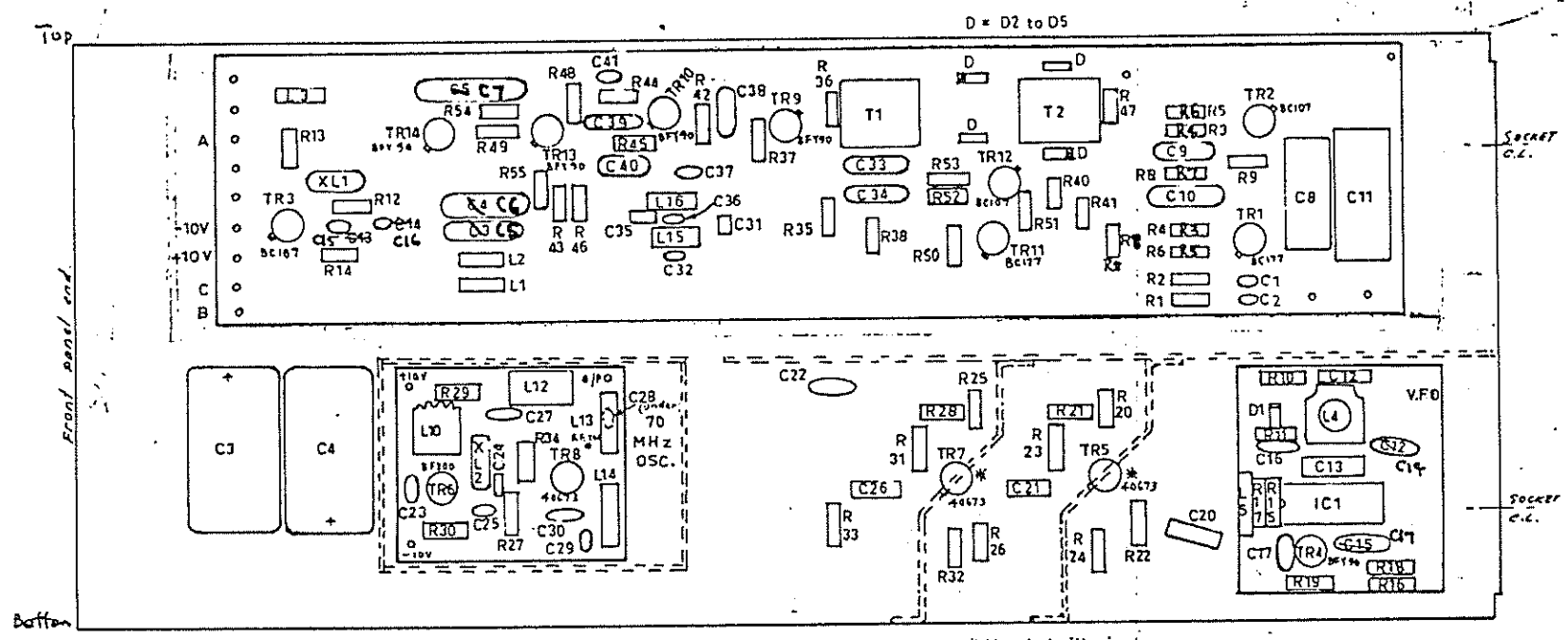
ISSUES

Order	Drwn	Chk'd	AMENDMENTS	Exm'd	Apr'd	Date	Nº
	GAD	D.H.	Inverter adj. to IC16 added & other mods.	D.H.	G.W.	16.9.74	1
	CAD	D.H.	IC24 (part of) & R6 Deleted.	D.H.	G.W.	16.5.75	2
	GAD	G.R.	Title changed to 4B.	D.H.	G.W.	17.2.77	3
	CAD	K.G.		K.G.	G.M.	14.4.78	4
	GAD	C.V.	Inverter adj. to IC16 added.	K.G.	G.M.	6.7.79	5
	CAD	K.G.	Mods. Adj. to output & not gate Transferred	K.G.	G.M.	6.12.81	6
	CAD	K.G.	IC14 Type changed, & Jpg. returned.	P.S.	B.P.	10.6.81	7

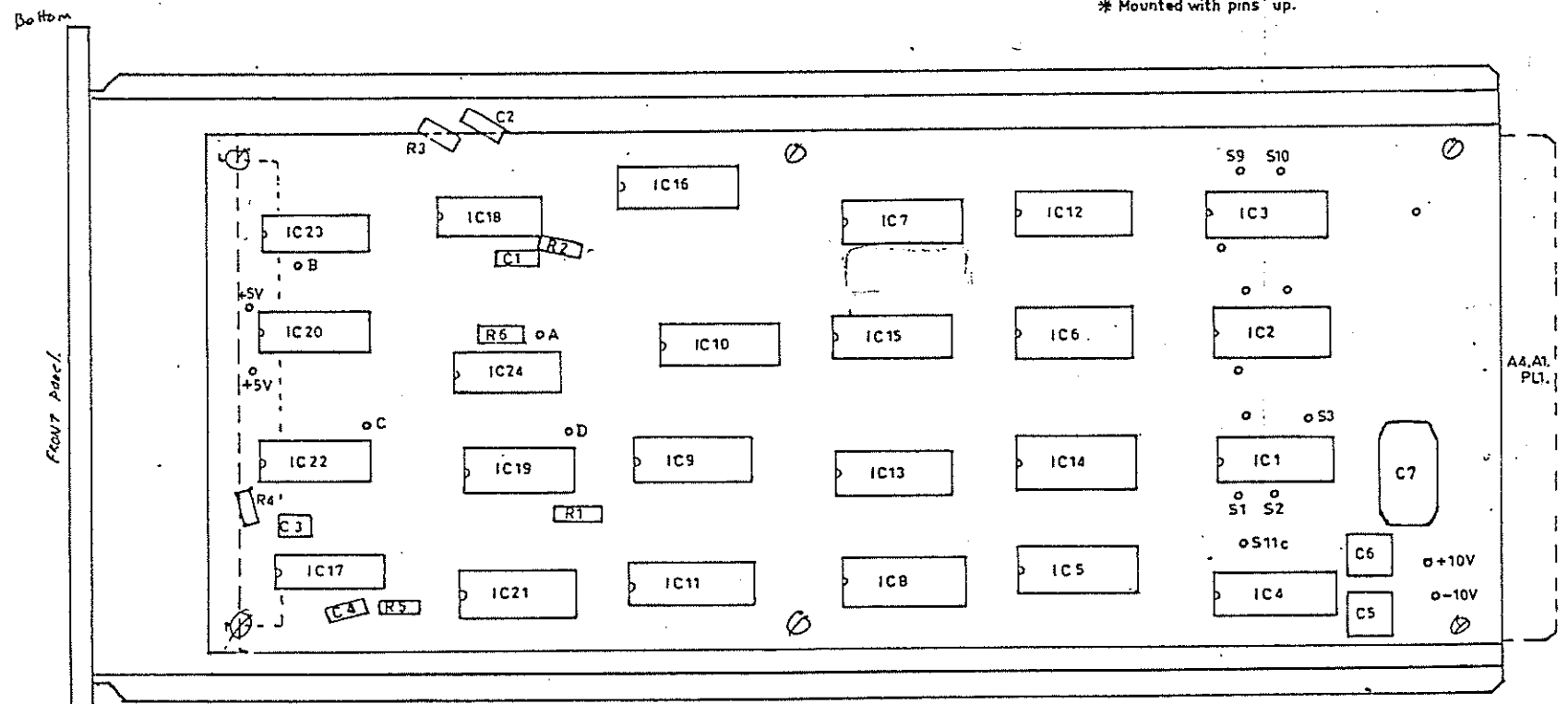
AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE
IONOSONDE TYPE 4B
FREQUENCY SYNTHESIZER - DIGITAL SECTION
ASSEMBLY A4.A1 - CIRCUIT DIAGRAM

DRAWING Nº
CD-232Y1

SHEET
1 of 3 SHEETS



A4.A2.
R.F. SECTION



A4.A1.
DIGITAL SECTION

Scale: 1:1

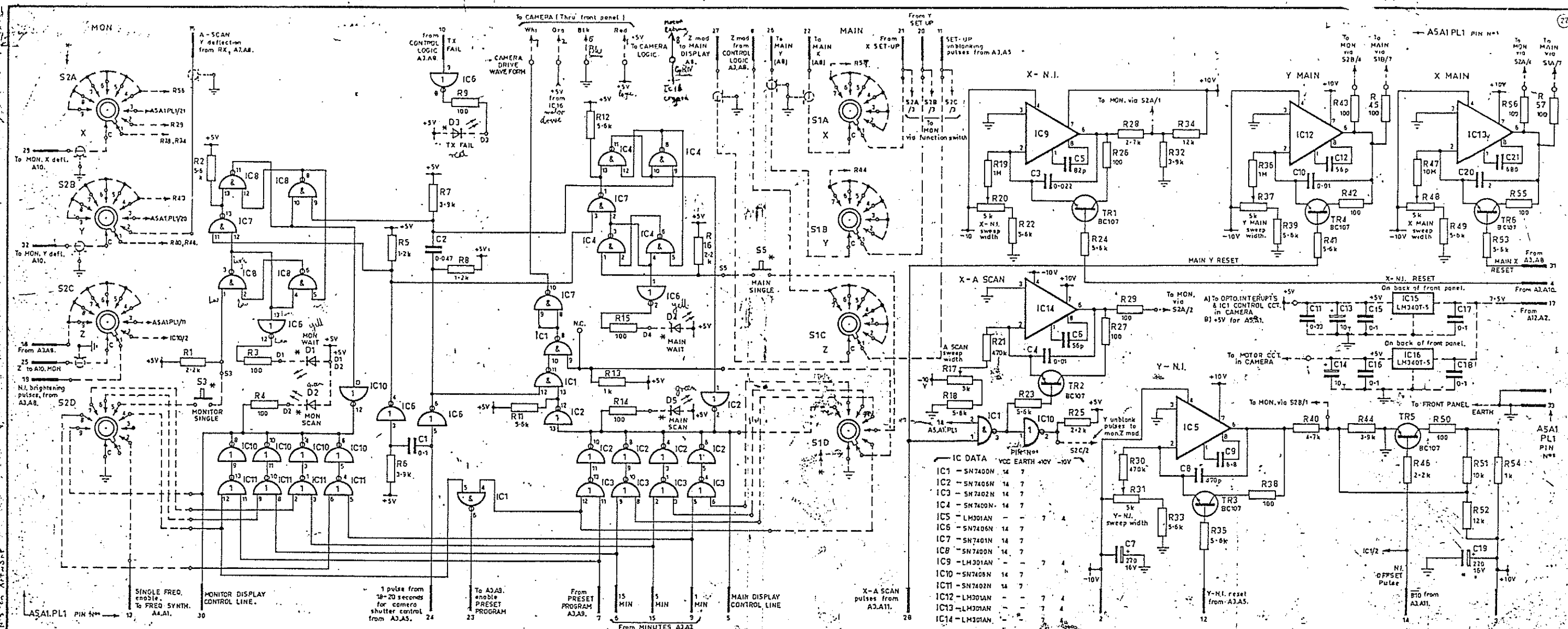
ISSUES							
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd	Date	Nº
	GAD	D.H.		D.H.	G.W.	30.9.75	1
	GAD	D.A.	In A4.A2. Several Capacitor Refs. changed	D.H.	G.W.	3.12.75	2
	GAD	R.H.	A4.A2. Top R.C. Board inserted	D.H.	G.W.	5.12.75	3
	GAD	R.H.	A4.A2. Transist. Refs. corrected TR11, TR12, TR13.	D.H.	G.W.	2.2.76	4
	GAD	K.G.	A4.A2. Top PCB, Tr. 3 & 4 interchanged and 6, 7 & 8 c.c.	D.H.	G.W.	11.3.76	5
	GAD	R.H.	Transistor pins added to layout.	D.H.	G.W.	21.2.76	6
	GAD	K.G.	Title changed to 4B.	K.G.	G.W.	11.10.76	7
	GAD	C.	A4.A2. in accordance with CD-232 R2 156 7	K.G.	G.W.	4.7.79	8
	GAD	G.W.	A4.A1. Layout reoriented.	K.G.	G.W.	27.10.80	9
	GAD	K.G.	C25 C32 & C36 added.	K.G.	G.W.	19.11.81	10

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
FREQ. SYNTH. - DIGITAL - ASSY. &
R.F. ASSY. - BOARD - CCT. DIAGM. &
SECTION - A4.A2. LAYOUTS - SUPPLEMENT.

DRAWING Nº
CD-232Y3

SHEET
3 OF 3

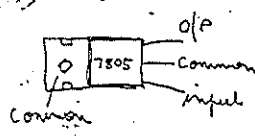


IC DATA

IC	Part Number	Pin 1	Pin 2	Pin 3
IC1	SN7400N	14	7	
IC2	SN7406N	14	7	
IC3	SN7402N	14	7	
IC4	SN7400N	14	7	
IC5	LH301AN	-	7	A
IC6	SN7406N	14	7	
IC7	SN7401N	14	7	
IC8	SN7400N	14	7	
IC9	LH301AN	-	7	A
IC10	SN7406N	14	7	
IC11	SN7402N	14	7	
IC12	LH301AN	-	7	A
IC13	LH301AN	-	7	A
IC14	LH301AN	-	7	A

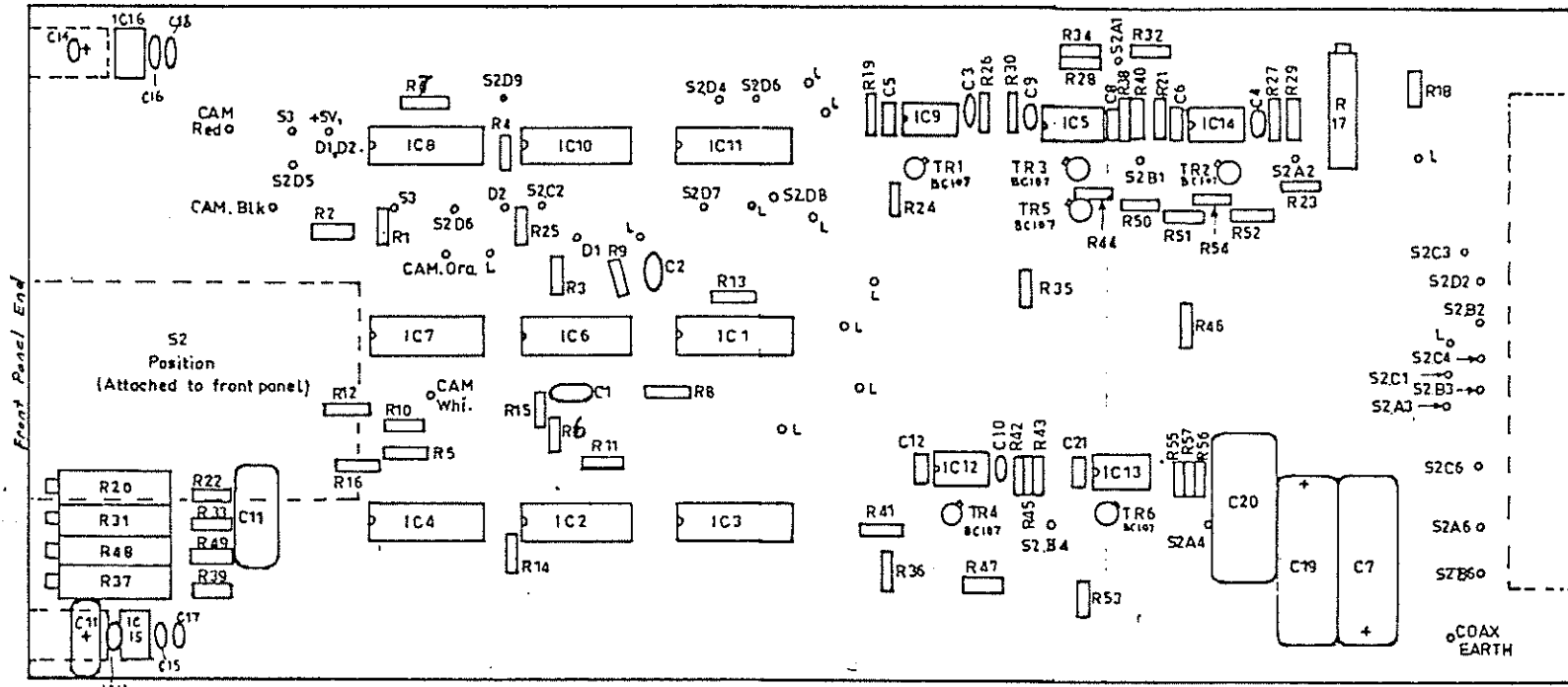
- NOTES
- All resistors 0.25 watt, unless shown otherwise.
 - Broken lines indicate wiring external to PCB.
 - * Fitted on front panel.
 - NB. On LED's the longer lead is +ve
 - For 4B, PCB track to be cut between ASAI PL1 pin 17 and +5V for additional circuitry.

- SWITCH S2 POSITIONS
- | MONITOR FUNCTION | MAIN FUNCTION |
|-------------------------------|-------------------|
| 1 Numerical Indication (N.I.) | 1 Set up |
| 2 A Scan | 2 Pre set Program |
| 3 Set up | 3 Single |
| 4 Preset Program | 4 15 minute |
| 5 Single | 5 3 minute |
| 6 15 minute | 6 1 minute |
| 7 3 minute | 7 Continuous |
| 8 1 minute | |
| 9 Continuous | |

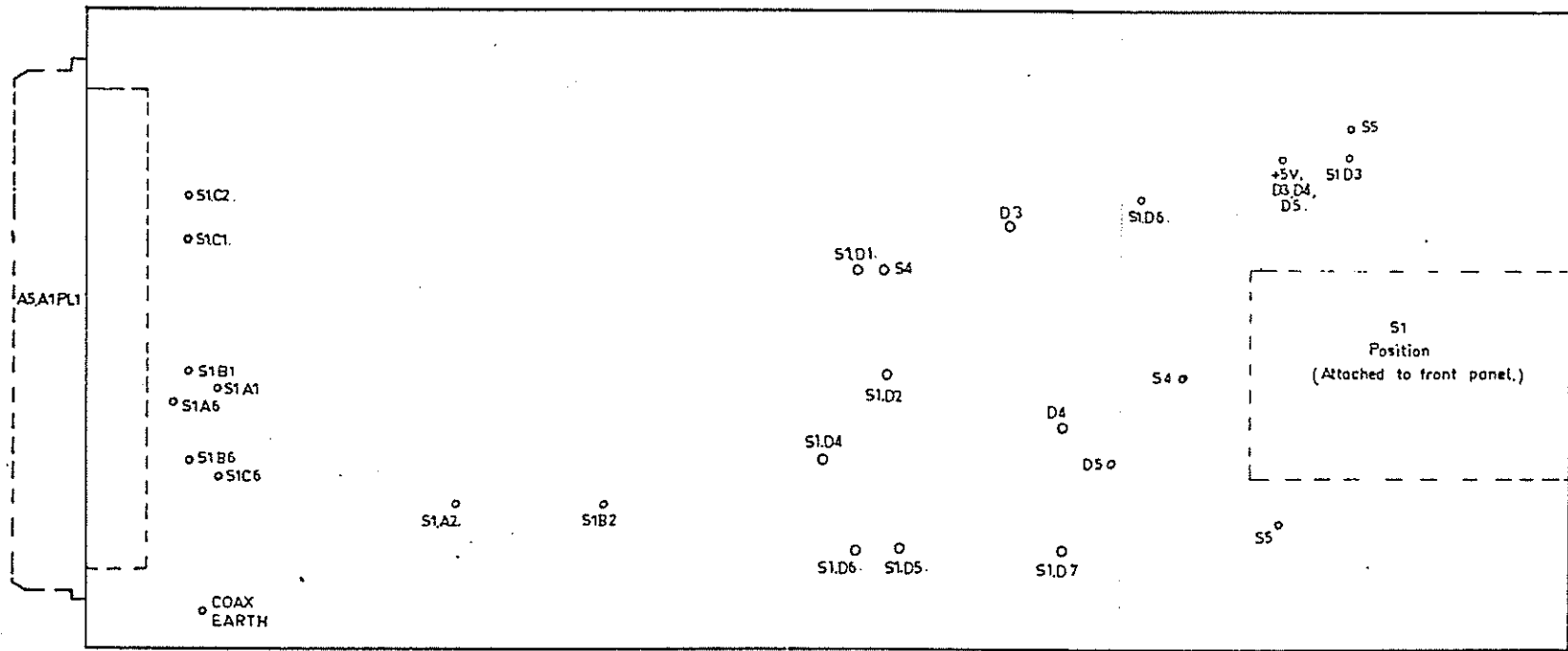


ISSUES						AUSTRALIAN GOVERNMENT	
Order	Drawn	Chkd.	AMENDMENTS	Exm'd	App'd	Date	N°
GAD	D.H.		Mod. to ASAI PL1 pin 28	D.H.	G.M.	11/5/75	1
GAD	D.H.		Mod. to S2A & S2B designations	D.H.	G.M.	11/5/75	2
GAD	R.K.		4B mode: IC5 is -15V ckt. added, S4 deleted.	R.K.	G.M.	11/5/75	3
GAD	R.K.		IC12 & IC13 values mod. Note: add 10V to X-N.I. common terminal	R.K.	G.M.	11/5/75	4
GAD	R.K.		IC12 & IC13 values mod. Note: add 10V to X-N.I. common terminal	R.K.	G.M.	11/5/75	5
GAD	R.K.		IC5 substituted for S4	R.K.	G.M.	11/5/75	6
GAD	R.K.		Part of IC12 ckt deleted. R10 relocated & resistor ASAI PL1, Pin 28 not to be used. R10 deleted.	R.K.	G.M.	11/5/75	7
GAD	R.K.		IC12 & IC13 values mod. Note: add 10V to X-N.I. common terminal	R.K.	G.M.	11/5/75	8

DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE
PROGRAM - TIME BASE GEN. FUNCTIONAL CONTROLS & INDICATIONS.
ASSEMBLY ASAI - CIRCUIT DIAGRAM.
DRAWING N° CD-22,8X1-77 SHEET 1 OF 2 SHEETS



R.H.S.
(From front)



L.H.S.

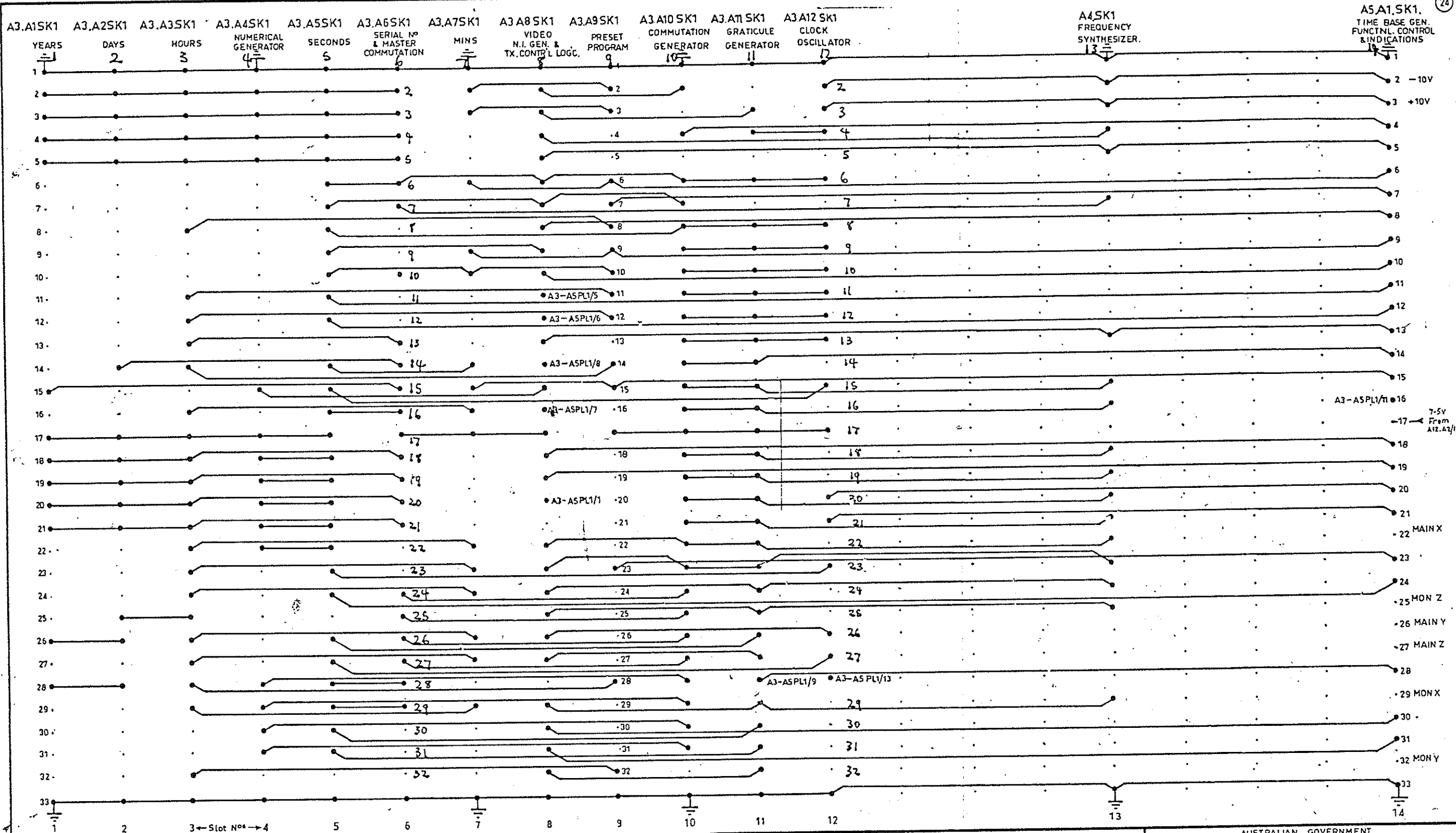
SCALE: 1:1

ISSUES						
Order	Drawn	Chk'd	AMENDMENTS	Exomid	Apprd	Date
	GAD	D.H.		DH	G.W.	31.1.75
	GAD	D.H.	Camera Tml on R.H.S. Changed To Blu	DH	G.W.	2.12.75
	GAD	R.H.	Transistor Types added to layout.	D.H.	G.W.	21.5.76
(4B)	GAD	K.G.	Revised in accordance with CD-228Y1 Issd.	K.G.	C.W.	2.11.78
	RAJ	D.V.	IC16, IC15 added.	K.G.	G.W.	16.1.76

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
PROGRAM-TIME BASE GENS -
FUNCTIONAL CONTROLS &
INDICATIONS-ASSEMBLY A5.A1.- BOARD
LAYOUT - CIRCUIT DGM. SUPPLEMENT.

