NEW ZEALAND BROADCASTING SERVICE.

HEAD OFFICE ENGINEERING SECTION.

WELLINGTON.

MONITOR AMPLIFIER,

TYPE 2839.

AND TYPE 2839/A

(S. W. McDonald)
Senior Engineer
Development Laboratory.

(W. L. Harrison)
Chief Engineer

August, 1955.

NEW ZEALAND BROADCASTING SERVICE
HEAD OFFICE ENGINEERING SECTION
W E L L I N G T O N

MONITOR AMPLIFIER TYPE 2839

MODIFICATION NO. 1

PURPOSE:

It has been found that many EF86 valves, satisfactory in other equipment, produce an excessive hum level when used as V1 of this amplifier. The cause has been traced to induction from the power transformer to the screen grid. Connecting V1 as a triode overcomes the difficulty.

The modification is necessary when the amplifier is used for distribution of programme to be recorded or broadcast. In other situations the modification is optional but recommended. It is to be standard in future 2839 amplifiers.

PERFORMANCE CHANGES:

(a) The overall frequency characteristic is unaltered.
(b) The distortion is unaltered.
(c) Gain is reduced by approximately 5db.
(d) A lower noise figure is obtained.

SCOPE OF MODIFICATION:

(a) Convert V1 to a triode.
(b) Change the feedback loop to suit the new amplifier gain condition.

MODIFICATION STEPS:

1. Remove R3, (1M) and C1, (.01mfd).
2. At the socket of V1 remove the strap between pins 3 and 8. Strap pins 8, 6 and 1.
3. At V2 remove C2 (25pf) and replace with 50pf 750V (code 005-17).
4. R5 and C7 should be altered to suit the output impedance used as follows:-

Output 15 ohms	R5, 3.4K	(Code 051-22)
	C7, .001	(Code 006-25)
Output 3.75 ohms	R5, 1.8K	(Code 051-22)
	C7, .002	(Code 006-43)

5. Correct manual parts list.

T E S T S:

1. Sensitivity.

   (a) No input transformer. With input gain at maximum, a 600 ohm source of 1000 c.p.s. and an N & D meter across the input, a reading of -15db ±1 should be obtained for an output of 6 watts into 15 ohms. ≑ +13 dbm.

   (b) Input Transformer I.P.32 B.P. With the same test conditions the reading should be -34 ±2.

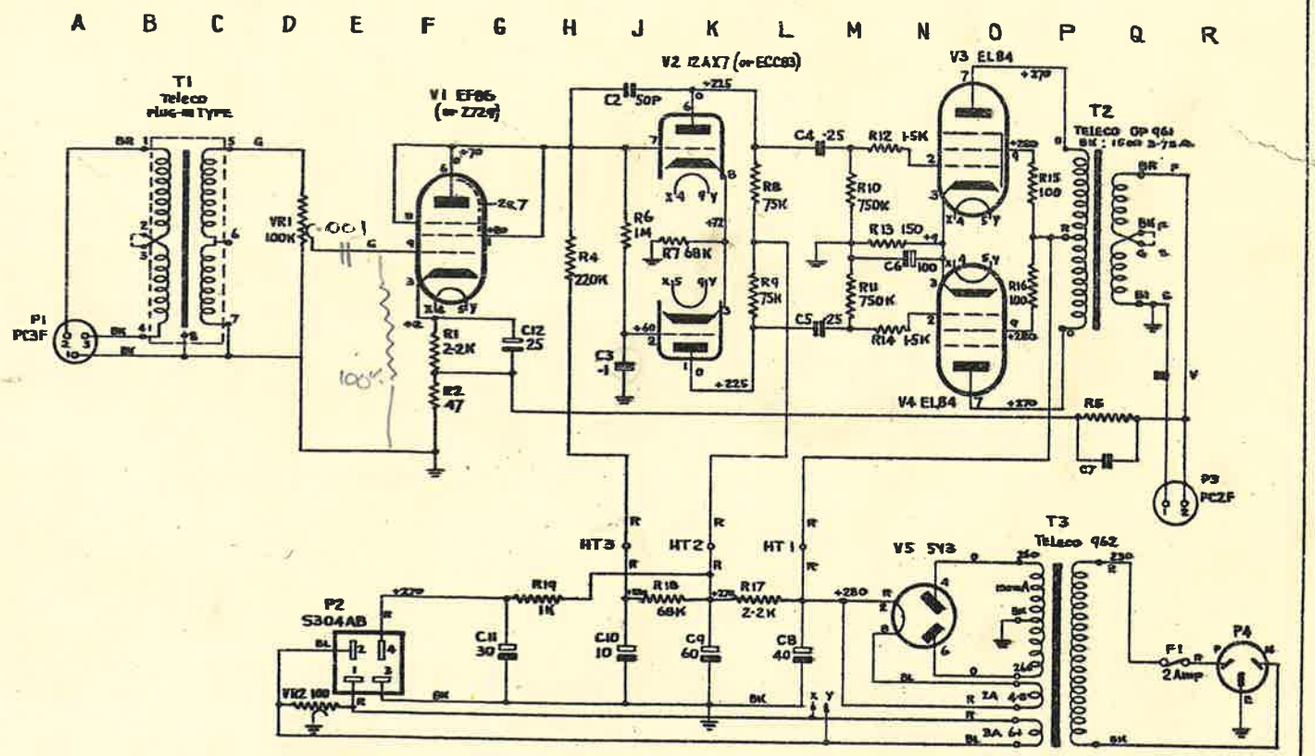
2. Residual Noise.

