1440 BROADWAY
NEW YORK 18, N.Y.

CHARLET H.J.

50 KI TOMISTITUER CARCETTE V.J. 710 K.C.

BOOK I

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BOOK No. (7

SEG. No. (C)

"50 KW Trans. & Ant. Equip. Maint."

Tuesday Maintenance Items No. 1 to No. 44

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (1)

1ST TUESDAY

ITEM 1.

(a) "Control Unit" #1 (A): Proceed to the Rear of this Unit, Feel and at the same time inspect Condensers "ClplA" - "Cl.2A" - "Cl.3A" - "Cl.4A" - "Cl.5A" - "Cl.6A" - "C2.1A" - "C2.2A" - "C3.2A" - "C4.1A" - "C4.2A" - "C5.1A" - "C5.2A" and "C6A for OVERHEATING.

Feel Tops and Sides of Metal Cases for OVERHEATING.

Feel Insulating Bushings on Tops of these Condensers for OVERHEATING.

Inspect Cases and Insulator Bushings for Breakage and Oil Leakage.

(b) "lst Power Amulifier Unit" #3 (E): Proceed to Rear of this Unit: Open Enclosure Door; feel and inspect Condensers "ClE" - "C2E" - "C5E" - "C6E" - "C7E" "C8E" for OVERHEATING.

Use AC Extension Light to locate and check Condensers.

Feel Tops and Sides of Metal Cases of Mica Condensers for OVERHEATING and Leakage of Insulating Compound.

Feel Metal End Plates and Isolantite Cases of Cornell-Dubilier Condensers for Overheating and Leakage of Insulating Compound.

Observe if the Four Counter Sunk Scres in the Top End-Plates of Cornell-Dubilier Condensers are all the way in or partly unscrewed.

CAUTION: DO NOT TURN ANY OF THESE FOUR COUNTER SUNK SCREWS IN THE END PLATES OF DUBILIER CAPACITORS, AS THIS WILL ALTER THE CAPACITY.

Report same on the "50 KW M.O.L."

Hote on the "50 KW M.O.L." any Condensers that have excessively Warm or Hot Spots.

BEWARE of this "Spotty" Condition since this indicates a Capacitor "Going Bad".

With a Rag Lightly Dampened with Maptha, clean all Isolantite Case Condensers.

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, Feel and at the same time, inspect Condensers "ClF" - "C2F" - "C3F" - "C4F" and "C6F" for OVERHEATING.

Procedure same as Item 1 (b).

Continued to Next Page

W C R OPERATING LIANUAL

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

7)

PAGE No. (2)

LST TUESDAY

BOOK No. (

ITEM 1.

Use "Shorting Stick" and short across the "End-Plates" (the 2 connections), and then feel and inspect Condensers "C7.2F - "C7.1F" - "C8.1F" - "C8.2F" - "C9.1F" and "C9.2F".

Procedure same as Item 1 (b).

Leave Enclosure Door open.

(d) "2nd Power Amplifier Tuning Unit" 75 (G): Proceed to the Rear of this Unit, Open Enclosure Door; Feel and Inspect Condensors "Cl.1G" - "Cl.2G" - "Cl.3G" "Cl.4G" - Cl.5G" - "C2.1G" - "C2.2G" - "C2.3G" - "C2.4" - "C2.5G" - "C3G" and "C4G" for OVERHEATING.

Procedure same as Item 1 (b).

Leave Enclosure Door open.

Use Small Step Ladder to reach the Cutside Top Enclosure; feel and inspect Condensers "C7G and "C8G" for OVERHEATING.

Procedure same as Item 1 (b).

(e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit; feel and inspect Condensers "C2H" - "C3.1H" - "C3.2H" - "Ch.1H" - "Ch.2H" "C5.1H" and "C5.2H" for OVERHEATING.

Procedure same as Item 1 (b).

Use "shorting stick" and short across the End-Plates (the 2 Connections" and then feel and Inspect Condensers "C6.1H" - "C5.2H" - "C7.1H" - "C7.2H" - "C6.1H" - "C8.2H" - "C9.1H" and "C9.2H" for OVERHEATING.

Procedure same as Item 1 (b).