DRAWING N° CD-228Y2	SHEET 2 OF 2 SHEETS
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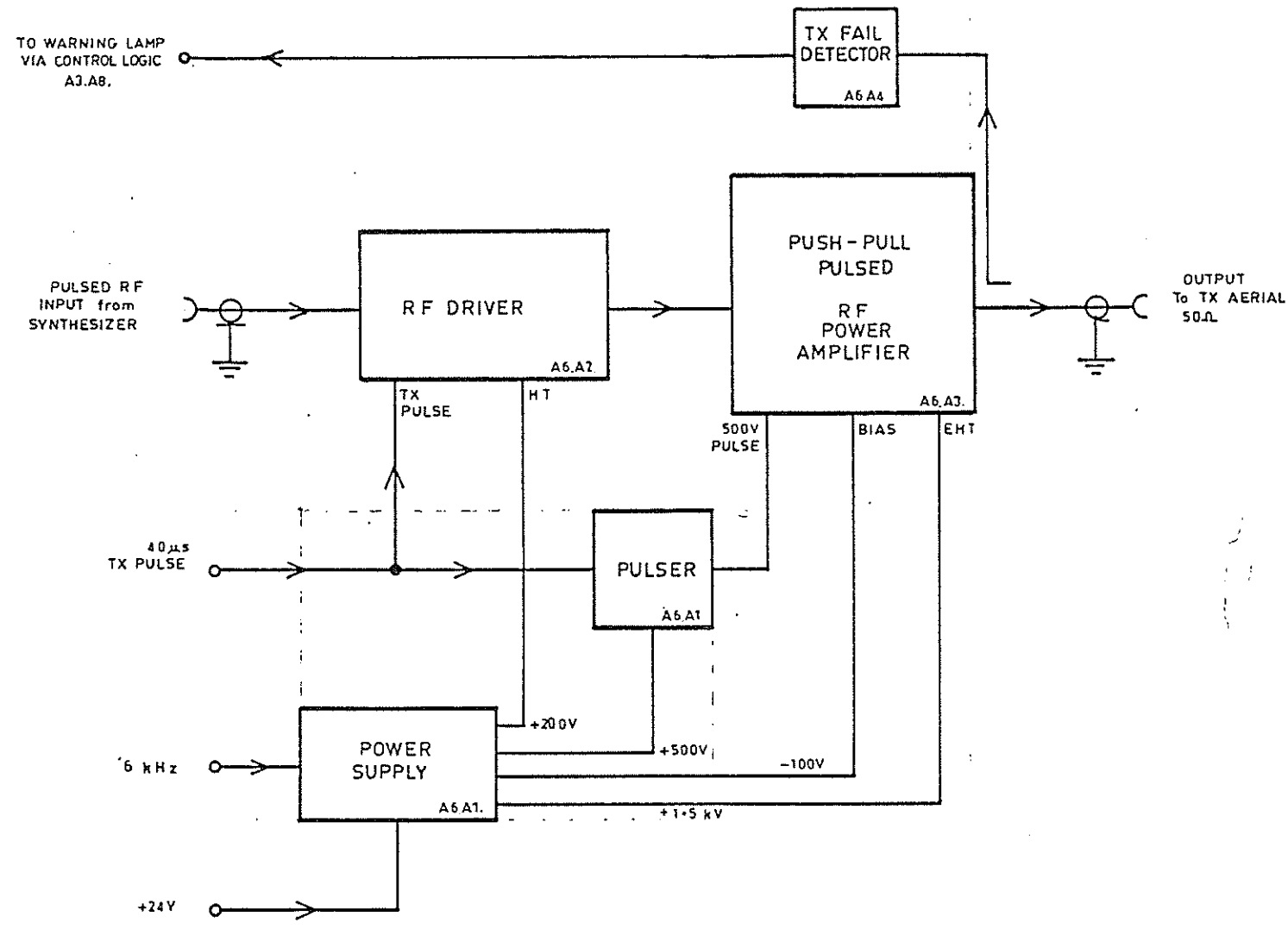
NOTES

ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date No
	GAD	D.H.		D.H.	G.W.	2.8.74 1
	GAD	D.H.	Link betw. A3A5SK1/29 & A3A12SK1/29 etc.	D.H.	G.W.	24.2.75 2
	GAD	D.H.	Mod's to A3A12SK1/29 & 17 (per c.d.)	D.H.	G.W.	18.11.75 3
	GAD	G.S.	Notation added to A3.A2SK1/20 & A3.A12SK1/29	D.H.	G.W.	2.6.77 4
	GAD	K.G.	Title changed to 4B	K.G.	G.W.	1.11.78 5

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

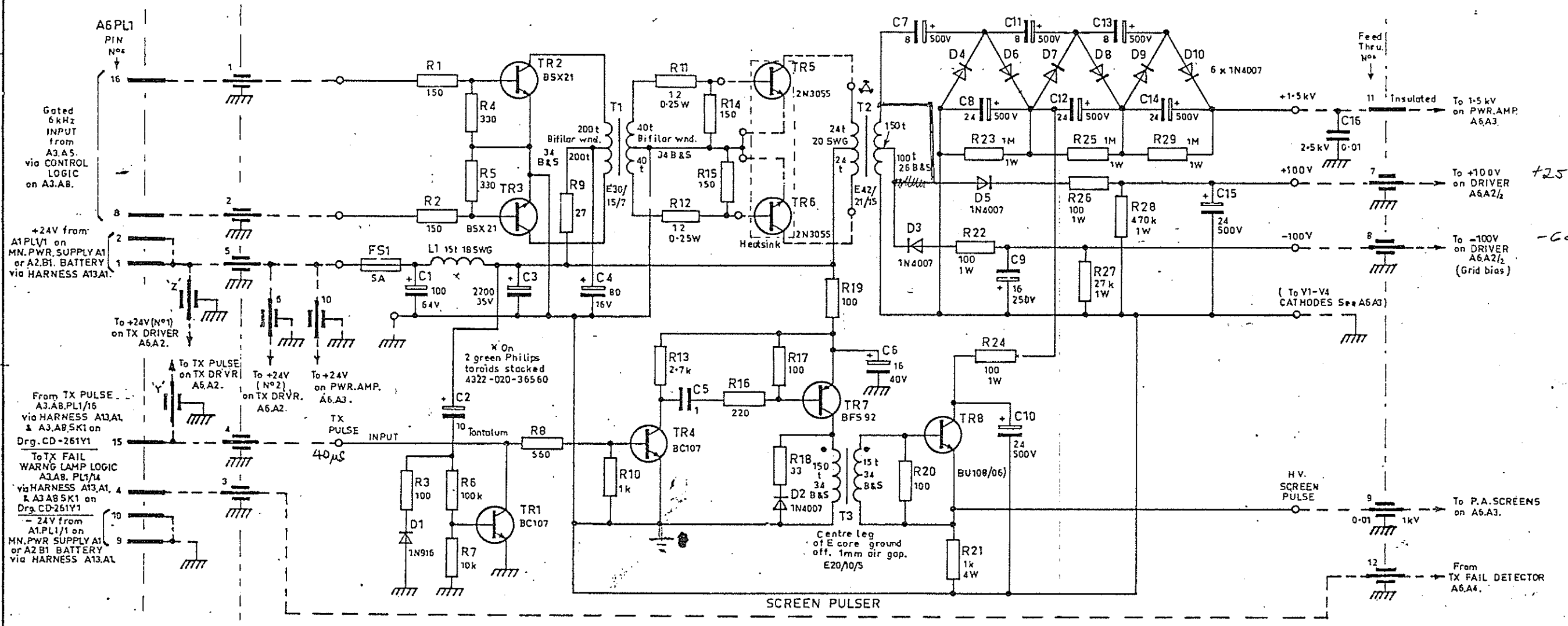
**IONOSONDE TYPE 4B
CARD FILE SOCKET
INTERCONNECTIONS**

DRAWING NO CD-251Y1	SHEET 1 OF 1 SHEETS
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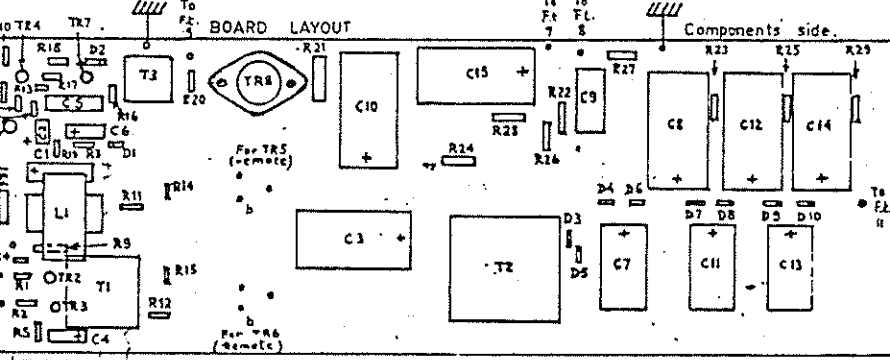


ISSUES								AUSTRALIAN GOVERNMENT	
Order	Drawn	Checked	AMENDMENTS		Exam'd	Appr'd	Date	Nº	DEPARTMENT OF SCIENCE
	G.A.D.	R.H.			Z.H.	G.M.	21-5-75	1	IONOSPHERIC PREDICTION SERVICE
	G.A.D.	K.G.	Title changed to 1B.		K.G.	G.W.	16.10.78	2	
								IONOSONDE TYPE 4B TRANSMITTER - ASSEMBLY A6 BLOCK DIAGRAM.	
DRAWING Nº CB-27Y1						SHEET 1 OF 1 SHEETS			

Bifilar wound



- NOTES
1. All resistors 0.25Watt unless otherwise stated.
 2. T1, E30/15/7 T2 E20/10/5 T3 E42/21/15
 3. Capacitor type feed throughs 0.0047 unless otherwise specified.



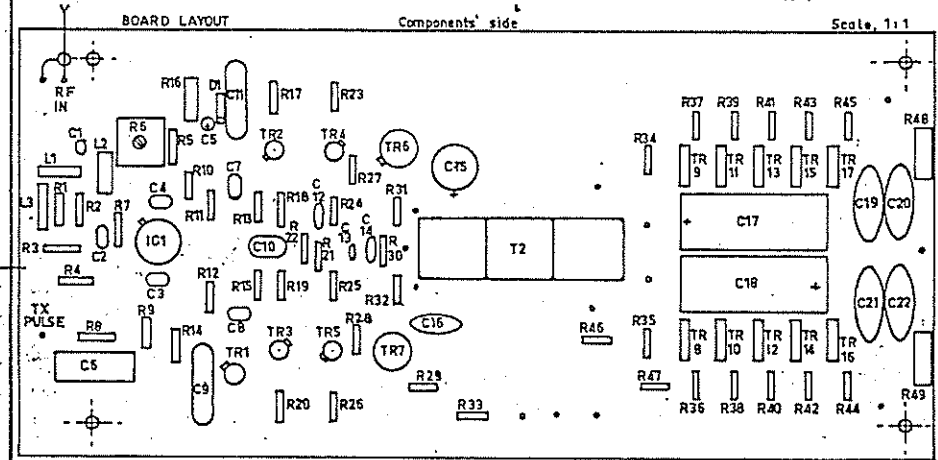
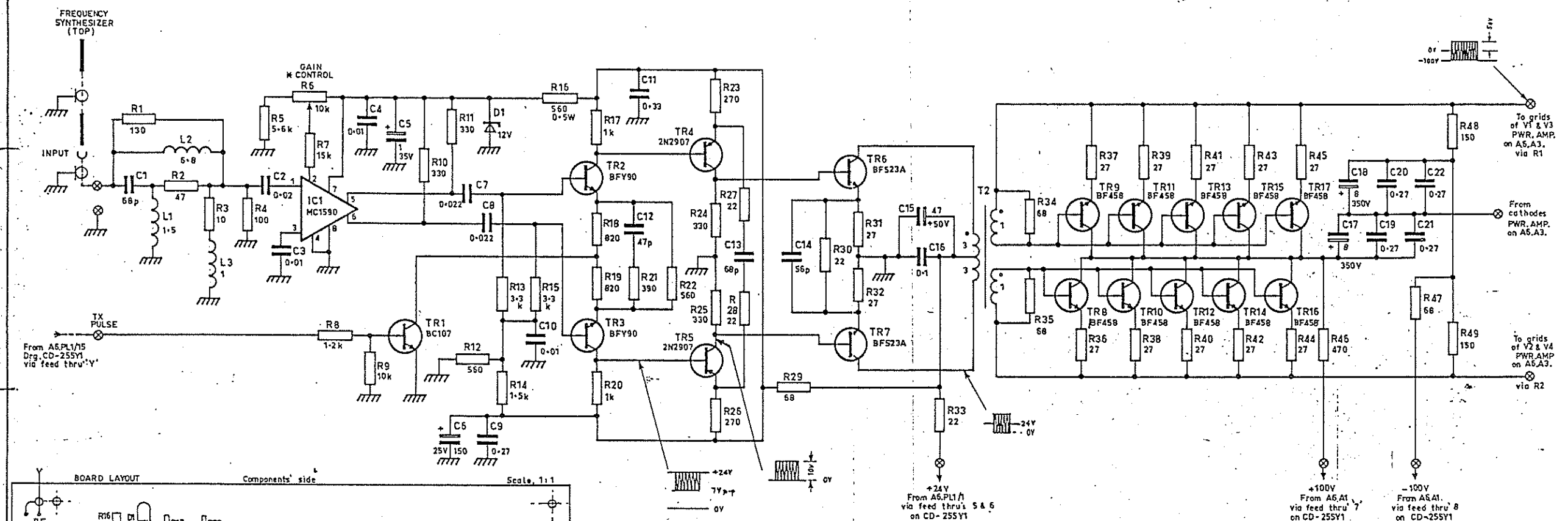
ISSUES		AMENDMENTS	Exam'd	App'd	Date	N°
GAD	J.H.	Several minor details added.	D.H.	G.W.	23.8.74	1
GAD	D.H.	R25 made 1W.	D.H.	G.W.	19.3.75	2
GAD	R.H.	TR7 Replacement Type Added. Feed Thru No 9 Value & rating changed.	D.H.	G.W.	28.5.76	3
GAD	P.A.	T1's new Feed thru No 9 notation mod.	D.H.	G.W.	1.1.77	4
GAD	V.S.	4B modts. C2, R3, R6, R7, D1, T1 added.	D.H.	G.W.	11.10.77	5
GAD	K.G.	Toroid type 11* altered (Philips)	K.G.	G.W.	24.9.78	6
GAD	C.J.	D2, -D10 Types changed, R22 value changed.	K.G.	G.W.	3.4.79	7
GAD	K.G.	Mods. for use with A6.A2 & A6.A3's	K.G.	G.W.	8.7.79	8
GAD	C.J.	Mods. to Output Notes re Feed thru's 7 & 8	K.G.	G.W.	10.7.80	9
GAD	E.J.	D1's. Volts to F.T. changed to +100V.	K.G.	G.W.	16.8.81	10
GAD	E.J.		K.G.	G.W.	8.9.83	11

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
TRANSMITTER POWER SUPPLY
ASSEMBLY A6.A1/2
CIRCUIT DIAGRAM**

DRAWING N°
CD-255Y1

SHEET
1 OF 1 SHEETS

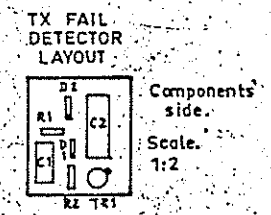
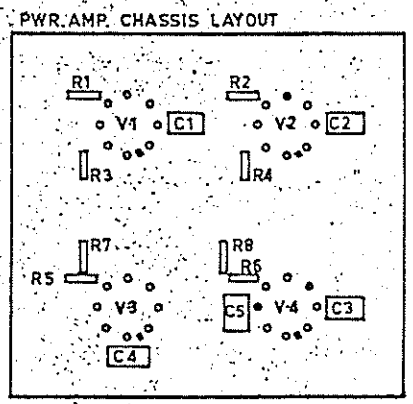
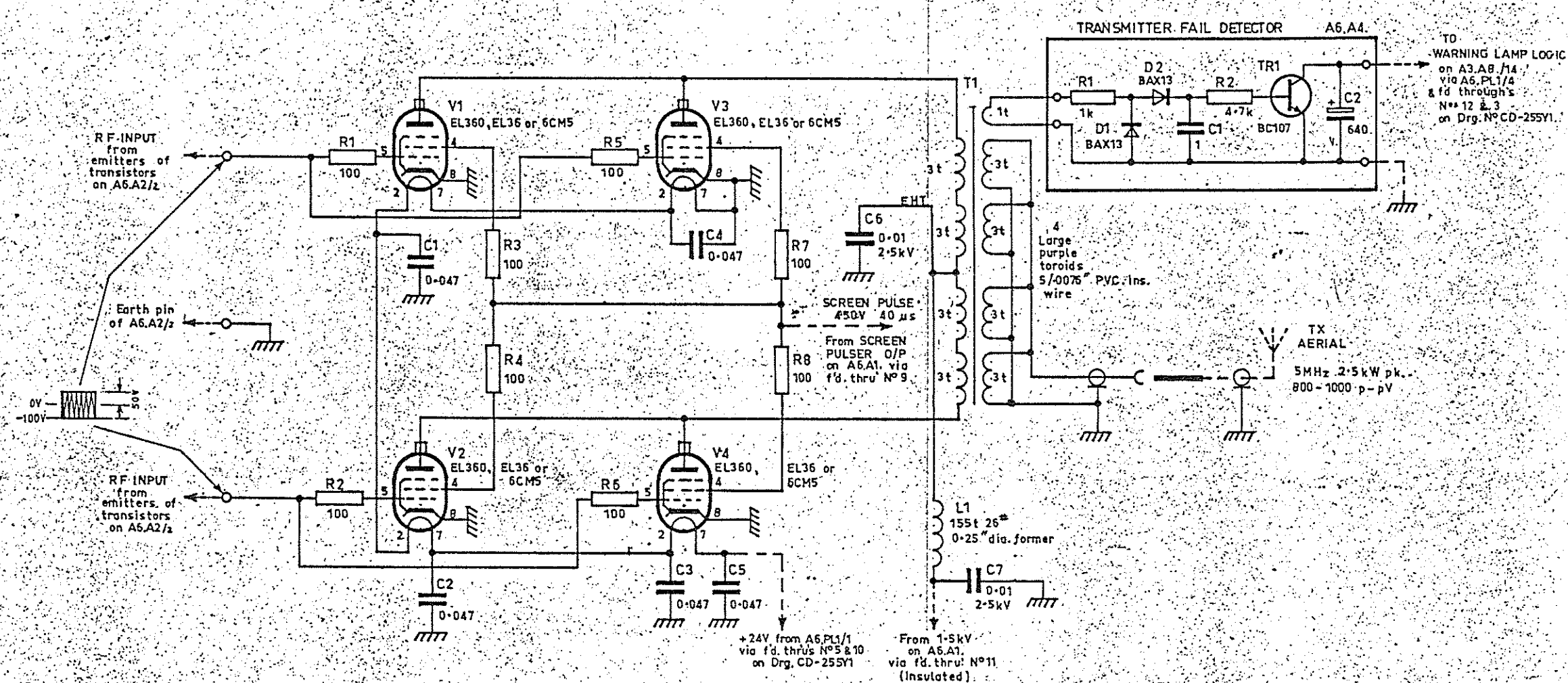


T2 Wound on 3 Balun formers.

DRN	AMENDMENT	CHECK'D	APPR'D	DATE	ISS
G.A.D.		A.C.	G.N.	25.5.57	1

IONOSONDE TYPE 4B
 TRANSMITTER - DRIVER
 ASSEMBLY A6.A2/2
 CIRCUIT DIAGRAM

AUSTRALIAN GOVERNMENT
 DEPARTMENT OF SCIENCE
 AND THE ENVIRONMENT
 IONOSPHERIC PREDICTION SERVICE
 DRG.N° CD-472 A2 SHEET 1 OF 1

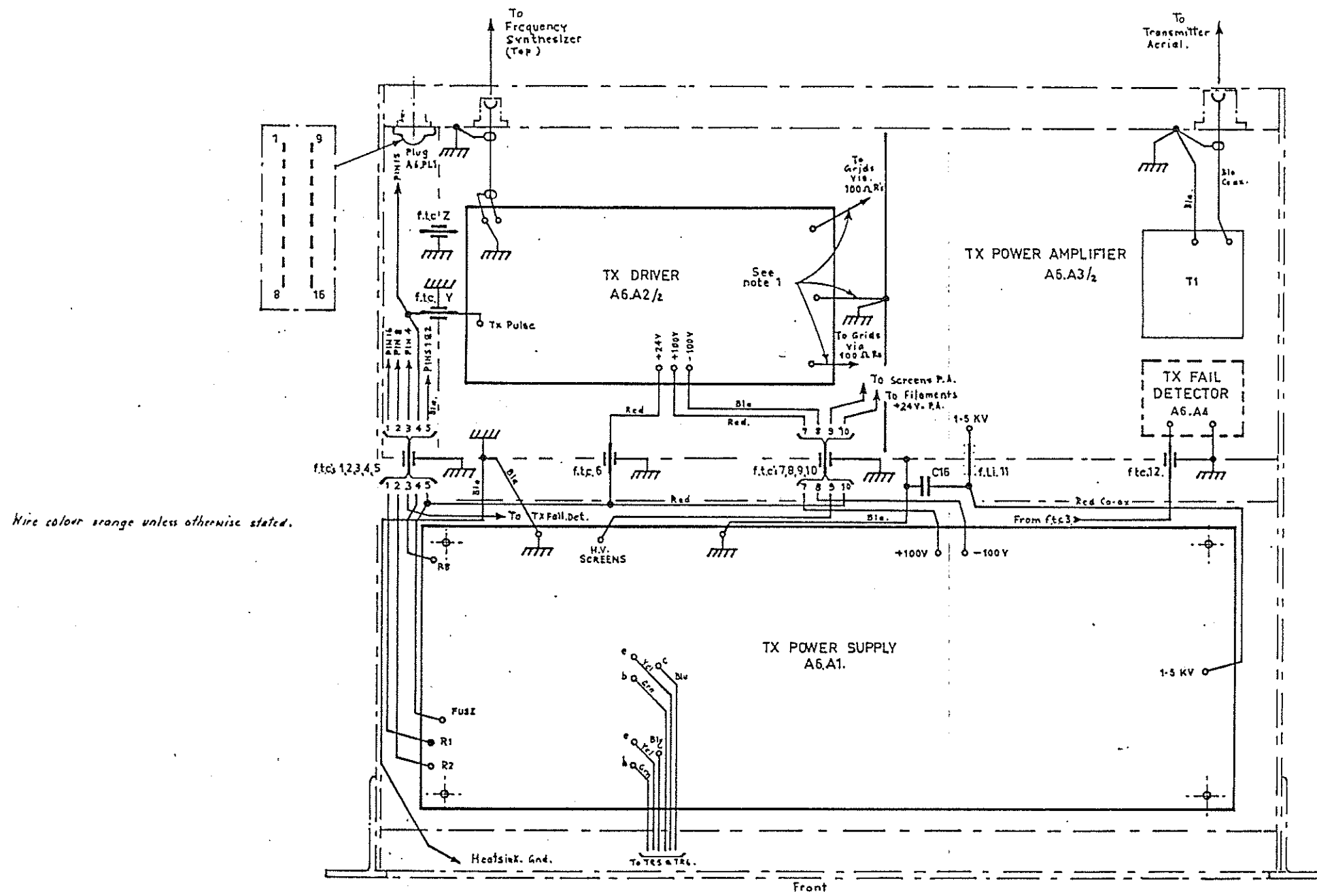


- NOTES
- All resistors 0.5 watt unless otherwise stated
 - E.H.T. 1450V loaded DC Grid bias -100V Collector supply to drivers -242V. Main supply voltage = 25V. Main supply current No drive 1.5A. Pulse only 2.65A R.F. 3A
 - Output R.F. pulse: 800-1000V p-p, 0.7V p-p input
 - Total plate current 30 mA when pulsed with R.F. Pulse only 23 mA. No pulse condition, plate current must not exceed 1 mA.

DRN	AMENDMENTS	CHECKD	APPR'D	DATE	ISS
G.A.D.		R.G. K.G.	G.W. G.W.	5.9.70	1
G.A.D.				19.8.82	2

IONOSONDE TYPE 4'B
 TRANSMITTER - POWER AMPLIFIER ASSEMBLY A6.A3/z & TX FAIL DETECTOR ASSEMBLY A6.A4.
 CIRCUIT DIAGRAM

AUSTRALIAN GOVERNMENT
 DEPARTMENT OF SCIENCE
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 IONOSPHERIC PREDICTION SERVICE.
 DRG. N° CD-476 A3 SHEET 1 OF 1



Wire colour orange unless otherwise stated.

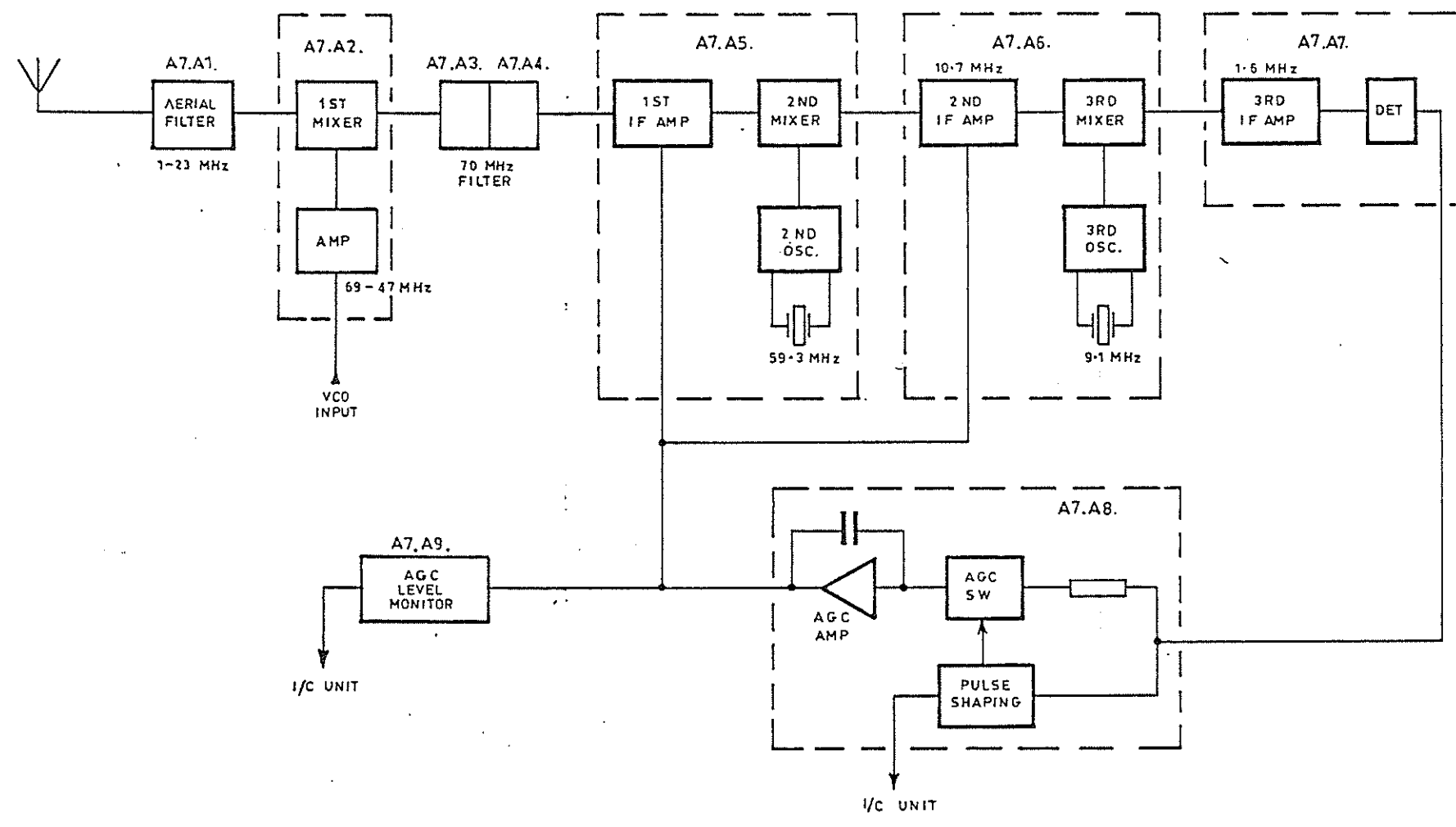
Scale: 1:2

NOTES
1. Lengths of conductors not to exceed 25mm.

DRN	AMENDMENT	CHECK'D	APPR'D	DATE	ISS
GAD		A.G.	G.M.	10-9-80	1

IONOSONDE TYPE 4 B
TRANSMITTER-ASSEMBLY A6 INT'CONN'S
BTWN. B'DS. A6.A1, A6.A2 1/2, A6.A4, & A6.A3 1/2
CIRCUIT DIAGRAM

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
AND THE ENVIRONMENT
IONOSPHERIC PREDICTION SERVICE
DRG. N° CD-477A3
SHEET 1 OF 1



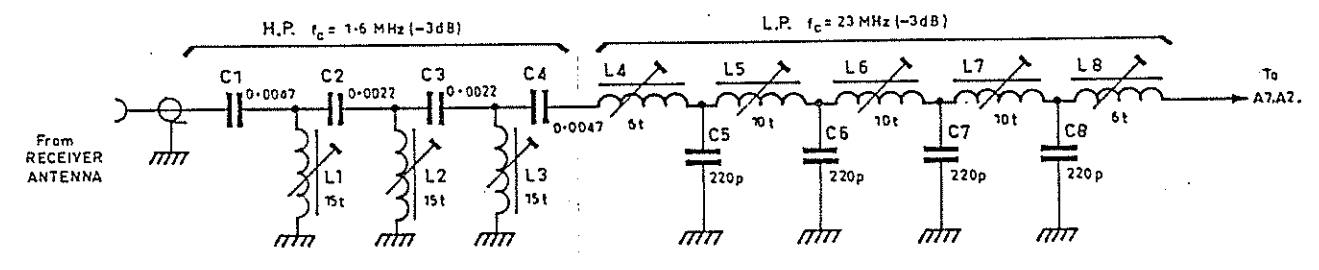
ISSUES							
Order	Drawn	Checked	AMENDMENTS	Exam'd	Appri'd	Date	No
	GAD	DH.		DH.	G.W.	22.1.75	1
	GAD	G.S.	A7.A9 Added.	JH.	G.W.	31.5.77	2
	GAD	KG	Title changed to 4B etc.	KG	G.W.	15.11.78	3

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

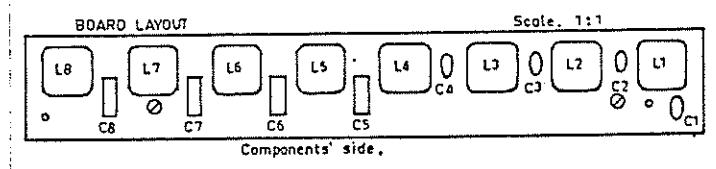
**IONOSONDE TYPE 4B
RECEIVER- ASSEMBLY A7
BLOCK DIAGRAM**

DRAWING No
CB-24Y1

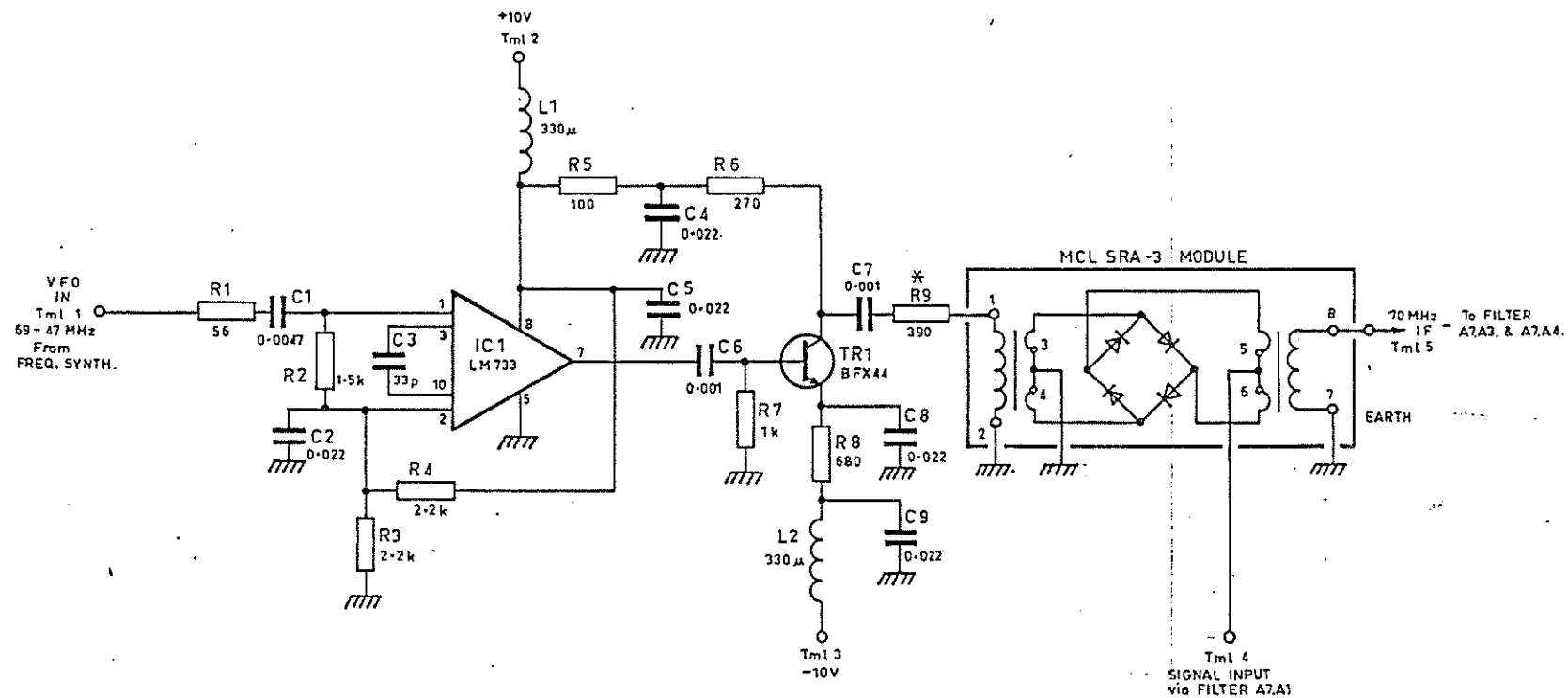
SHEET
1 OF 1 SHEETS



L1, L2, L3, L4, L5, L6, L7, L8, 30 SWG Plessey R.F. assembly.