   With a 15 ohm resistive output load, the input gain control at minimum, an N & D meter (switched to noise) and 600 ohm bridging) across the output, the figure should be -62 ±2.

Prepared by:
R.F. Neate

Approved:

S.W. McDonald
Senior Engineer



A B C D E F G H J K L M N O P Q R

1 2 3 4 5 6 7 8 9

INPUTS

BRIDGING: USE TYPE IP12BP, JOIN 2&3
600 OHM: USE TYPE IP32BP, JOIN 2&3
200 OHM: USE TYPE IP31BP, JOIN 2&3
50 OHM: USE TYPE IP31BP, JOIN 1&2 3&4
GRID = (No TRANSFORMER) JOIN 4&8, 1&5

BEFORE MEASURING THESE ON A 20KΩ/VOLT METER USE THE 1000V, 250V & 10V RANGES

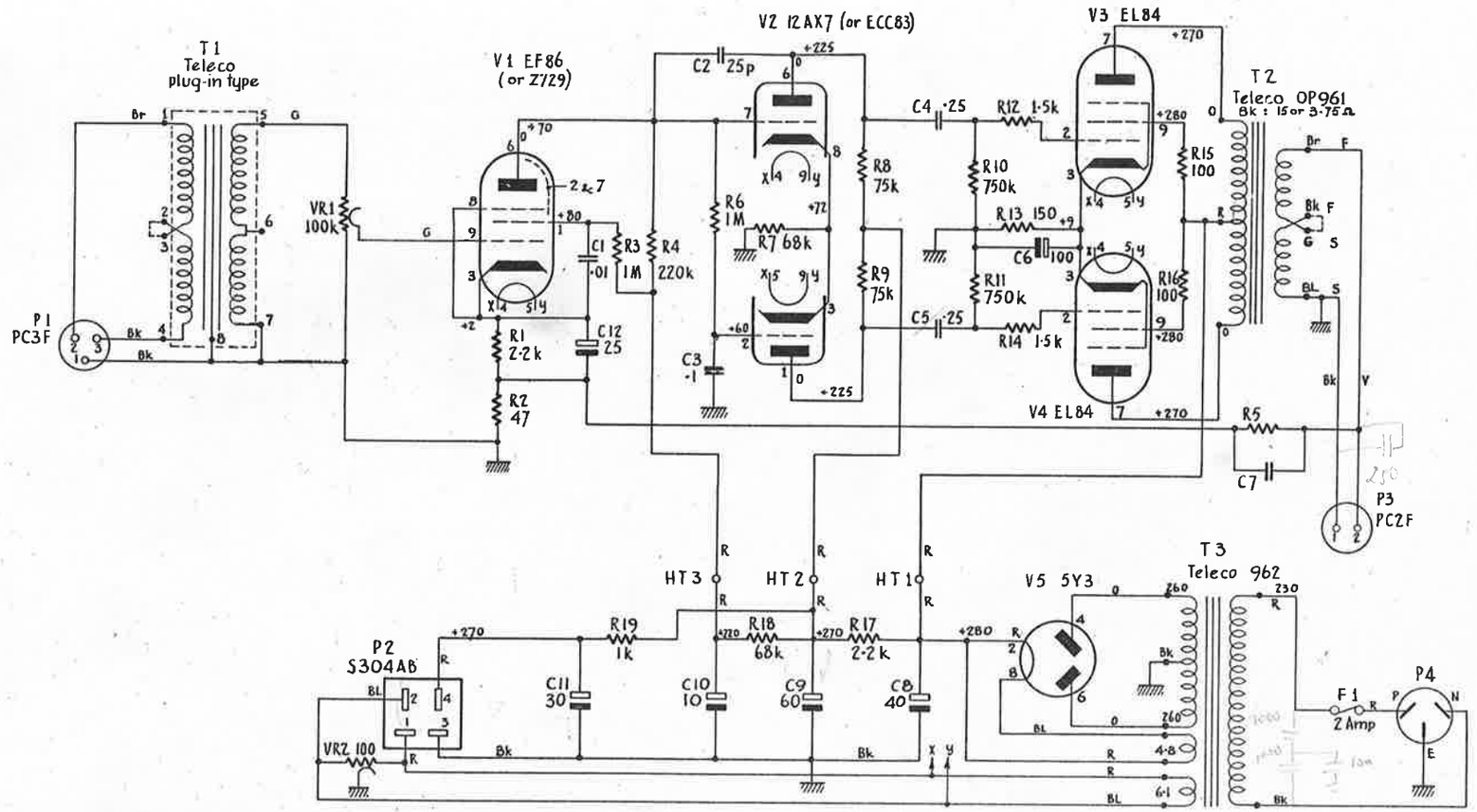
OUTPUTS

15 OHMS: R5, 3·4K ; C7, ·001
CONNECT BK&G, USE BLK BP
3·75 OHMS: CONNECT BL&G, BK&BP, USE BOTH
R5, 1·8K ; C7, ·002.

MONITOR AMPLIFIER TYPE 2839/A

(2839/A IS 2839 WITH TRIODE FIRST STAGE)

NEW ZEALAND BROADCASTING SERVICE HEAD OFFICE ENGR. SECTION, WELLINGTON.			