(f) "3rd Power Am-lifter Tuning Unit" #7 & #8 (I): Proceed to Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.11" - "Cl.21" - "Cl.31" "C2.11" - "C2.21" - "C2.31" - "C3.11" - "C3.21" - "C3.31" - "C4.11" - "C4.21" "4.31" - "C10.11" - "C10.21" - "C11.11" - "C11.21" - "C12.11" - "C12.21" - "12.31" "C1 2.41" - "C12.51" and "C161" for OVERHEATING.

Procedure same as Item 1 (b).

Continued to Mext Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

PAGE No. (3)

LST TUESDAY

BOOK No.

TTEM 1.

Leave Enclosure Door Open.

(g) "3rd Power Amplifier Tuning Unit" #8 (I): Proceed to the Front of this Unit, open the Metal Panel #2, feel and inspect Condensers "C17I" - "C18I" - "19I" "C20.1I" - "C20.2I" and "C21I", for OVERHEATING.

Procedure same as Item #1 (b).

Leave Enclosure Door Open.

On the Front of this Unit, Open the Metal Panel #3, and feel and inspect Condensers "C7.1I" - "C7.2I" - "C1 3.1I" - and "C13.2I" for OVERHEATING.

Procedure same as Item #1 (b).

(h) "Antenna Coupling Unit" "9 (J): Proceed to this Unit, open Enclosure Door, feel and inspect Condensers "Cl.lJ" - "Cl.2J" - "Cl.3J" - "C2.1J" - "C2.2J" "C2.3J" - "C3.1J" - "C3.3J" - "C3.2J" - "C4.1J - "C4.2J" - "C4.3J" and "C4.4J" for OVERHEATING.

Procedure same as Item 1 (b).

Leave Enclosure Door Open.

(i) Units Listed Item 1 (a) to (h): Proceed to these Units listed in this sequence.

Use the AC Extension Light and tighten all Bolted Connections.

In some instances it will be found that Condensers are bolted to Support Insulators, and that these Bol ts also connect Two Busses Together.

In this work, exercise CARE NOT TO BREAK OR CHIP Threaded Bolt Hole in End of Stand-off Insulator, which will cause LOOSE BOLTED CON ECTION OF BUSSES.

Inspection will show that some of these Insulators do not have any Metal Ends, but that Threaded Holes are in the Isolantite itself.

DO NOT TIGHTEN SUCH BOLTS TOO MUCH - DO NOT JERK.

At the same time, feel Filament Connections of Water-Cooled Power Amplifier Tubes for OVERHEATING.

These Connections are normally Warm, NOT HOT.

Continued to Next Page

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End Item 1.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (5)

LST TUESDAY

ITEM 2.

(a) "Switch Room": Proceed to this Room and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely Grasp Handle of Oil Circuit Breaker and lift it up.

(b) "Control Unit" #1 (A): Proceed to the Rear of this Unit and put "OFF" "Safety Switch" - "DlA", Open hinged door and feel Fuses "Fl.lA" - "Fl.2A" - "Fl.3A" - "F2.lA" - "F3.lA" - "F3.lA" - "F4.lA" - "F4.2A" for OVERHEATING. Be sure to retate Fuses in their Holders, since Burned Spots may be on Lower Sides or Sides turned toward the Panel.

Fuses normally run Warm - NOT HOT.

Technician should be able to keep hand on fuses when checking same.

Replace any Fuse showing a burned or OVERHEATED place on Insulated Body of same. Spare Fuses are located in the "Portable Fuse and Test Unit" kept in the Main Transmitter Room and in the "Fuse Tester Rack" kept in the Basement Areaway at the foot of the Basement Stairs.

Fuses should be gripped tightly in Clips and Fuse Block Holders, so that OVERHEATING does not take place at these connections.

Some Fuses are provided with Compression (Variable Clamps to prevent OVERHEATING and to assure full Voltage and Current throughout the Circuit.

Be sure that proper Tension is on these Clamps.

After checking these Fuses, be sure to Close Metal Door, and put "SAFETY" Switch "DlA" - "ON".

(c) "Control Unit" #1 (A): While at the rear of this Unit feel Fuses
"F5A" - "F6A" - "F7A" - "F8A" - "F9A" and "F1O-A" for CVERHEATING.

Procedure same as Item #2 (b).

Exercise Care not to break the single socket holding each Fuse.