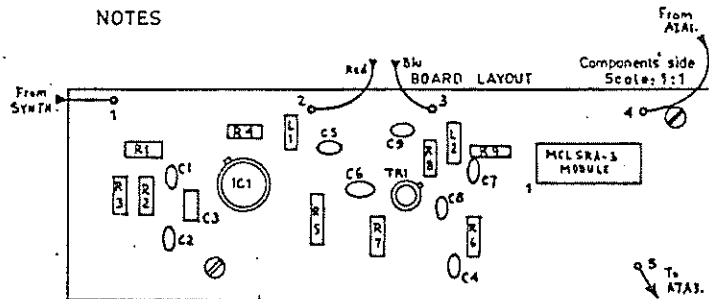
ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Chk'd	AMENDMENTS	Exam'd	App'd	Date	No	DEPARTMENT OF SCIENCE
	G.A.D.	R.H.	Redrawn on Y Size sheet	D.H.	G.H.	11.8.75	1	IONOSPHERIC PREDICTION SERVICE
	G.A.D.	R.H.	C1 & C2 changed to 1.0047, C2 & C3 changed to 0.0022.	R.H.	G.H.	31.5.76	2	IONOSONDE TYPE 4B
	G.A.D.	R.G.	Title changed to 4B.	R.G.	G.H.	11.1.79	3	RECEIVER - BANDPASS FILTER UNIT
							ASSEMBLY A7.A1. - CIRCUIT DIAGRAM.	
							DRAWING N°	
							CD-253Y1	
							SHEET	
							1 OF 7 SHEETS	



* See note 3.

NOTES

- All resistors 0.25 watt
-
- R9 may be removed to increase sensitivity.



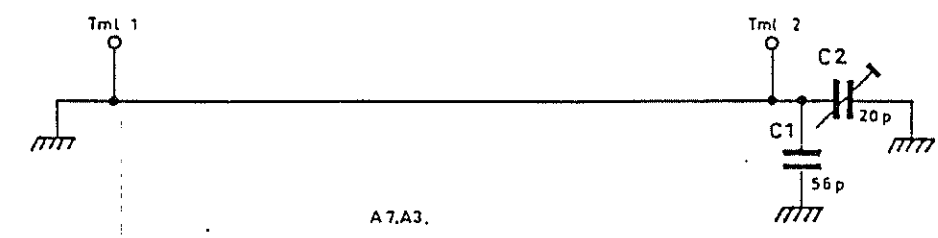
ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date
1	GAD	DH	Note 4. added.	DH	G.M.	21.5.75
2	GAD	RK	4B mods. (Module added.) A7A2/2	DH	G.M.	21.5.76
3	GAD	K.G.	4B mods. (Module added.) A7A2/2	K.G.	G.M.	15.8.78
4	GA3	R.J.	Mods. to Module MCL SRA-3 connections.	K.G.	G.M.	18.8.83

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

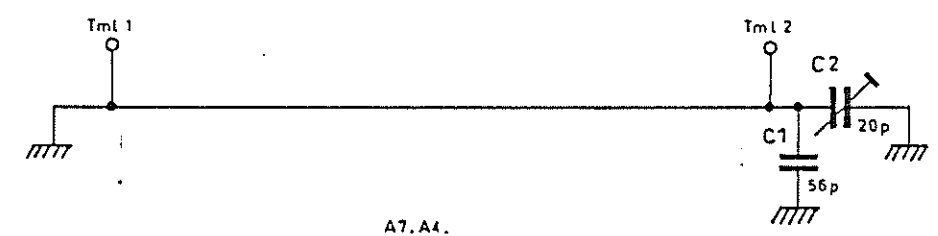
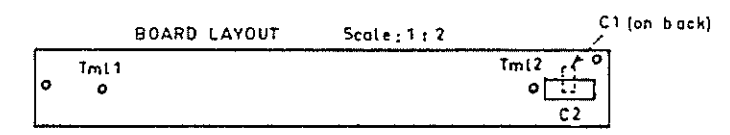
IONOSONDE TYPE 4B
RECEIVER — ASSEMBLY A7A2/2
VFO, AMP & 1ST MIXER.
CIRCUIT DIAGRAM

DRAWING No
CD-253Y2

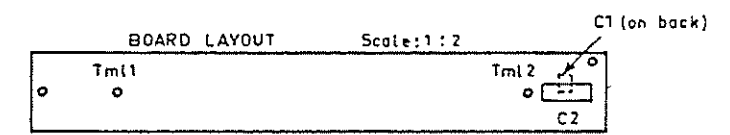
SHEET
2 OF 7 SHEETS



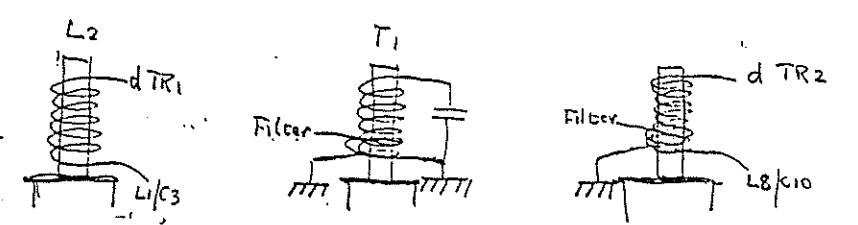
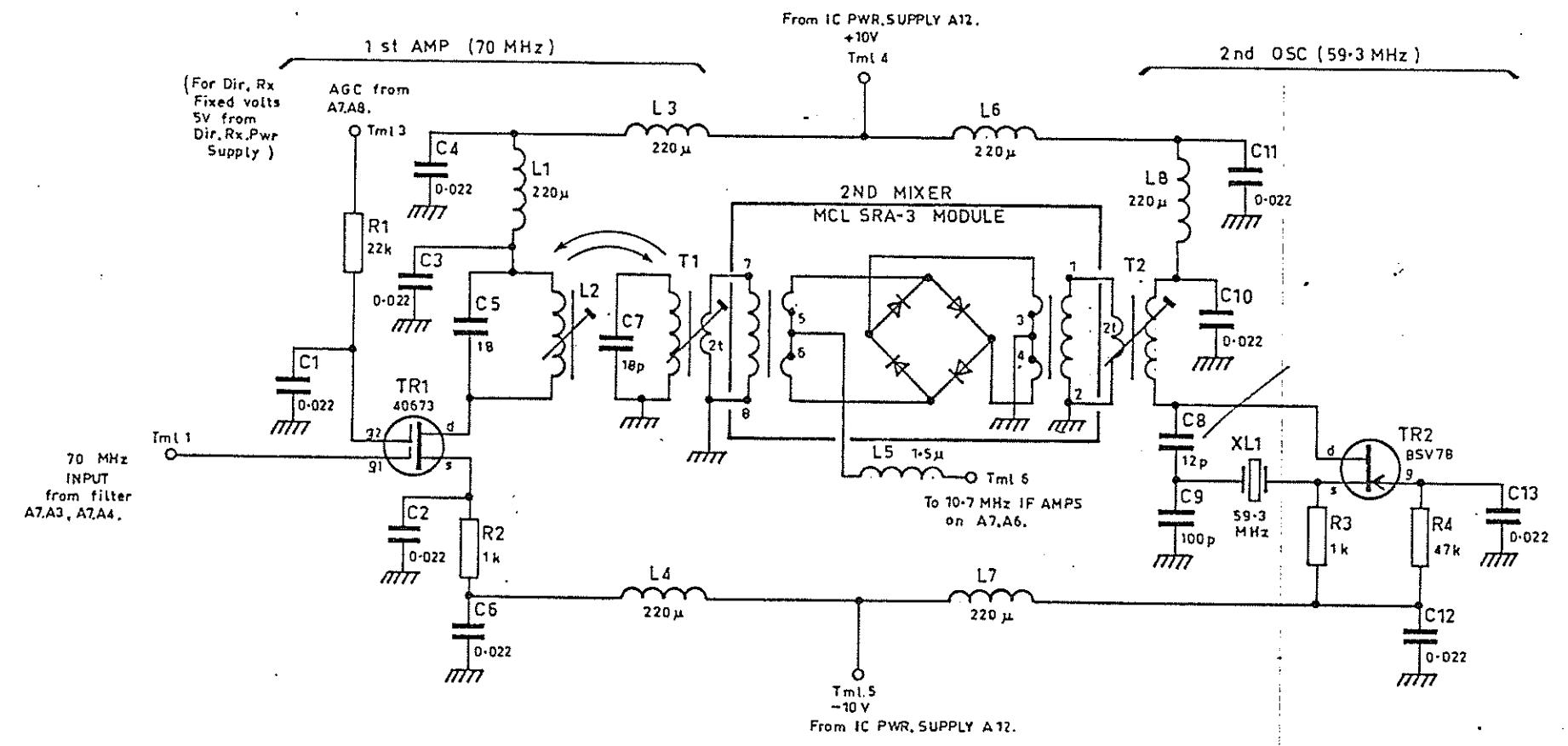
A7.A3.



A7.A4.

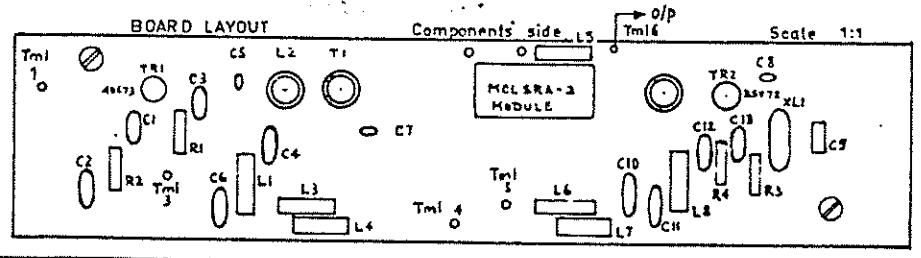


ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date	N°	DEPARTMENT OF SCIENCE
	GAD	RH.	Redrawn on 'y' size sheet.	DH.	G.W.	11.2.75	1	IONOSPHERIC PREDICTION SERVICE
	CAD	C.J.	C1 added. Value of C2 modified.	DH.	G.W.	11.3.77	2	IONOSONDE, TYPE 4B RECEIVER - ASSEMBLIES A7.A3.& A7.A4. 1ST & 2ND PARTS 70MHz IF FILTER. CIRCUIT DIAGRAM.
	GAD	KG	Title changed to 4B	KG.	G.W.	11.12.77	3	
							DRAWING N°	SHEET
							CD-253Y3	3 OF 7 SHEETS



NOTES

- 1. All resistors 0.25-watt.
- 2. L2=6t 24 SWG RF Former blue core. No shell or can.
- T1= 6t 24 SWG plus 2t 30SW6 RF former blue core. No shell or can.
- T2= 8t 30SWG 2t 36 SWG RF former blue core. No shell or can.

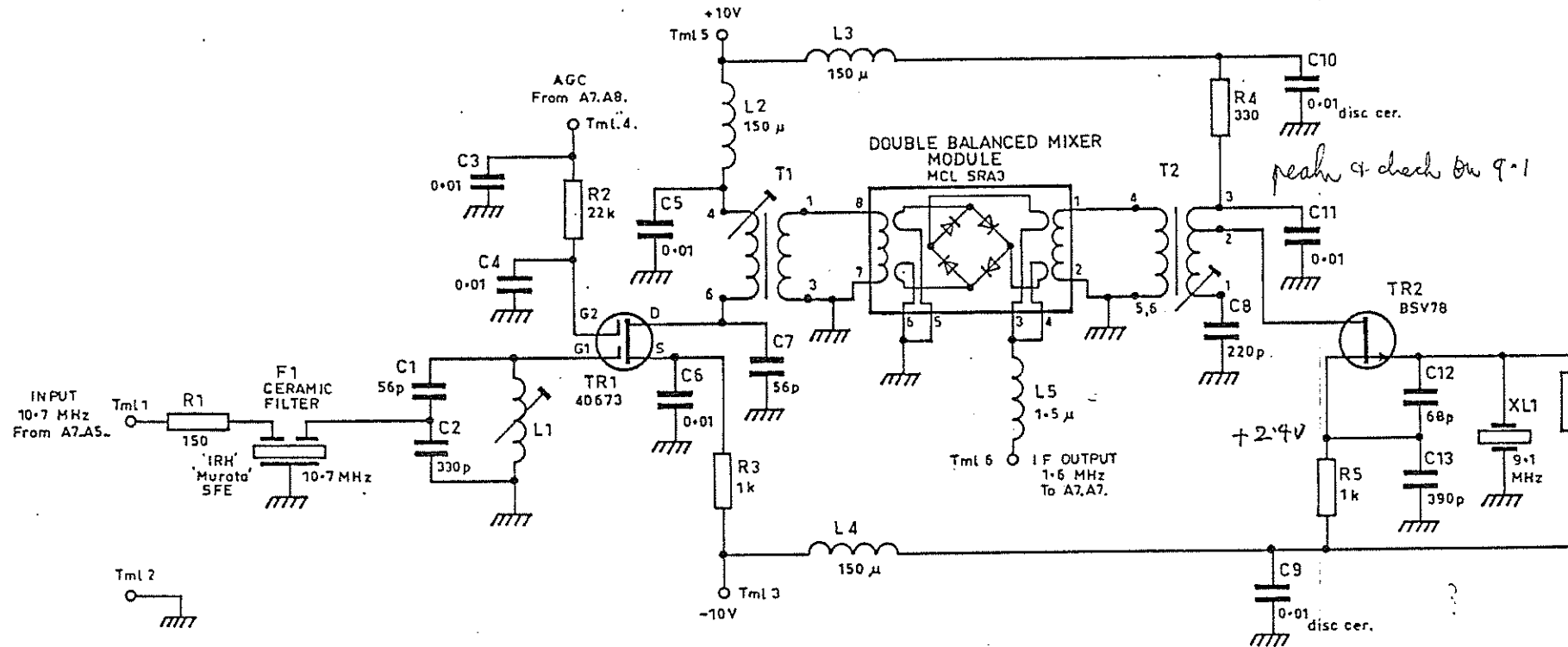


ISSUES						
Order	Drawn	Checkd	AMENDMENTS	Exam'd	Apprd	Date No
	G.A.D.	D.H.	Note added To Tmls 3,4 & 5	D.H.	G.W.	22.5.75 / 1
	G.A.D.	F.B.	48 mods re 2nd Mixer module substituted.	D.H.	G.W.	2.4.77 / 2
		K.G.		R.G.	G.W.	18.11.78 / 3

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
RECEIVER - ASSEMBLY A7.A5/2**
1ST IF AMP, 2ND MIXER & 2ND OSCILLATOR
(70 MHz) CIRCUIT DIAGRAM (59.3MHz)

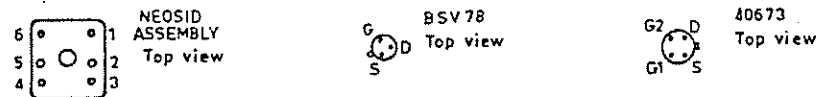
DRAWING NO CD-253Y4	SHEET 4 OF 7 SHEETS
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WOUND COMPONENTS' DETAILS

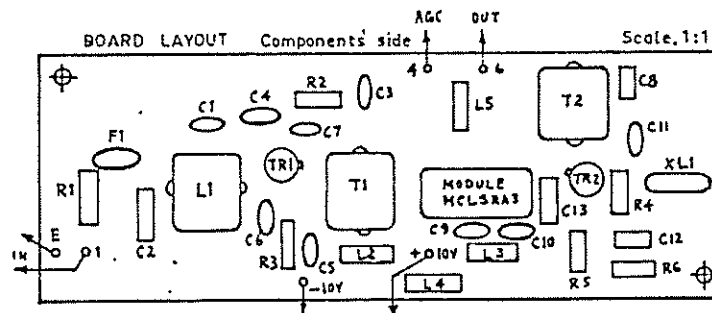
- L1 - 22 turns 0.25 mm enamelled wire on 5 mm 'Neosid' former, F16 slug & F16 potcore.
- T1 - As for L1 but with 3 turns secondary over cold end of primary.
- T2 - 18 turns 0.25mm enamelled wire on 5mm former, F16 slug & potcore, tap at 4 turns from cold end. Secondary 4 turns over cold end.

Zero gain



NOTES

1. All resistors 0.25W



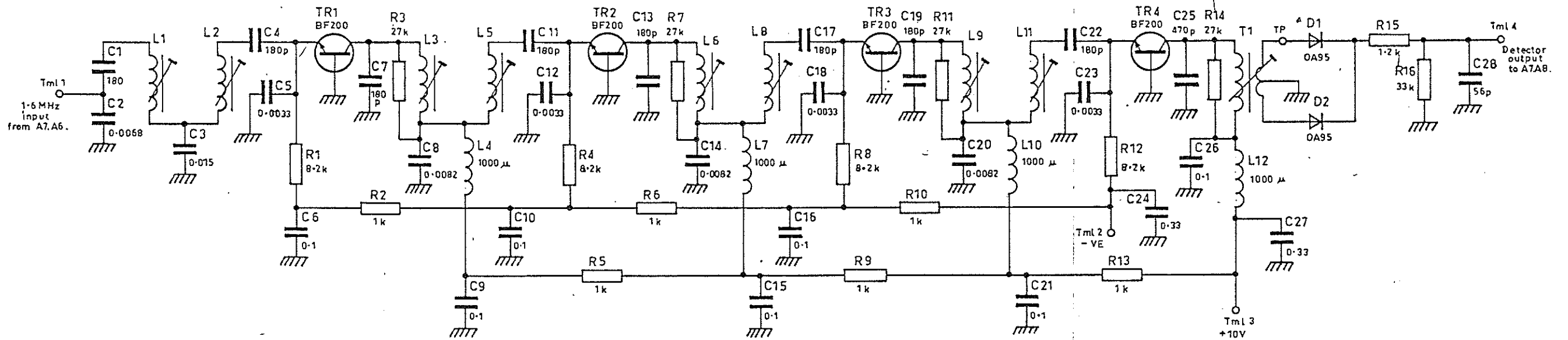
ISSUES						
Drn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date	Nº
G.A.D.	K.C.		R.G.	G.H.	2-1-50	1

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE AND THE ENVIRONMENT

IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
RECEIVER - ASSEMBLY A7.A6/2
2ND IF AMP, 3RD MIXER & 3RD OSCILLATOR
(10.7 MHz) - CIRCUIT DIAGRAM**

DRAWING Nº CD-235Y5A	SHEET 5 OF 7 SHEETS
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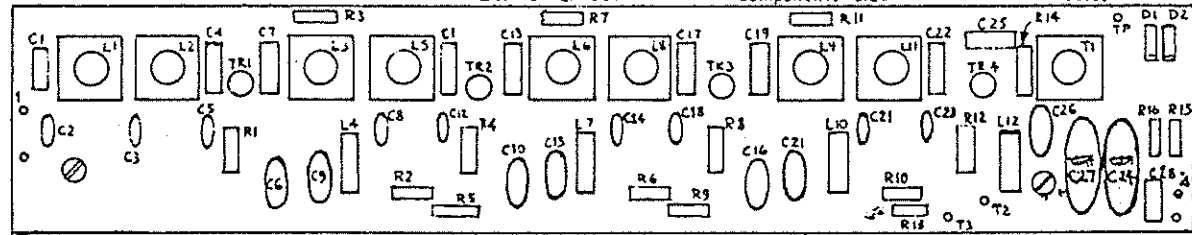
0.5µV 1.6mhz in -100db signal into Tml 1 = -15dbm into TP
 produces approx 0.02 VDC
 on Fluke 77 at 0/P

-90db in
 0.01vdc out

NOTES

- All resistors 0.25 watt.
- L1, L2, L3, L5, L6, L8, L9, L11 = IF former 32 turns 38 SWG
 T1 = IF former 19 turns 5 + 5t 38 SWG
 Check each coil when assembled to tune to 1.600 MHz with 180p. The core must be between 0.5 & 0.75 turns from the fully in position [For T1 check (pri) resonance with 470p]

BOARD LAYOUT Components' side Scale: 1:1



ISSUES

Order	Drawn	Checked	AMFNDMENTS	Examd	Apprd	Date	No
	GAD	DN		DN	GN	23.5.75	1
	GAD	KG	Title changed to 4B1	KG	GN	15.12.75	2
	GAD	KG	R16 Value changed.	KG	GN	16.5.79	3
	GAD	KG	Layout Refs. to R1,3,4,7,8,11,12,14.	KG	GN	6.12.79	4

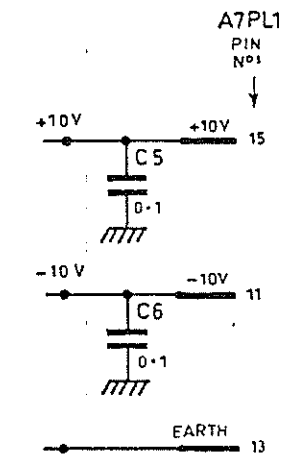
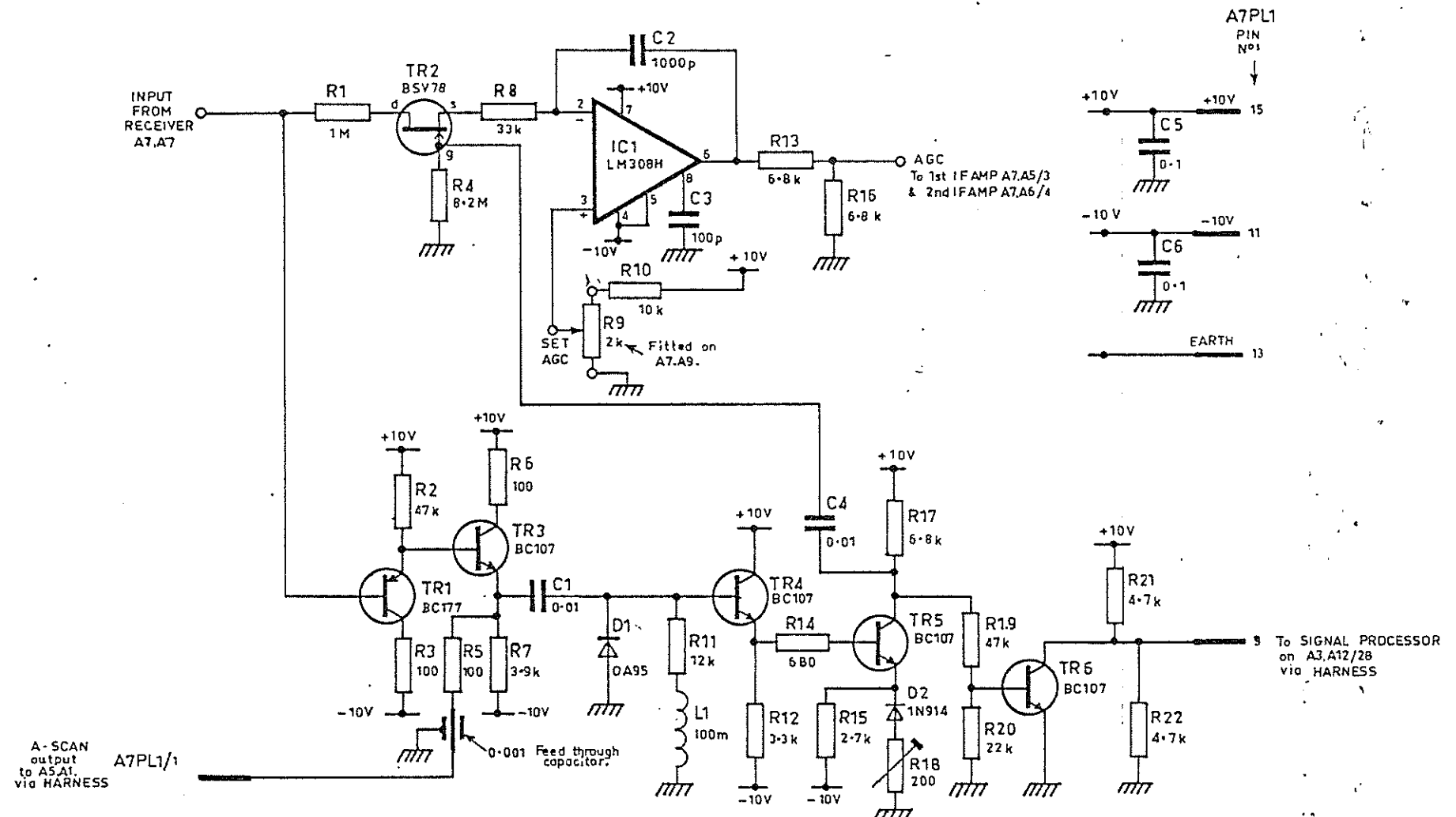
AUSTRALIAN GOVERNMENT
 DEPARTMENT OF SCIENCE

IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
 RECEIVER - ASSEMBLY A7.A7
 1.6 MHz 3RD IF AMPLIFIER & DETECTOR
 CIRCUIT DIAGRAM

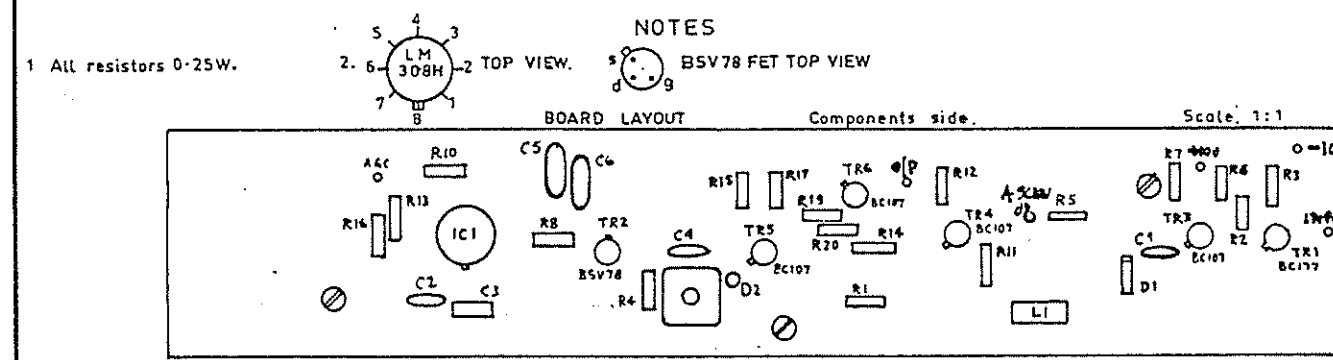
DRAWING No
 CD-253Y6

SHEET
 6 OF 7 SHEETS



A-SCAN output to A5.A1 via HARNESS A7PL1/1

To SIGNAL PROCESSOR on A3.A12/28 via HARNESS



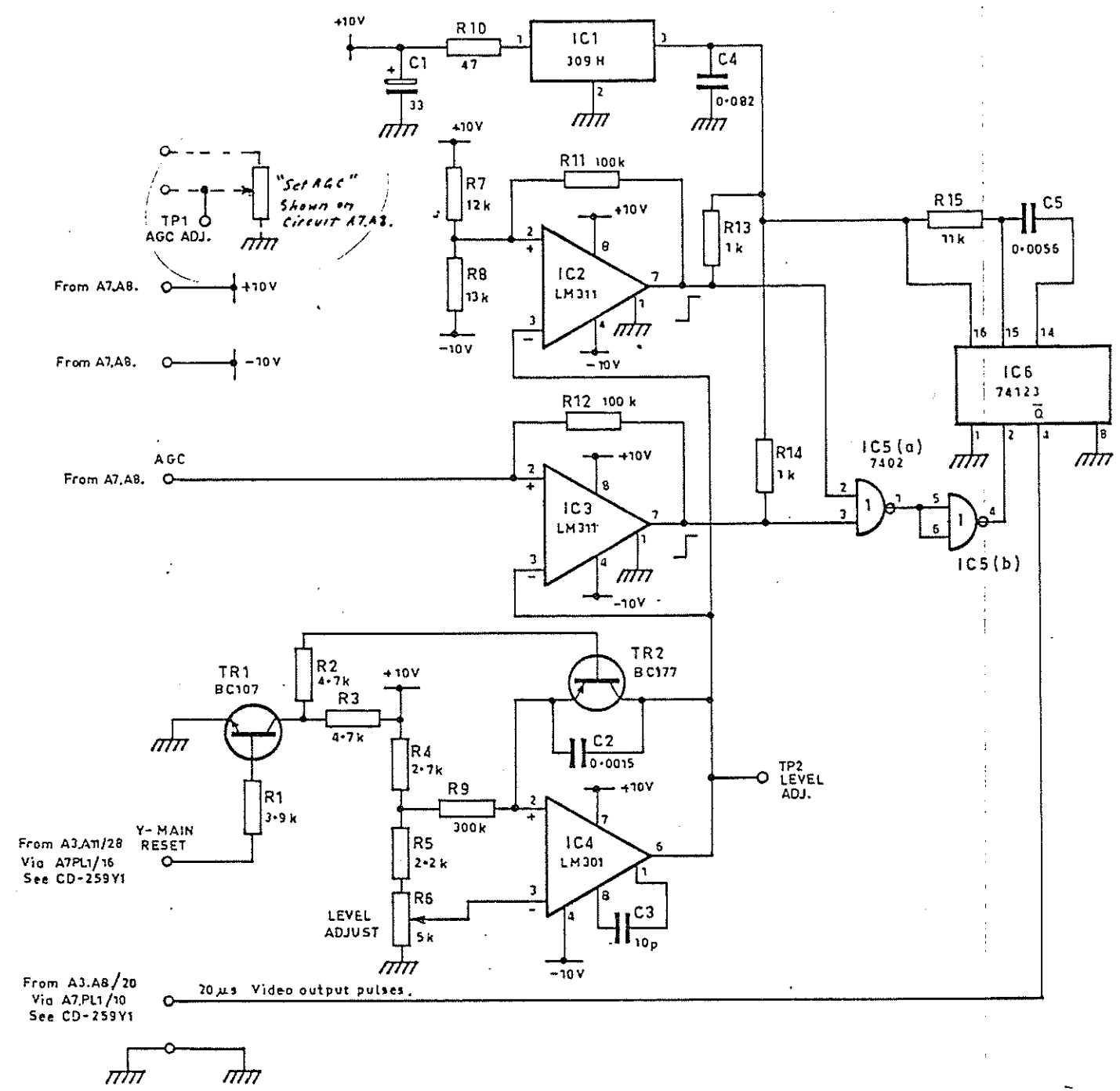
ISSUES						
Order	Drwn	Checkd	AMENDMENTS	Examd	Apprd	Date
	GAD	DH		DH	G.M.	21.5.75
	GAD	DH	Legend refers to C2 & C3 reversed.	DH	G.W.	31.12.75
	SAS	DH	'Input From Receiver' changed to A7A7	DH	G.W.	30.7.76
	DAD	RH	D2 type corrected to 1N914. Transistor Types added to layout.	DH	G.W.	11.5.76
	GAD	RH	R12 & R16 Values changed	DH	G.M.	15.12.76
	GAD	G.S.	Mods. to R3 & T1/1e	DH	G.M.	31.5.77
	GAD	K.G.	Title changed to 4B	K.G.	G.M.	15.12.77
	GAD	C.J.	Pull up R's R20 & R21 added.	K.G.	G.W.	24.8.78
	GAD	V.S.	Board layout re C1 & C4 D1 & D2 mods.	K.G.	G.W.	18.3.79
	GAD	K.G.	R16 added.	K.G.	G.M.	1.11.79