ORIGIN	H.O.E.S.	AMENDMENTS	DATE
DRAWN	J. GRANT		
TRACED	T.H.H.		
CHKD	R.F.M.		
APPD	W.C.		
DATE	20·2·51		
SECTION	STATION	PLAN NO	
R3	H.O.	D.F. 2839/A	



Voltage readings taken on a 20kΩ/volt meter on the 1000V, 250V & 10V ranges

INPUTS

Bridging : Use Type IP12BP , join 2&3
600 ohm : Use Type IP32BP , join 2&3
200 ohm : Use Type IP31BP , join 2&3
50 ohm : Use Type IP31BP , join 1&2 3&4
Grid : (No transformer) join 4&8, 1&5

OUTPUTS

15 ohms : R5, 6·8k ; C7, 500P.
Connect Bk&G, use BL&Br
3·75 ohms : Connect BL&G, Bk&Br, use both
R5, 3·3k ; C7, ·001

MONITOR AMPLIFIER TYPE 2839

Amended 28/6/57.

NEW ZEALAND BROADCASTING SERVICE HEAD OFFICE ENGR SECTION WELLINGTON			
ORIGIN	H.O.E.S.	CHKD	J.H.Grant.
DRAWN	J.H.Grant.	APPD.	S.McConnell
TRACED	N.J.Hastie	DATE	31-8-55
SUB-SECTION	STATION	PLAN SIZE	FILE NUMBER
R3	HO	DF	2839

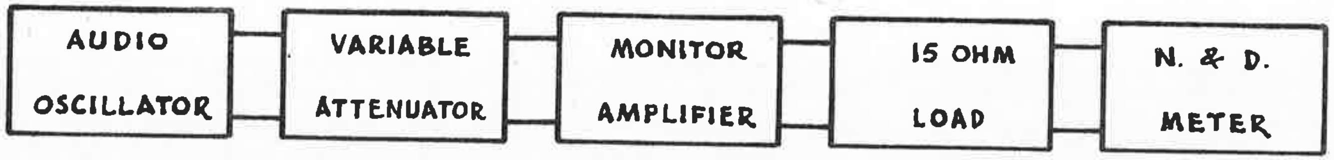
MONITOR AMPLIFIER - TYPE 2839.