Continued to Next Page

WOR OPERATING MANUAL "50 KW Trans. & Ant. Equip. Maint." BOOK No. (7) SEC. No. (C) PAGE No. (6)

1st TUESDAY

ITEM 2.

(d) "Oscillator-Modulator Unit" #2 (D): Proceed to the rear of this Unit and Feel Fuse "F3D".

Same Procedure as Item #2 (b)

Fuse is located in the Lightning Protective Device Apparatus Panel on Bottom of the Unit.

(e) "1 7 KV Rectifier Unit" #10 (c): Proceed to this Unit and feel Fuses "Fl.1C" and "Fl.2C" for OVERHEATING.

Same procedure as Item #2 (b).

These Fuses are located on the Metal Panel supporting "Rectifier Air Blast" Relays on bottom of the Unit.

(f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and feel Fuses "FIH" - "F2H" - "F3H" - "F5H" - "F6H" for OVERHEATING.

Same Procedure as Item #2 (b), except that Knife Type fuse clears Panel Sufficiently to observe any Abnormal Condition.

These Fuses are located on the Bakelite Panel just above the Rear Tubes.

(g) "Basement": Proceed to Basement, and put "CFF" Switch "DlP"
"Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it UP.

(h) "Basement": While in the Basement, put "OFF" switch "Dl.lP"

"Main Power Disconnect Panel" - Open Metal Door and feel Fuses "Fl.lP" - "Fl.2P"

"Fl.3P" - "F2.lP" - "F2.2P" - "F2.3P" - "F20.1P" - "F20.2P" and "F20.3P"

for OVERHEATING.

Technician should be able to lay hand on these parts, they should be Warm, Not HOT.

If Blades or contacts are too hot, tighten up Compression Nuts, clean off contacts with Crocus Cloth, wipe with rag dampened with Carbon-tet and lightly coat with "3-in-1" Oil.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C

,

PAGE No. (7)

LST TUESDAY

BOOK No.

ITEM 2.

After Checking Fuses and Switches, put Switch "Dl.1P" - "ON".

(i) "Basement": While in the Basement, put "OFF" Switch "D15P" - "Motor Distribution Panel", open Metal Door and feel Fuses "F4.1P" - "F4.2P" - "F4.3P" "F5.1P" - "F5.2P" - "F5.3P" - "F7.1P" - "F7.2P" and "F7.3P" for OVERHEATING. Procedure same as Item #2 (b).

Feel Blades and contacts of Switch "DISP" for OVERHEATING.

Procedure same as Item #2 (h).

(j) "17 KV Rectifier Switching Unit" #11 (B): Proceed to the front of this Unit and test Switch for binding.

If the Switch does bind, or does not move freely when placed in the "10 KV" or "17 KV" positions, coat lightly with "3-in-1" Oil.

If the Switch still binds following this, loosen Compression Nuts and remove Bolts and compression Washers, from the "Swingers" pulling the Swingers" free of rest of the Switch.

Clean the Swinger Contact surfaces with Crocus Cloth, wipe off with Rag dampened with carbon-tet.

Wrap a piece of Crocus Cloth around Narrow Flat File and clean inside of Switch Contacts, then wrap Rag dampened in Carbon-tet about the file and wipe Residue from Switch Contacts.

Put Switch back together again, repl ace Bolts, Compression Washers and Muts, tightening them JUST ENOUGH TO SEE THE COMPRESSION WASHERS BEGIN TO FLATTEN. Lightly coat "Swingers" and Switch Contacts with "3-in-1" Oil and again test for Binding.

Technician should be able to move Switch from one position to the other freely and smoothly.

Wipe up all copper dust and other Residue from floor and section where Switch was cleaned.

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End Item 2.

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"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (9)

LST TUESDAY

ITEM 3.

(a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it up.

(b) "Basement": While in the Basement, put "OFF" Switch "DlP" - "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

(c) "Control Unit" #1 (A): Proceed to the Rear of this Unit and feel Field Coils of Relays "S2A" - "S3A" - "SLA" and "SLLA" for OVERHEATING.

These Relays are located in top rear of this Unit, mounted on a metal Sub-Panel. These Relay Field Coils will normally run WARM, but NOT HOT.

Technician should be able to keep Hand on them.

Log any that are excessively Warm or Hot on the "50 KW M.O.L."

While at the rear of this Unit, open Door of Metal Box Housing Relay "SlA" and feel Field Coil for OVERHEATING.