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
 RECEIVER - ASSEMBLY A7.A8.
 AGC GENERATION & PULSE SHAPING.
 - CIRCUIT DIAGRAM

DRAWING NO
CD-253Y7

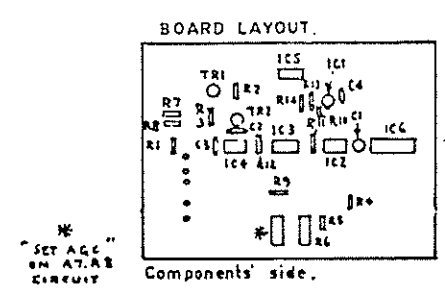
SHEET
 7 OF 7 SHEETS



IC DATA
 PIN No1
 GND +V
 IC5 7 14

1. All resistors 0.25 W.

NOTES



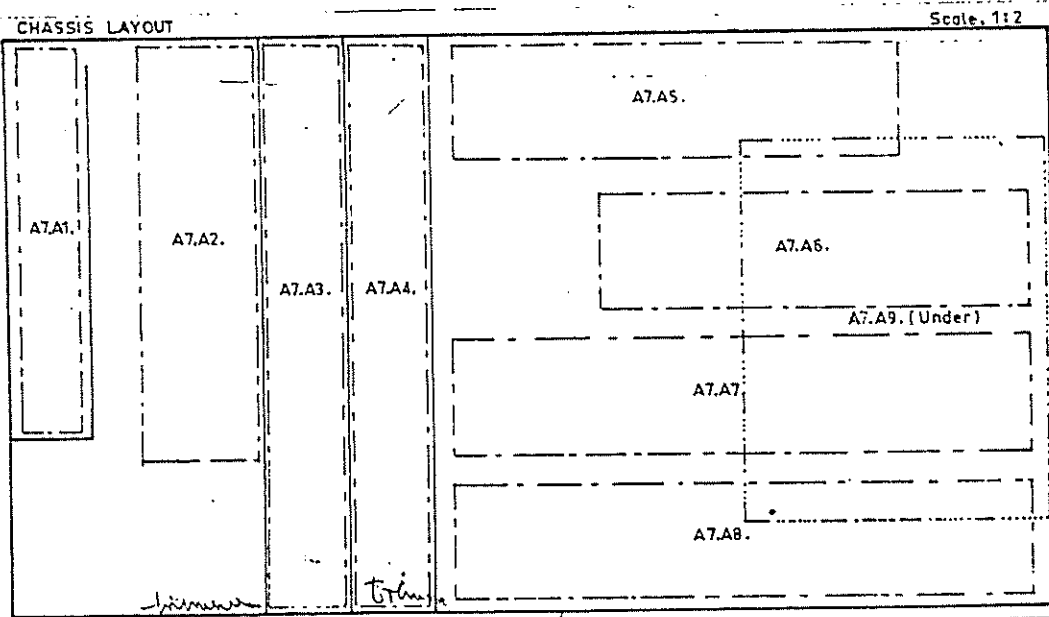
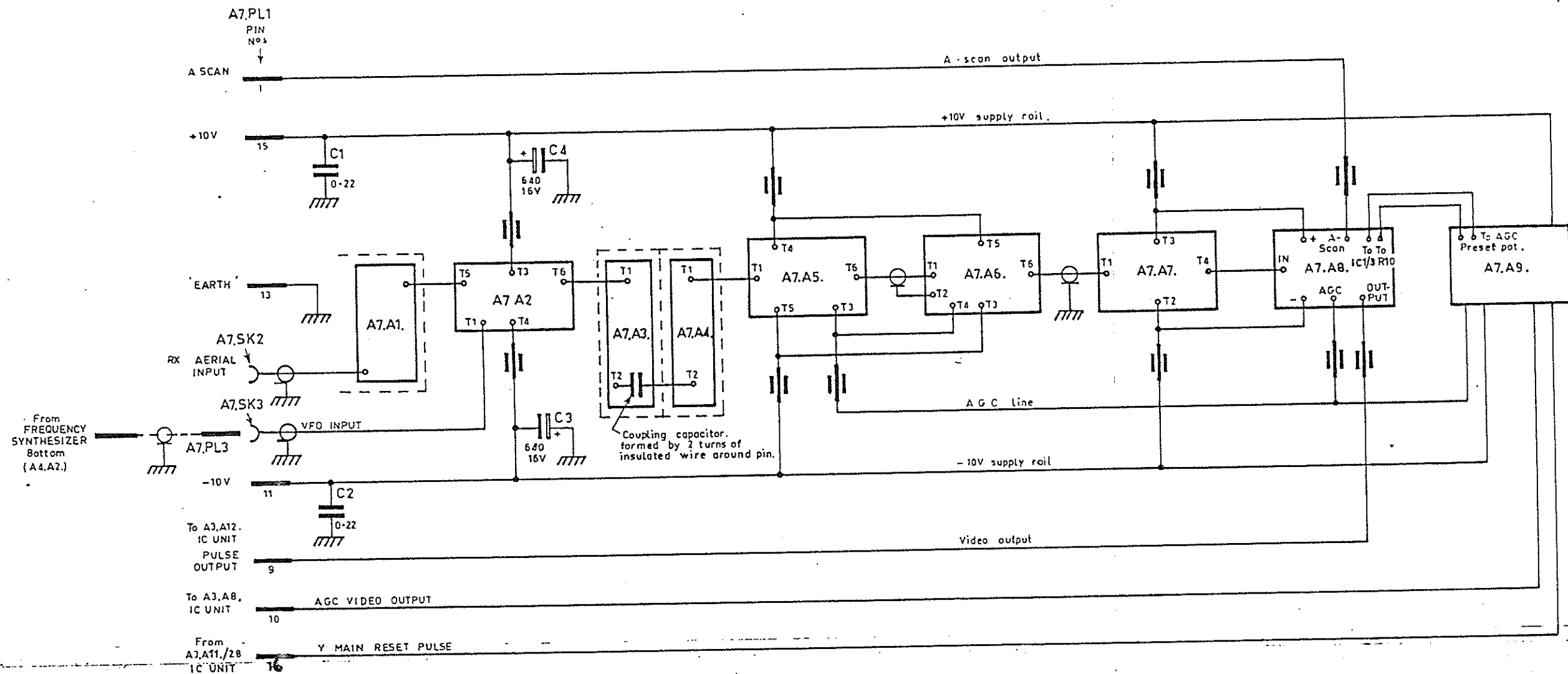
ISSUES						
Order	Drn.	Check'd	AMENDMENT	Exam'd	App'd	Date
	GAD	G.S.		D.H.	G.M.	6.6.77
	GAD	K.G.	Title changed to 4B	K.G.	G.M.	15.12.78
	GAD	M.L.	TP1 & TP2 added.	K.G.	G.M.	5.7.89

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
 RECEIVER - ASSEMBLY A7A9.
 AGC LEVEL MONITOR
 CIRCUIT DIAGRAM

DRAWING NO
CD-323Y1

SHEET
 1 OF 1 SHEET



NOTES
1. Feed through capacitors 0.001 μF

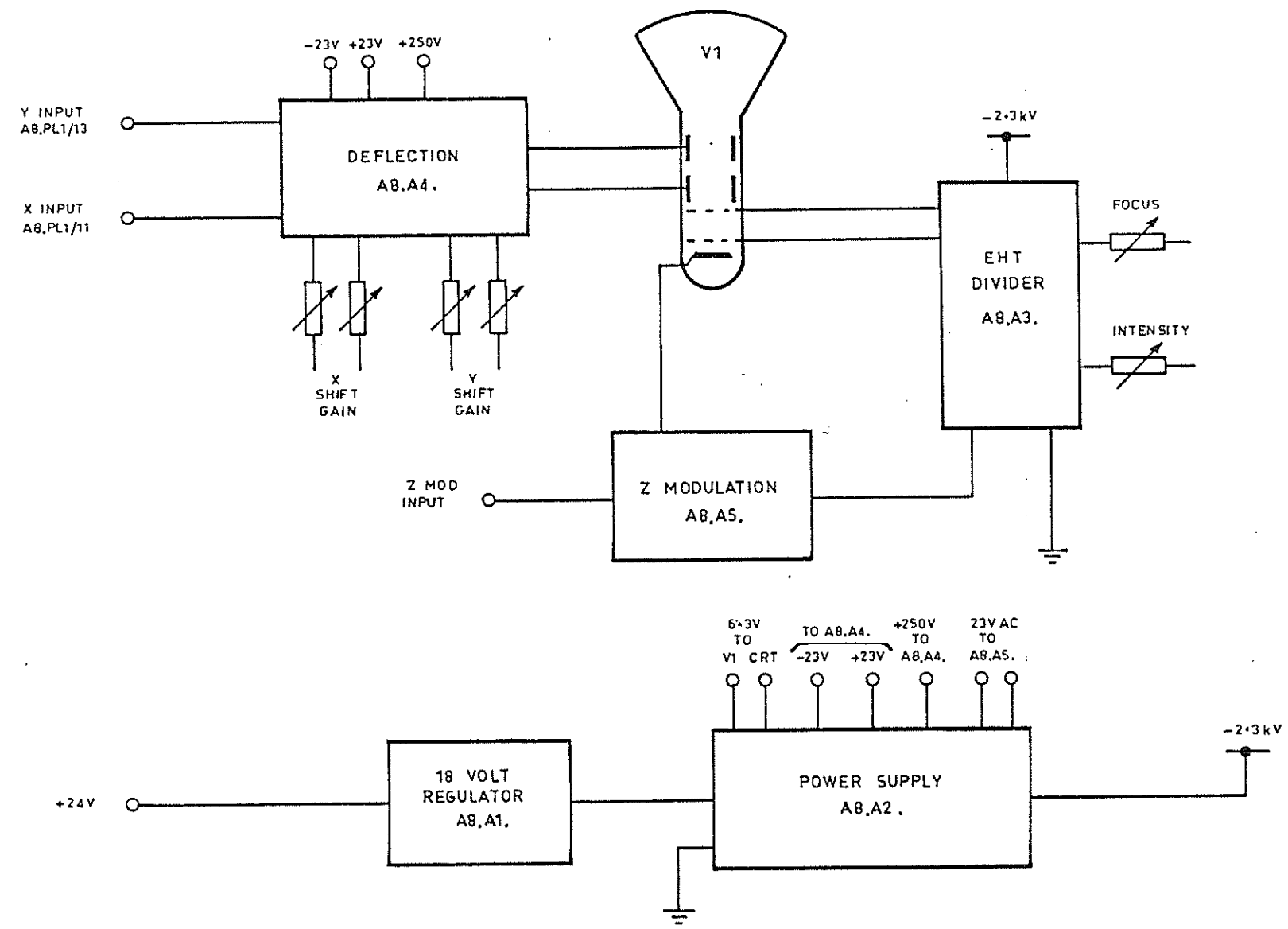
ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd	Date
	GAD	R.H.		D.H.	G.W.	8.5.75
	GAD	R.H.	Supply rails, output lines, AGC line annotated	D.H.	G.W.	31.5.76
	GAD	G.S.	A7.A9 (AGC Monitor) added.	D.H.	G.W.	31.5.77
	GAD	K.G.	Title changed to 4B.	R.S.	G.W.	15.12.78
	GAD	K.G.	Detail added to A7.Sk2.	K.G.	G.W.	11.5.79
	GAD	K.G.	Chassis layout added.	K.G.	G.W.	15.8.80

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
RECEIVER - ASSEMBLY A7
BOARDS INTERCONNECTIONS
CIRCUIT DIAGRAM**

DRAWING NO
CD-259Y1

SHEET
1 OF 1 SHEETS



AUSTRALIAN GOVERNMENT

DEPARTMENT OF SCIENCE

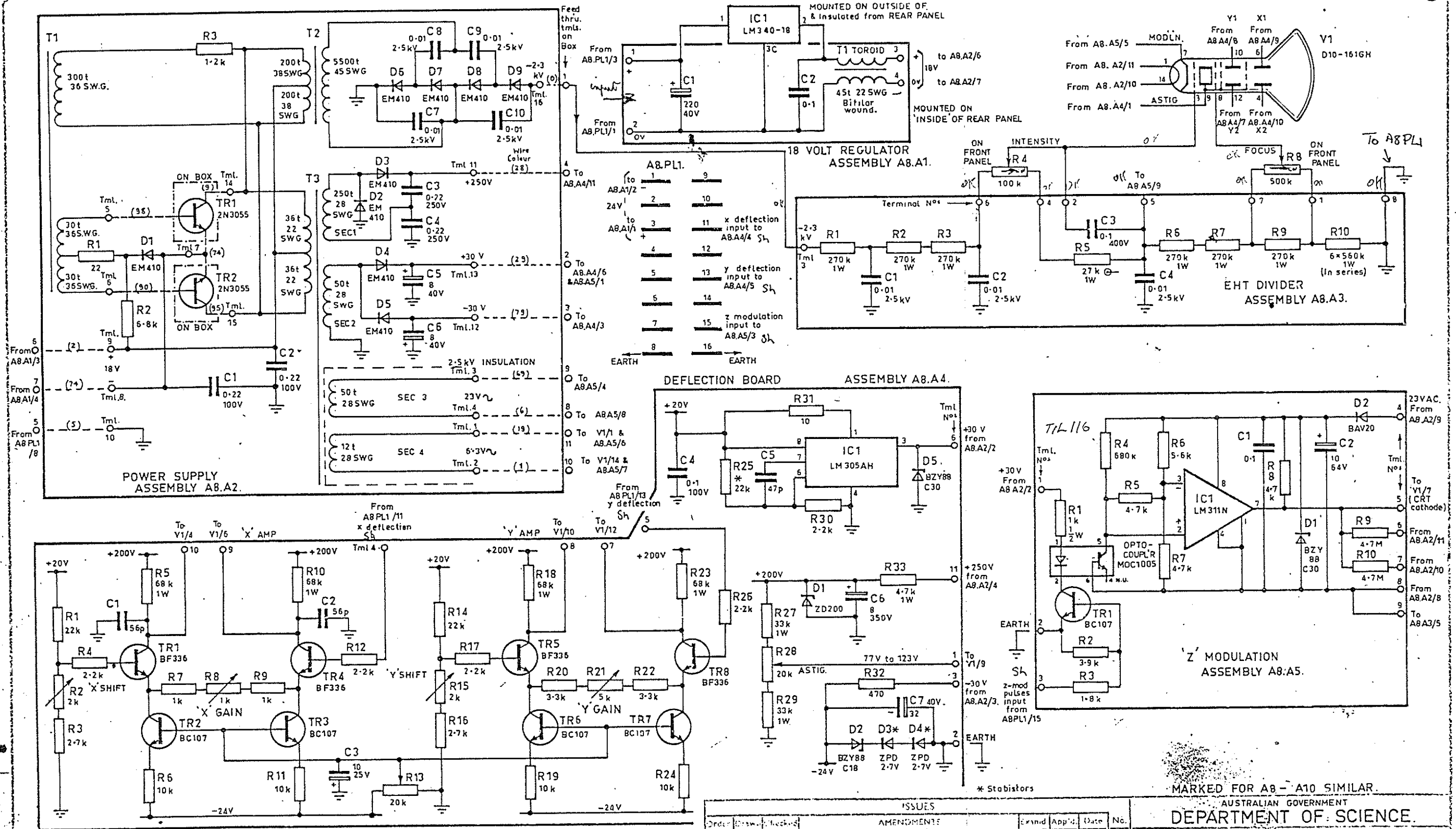
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
 DISPLAY & MONITOR-ASSEMBLIES A8 & A10
 BLOCK DIAGRAM

DRAWING NO
 CB-26Y1

SHEET
 1 OF 1 SHEETS

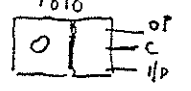
ISSUES						
Order	Drawn	Checked	AMENDMENTS	Ex'm'd	App'd	Date
	GAD	JM				31.8.75
	GAD	KG	Title changed to 4B.	KG	GN	1/10/75



- NOTES
- All resistors 1/4 watt unless otherwise stated.
 - * Selected for 20V out.
 - Transformers; T1-E20/10/5, T2-E30/15/7, T3-E42/2V/15
 - Toroid ring Part No 4332-020-36560
 - ⊗ Selected on test-typical.
 - Indicates not included in PCB.

earth shields at socket end.

MCD2 7618
7818



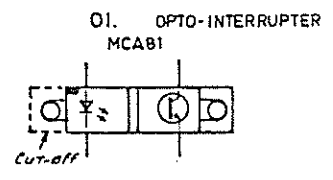
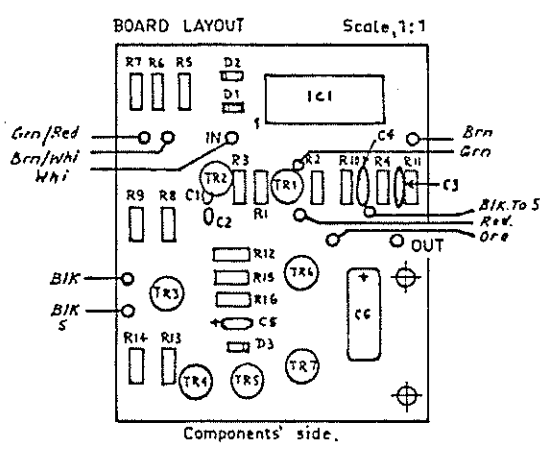
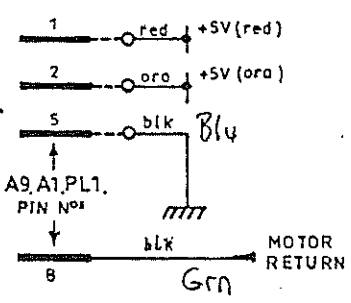
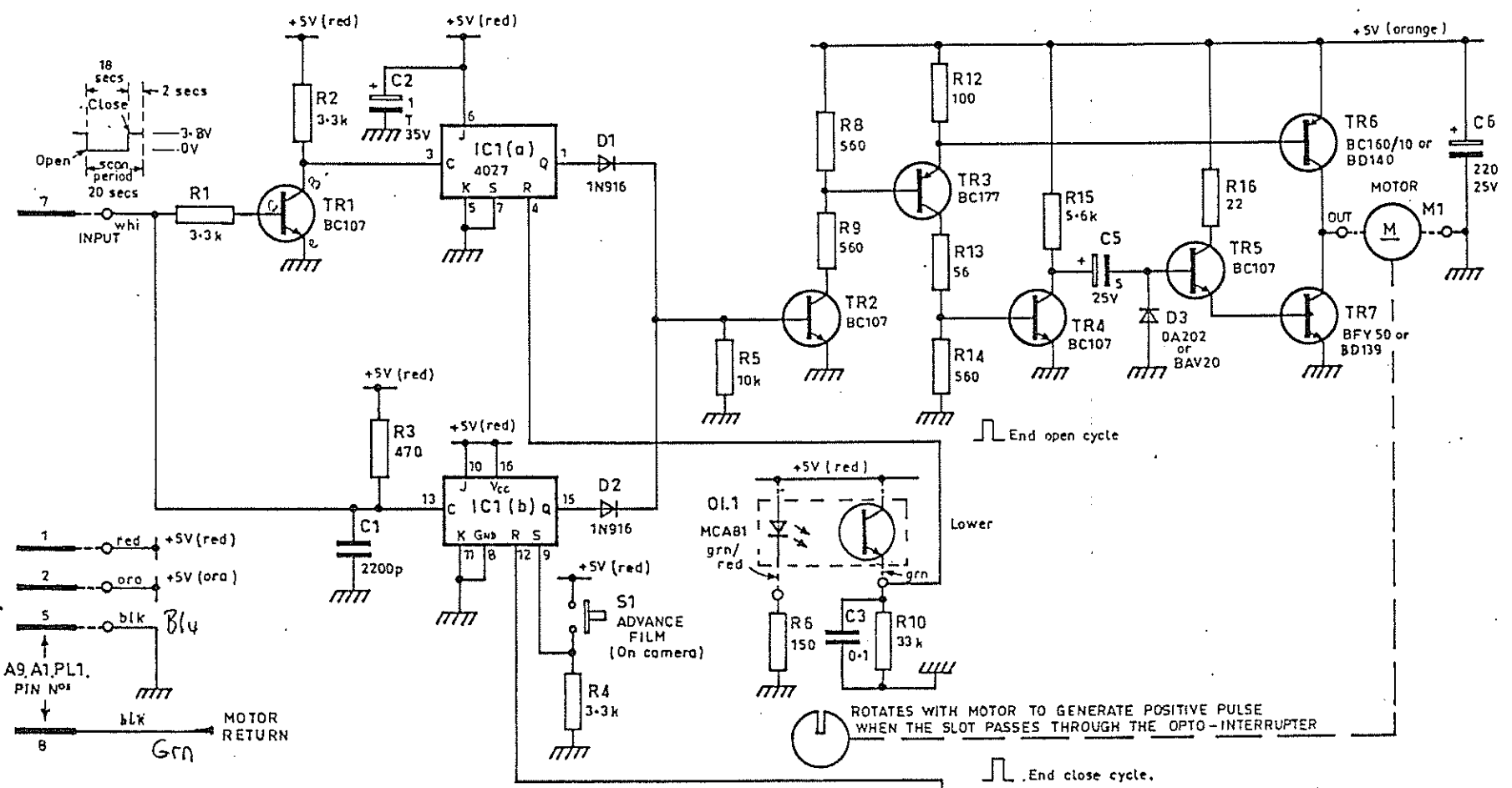
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd.	Date	No.
	GAD	G.W.	IC1 on A8.1 changed, etc.	D.H.	G.W.	11.5.75	1
	GAD	G.W.		D.H.	G.W.	16.10.75	2
	GAD	R.H.	Several minor annotation modifications	D.H.	G.W.	31.5.76	3
	GAD	C.J.	Annotation on IC1 modified	D.H.	G.W.	16.2.77	4
	GAD	K.G.	R3 on A8.3. Value changed	D.H.	G.W.	8.3.78	5
	GAD	K.G.	Title change To 4B - DL change of type.	R.G.	G.W.	11.10.78	6
	GAD	K.G.	R3 & R16 values changed on A8.4 - Photon coupler type changed.	K.G.	G.W.	14.5.79	7
	GAD	K.G.	OPTO-coupler substituted for Photon coupler.	K.G.	G.W.	31.8.81	8

MARKED FOR A8 - A10 SIMILAR.

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DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
DISPLAY & MONITOR - ASSEMBLIES A8 & A10
CIRCUIT DIAGRAM

DRAWING No CD-230Y1 SHEET 1 OF 2 SHEETS



1. All resistors 0.25W.

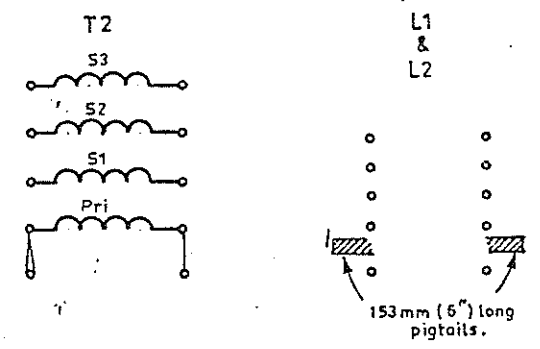
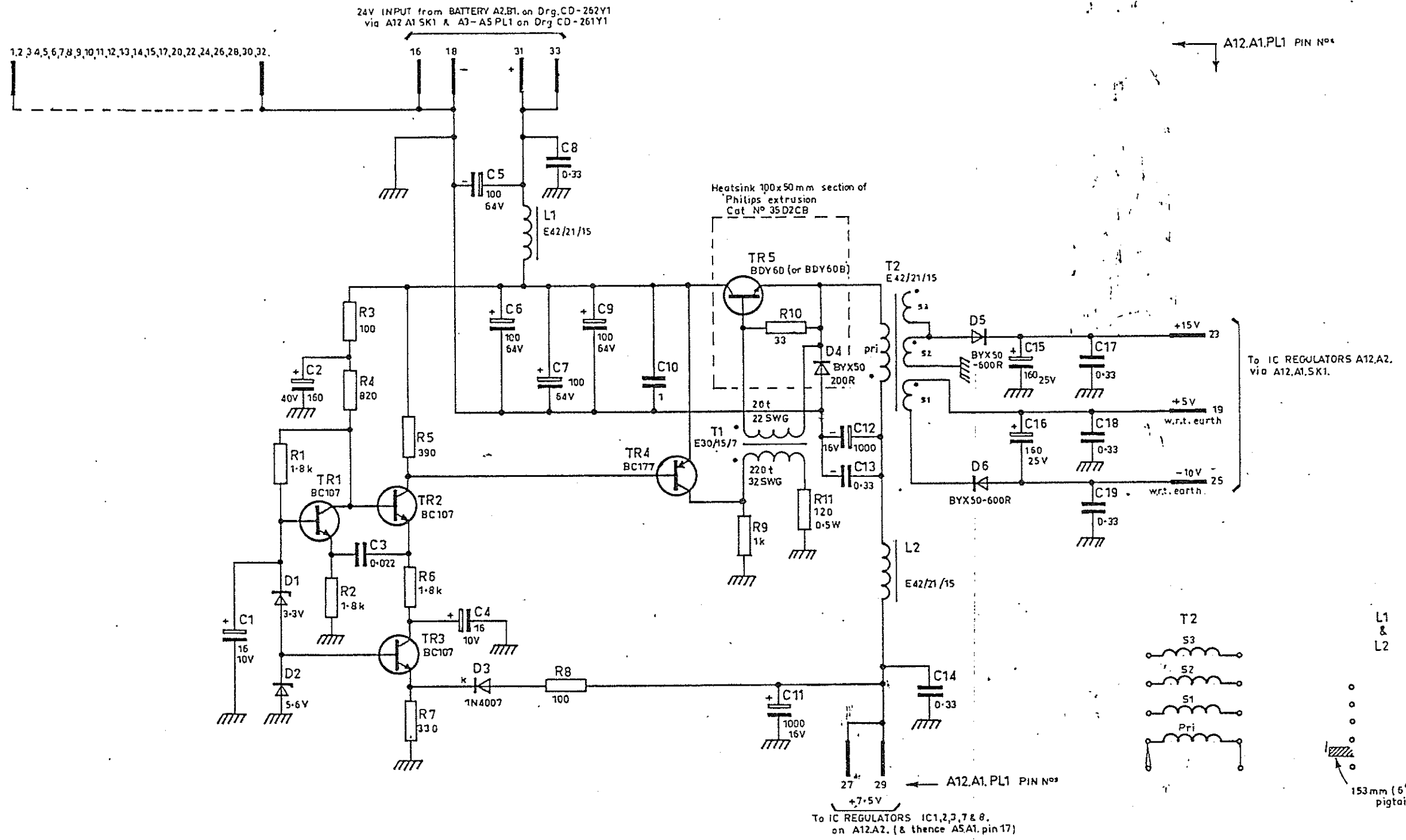
NOTES

ISSUES						
Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date	Nº
G.AZ	K.G.	TRC, TR7 Type changed. Input Have Em model.	K.G.	G.H.	9.11.78	1
G.AZ	K.G.	On Layout Brn & Grn Leads reversed.	K.G.	G.W.	22.1.79	2
GAD	K.G.	PIN 8 on A9, A1 PLS added.	K.G.	G.W.	1.5.79	3
GAD	K.G.	C2 value changed from 0.01 mF	K.G.	G.W.	14.12.79	4
GAD	K.G.	R3 value changed. W. Form voltage added	K.G.	G.W.	22.10.79	5
GAD	X.S.	C3 & C4 added.	K.G.	G.W.	21.1.81	7
GAD	K.G.	Mods to Layout C3 & C4 & Trns. TR6 & 7 modif.	K.G.	G.W.	15.1.82	8

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DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

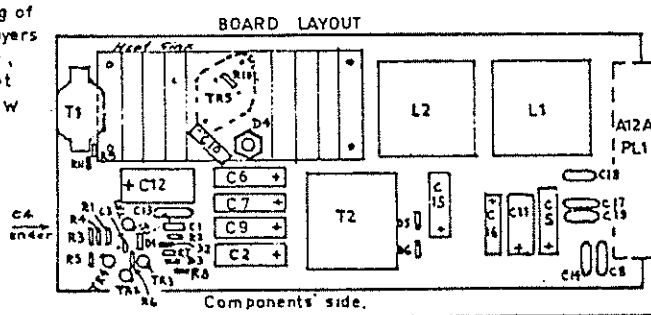
**IONOSONDE TYPE 4B
CAMERA - MOTOR DRIVE - ASSEMBLY A9.A1.
CIRCUIT DIAGRAM**

DRAWING Nº CD-404Y1	SHEET 1 OF 1 SHEETS
-------------------------------	------------------------



NOTES

- Volts on load of +30, +15 & -15 outputs depend on sufficient loading of +7.5 output.
- N.B Phase of winding on T2.
- L1 & L2 - 3 layers 39t of 16 G; 0.75 ± 0.25mm air gap.
- T2 - Pri 19t - single layer 18 G, S1 36t - single layer 24 G, S2 36t - single layer 24 G, S3 36t single layer 24 G; 0.75 ± 0.25mm air gap.
- All resistors 0.25W unless otherwise specified.