COMPONENT LIST.

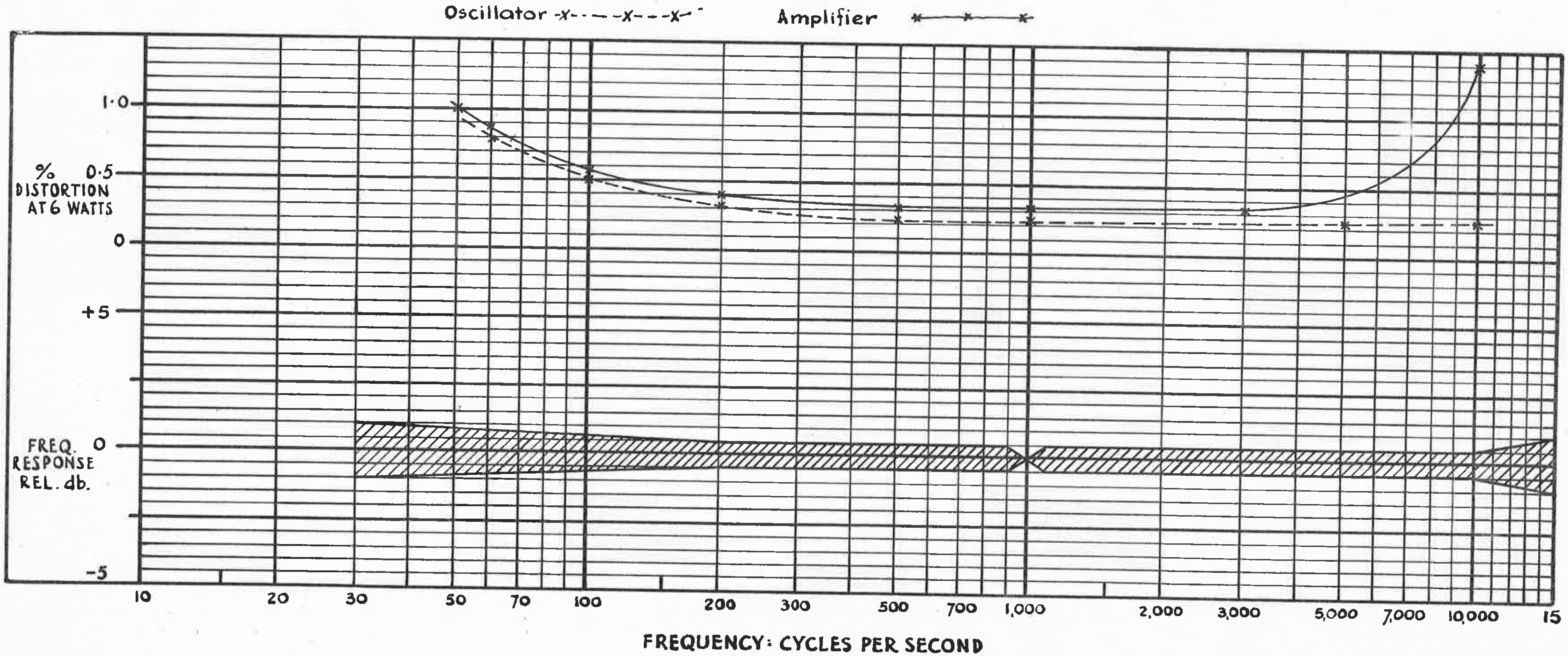
SYMBOL.	LOC.	SPECIFICATION.	N.Z.B.S. CODE.
C1	3G	0.01 mfd 350 volt T.C.C. CP.32N.	009-93
C2	1J	25 pfd 350 volt Erie MIK.	005-01
C4	4J	0.1 mfd 350 volt T.C.C. CP37N.	010-24
C4	1L	0.25 " 350 " " " CP48N.	010-40
C5	3L	" " " " " "	"
C6	2N	100 " 12 " Elect. T.C.C. CE18B.	004-23
C7	5Q	500 pfd 350 " 5% or 1000 pfd 500V 5%. Hunts L1/2S, depending on output impedance.	009-28 or 009-47
C8	8L	40 mfd 450 volt 40/20/10 Elect. Hunts K513.	003-99
C9	8K	60 mfd " " " " "K513.	"
C10	8J	10 " " " common with C9.	
C11	8G	30 " " " " " C8.	
C12	4G	25 " 25 " Elect. T.C.C. CE32C.	003-70
R1	4F	2.2K ohms 10% 1 watt.	051-25
R2	5F	47 " 5% "	051-22
R3	3H	1M " 10% "	"
R4	3H	220K " " "	"
R5	5Q	6.8K or 3.3K 5% " depending on output impedance.	"
R6	2J	1M ohm 10% ½ watt.	"
R7	2K	68K " 10% "	"
R8	2L	75K " 5% "	"
R9	3L	" " " "	"
R10	2M	750K " " "	"
R11	3M	" " " "	"
R12	1N	1.5K " 10% "	"