Procedure same as Item #3 (c).

Close Door of Metal Box Housing Relay "SlA".

While at the Rear of this Unit, but "OFF" the Series Switches on "1650 Volt Magnetic Switch Contactor" Metal Box, Open Box and feel this Relay Contactor "S7A" Field Coil for OVERHEATING.

Procedure same as Item #3 (c).

Close Door of Metal Box, and put Series Switch "ON".

(d) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C7.1F" - "C7.2F" - "C8.1F" "C8.2F" - "C9.1F" - "C9.2F" - "C10.1F" and "C10.2F" then feel Field Coils of Relays "S1F" - "S2F" - "S3F" and "S4F" for OVERHEATING.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

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(7)

SEC. No. (C)

PAGE No. (10)

LST TUESDAY

BOOK No.

ITEM 3.

Temperature of these Relay Field Coils should be BARELY WARL, in no event higher than Room Temperature.

To discharge Condensers, merely place Metal part of "Shorting Sticks" across the two End-Plates of these Condensers.

As each Condenser is discharged, a moderate Arc will be observed when "Shorting Stick" first touches the End-Plates.

Log Any Relay Field Coils that are excessively warm or Hot, on the "50 KW M.O.L."

(e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the rear of this Unit use "Shorting Stick" and discharge condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" "C8.1H" - "C8.2H" - "C9.1H" - "C9.2H" - then feel Field Coils of Relays "S3H" "ShH" - "S5H" - "S6H" - "S7H" - "S8H" - "S9H" - "S10H" - "S12H" - "S12H" - "S13H" and "S1hH" for OVERHEATING.

Same Procedure as Item #3 (d).

(f) "17 KV Rectifier Tube Unit" #10 (C): Proceed to this Unit and feel Field Coils of Relays "S1C" - "S2C" - "S3C" - "S4C" - "S5C" - "S6C" - "S7C" - "S8C" "S9C" - "S10C" - "S11C" and "S12C" for OVERHEATING.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

While at this Unit, open door of Metal Box Housing "17 KV Rectifier Air Blast Heater Relay" - "S17C" and feel Field Coil for OVERHEATING.

This Field Coil will run normally Warm not Hot.

Technician should be able to keep Hand on it.

If excessively Warm or Hot, Log on the "50 KW M.O.L."

(g) "17 KV Rectifier Switching Unit" #11 (B): Proceed to this Unit and feel Solenoids of Magnetic Contactors "ShB" and "SSB" for OVERWEATING.

Solenoids of these Contactors run normally warm with Temperature distributed evenly around outside of Casings.

Inspection should be made for OVERHEATING, UNEV_NLY distributed Temperature

Continued to Next Page World Radio History

| | W C R OPERATING HANU | /AL | BOOK No. | (7) | 1 |
|------------------------|-------------------------|------------------|----------------|-----------|-------------|
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| (HOT SPOTS), Loose Co | nnections, and condi | ition of Insula | tion Coverin | g around | |
| Outside of Solenoids. | | | | | |
| When Insulating Cover | ing around solenoids | s of "SLB" and | "S5B" begins | to get | bare. |
| apply coat of "BLACK | | | _ | J | |
| On the Bottom of this | Unit, feel Field Co | oils of Relays | "S3B" and "S21 | B" for | |
| OVERIEATING. | | - | | | |
| Log any Abnormal Cond | ition and work perfo | ormed on the "5" | O KW M.O.L." | | |
| | Condenser Charging | | | ես #12 (1 | ւ)։ |
| Proceed to this Unit | | | | | |
| Procedure same as Iter | | | | | |
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End Item 3.

WOR

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (12)

1ST TUESDAY

ITEM 4.

(a) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Front of this Unit, open Glass Front Window, and measure the Filament Current of Tube "V2F". This is performed directly after taking 50 KW Transmitter Carrier "OFF" the Air, (1650 Volt Rectifier "OFF" and 17,000 Volt Rectifier "OFF") but prior to shutting down the Rotating Machinery.

When available, use the Weston Model 45 DC Ammeter; if not available use Jewel Model 171 or other Type DC Ammeter.

These Meters are kept in the "Portable Fuse and Test Unit" in the Transmitter Room, as well as in the "Measuring Bench" in the Basement.