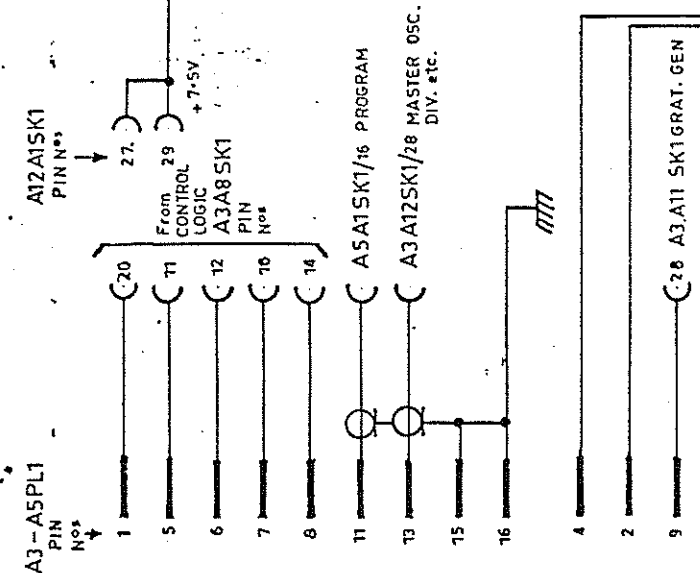
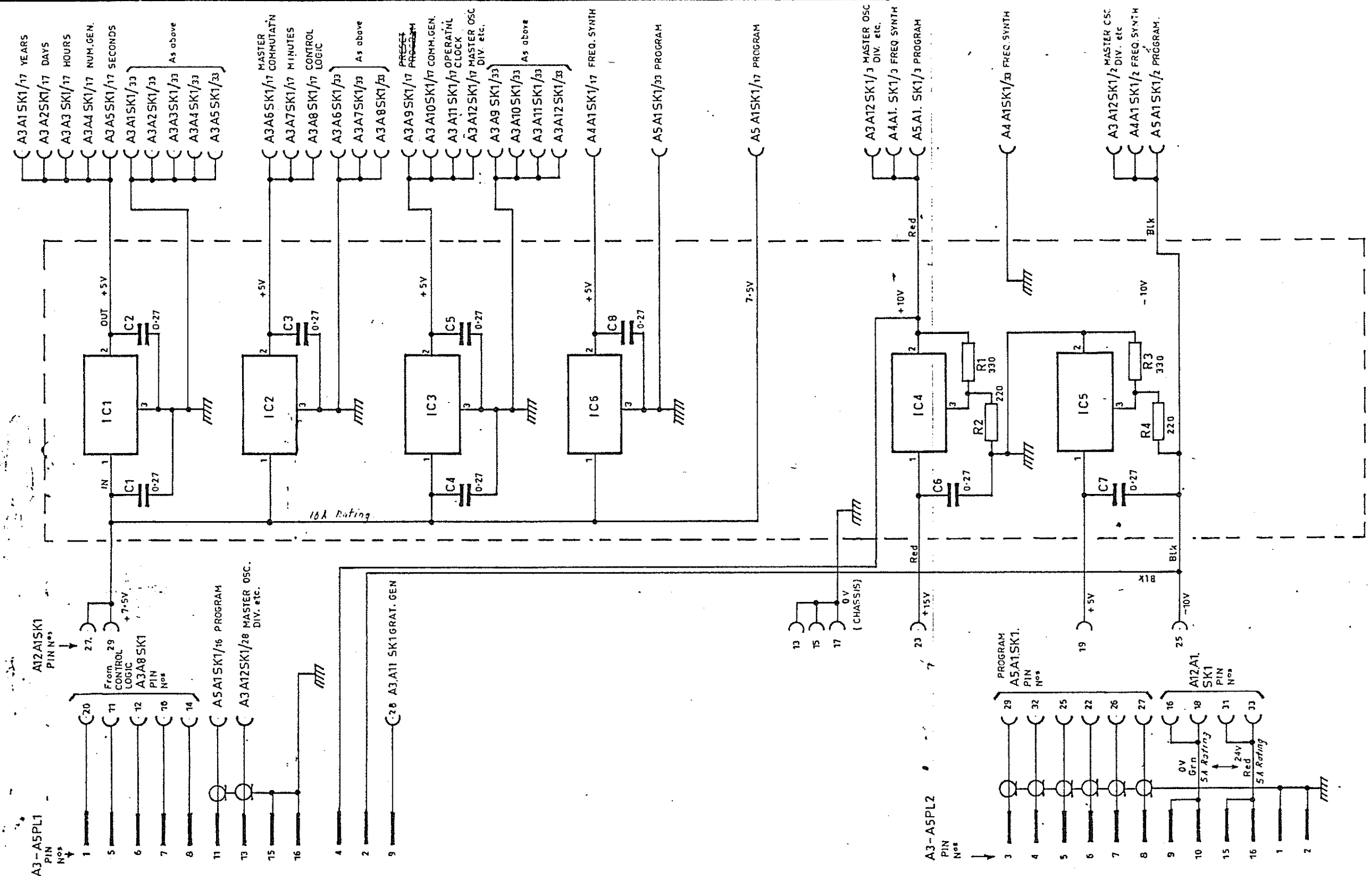


ISSUES							
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date	Nº
	GAD	DH		DH	GW	12.8.75	1
	GAD	GR	Values for D2, R7 & R11 changed, etc.	DH	GW	3.12.75	2
	GAD	PA	Note A added to	DH	GW	30.3.76	3
	GAD	PA	TR5 Replacement Type added	DH	GW	29.6.76	4
	GAD	CJ	A12.A1 PL1 pins 15, 16, 17, 18 modified, & TR5 equivalent changed.	DH	GW	12.9.77	5
	GAD	KG	4B mods D5, C15, C18 deleted, D6 & D7 Type mod.	KG	GW	12.9.78	6
	GAD	KG	D3 Type changed.	KG	GW	11.5.79	7
	GAD	CJ	Notation on pins 27 & 29 added to.	KG	GW	30.1.79	8

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DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
I/C POWER SUPPLY-ASSEMBLY A12.A1
CIRCUIT DIAGRAM

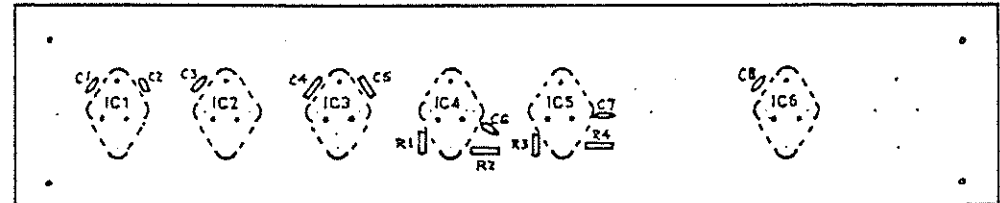
DRAWING Nº CD-260Y1	SHEET 1 OF 1 SHEETS
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NOTES

- 1. All resistors 0.25 watts.
- 2. All IC's type LM309K.

PANEL LAYOUT



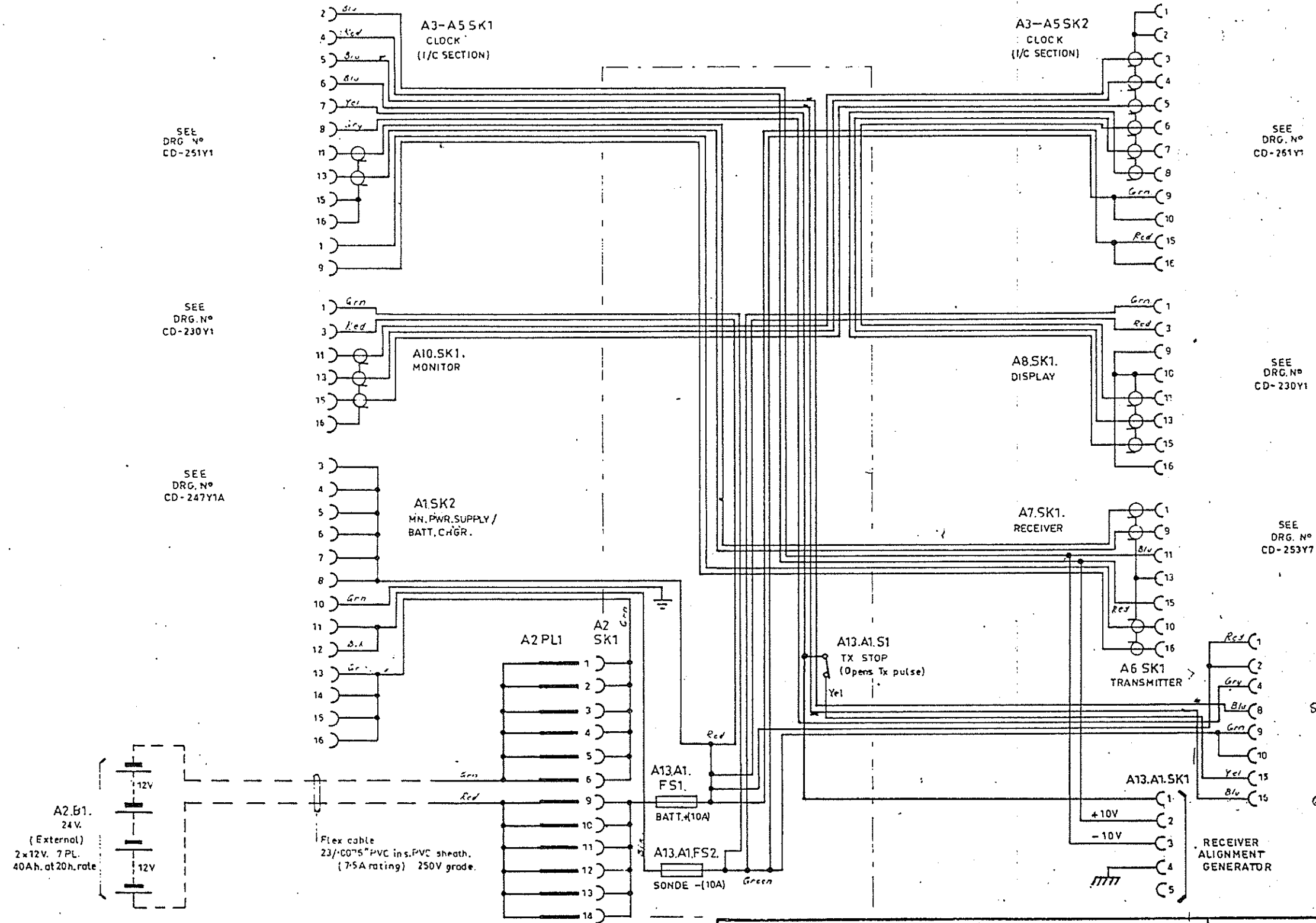
Regulators below; other components above.

ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	Appr'd	Date
	G.A.D.	D.H.			G.W.	15.5.75
	G.A.D.	R.H.	Note on pins of A12A1SK1 added.	D.H.	G.W.	3.12.75
	G.A.D.	G.S.	Pins 1 & 3 Added To A3-A5 PLT. deleted	D.H.	G.W.	6.6.75
	G.A.D.	C.F.	Notation added to pins 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	D.H.	G.W.	11.8.75
	G.A.D.	K.G.	Title changed to A3-A5 PLT. etc etc etc	K.G.	G.W.	11.11.75

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IONOSONDE TYPE 4B
I/C PWR. SUPPLY REGULATORS
ASSEMBLY A12A2. (AND ADJACENT PLUGS
A3-A5PL1 & 2) - CIRCUIT DIAGRAM

DRAWING No CD-261Y1	SHEET 1 OF 1 SHEETS
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SEE DRG. N° CD-251Y1

SEE DRG. N° CD-230Y1

SEE DRG. N° CD-247Y1A

SEE DRG. N° CD-261Y1

SEE DRG. N° CD-230Y1

SEE DRG. N° CD-253Y7

SEE DRG. N° CD-255Y1

NOTED

A2.B1.
24V.
(External)
2x12V. 7 PL.
40Ah. at 20h. rate

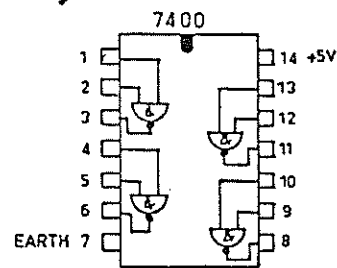
Flex cable
23/CO*5 PVC ins. PVC sheath.
(7.5A rating) 250V grade.

ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date. No
	GAD		Conn. from A5SK1/1 & 2 to A13A1FS1 & FS2 modified.	D.H.	G.W.	20.5.75 1
	GAD	G.S.	MODIFIED TO A7SK1 & A3-A5SK1	D.H.	G.W.	11.11.75 2
	GAD	K.G.	Title changed to 4B	D.H.	G.W.	1.6.77 3
	GAD	K.G.	Rx alignment gen'r. socket add'd: a	K.G.	G.W.	11.11.77 4
				K.S.	G.W.	3.12.82 5

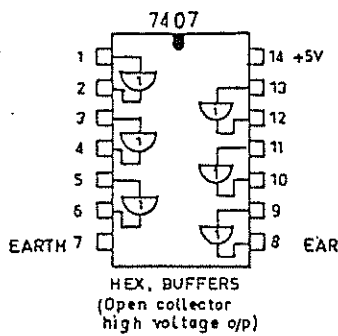
AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
HARNESS - ASSEMBLY A13.A1_{1/2} (& ADJACENT)
CIRCUIT DIAGRAM

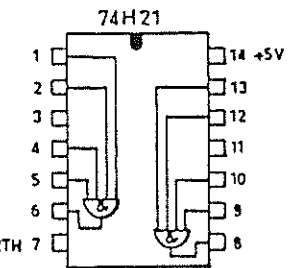
DRAWING N° CD-262Y1A	SHEET 1 OF 1 SHEETS
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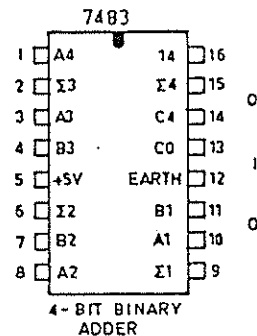
7400
QUAD 2-INPUT
NAND GATES



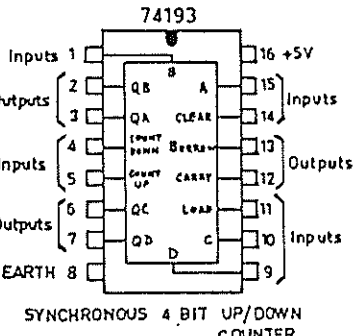
7407
HEX. BUFFERS
(Open collector
high voltage o/p)



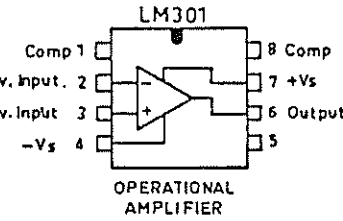
74H21
DUAL 4-INPUT
AND GATES



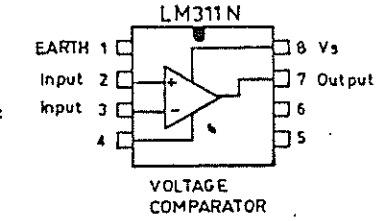
7483
4-BIT BINARY
ADDER



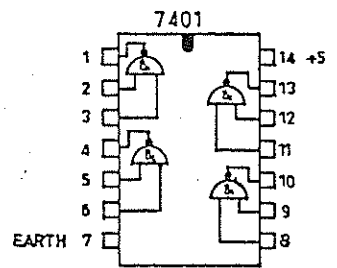
74193
SYNCHRONOUS 4 BIT UP/DOWN
COUNTER.



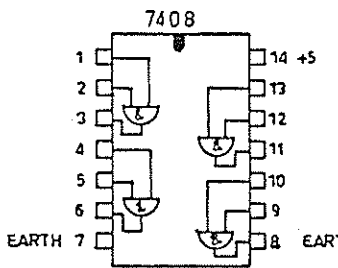
LM301
OPERATIONAL
AMPLIFIER



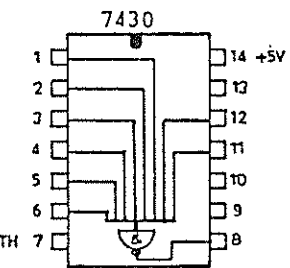
LM311N
VOLTAGE
COMPARATOR



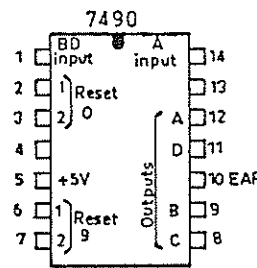
7401
QUAD 2-INPUT
NAND GATES
(Open collectors O/P)



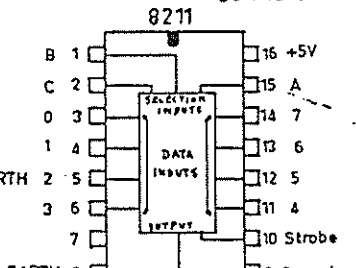
7408
QUAD 2-INPUT
AND GATES



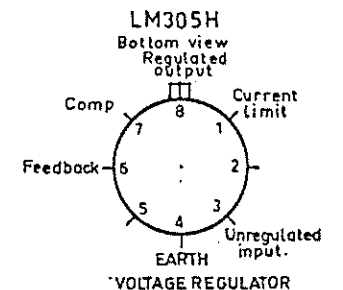
7430
8-INPUT
NAND GATE



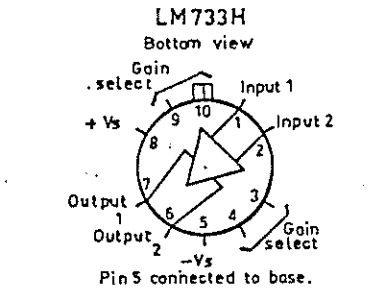
7490
DECADE COUNTER
(÷5 or ÷10)



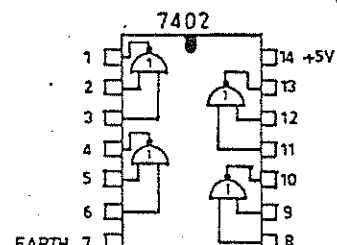
8211
8 CHANNEL DIGITAL SWITCH



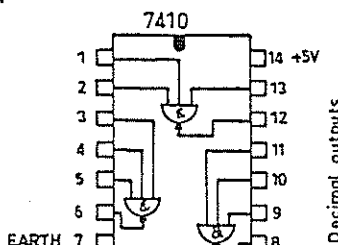
LM305H
Bottom view
Regulated
output



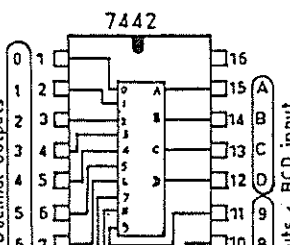
LM733H
Bottom view



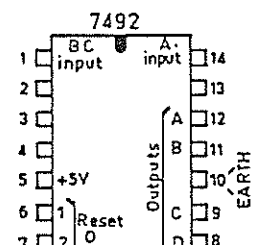
7402
QUAD 2-INPUT
NOR GATES



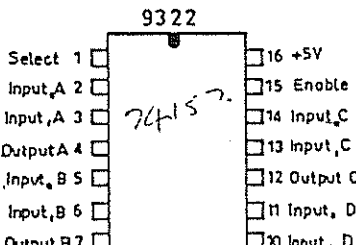
7410
TRIPLE 3-INPUT
NAND GATES.



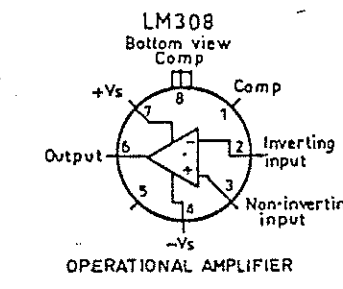
7442
BCD TO DECIMAL DECODER



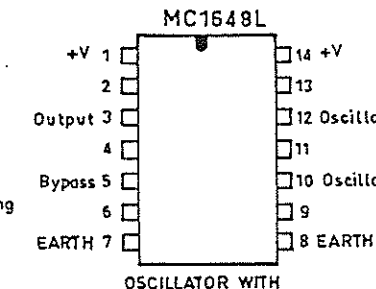
7492
÷12 COUNTER



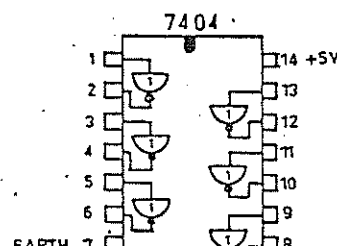
9322
QUAD 2-INPUT MULTIPLIER



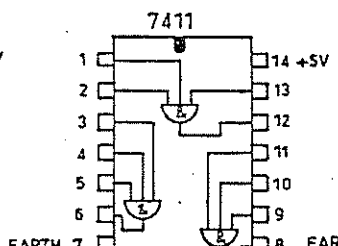
LM308
Bottom view
Comp



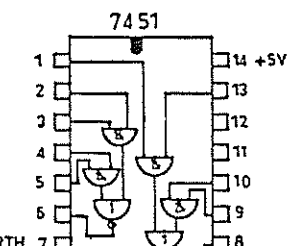
MC1648L
OSCILLATOR WITH
AUTOMATIC LEVEL CONTROL



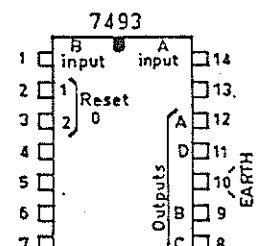
7404
HEX INVERTERS



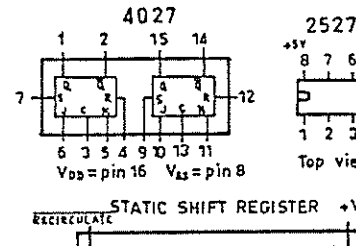
7411
TRIPLE 3-INPUT
AND GATES



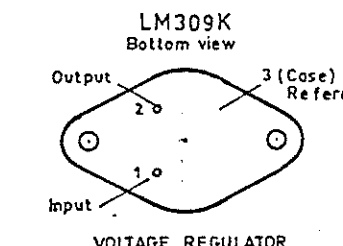
7451
2 POLE, 2 WAY
SWITCH



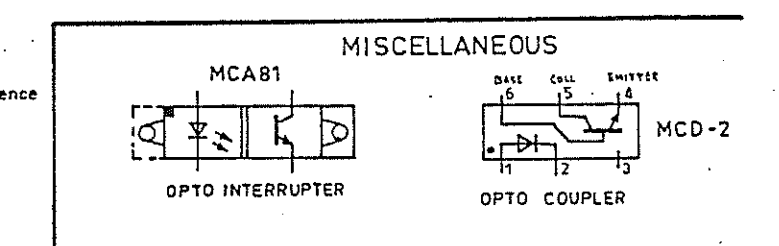
7493
4-BIT BINARY
COUNTER



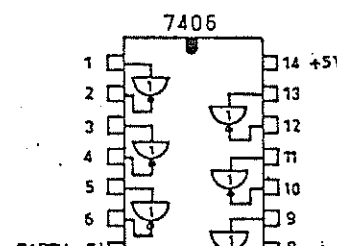
4027
STATIC SHIFT REGISTER



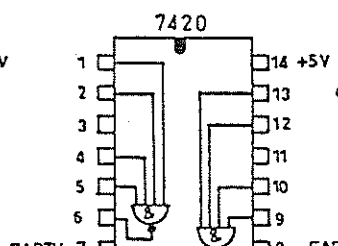
LM309K
Bottom view



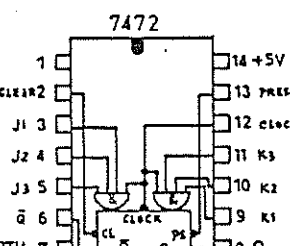
MISCELLANEOUS



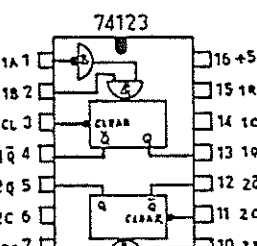
7406
HEX INVERTERS
(Open collector
high voltage O/P)



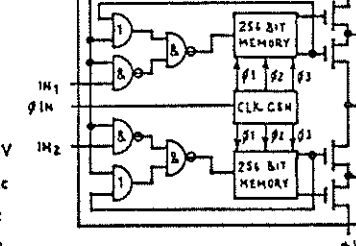
7420
DUAL 4 INPUT
NAND GATES.



7472
J-K MASTER SLAVE
FLIP-FLOP



74123
DUAL MONO



LM340T-05
LM340-18T
5V or 18V REGULATOR

1 All ICs shown topview except where shown otherwise.

NOTES

ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd	Date
	GAD	R.H.		D.M.	G.M.	28.5.75
	GAD	K.G.	Title changed to 4B	K.G.	G.W.	12.10.75
	GAD	K.G.	STAT. SHIF. REG., Opto interr., opto coupler added etc.	K.G.	G.W.	15.1.79
	GAD	G.J.	Digital IC Type 4027 added.	K.G.	G.W.	27.7.79

AUSTRALIAN GOVERNMENT	
DEPARTMENT OF SCIENCE	
IONOSPHERIC PREDICTION SERVICE	
IONOSONDE TYPE 4B	
IC's PIN CONNECTIONS & FUNCTIONS	
CIRCUIT DIAGRAMS	
DRAWING N°	SHEET
CD-263Y1	1 OF 1 SHEETS

TRANSISTORS

Bottom view except for TO-126

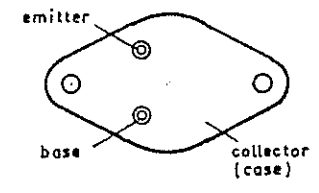
TYPE PACKAGE

- BF592 - TO-5
- BC160/10 - TO-5
- BC107 - TO-18
- BC177 - TO-18

- BDY60 - TO-3
- BF200 - TO-72
- BF336 - TO-39
- BF458 - TO-126
- BFS23A - TO-39
- BSV78 - TO-18 (FET)
- BFX44 - TO-18
- BFY90 - TO-72
- BSX21 - TO-18
- BU108 - TO-3
- 2N2907 - TO-18
- 2N3055 - TO-3

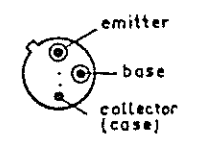
- 40673 - TO-72 (FET)

TO-3



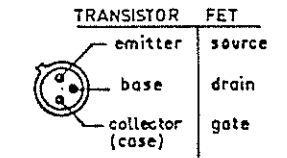
- BDY60
- BU108
- 2N3055

TO-5



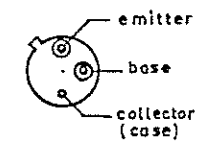
- BF592
- BC160/10

TO-18



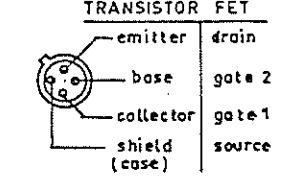
- BC107
- BC177
- BFX44
- BFX21
- 2N2907
- BSV78 (FET)

TO-39



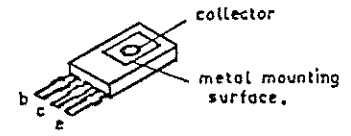
- BF336
- BFS23A

TO-72



- BF200
- BFY90
- 40673 (FET)

TO-126

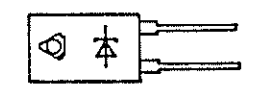


- BF458

TYPE PACKAGE

- BAX13 - SOD-17(a)
- BAX15 - SOD-17(a)
- BB105G - SOD-23
- BYX42 - DO-4
- BZX50/200R - DO-4
- BZX75 - DO-7
- BZY88/Zeners - DO-7
- 1N4007 - PLASTIC
- OA95 - DO-7
- OA202 - DO-7
- ZD200 - DO-4
- 1N914 - SOD-17(b)
- 1N916 - SOD-17(b)
- LED - See below
- MR250-2 - PLASTIC
- BYX71 - SOD-38

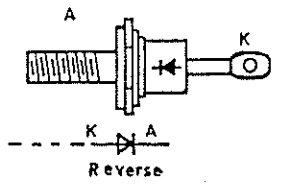
SOD-38
BYX71 600R



DIODES

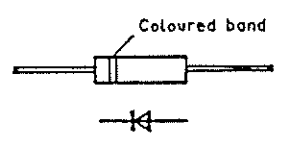
DO-4

- BYX42
- BZX50/200R
- ZD200



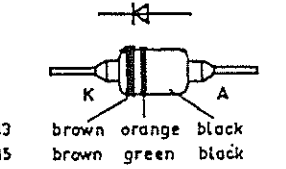
DO-7

- BZX75
- BZY88/Zeners
- OA95
- OA202
- BAV20



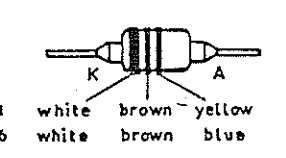
SOD-17(a)

- BAX13
- BAX15



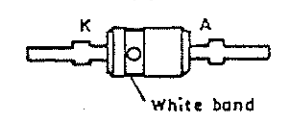
SOD-17(b)

- 1N914
- 1N916



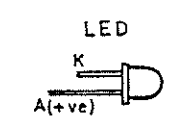
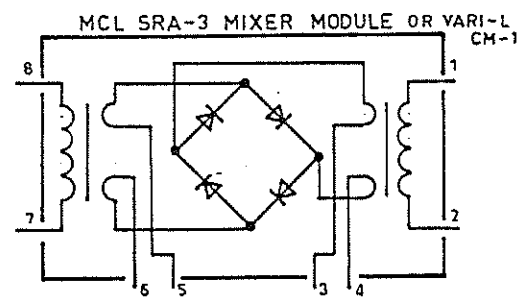
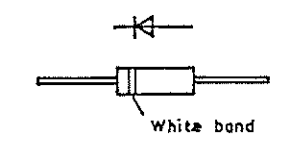
SOD-23

- BB105G

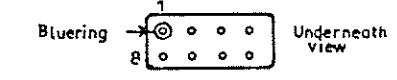


PLASTIC

- 1N4007
- MR250-2



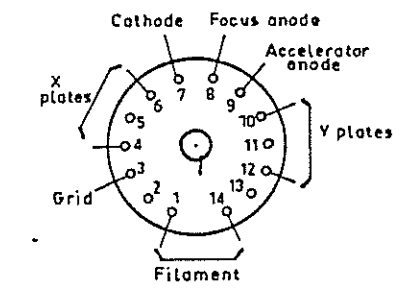
NOTES



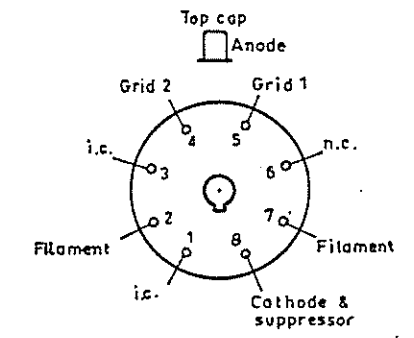
VACUUM TUBES

Bottom view.