R13	2N	150 " " 5 watt I.R.C. Type AB	052-90
R14	3N	1.5K " " ½ "	051-22
R15	2P	100 " 5% "	"
R16	3P	100 " " "	"
R17	7L	2.2K " 10% 1 "	051-25
R18	7J	68K " " 1 "	"
R19	7H	1K " " 1 "	"
VR1	2D	100k " carbon IRC.	043-17
VR2	9E	100 " Colvern W.W.	043-53
T1	2C	200 or 50 ohm/Grid. Teleco Type IP31BP	062-97
	or	600 ohm/Grid. " " IP32BP	062-98
	or	600 ohm Bridg/Grid. " " IP12BP	063-18
T2	2P	8K Prim p/p to 3.75 or 15 ohms Teleco Type OP961.	064-21
T3	8P	230/270-0-270 100 mA, 6.3.& 5 volts, Teleco Type No.962.	064-68
F1	8Q	2 amp. 1¼" Belling-Lee.	024-88
P1	4A	Amphenol PC3F.	016-74
P2	8E	Howard Jones S304AB.	018-56
P3	6Q	Amphenol PC2F.	016-64
P4	8R	Heavy duty face entry plug.	021-54
V1	2F	EF86 (or Z729).	070-44
V2	1K&4K	12AX7 (or ECC83).	072-08
V3	10	EL84	070-48
V4	40	"	"
V5	8N	5Y3	072-70
		Special Terminal Board.	041-56
		Valve Sockets B9A McMurdo.	074-61
		" " Octal. Amphenol.	074-46
		" " " Teletron ST38.	074-51