One Technician to go to the Front of Control Unit (#1 -"A") and turn the "Filament Generator" Rheostat "FlóA" Clock-wise to reduce Filament Voltage to Minimum.

2nd Technician will loosen Filament Dossert of one Filament Connection of Water Cooled P.A. Tube and lift off the Lead, carefully placing it down in the Hanging position.

(It is preferable to remove the Filament Lead that is not insulated, thereby avoiding the risk of short circuiting the 20 Volt Filament Supply on the top metal Ring of the Tube which would severely burn or damage same.)

CAUTION: While Ammeter is in the Circuit, be sure that Filaments are Lighted otherwise 600 amperes D.C. will flow through the Ammeter and INJURE SAME.

Connect the Model 45 Meter to its 50 Millivolt Shunt by means of the associated Meter Leads.

Set Meter on Small Typewriter Table or rest it against bottom edge of Window.

Connect the Dossert connection on the Meter Shunt to the Filament Terminal on the Tube, exercising care not to damage the Tube; tighten the Dossert.

Connect Filament Dossert to the Male Connection on the Meter Shunt.

Exercise Care not to damage Shunt or connections; tighten the Dossert.

After Ammeter has been placed in the Filament Circuit of the Tube, 1st Technician will adjust "Filament Generator" Rheostat "RIGA" Counter-Clockwise to read exactly

Continued to Next Page

World Radio History

"50 KW Trans. & Ant. Equip. Ma int."

SEC. No. (C)

PAGE No. (13)

1ST TUESDAY

BOOK No.

ITEM 4.

20 Volts on "Amplifier Filament Voltage" Voltmeter "MIA".

2nd Technician will observe reading on Model 45 Voltmeter, keeping Meter very Steady and perfectly horizontal.

When Filament Current Reading is steady, approximately 30 seconds after Filament Voltage was adjusted to 20.0 Volts, 2nd Technician will read Filament Current. In order to achieve Precision Results with Meters, it is necessary to allow 30 Seconds time for heating of Meter Element, before reading.

Also when Reading these Meters, be careful to avoid Parallex, which is a condition of the focus of the Eyes when too close to an object.

After reading Filament Current, 1st Technician to turn "Filament Generator" Rheostat "R16A" clockwise to reduce Filament Voltage to Minimum.

(Leave this way until Meter has been placed in series with next Tube Filament to be measured.)

2nd Technician to loosen Dossert, remove the Filament Connection from the Male Connection on the Meter Shunt and let hang.

Loosen the Dossert Connector of the Meter Shunt, lift the Shunt off the Tube Filament Connection and place Meter Shunt on table beside the Meter.

Connect Filament Connection to the Filament Terminal on the Tube and tighten the Dossert.

Fill in Form "TUBE FILAMENT CURRENTS" entering Filament Current measured at 20.0 Volts reading on "Amplifier Filament" Voltage "Voltmeter MIA".

(b) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Front of this Unit open Glass Front Window, and measure the Filament Currents of Tubes "V2H" - "V4H" and "V6H" in this order.

Procedure same as Item #4 (b).

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit and measure the Filament Current of Tube "VIF".

Procedure same as Item #4 (a).

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (14)

1ST TUESDAY

ITEM 4.

(d) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, and measure the Filament Currents of Tubes "VIH" - "V3H" and "V5H" in this order.

Procedure same as Item #4 (a).

(e) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the front of this Unit and m easure the Filament Voltage at the Terminals of tube "V2H".

This is performed directly after Item No. 4 (d) is completed, but is sections (a) to (d) are not performed, it is done directly after taking 50 kW Transmitter Carrier "OFF" the Air, (1650 Volt Rectifier "OFF" and 17,000 Volt Rectifier "OFF",) but prior to shutting down the Rotating Machinery.

When available, use the Weston Model 45 D.C. Voltmeter; if not available, use Jewel Model 171, or other type DC Voltmeter.

These Meters are kept in the "Portable Fuse and Test Unit" in the Transmitter Room, as well as in the "Measuring Bench" in the Basement.

One technician to go to the front of the "Control Unit" and adjust "Filament Generator" Rheostat "R16A" to maintain exactly 20 volts on "Amplifier Filament Voltage" voltmeter "M1A".

2nd Technician will measure the Filament Voltage at the Tube Terminals.