D10-161GH
(CRT)



EL360
(POWER PENTODE)



ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	Appr'd	Date
	G.A.D.	R.H.		D.H.	G.W.	4.6.75
	G.A.D.	R.H.	EL360 Grid Conn's changed.	D.H.	G.W.	7.5.75
	G.A.D.	C.J.	BAV20 added to diodes	D.H.	G.W.	12.7.77
	G.A.D.	K.G.	Title changed to 4B	K.G.	G.W.	14.10.78
	G.A.D.	K.G.	Transistor & Diode Types changes - Models added	K.G.	G.W.	18.3.79
	G.A.D.	C.J.	Diode Type BYX71 600R added.	K.G.	G.W.	25.3.80

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
TRANSISTORS, DIODES & VACUUM
TUBES PIN CONNECTIONS.
CIRCUIT DIAGRAMS.**

DRAWING N° CD-264Y1	SHEET 1 OF 1 SHEETS
-------------------------------	------------------------

TRANSISTORS

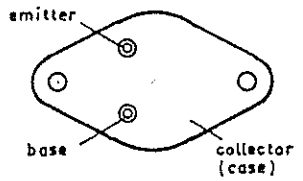
Bottom view except for TO-126

- TYPE PACKAGE
 BFS92 - TO-5
 BC160/10 - TO-5
 BC107 - TO-18
 BC177 - TO-18

 BDY60 - TO-3
 BF200 - TO-72
 BF336 - TO-39
 BF458 - TO-126
 BFS23A - TO-39
 BSV78 - TO-18(FET)
 BFX44 - TO-18
 BFX90 - TO-72
 BSX21 - TO-18
 BU108 - TO-3
 2N2907 - TO-18
 2N3055 - TO-3

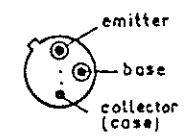
- 40673 - TO-72 (FET)

TO-3



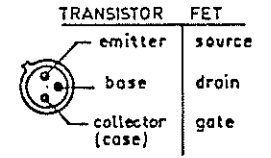
BDY60
BU108
2N3055

TO-5



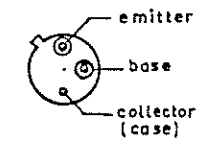
- BFS92
BC160/10

TO-18



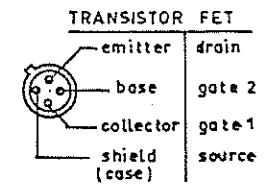
- BC107
BC177
BFX44
BFX21
2N2907
BSV78 (FET)

TO-39



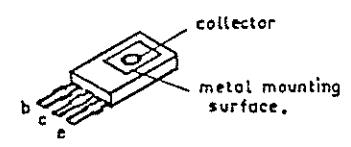
- BF336
BFS23A

TO-72



- BF200
BFX90
40673 (FET)

TO-126

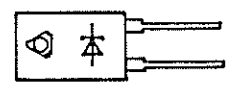


- BF458

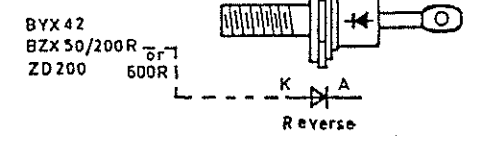
DIODES

- TYPE PACKAGE
 BAX13 - SOD-17(a)
 BAX15 - SOD-17(a)
 BB105G - SOD-23
 BYX42 - DO-4
 BZX50/200R - DO-4
 BZX75 - DO-7
 BZY88/Zeners - DO-7
 1N4007 - PLASTIC
 OA95 - DO-7
 OA202 - DO-7
 ZD200 - DO-4
 1N914 - SOD-17(b)
 1N916 - SOD-17(b)
 LED - See below
 MR250-2 - PLASTIC
 BYX71 - SOD-38

SOD-38
BYX71 600R

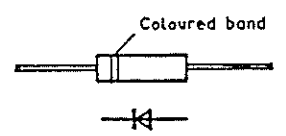


DO-4



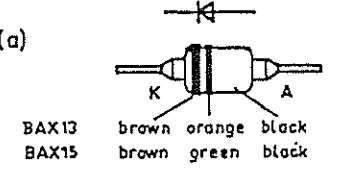
- BYX42
BZX50/200R
ZD200

DO-7



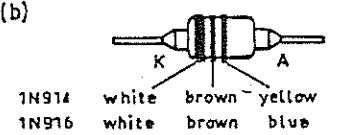
- BZX75
BZY88/Zeners
OA95
OA202
BAV20

SOD-17(a)



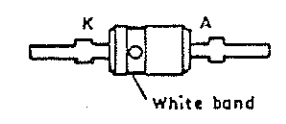
- BAX13
BAX15

SOD-17(b)



- 1N914
1N916

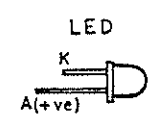
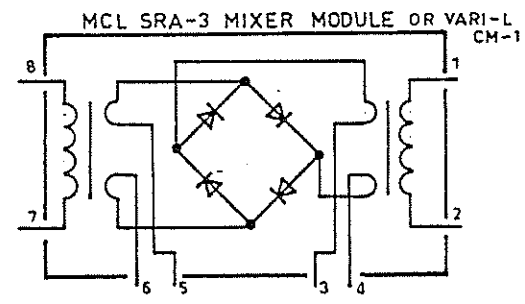
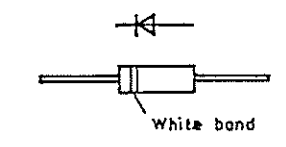
SOD-23



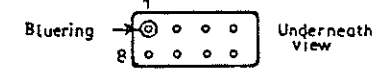
- BB105G

PLASTIC

- 1N4007
MR250-2



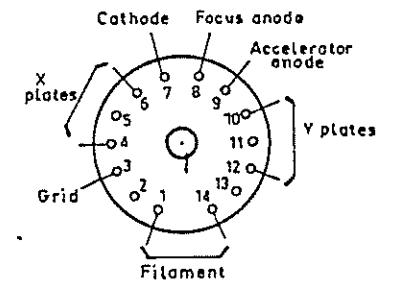
NOTES



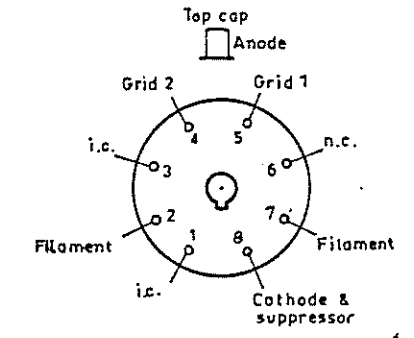
VACUUM TUBES

Bottom view.

D10-161GH
(CRT)



EL360
(POWER PENTODE)

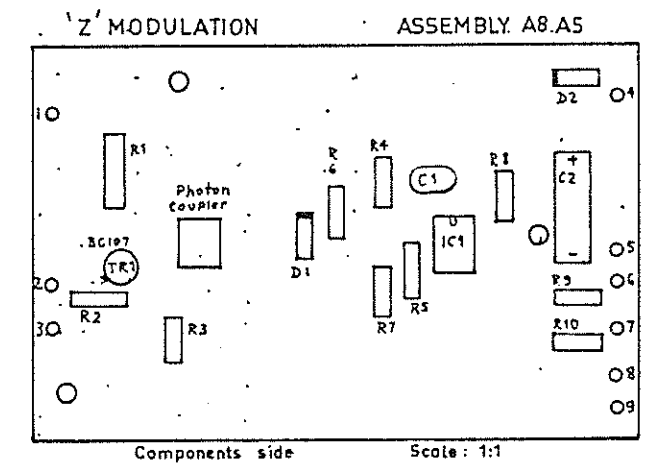
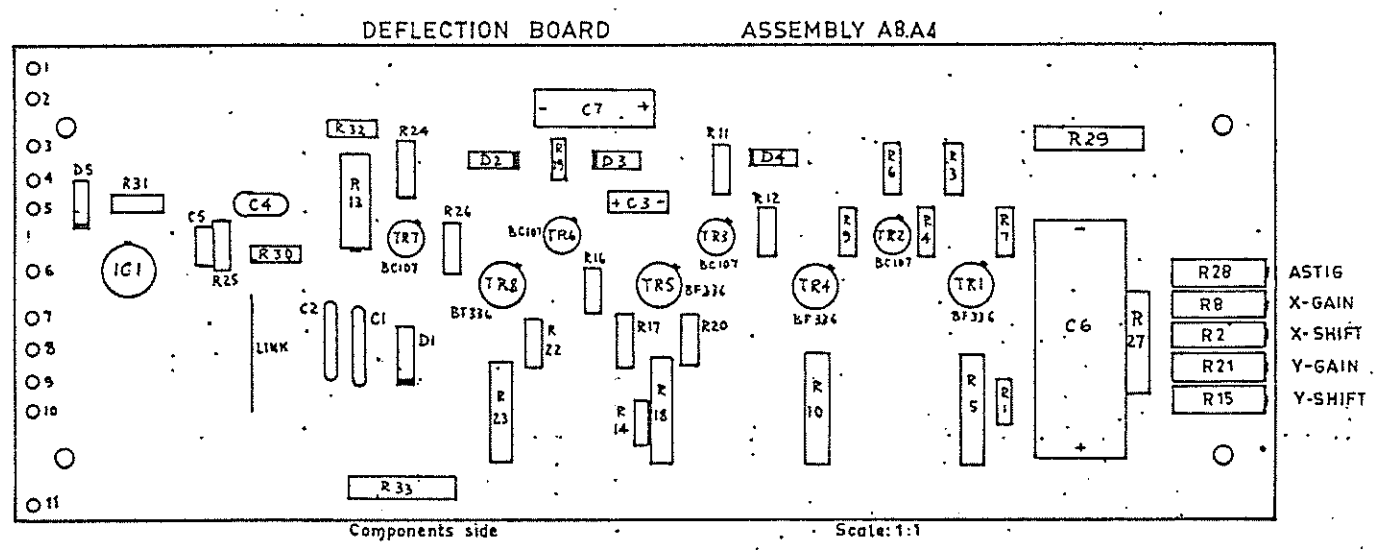
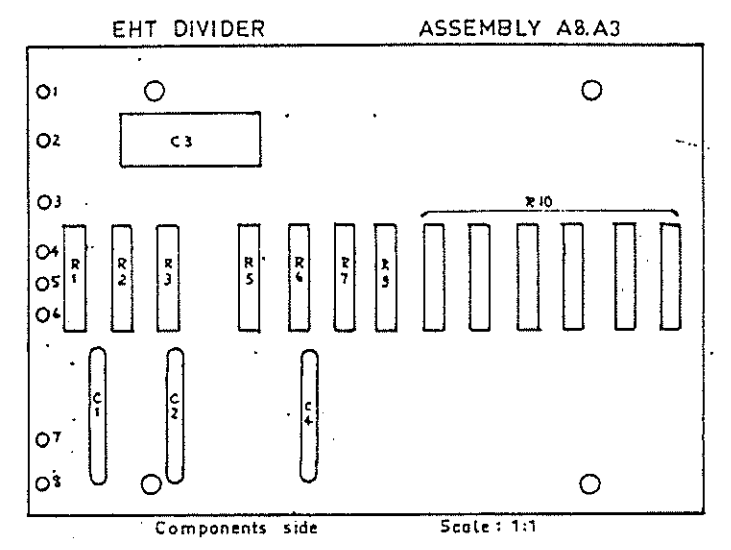
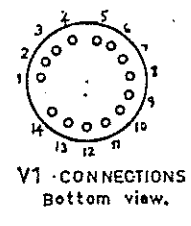
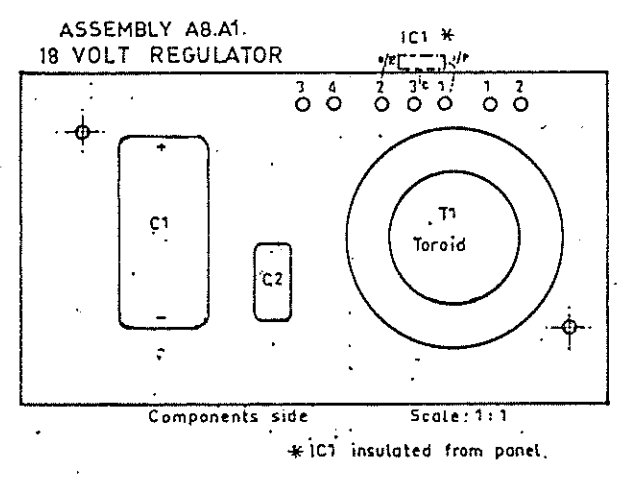
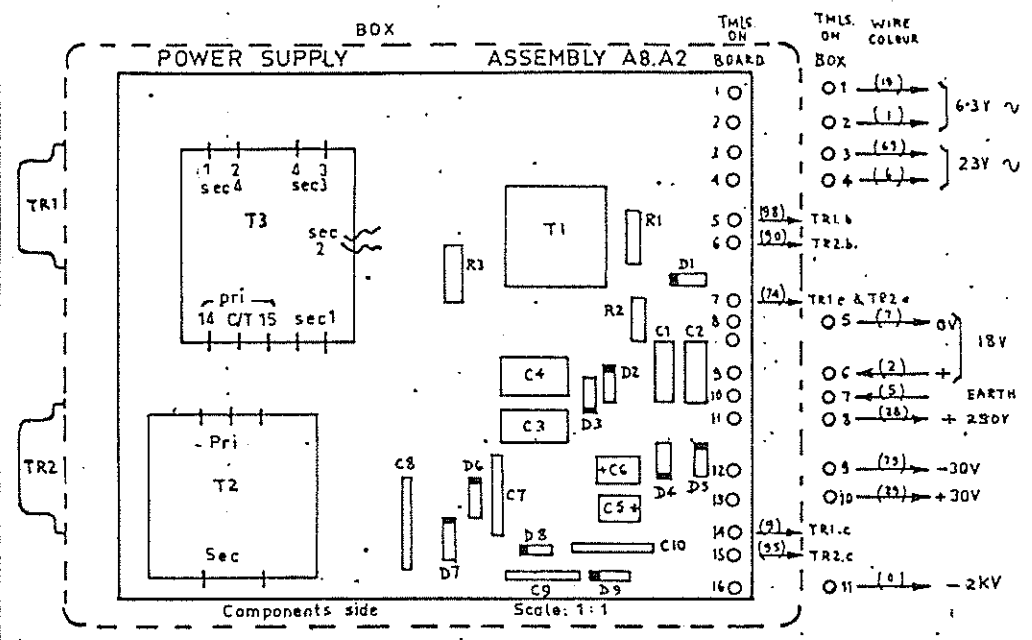


ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	Appr'd	Date
	G.A.D.	R.H.		D.H.	G.M.	6.6.75
	G.A.D.	R.H.	EL360 Grid Conn's changed.	D.H.	G.M.	7.8.75
	G.A.D.	C.J.	BAV20 added to diodes	D.H.	G.M.	12.7.77
	G.A.D.	K.G.	Title changed to 4B	K.G.	G.W.	14.10.79
	G.A.D.	K.G.	Transistor & diode types changes - Modules added	K.G.	G.W.	16.1.79
	G.A.D.	C.J.	Diode Type BYX71 600R added.	K.G.	G.W.	23.3.80

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
TRANSISTORS, DIODES & VACUUM
TUBES PIN CONNECTIONS.
CIRCUIT DIAGRAMS.

DRAWING N° CD-264Y1	SHEET 1 OF 1 SHEETS
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NOTES

ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	App'd	Date
	G.A.D	G.M.		D.H.	G.W.	21.5.75
	G.A.D	G.W.	18v Regulator mods. 1c1 changed etc.	D.H.	G.W.	16.11.75
	G.A.D	R.H.	Minor annotation mods.	D.H.	G.W.	31.5.76
	G.A.D	C.F.	On A8.A1 - 1c1 note added.	D.H.	G.W.	18.8.77
	G.A.D	K.G.	Title changed to 4B.	K.G.	G.W.	16.10.77
	G.A.D	K.G.	Layout of A8.A1 & A8.A4 modified.	K.G.	G.W.	17.8.81
	G.A.D	E.J.	A8.A2 layout T3 & T2 Tmt added.	K.G.	G.W.	1.2.78

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
 IONOSPHERIC PREDICTION SERVICE
IONOSONDE TYPE 4B
DISPLAY & MONITOR-ASSEMBLIES A10
 BOARD CIRCUIT DGM. SUPPLEMENT.

DRAWING No
CD-230Y2

SHEET
 2 OF 2 SHEETS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Battery. (longer lead is +)		Resistor fixed		Motor		Diode device
	Earth.		Resistor variable.				Diode used as a capacitive device, varactor or varicap.
	Frame or chassis not necessarily earthed.		" with preset adjustment.				Diode, voltage reference, Zener.
	Lamp, signal.		" " moving contact.				Transistor, junction-gate field effect, "n" channel type.
	Piezo-electric crystal.				Switch contacts - change-over.		Transistor npn type
	Conductors crossing (no electrical connection)		Capacitor fixed		Switch contacts, change-over, press button.		" pnp "
	" junctions.		" Lead or feed through.		Switch-multiposition (wafers sequenced from front) c = common		Transistor, junction-gate field effect, "p" channel type.
	Coaxial pair of lines with outer connected to earth.		" polarized electrolytic				Light emitting diode (LED)
	Terminal or tag.		" variable		Cathode ray tube. (CRT)		Transistor, junction-gate field effect "n" channel type.
	Plug (male)		" with preset adjustment		Thermionic valve, pentode.		Photon coupler.
	Socket (female)		Inductor (choke)				Aerial
	Plug, coaxial.		" with ferromagnetic core.		Logic element (gate) AND		Integrated circuit.
	Socket, coaxial.		" variable.		" " " NAND		" " " OR
	Fuse		" preset adjustment.		" " " OR		Diode bridge rectifier
			Transformer with ferromagnetic core.		" " " NOR		

NOTES

1 Symbols generally in accordance with BS3939.

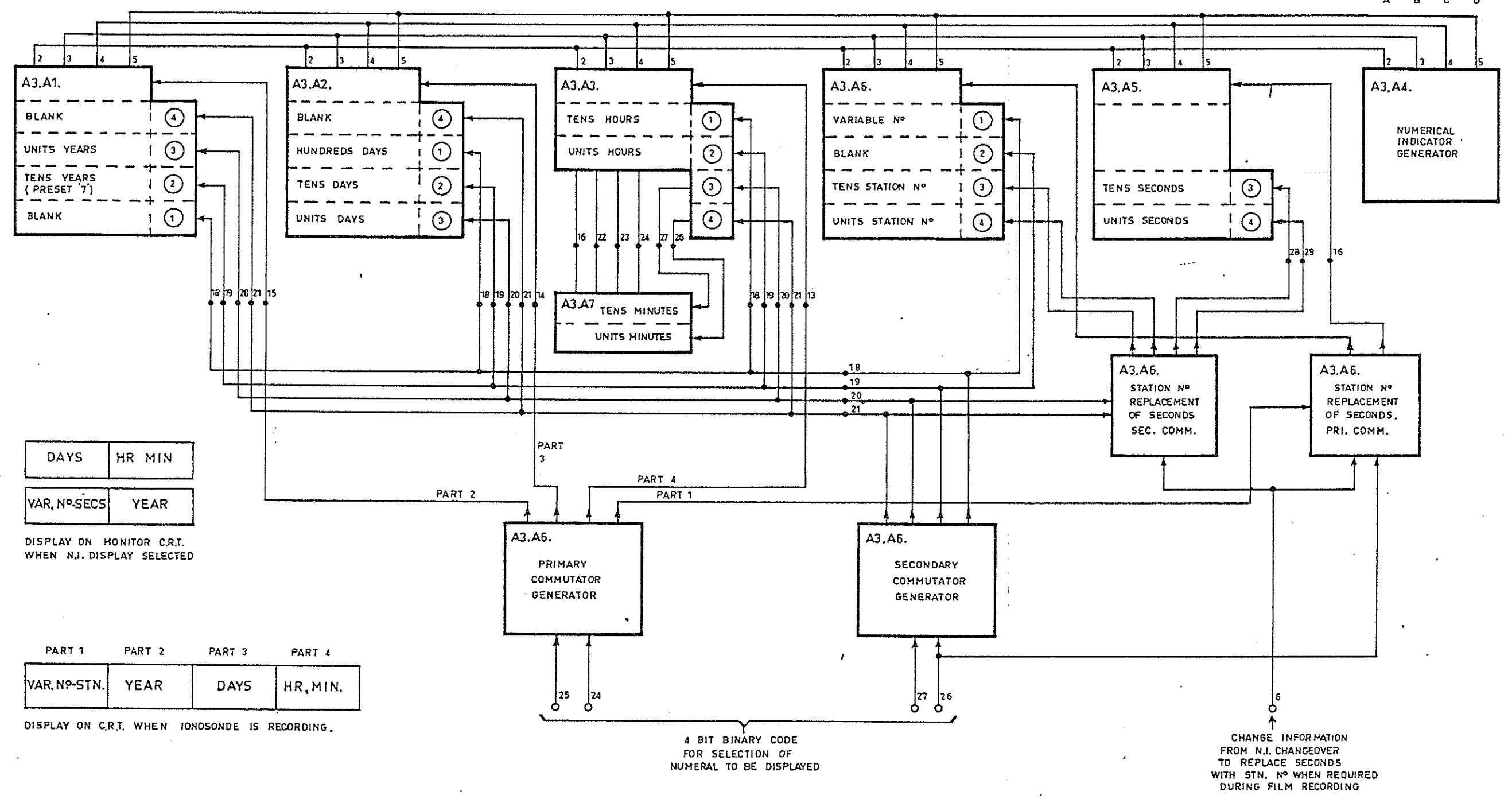
ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date
	G.A.D.	R.H.		D.H.	G.M.	2.4.75
	G.A.D.	R.G.	Title changed to 4B.	K.G.	G.W.	11.10.75

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
REFERENCE LIST OF SYMBOLS
FOR THE CIRCUIT DIAGRAMS.

DRAWING N° GC-11Y1	SHEET 1 OF 1 SHEETS
-----------------------	------------------------

4 BIT BINARY CODE
OF SELECTED NUMERAL
A B C D



DAYS	HR MIN
VAR. N° SECS	YEAR

DISPLAY ON MONITOR C.R.T.
WHEN N.I. DISPLAY SELECTED

PART 1	PART 2	PART 3	PART 4
VAR. N° STN.	YEAR	DAYS	HR, MIN.

DISPLAY ON C.R.T. WHEN IONOSONDE IS RECORDING.