31.8.55.

PARTICULARS OF TEST:



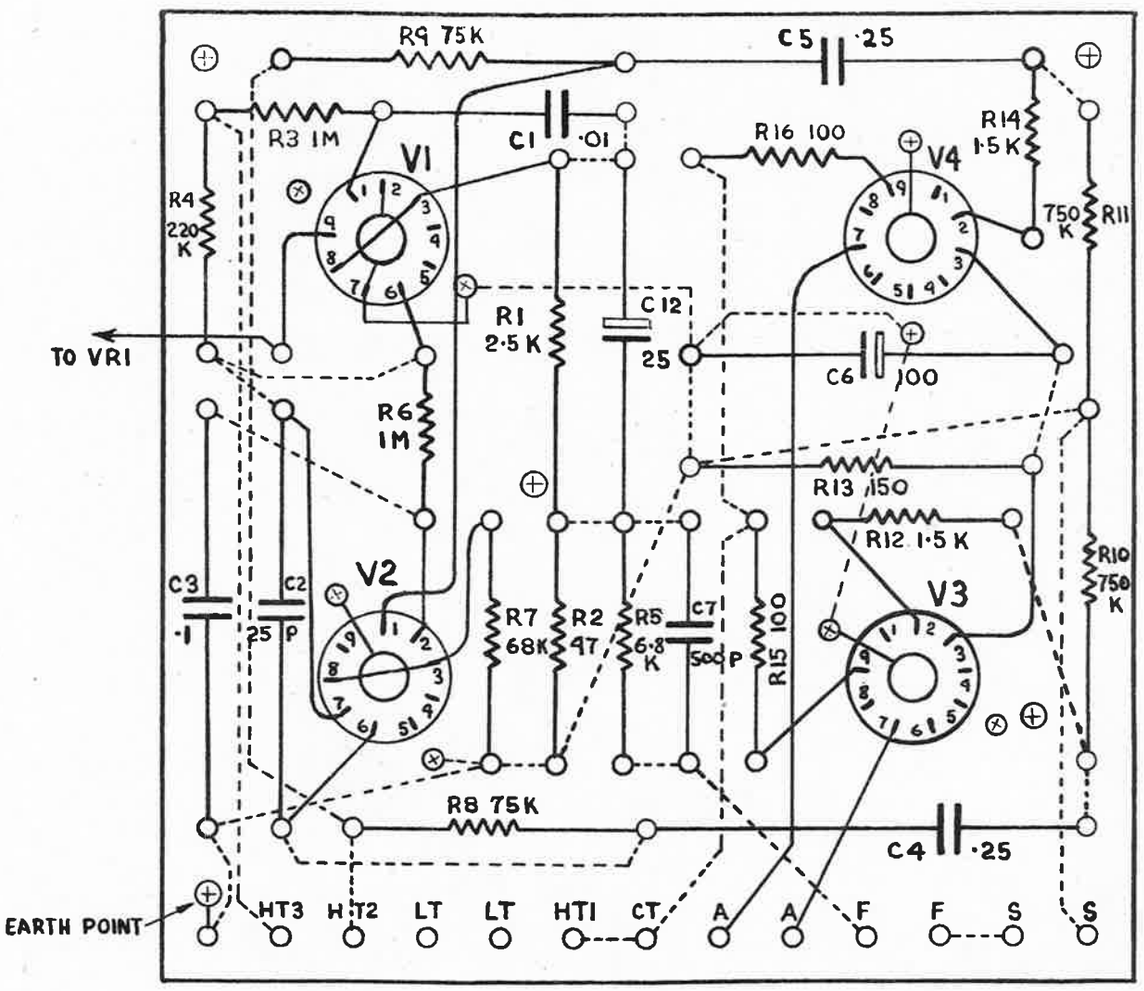
STATION H.O.
Date: 28 / 3 / 55



MONITOR AMPLIFIER TYPE 2839

DISTORTION & RESPONSE TOLERANCE CURVES

NEW ZEALAND BROADCASTING SERVICE HEAD OFFICE, ENGR. SECTION WELLINGTON C.I.				
ORIGIN	H. O. E. S.		CHKD.	SGM.C.D
DRAWN	J I Grant		APPD.	SGM.C.D
TRACED	R.J. Hatton		DATE	2. 5. 55
SUB-SECTION	STATION	PLAN SIZE	FILE NUMBER	
R3	H.O.	F	2839-5	



Dotted lines show connections on other side of the terminal board.