Connect measuring Leads to the O and 30 Volt Terminals of Model 45 Voltmeter.

Make the Filament Voltage measurement with Voltmeter and Leads projecting through the Glass Front Window.

This keeps leads out of D.C. Field and will give correct reading.

Set the Voltmeter on a small Typewriter Table or rest it against bottom edge of Window.

Place Test Prods against the two Filament Terminals on top of the Tube and after waiting 30 seconds, read the Filament Voltage.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (15)

1ST TUESDAY

ITEM 4.

With "RIOF" Filament Voltage Dropping Resistor in use and 2 Type 232-B Tubes in Service, Voltage at Tube Terminals should read a minimum of 19 Volts.

(MIA Filament Voltmeter reading exactly 20 Volts."

With "RIOF" Filament Voltage Dropping Resistor NOT IN SERVICE, and 2 Type 342-A Tubes in service, Voltage at Tube Terminals shoud read a minimum of 19.6 Volts. ("Mila" Filament Voltmeter reading exactly 20 Volts.)

After Filament Voltage is measured, remove Meter Test Prods from Filament Terminals. Fill in Form "TUBE FILAMENT CURRENTS" entering Voltage measured at the Tube Terminals with "Amplifier Filament Voltage" Voltmeter "MLA" at 20.0 Volts. If Weston Voltmeters are not available for Voltage Measurements and our Hickok Voltmeter is used, the following procedure will be adhered to in taking these Voltage Readings:

Since our Hickok Voltmeter is designed for A.C. - D.C. use, it is reasonable to assume that POLARITY is a factor when measuring with a Combination Meter of this Type. Take Voltage readings one way, then reverse Voltmeter Terminal Leads and make another reading, add together, divide by two, and the Result is the proper Voltage.

As an Example: -

21.0 Volts One Way

22.5 Volts with Test Leads reversed.

43.5 Volts Total, divided by 2 equals 21.75 Volts.

Correct Voltage reading then, is 21.75 Volts.

Be sure to keep Meter in One Place when measuring, Reeping Test Leads out of D.C. Fields.

(f) "3rd Power Amolifier Tube Unit" #6(H): Proceed to the Front of this Unit and measure the Filament Voltage at the Terminals of Tubes "V2H" - "V4H" and "V6H".

Procedure same as Item #4 (e) except that there is no Filament Voltage Dropping Resistor in Service and that Minimum voltage at the Tube Filament Terminals reads 19.8 Volts.

Con tinued to Next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

DEG. 140. (C)

PAGE No. (16)

1ST TUESDAY

ITEM 4.

("MAA" Filament Voltmeter reading exactly 20.0 Volts.)

- (g) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit and measure the Filament Voltage at the Terminals of Tube "VIF".

 Procedure same as Item #4 (e).
- (h) "3rd Power Amplifier Tube Unit" #6 (II): Proceed to the Rear of the Unit and measure the Filament Voltage at the Terminals of tubes "VIH" "V3H" and "V5H".

Procedure same as Item #4 (e) except that there is no Filament Voltage Dropping
Resistor in Service and that Minimum Voltage at the Tube Terminals reads 19.8 Volts.

("MIA" Filament Voltmeter reading exactly 20.0 Volts.)

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End Item 4.

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World Radio History

"Tube Filament Currents"

1st Tuesday

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| Serial # | 408 | 346 | 413 | 905 | 4/6 | 9.45. | 41 | 2202 | 41 | 5909 | 413 | 902 | 412 | 703 | 420 | 360 |
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| Tube Position | 1_/ | , | | 2 | | h | 2 | <u></u> | | 3 | 7 | - - | <u></u> | } | 6 | |
| Fil. Volts (Meter) | 20-0 | 26.5 | 26.6 | 20.5 | 20 | 20.5 | 20 | 120,5 | 20 | 20.5 | 20 | 20.5 | 20 | ≥. <i>5</i> . j | 20 | 200 |
| Fil. Volts(Tube) | 19.5 | 20./ | 19.8 | 20.1 | 199 | 20.2 | 19.9 | 25.2 | 19.9 | 20.2 | 199 | 20.2 | 17.9 | 29.2 | 19.9 | 76.7 |
| Fil. Cur. Amps. | 61.8 | 623 | 60.5 | 61.1 | 6J.c | ֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֖֓֞֞ | 63.0 | (3.5 | 62.0 | 60.5 | 35 | 646 | 640 | 64.5 | 64,0 | 64.5 |
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"Tube Filament Currents"