4 BIT BINARY CODE
FOR SELECTION OF
NUMERAL TO BE DISPLAYED

CHANGE INFORMATION
FROM N.I. CHANGE OVER
TO REPLACE SECONDS
WITH STN. N° WHEN REQUIRED
DURING FILM RECORDING

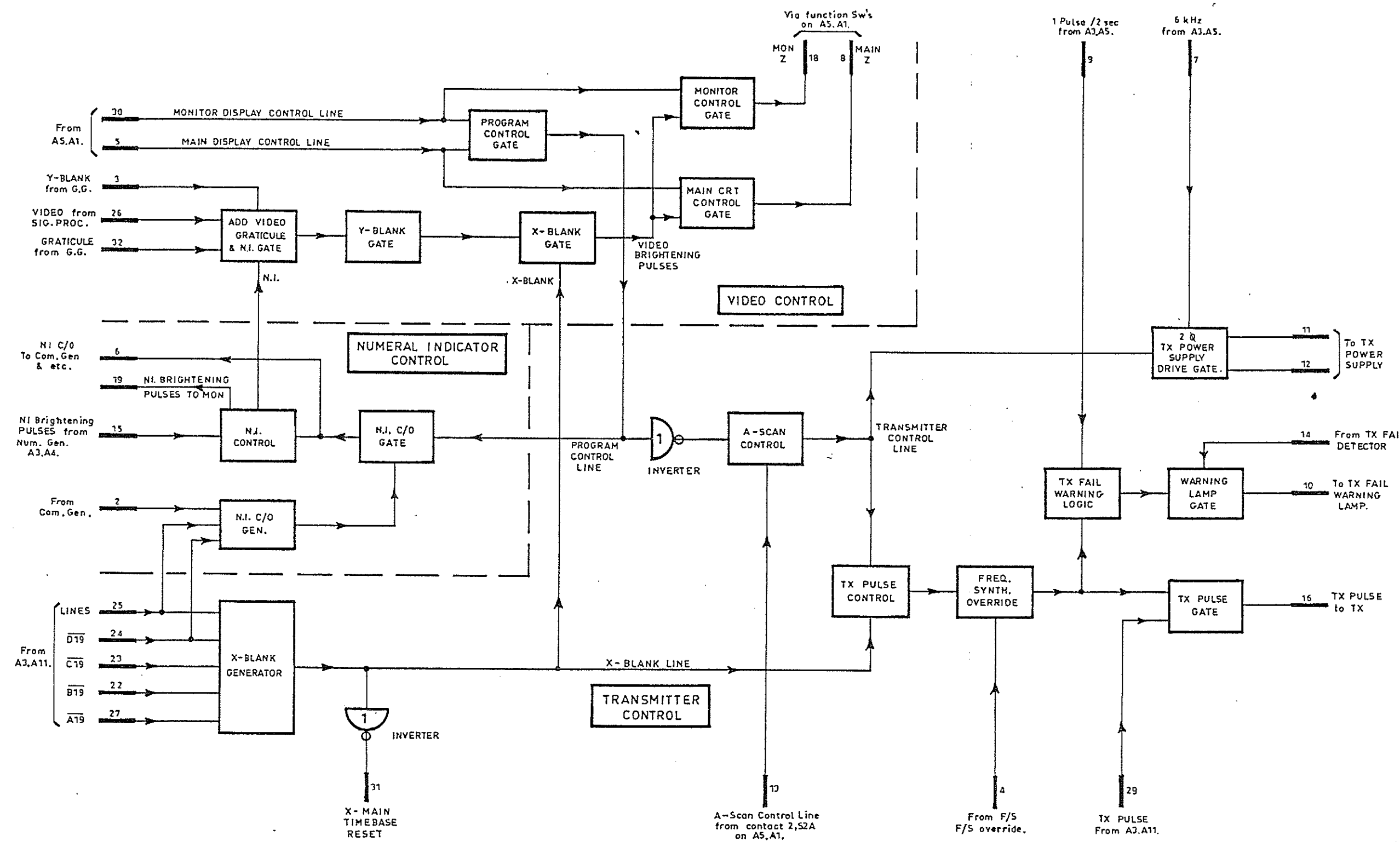
ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date
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	GAD	K.G.		K.G.	G.M.	12.12.75

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

**IONOSONDE TYPE 4B
NUMERAL SELECTION
BLOCK DIAGRAM.**

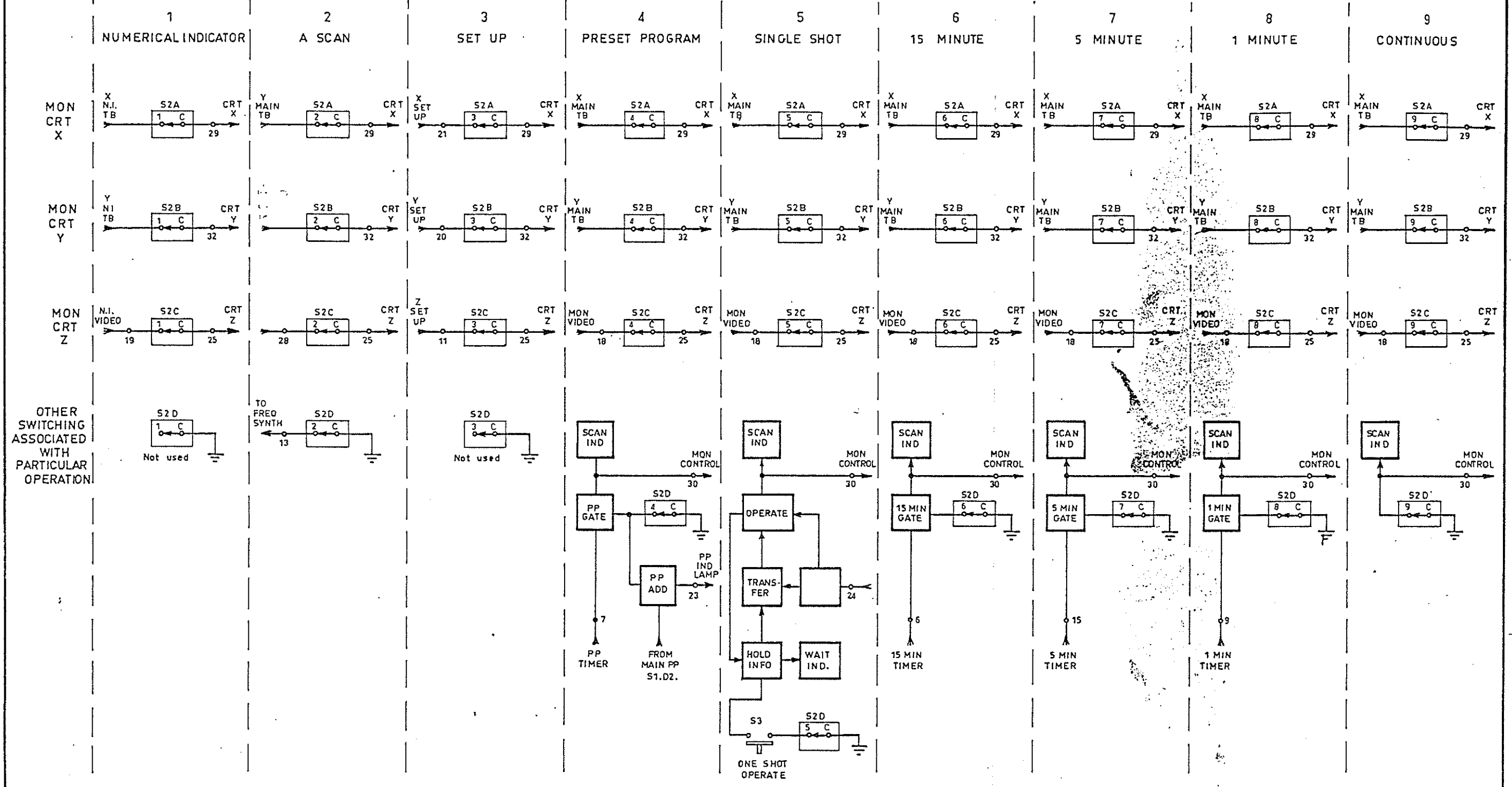
DRAWING N°
CB-30Y1

SHEET
1 OF 1 SHEETS



ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date	No	DEPARTMENT OF SCIENCE
	GAD	R.H.		DH	GW	22.2.74	1	IONOSPHERIC PREDICTION SERVICE
	GAD	KG	Title changed to 4B	KG.	G.W.	11.10.73	2	
IONOSONDE TYPE 4B CONTROL LOGIC BLOCK DIAGRAM								
DRAWING NO						SHEET		
CB-31Y1A						1 OF 1 SHEETS		

SWITCH S2 POSITION



ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date
	G.A.D.			D.H.	G.M.	7/10/70
	G.A.D.	K.G.	Title changed to 4B.	K.G.	G.M.	11/17/70

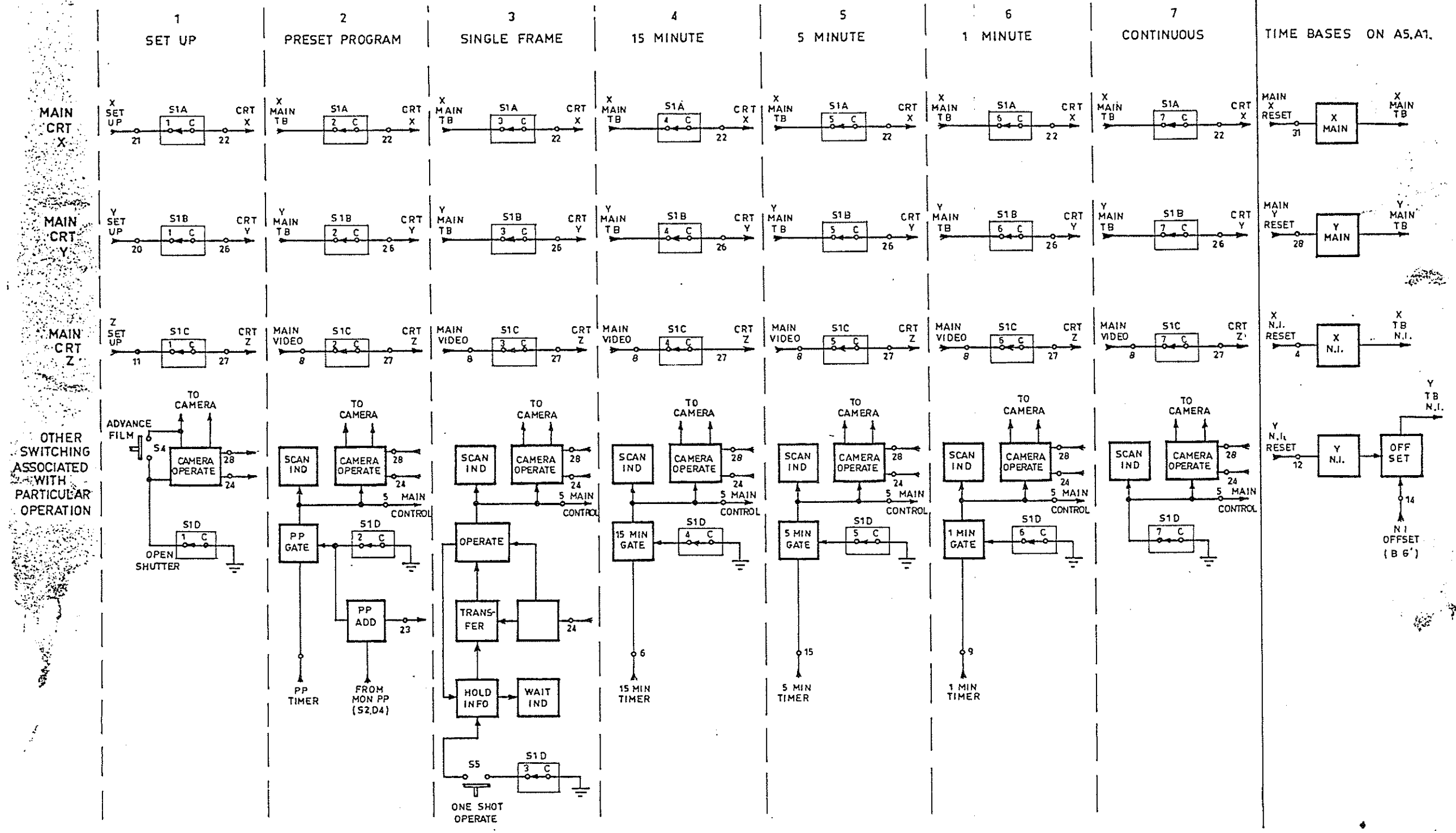
AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

IONOSONDE TYPE 4B
MONITOR PROGRAM SWITCH
OPERATION - BLOCK DIAGRAM.

DRAWING N°
CB-32Y1

SHEET
1 OF 1 SHEETS

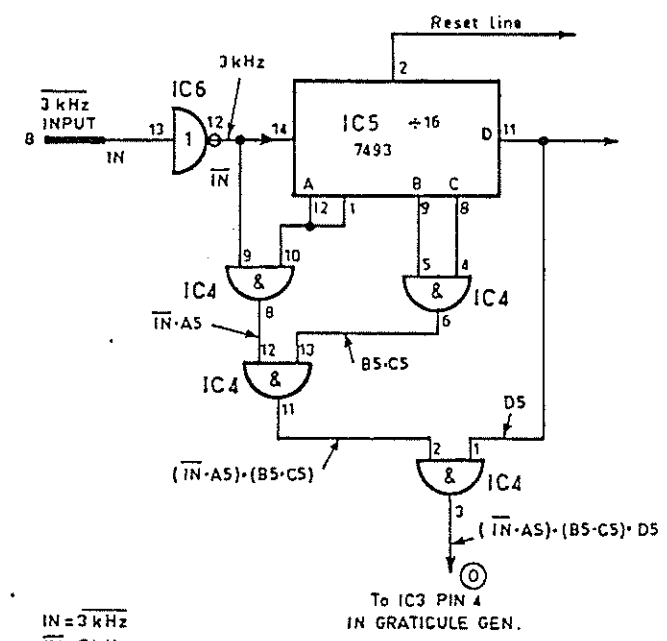
SWITCH S1 POSITION



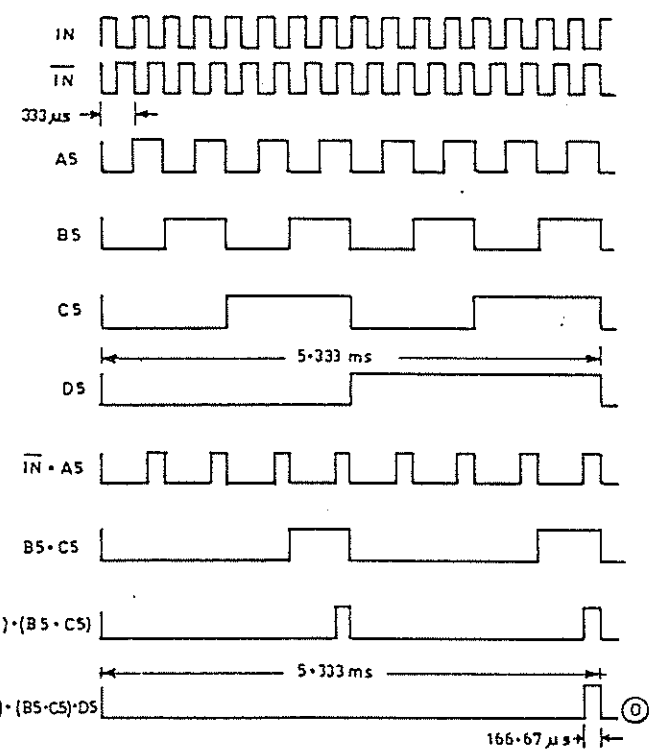
ISSUES						
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date
	G.A.D	K.G.	Title changed to 4B	D.H.	G.W.	11.11.74
	G.A.D					14.11.74

AUSTRALIAN GOVERNMENT DEPARTMENT OF SCIENCE IONOSPHERIC PREDICTION SERVICE	
IONOSONDE TYPE 4B DISPLAY PROGRAM SWITCH OPERATION - BLOCK DIAGRAM.	
DRAWING NO CB-33Y1	SHEET 1 OF 1 SHEETS

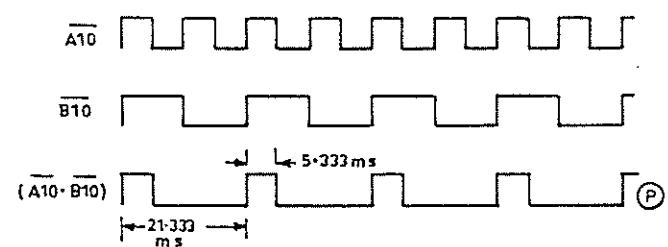
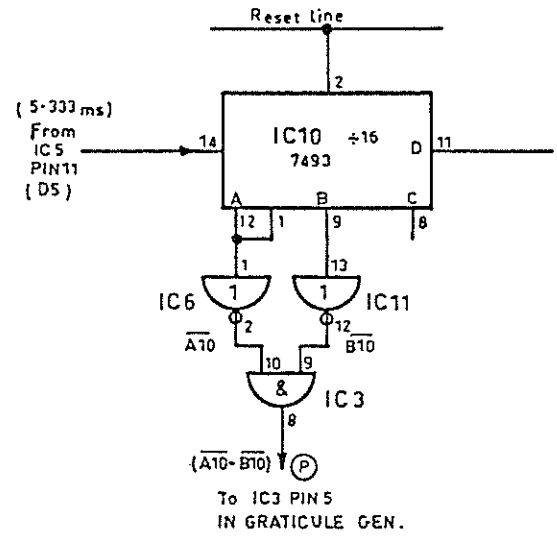
DERIVATION OF INPUT 'O'



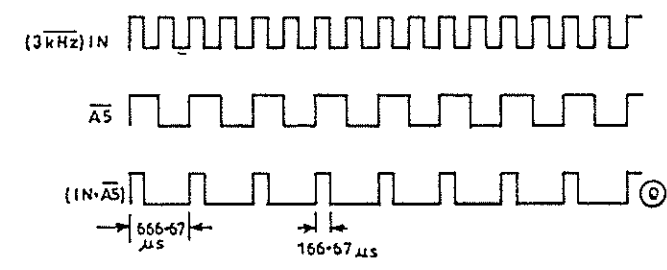
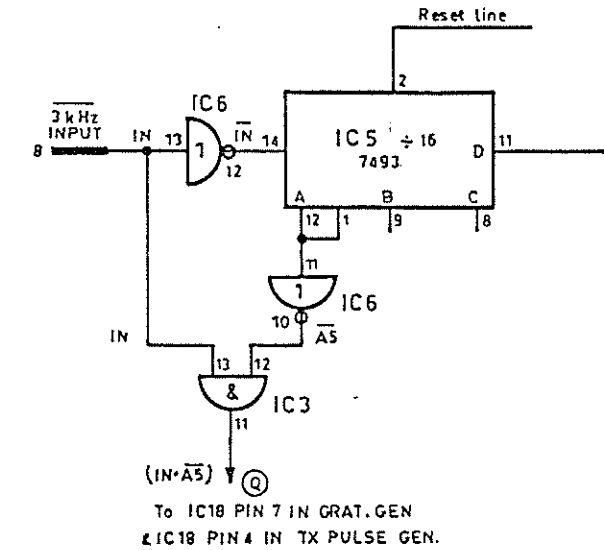
IN = 3 kHz
IN̄ = 3 kHz



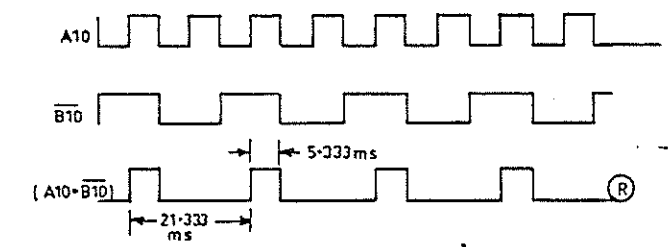
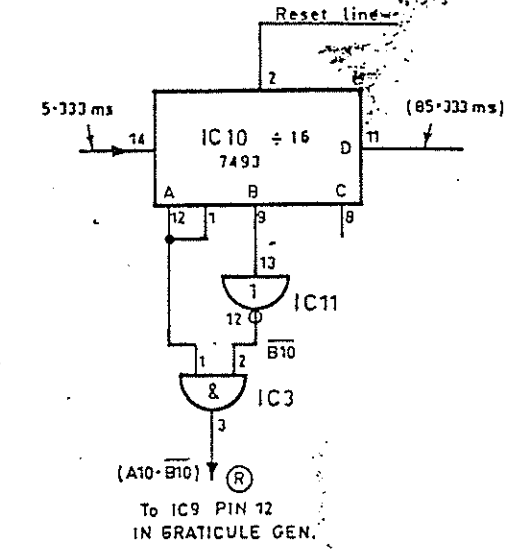
DERIVATION OF INPUT 'P'



DERIVATION OF INPUT 'Q'



DERIVATION OF INPUT 'R'



Refer to A3.A11.

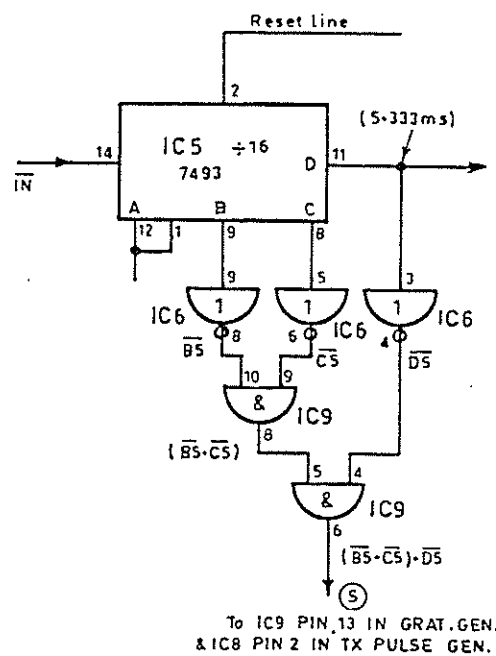
ISSUES						
Order	Drawn	Checked	AMENDMENTS	Exam'd	Apprd	Date
	G.A.D.	R.H.		D.H.	G.M.	23.7.75
	G.A.D.	K.G.	Title changed to 4B	K.G.	G.W.	11.8.75
						1
						2

AUSTRALIAN GOVERNMENT
DEPARTMENT OF SCIENCE
IONOSPHERIC PREDICTION SERVICE

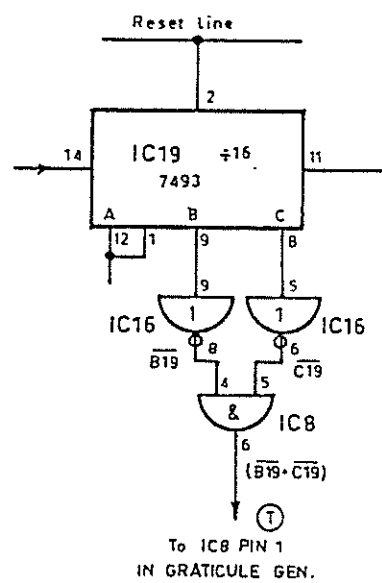
**IONOSONDE TYPE 4B
GRATICULE GENERATOR
INPUT WAVEFORMS.**

DRAWING N° GC-28Y1	SHEET 1 OF 3 SHEETS
------------------------------	------------------------

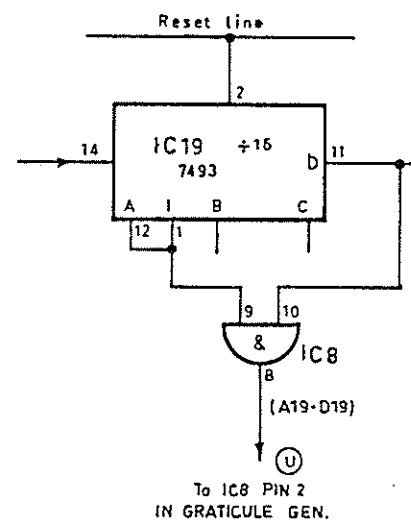
DERIVATION OF INPUT 'S'



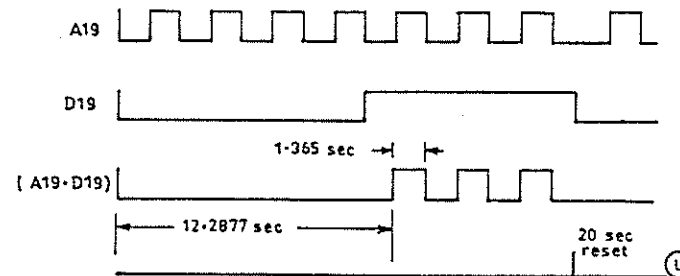
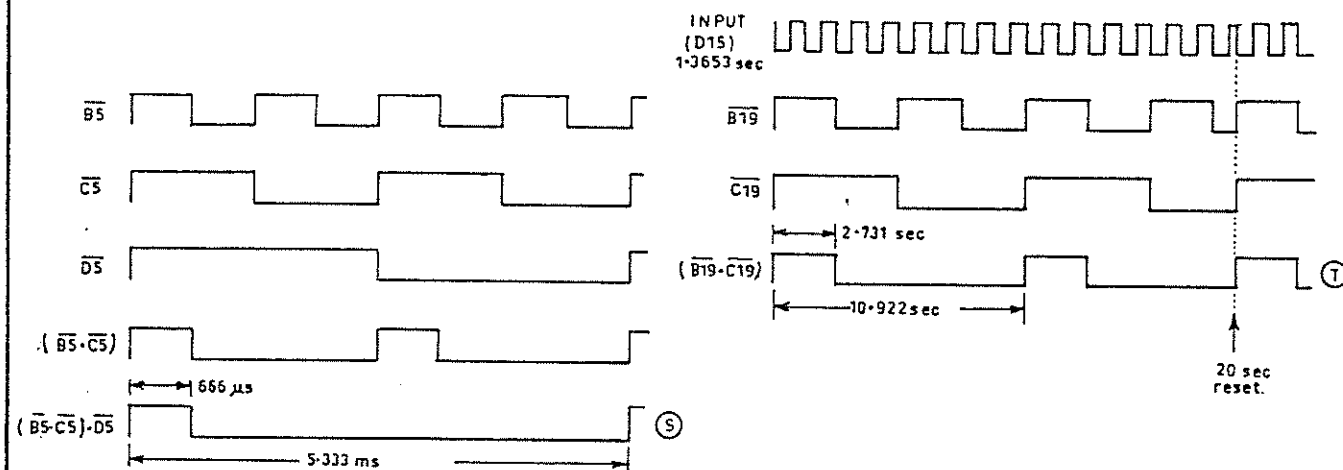
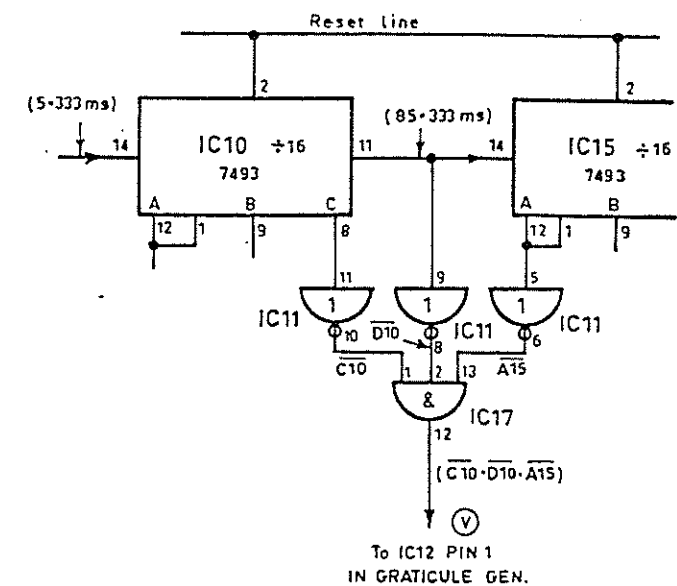
DERIVATION OF INPUT 'T'



DERIVATION OF INPUT 'U'

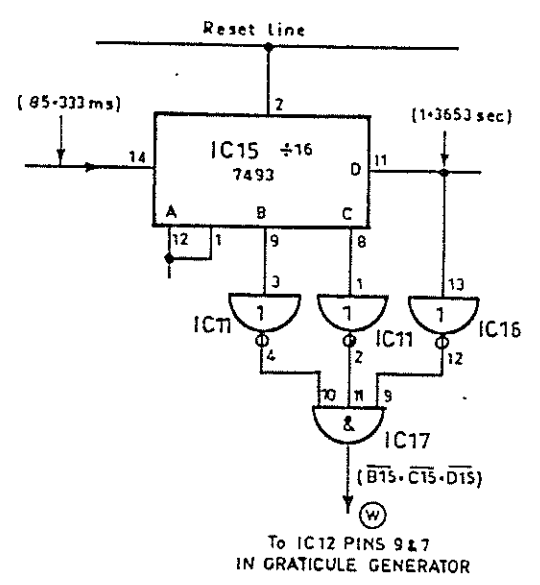


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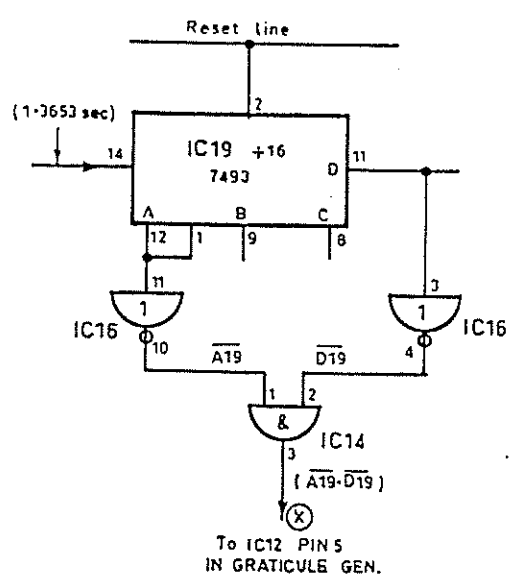


ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date	Nº	DEPARTMENT OF SCIENCE
	GAD	R.H.		A.H.	G.W.	23.7.75	1	IONOSPHERIC PREDICTION SERVICE
	GAD	K.G.	Title changed to 4B	K.G.	G.W.	16.12.75	2	IONOSONDE TYPE 4B GRATICULE GENERATOR INPUT WAVEFORMS.
							DRAWING Nº	SHEET
							GC-28Y2	2 OF 3 SHEETS

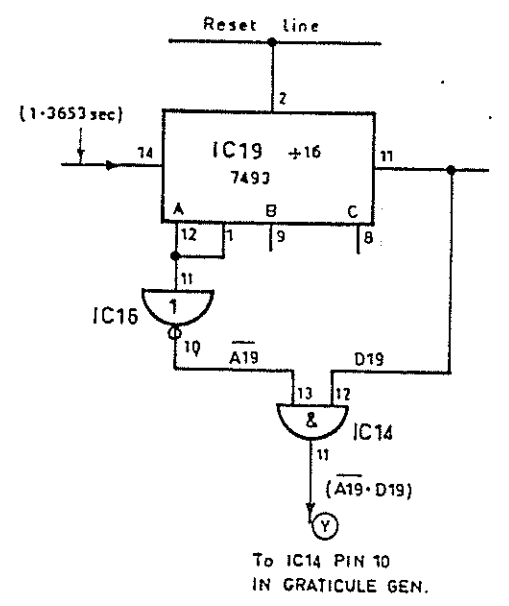
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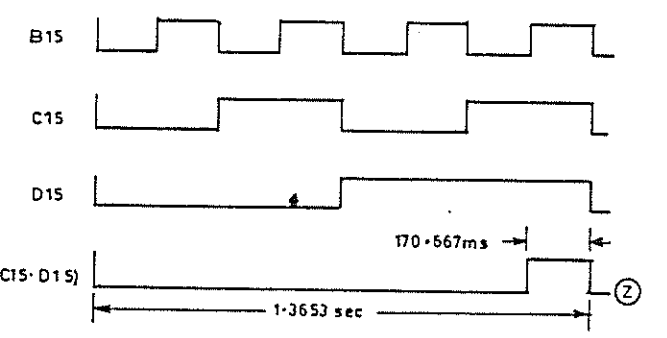
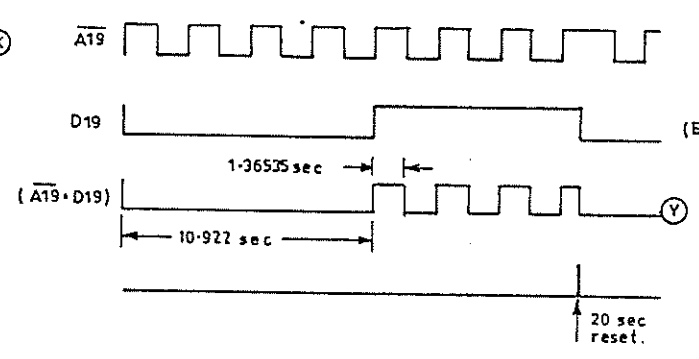
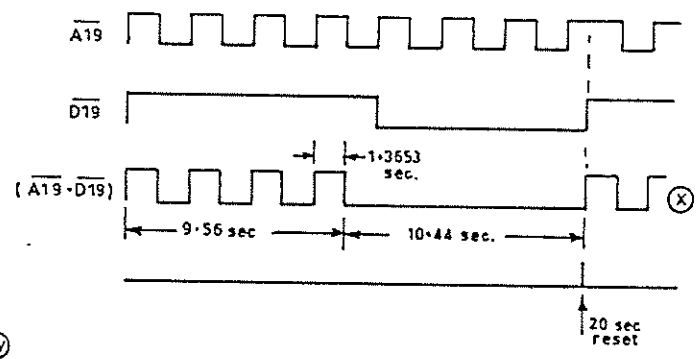
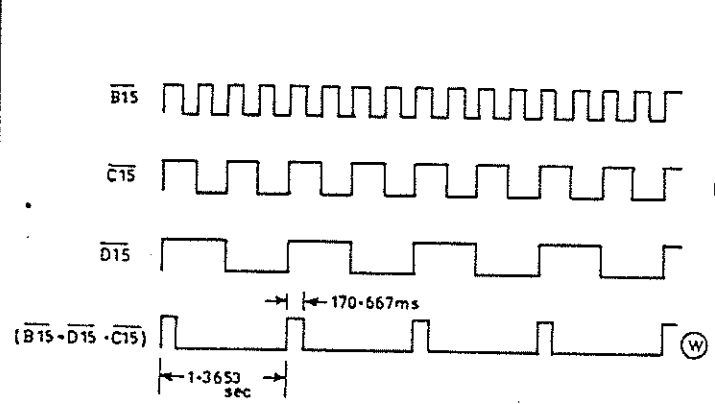
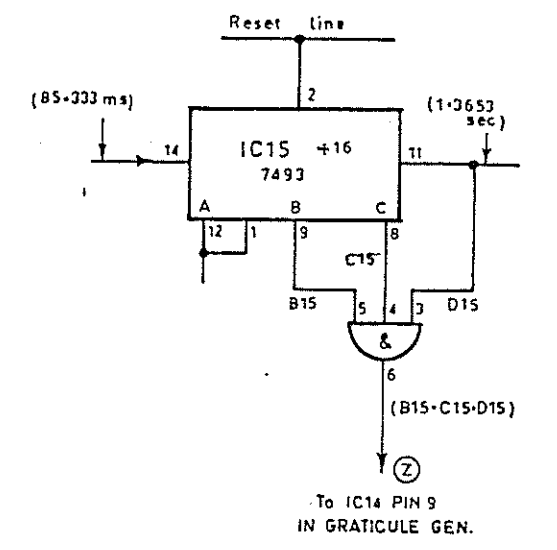
DERIVATION OF INPUT 'X'