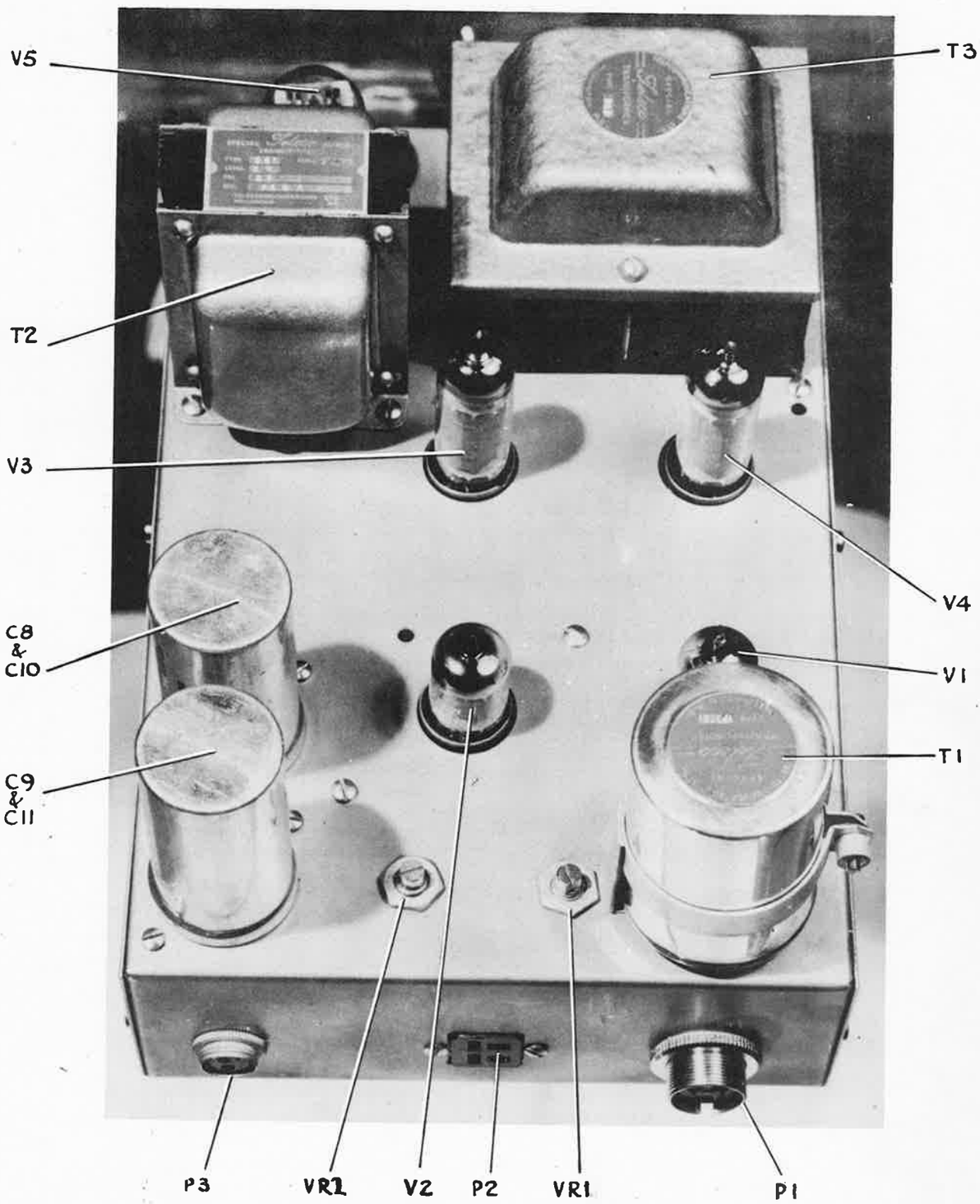
R5 and C7 shown for 15 ohm output.
For 4 ohm output connect "F" to "F" and "S" to "S"
R5 becomes 3·3K and C7 ·001 mfd.

TERMINAL BOARD FOR MONITOR AMP. TYPE 2839

NEW ZEALAND BROADCASTING SERVICE
HEAD OFFICE, ENGR. SECTION, WELLINGTON, C.1.