1st Tuesday

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| Serial # | 408 | 296 | 415 | 905 | 416 | 74.5 | 417 | 702 | 415 | 7 09_ | 415 | 907 | 417 | 703 | 420 | 360 |
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"Tube Filament Currents"

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"Tube Filament Currents"

1st Tuesday

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| Signatures | 342A 40829 | 6 415 | 905 | 416 | 1 14 14 | 39 417 | F 3 | 11.M rd F 79 | A Ba | Houl.Di | 2 V 2A | 1 8 3) | 95 562 570 | 7 1 34 420 | 2 2/2 360 |
| Signatures /// // 2nd PA Bal.Div) // Tube Pos'n Type Tube Serial # | 342A 40829 2PA | 6 415 | 905 PA | 416 | (A | 34 417 31 | F 3 | 11.M rd F 79 142 | leter PA Ba S2JS OA. | Houl. Di | 2 V 2 B 3 L6 / | 1 3 3 3 3 1 3 1 3 1 | 95 62 62 770 | 7 1 34 420 | 2 2/F 360 |
| Signatures ///// 2nd PA Bal.Div) // Tube Pos'n Type Tube Serial # Transm. Pos'n | 342A 40829 2011 | 1415 | 905 PA | 416 | 10.5 | 34 417 31 | 702 702 4 | 11.M rd F 342. | PA Ba | Hou 1. Di 34. | 2 rs _ v 2 / 2 / 3 2 / 6 / 1 / 2 / 3 / 6 / 1 / 2 / 3 / 6 / 2 / 3 / 6 / 2 / 3 / 6 / 2 / 3 / 6 / 6 | 1 3) 3) 3) 21 21 | 95 67 770 | 7 7 34 420 3(1 | 2 2/F 3(0) |
| Signatures | 742A 40829 2011 2011 | 6 415 2 C | 905 A 1313 | 416 | 100 | 34 417 31 20 | 12.02 702 4 26.5 | 11.M rd F 742.7 198. | SA SA SA SA SA SA SA SA SA SA SA SA SA S | Hou 1.Di 34 172 | 2 Prs _ V 7 Prs _ 7 | 1 3 3 3 2 197 | 95 62 70 120 202 | 7 1 34 420 26 198 | 2/2 360 205 |
| Signatures /// f/ 2nd PA Bal.Div] // Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 342A 40829 2011 | 6 415 2 C | 905 A 1313 | 416 | 100 | 34 417 31 20 | 12.02 702 4 26.5 | 11.M rd F 742.7 198. | SA SA SA SA SA SA SA SA SA SA SA SA SA S | Hou 1.Di 34 172 | 2 Prs _ V 7 Prs _ 7 | 1 3 3 3 2 197 | 95 62 70 120 202 | 7 1 34 420 26 198 | 2/2 360 205 |
| Signatures /// f/ 2nd PA Bal.Div] // Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 742A 40829 2011 2011 | 6 415 2 C | 905 A 1202 61.0 | 416 | 202 | 34 417 76 20 195 640 | 702 702 4 | 11.M rd F 742/ 742/ 722/ 738/ 738/ | 24.2 24.2 24.2 | Hou 1.Di 34 142 | 2 PR _ V 2 PR _ | 37 37 37 26 197 63 | 95 562 7763 202 (30 | 7 34 420 26 198 63.0 | 2/2 360 2012 (33 |
| Signatures /// // 2nd PA Bal.Div) // Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 742A 40829 2011 2011 | 6 415 2 C | 905 A 1202 61.0 | 416 | 202 | 34 417 76 20 195 640 | 702 702 4 | 11.M rd F 742/ 742/ 722/ 738/ 738/ | SA SA SA SA SA SA SA SA SA SA SA SA SA S | Hou 1.Di 34 142 | 2 PR _ V 2 PR _ | 37 37 37 26 197 63 | 95 562 7763 202 (30 | 7 34 420 26 198 63.0 | 2 /2 /3 /3 /3 /3 /3 /3 /3 /3 /3 /3 /3 /3 /3 |
| Signatures /// // 2nd PA Bal.Div) // Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 742A 40829 2011 2011 | 6 415 2 C | 905 A 1202 61.0 | 416 | 202 | 34 417 76 20 195 620 | 702 702 4 | 11.M rd F 742/ 742/ 722/ 738/ 738/ | Eter A Ba 3253 OA. 20.2 64 oo | Hou 1.Di 34 192 | 2 PR _ 7 | 37 37 29 29 197 | 95 62 70 8. 20.2 13.0 | 7 34 420 26 198 63.0 | 2/2 360 2012 (33 |
| Signatures /// f/ 2nd PA Bal.Div) / Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 742A 40829 2011 2011 | 6 415 2 C | 905 A 1202 61.0 | 416 | 202 | 34 417 76 20 195 620 | 702 702 4 | 11.M rd F 742/ 742/ 722/ 738/ 738/ | 13.1 32.5 0.1 20.2 64.0 | Hou 1. Di 34 72 17.8 64.0 | 2 PR _ V 2 PR _ | 183 37 37 26 193 635 | 95 67 70 120 20 20 20 20 20 20 20 20 20 20 20 20 2 | 7 34 420 26 198 63.0 | 2 A 3 C 3 S 3 C 3 C |