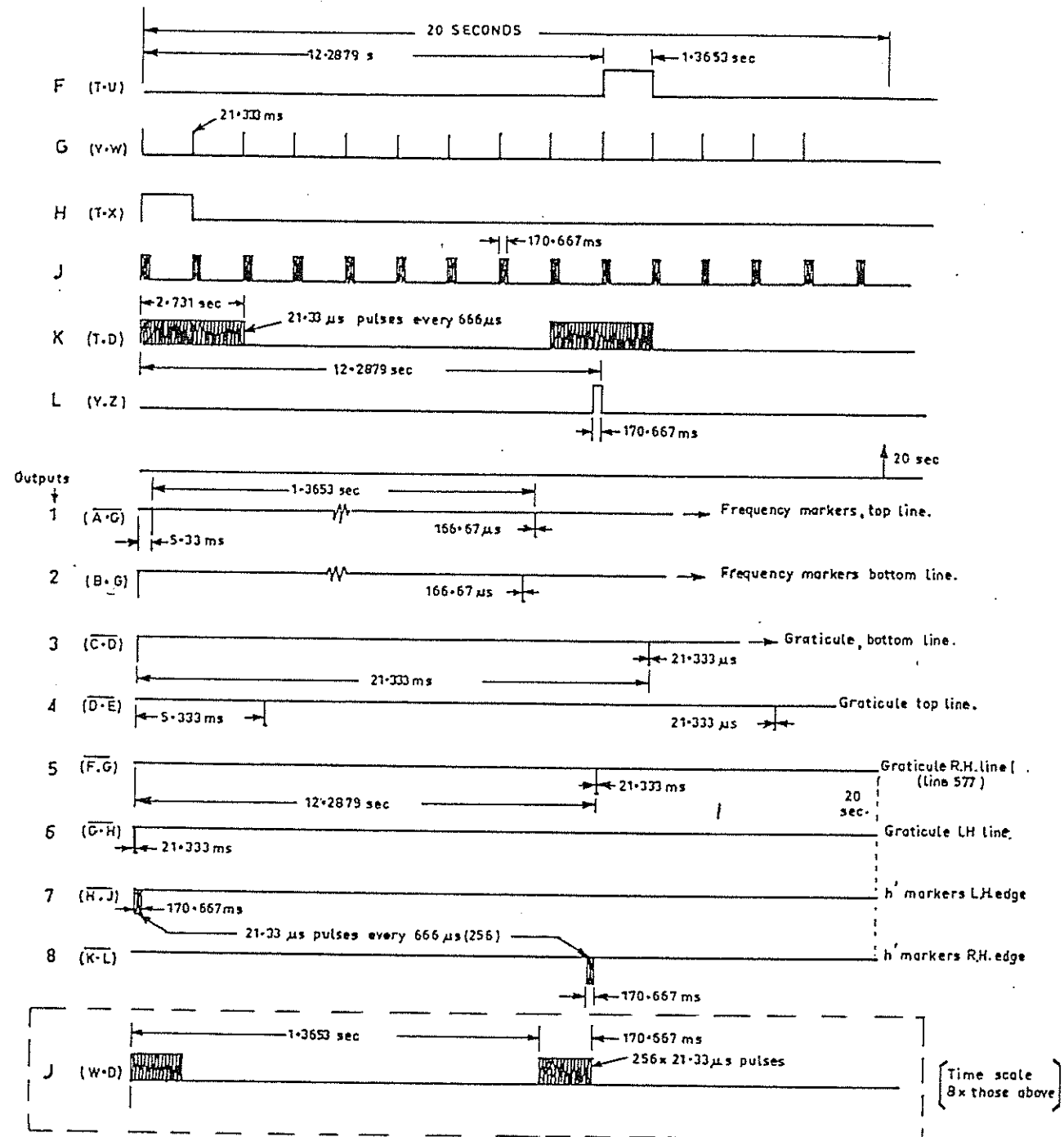
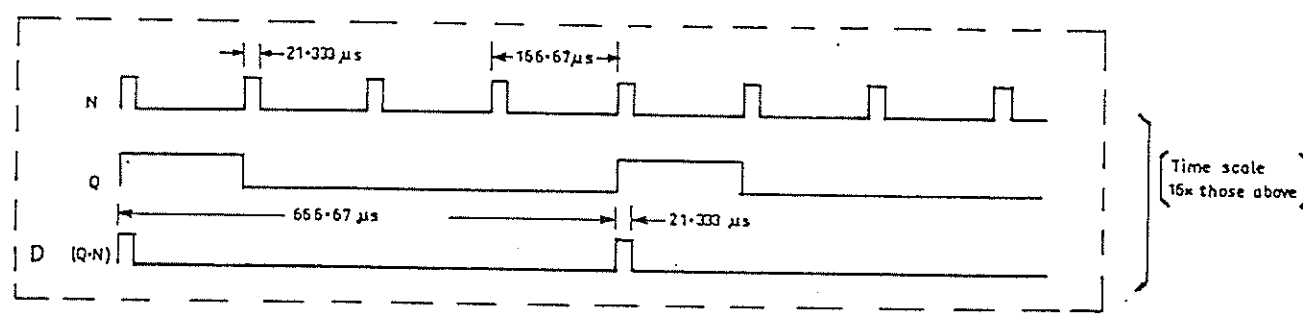
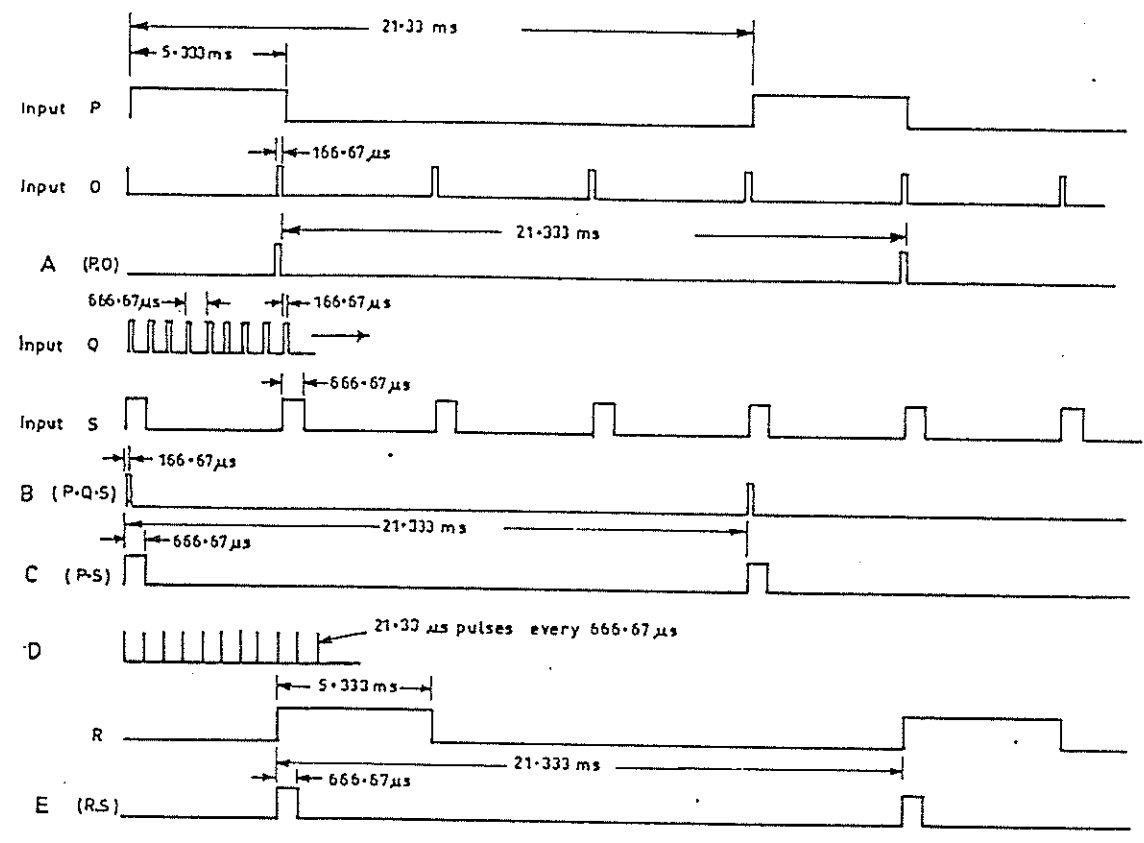
DERIVATION OF INPUT 'Y'



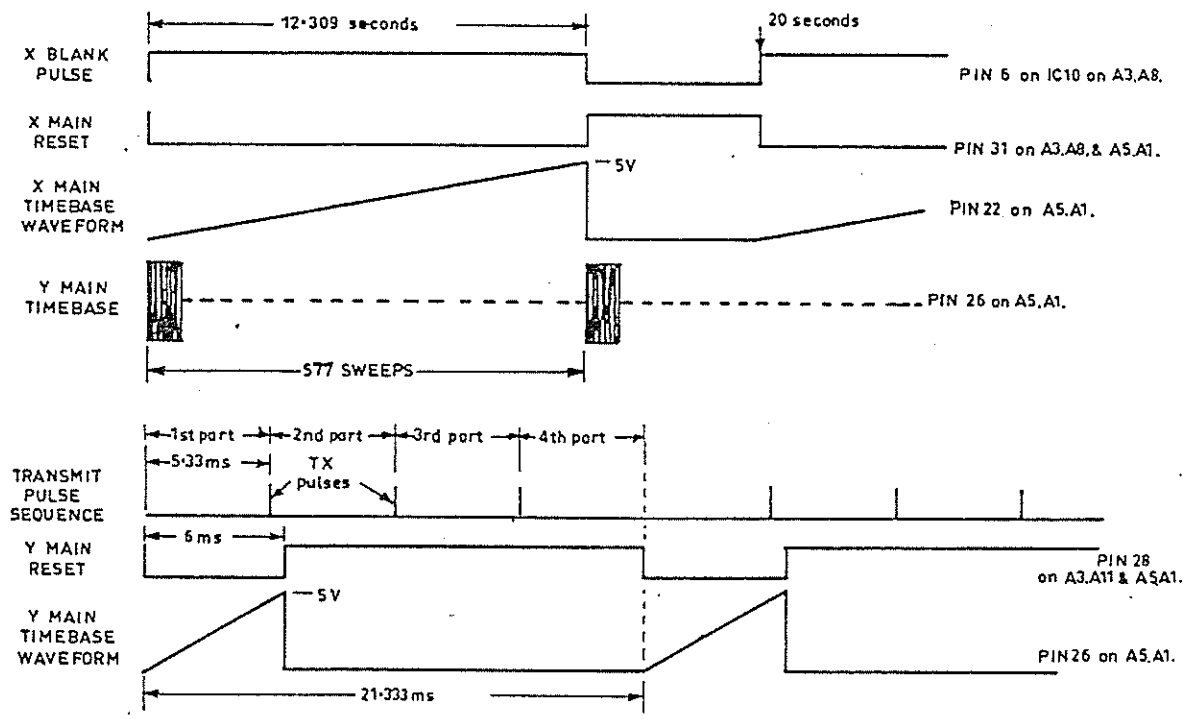
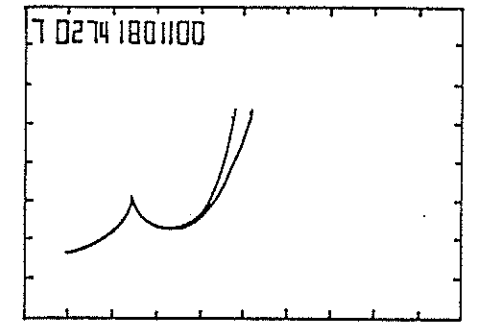
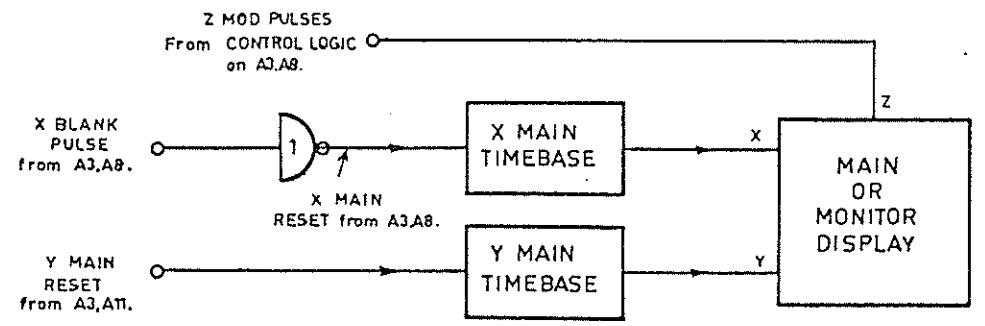
DERIVATION OF INPUT 'Z'



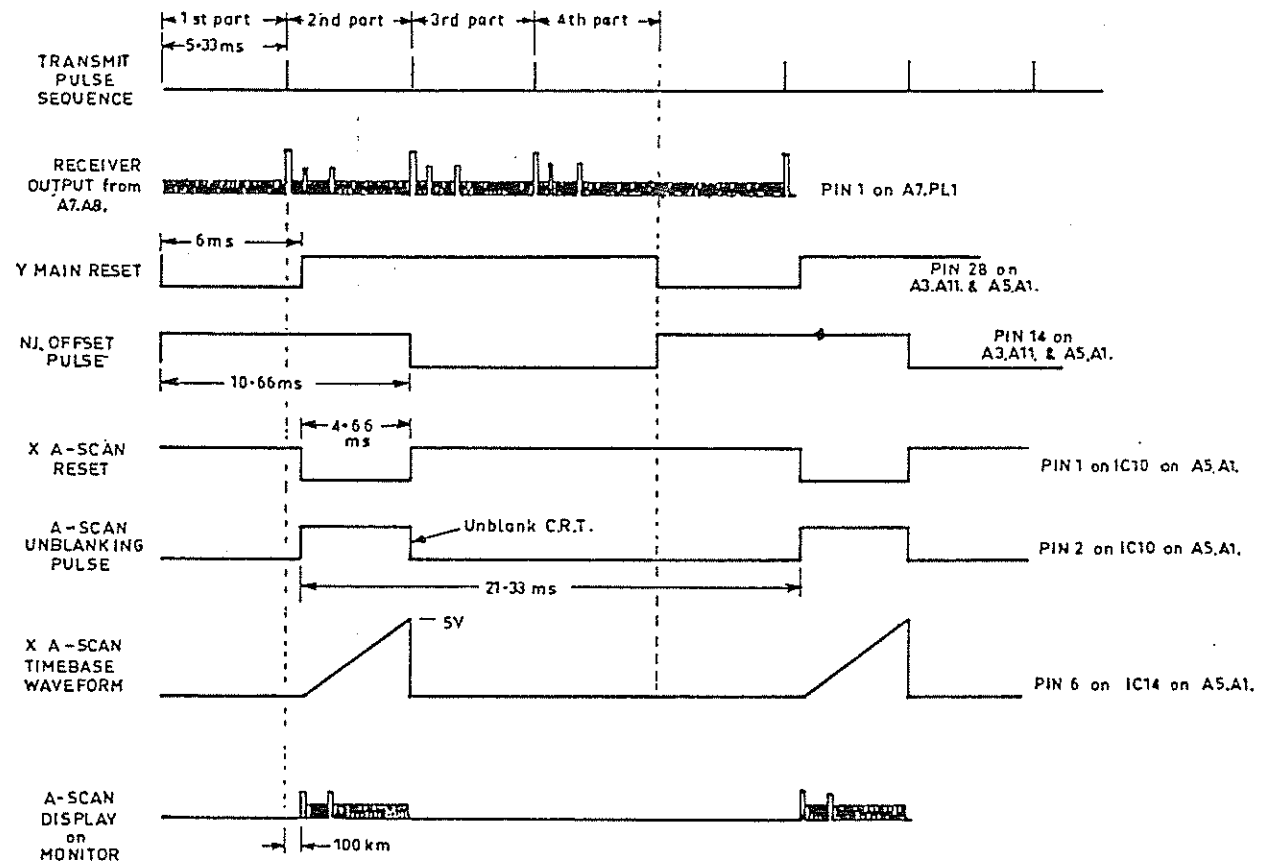
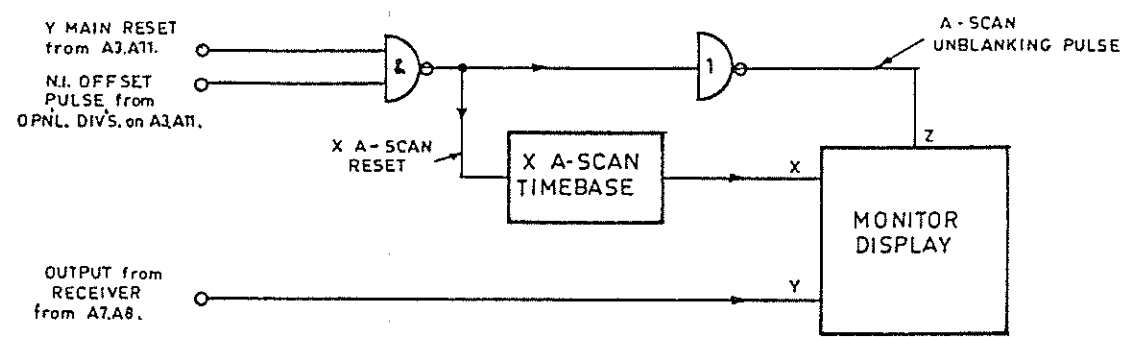
ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Check'd	AMENDMENTS	Exam'd	App'd	Date	Nº	DEPARTMENT OF SCIENCE
	G.A.D.	R.H.		D.H.	G.A.	24.7.75	1	IONOSPHERIC PREDICTION SERVICE
	G.A.D.	K.G.	Title changed to 4B.	K.G.	G.W.	16.8.75	2	IONOSONDE TYPE 4B GRATICULE GENERATOR WAVEFORMS.
DRAWING Nº							SHEET	
GC-28Y3							3 OF 3 SHEETS	



ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Checked	AMENDMENTS	Examd	Apprd	Date	N°	DEPARTMENT OF SCIENCE
	GAD	RH		D.H.	G.M.	29.7.75	1	IONOSPHERIC PREDICTION SERVICE
	GAD	K.G.	Title changed to 4B.	E.G.	G.W.	14.12.75	2	IONOSONDE TYPE 4B GRATICULE GENERATOR WAVEFORMS.
							DRAWING N°	SHEET
							GC-29Y1	1 OF 1 SHEETS

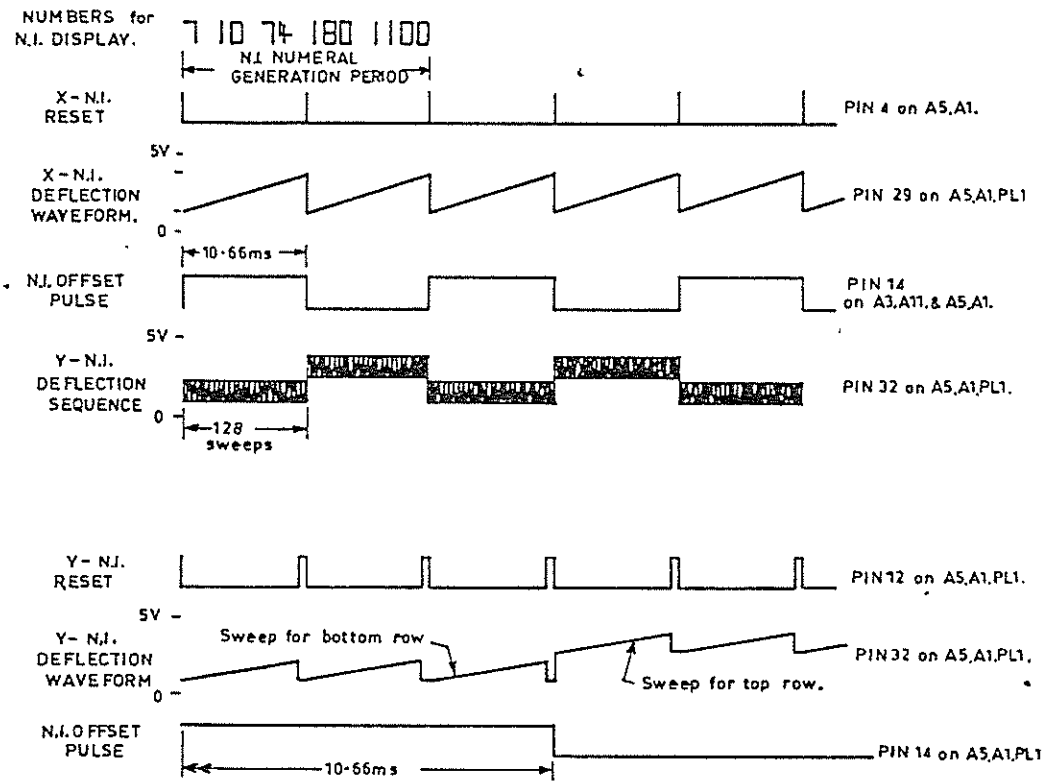
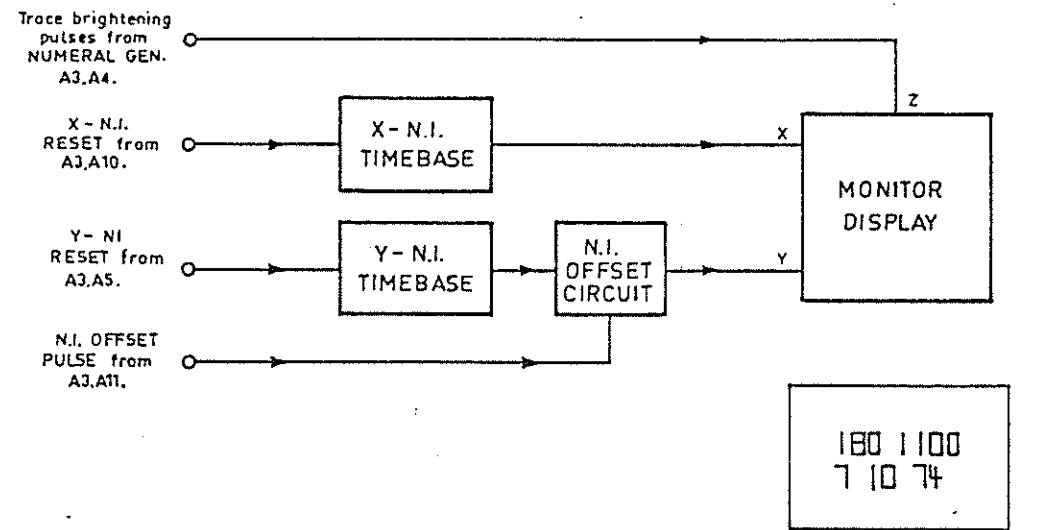


IONOGRAM DISPLAY SUMMARY OF DEFLECTION AND RESET WAVEFORMS.

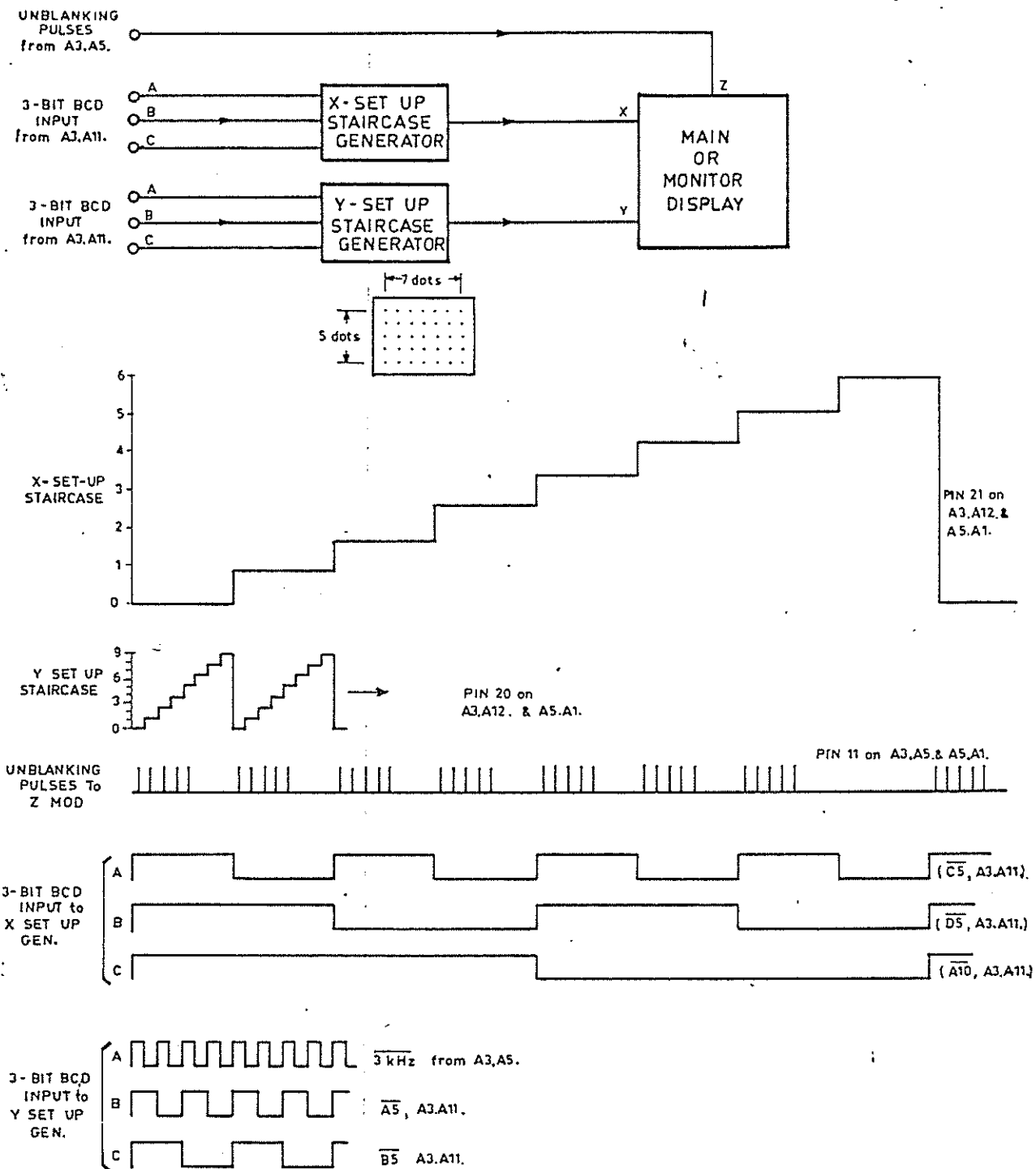


A-SCAN DISPLAY, SUMMARY OF DEFLECTION, BLANKING AND RESET WAVEFORMS.

ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Checked	AMENDMENTS	Exam'd	Appr'd	Date	Nº	DEPARTMENT OF SCIENCE
	GAD	R.H.		D.H.	G.W.	1.8.75	1	IONOSPHERIC PREDICTION SERVICE
	GAD	C.J.	Annotation added to some waveforms.	D.H.	G.W.	12.8.77	2	
	GAD	K.G.	Title changed to 4B	K.G.	G.W.	16.11.78	3	
								IONOSONDE TYPE 4B
								SUMMARY OF IONOGRAM & A-SCAN WAVEFORMS
DRAWING Nº GC-30Y1							SHEET 1 OF 2 SHEETS	



N.I. DISPLAY, SUMMARY OF DEFLECTION AND RESET WAVEFORMS.



SET-UP DISPLAY, SUMMARY OF DEFLECTION WAVEFORMS INPUT AND UNBLANKING PULSES.

ISSUES							AUSTRALIAN GOVERNMENT	
Order	Drawn	Check'd	AMENDMENTS	Exam'd	Appr'd	Date	No	DEPARTMENT OF SCIENCE
	G.A.D.	R.H.		D.H.	G.W.	24/12/75	1	IONOSPHERIC PREDICTION SERVICE
	G.A.D.	C.J.	Annotation added to some waveforms.	D.H.	G.W.	11.8.77	2	IONOSONDE TYPE 4B SUMMARY OF N.I. & SET-UP DISPLAY WAVEFORMS.
	G.A.D.	K.G.	Title changed to 4B.	K.G.	G.W.	11/11/78	3	
							DRAWING No	SHEET
							GC-30Y2	2 OF 2 SHEETS