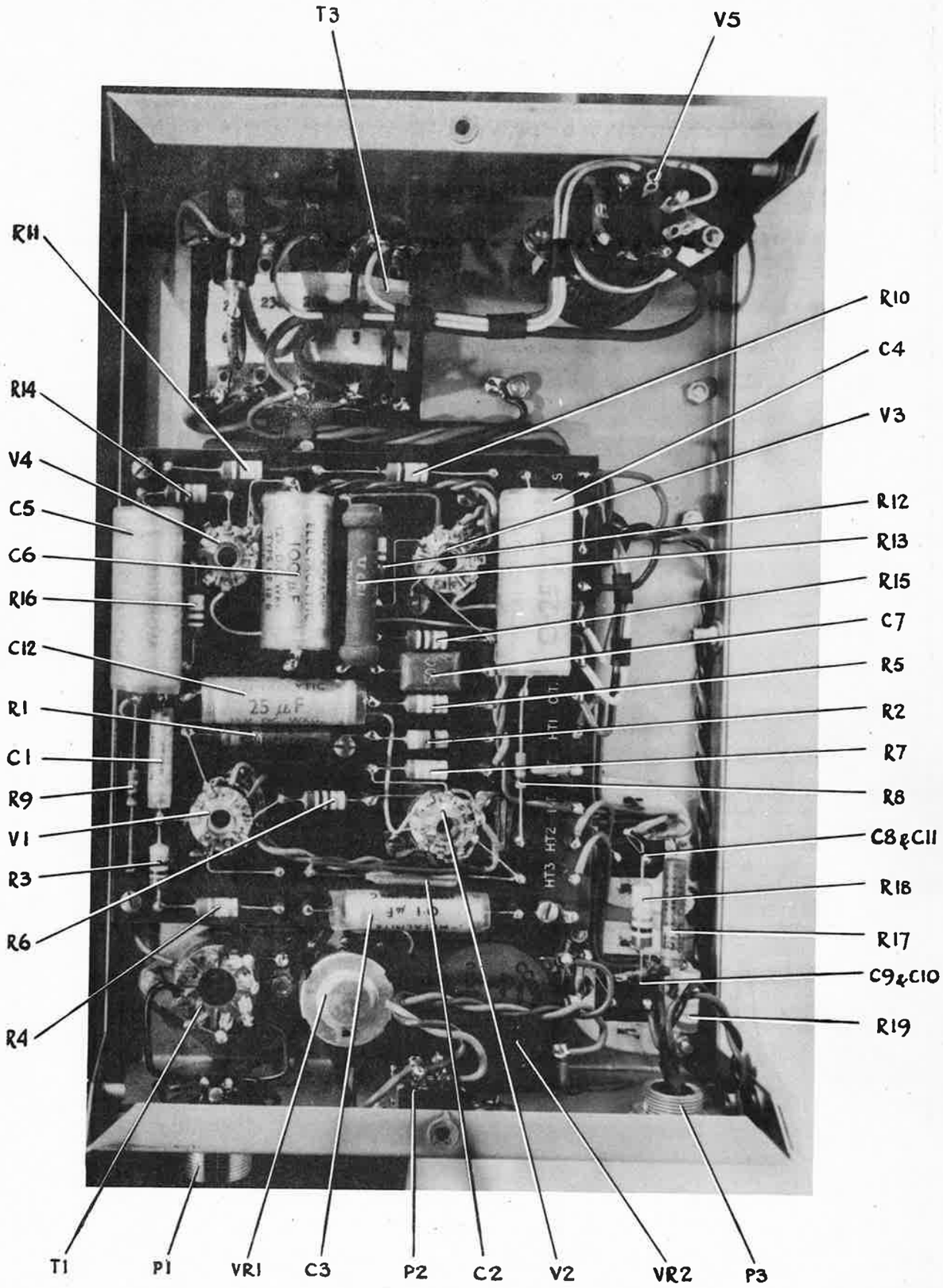
ORIGIN	H.O.E.S.	CHKD.	J.J.Grant.
DRAWN	J.J.Grant.	APPD.	S.L.McDonald
TRACED	R.S.Stewart	DATE	3-3-55

SUB-SECTION	STATION	PLAN SIZE	FILE NUMBER
R3	H.O.	F	2839-2



MONITOR AMPLIFIER TYPE 2839
TOP VIEW OF CHASSIS

NEW ZEALAND BROADCASTING SERVICE HEAD OFFICE ENGR. SECTION WELLINGTON			
ORIGIN	H. O. E. S.	CHKD	
DRAWN	R. J. Hatton	APPD.	
TRACED		DATE	5·8·55
SUB SECTION	STATION	PLAN SIZE	FILE NUMBER
R3	H O	F	2839-7



MONITOR AMPLIFIER TYPE 2839

INSIDE VIEW OF CHASSIS

NEW ZEALAND BROADCASTING SERVICE HEAD OFFICE ENGR. SECTION WELLINGTON				
ORIGIN	H.O.E.S.		CHKD.	
DRAWN	R.J. Hatton		APPD.	S.W.M. Dowd
TRACED			DATE	8-8-55
SUB SECTION	STATION	PLAN SIZE	FILE NUMBER	
R3	HO	F	2839-8	