"Tube Filament Currents"

1st Tuesday

| Type Tube 344 3424 | Day fractions Signatures 9 F F F 2nd PA Bal Div 7.7 | | | | manang, gra d | | in plant pag th age o | THE STATE OF THE | were experience | Fil | e & . Mex PA I | ter 1 | Hour | \$_8 | | | , , |
|--|--|---|--|--|--|--|--|---|--|---|--|--|--|---|---|---|--|
| Serial # 41909 415905 41695 41702 42325 5 22161 41703 40560 Trans. Pos'n 298 399 399 399 309 22 205 205 | Type Tube | 34 | 124 | 39 | +2A | 3 | YZA | 3 | 42A | 7 | LZ# | 34 | ZÁ | 3 | ジュー ジフノ | 4 3 | V> A |
| Trans. Pos'n Tube Position Fil. Volts(Meter) 20 20 20 20 20 20 20 20 20 20 20 20 20 2 | Ł . | 11 | | , | , | ı | | i . | | | | 1 | | • | | | |
| Tube Position 2 2 2 2 2 2 2 2 2 | Trans. Pos'n | 1 | DA. | 1 | \sim | | | | | | | | | | | | |
| Fil. Volts (Meter) 20 20 20 20 20 20 20 2 | Tube Position | | / / | f | | | / / | 1 | | 1 1 10000 | | 1 | | 1 | - | 16 | |
| Fil. Volts(Tube) 179 20219 300 175 202 100 202 175 202 | Fil. Volts(Meter) | 20 | 2.0. | 20 | 20.5 | 20 | 20. | 20. | كدهن | 20 | 1 | 1 ' | ŧ. | 1 | 20.5 | 20 | 20,5 |
| Remarks: Pil. Cur. Amps. 61.5 62.0 64.5 62.5 63 62.5 5 62.5 64 64.5 62 62.5 65 | Fil. Volts(Tube) | 13 | 1 | 7 | 1 -1011-113 | 4-1-1-1-1 | Janes | fragament. | - Land | dimental | A | 74010-00-2 | Mark Street | d | | 61 ft. 176 parson | - [- [-] -] |
| Remarks: Remarks: | Fil. Cur. Amps. | 61.5 | 62.0 | 60 | 66.5 | 62. | 63 | 62 | £25 | 63.5 | 64. | 96 Y | 64.5 | 62 | K2.J | 63 | 63.5 |
| Day FRI. Date Oct 4, 1957 Signatures Al-IP 2nd PA Bel. Div 72 Tube Pos'n 2nd PA 342A 342A 342A 342A 342A 342A 342A Serial # 415909 415905 416945 417701 423258 42316/ 417701 420360 Transm. Pos'n 2 13 12 10 10 10 10 10 10 10 10 10 10 10 10 10 |) } |] | | ذر لجود إ سيدا | our labely all y | h | 7 | 1 | · · · · · · · · · · · · · · · · · · · | 100000 | | | | | |] | 4.7, 4. |
| Day FRI. Date Oct 4, 1957 Signatures Al-IP 2nd PA Bel. Div 72 Tube Pos'n 2nd PA 342A 342A 342A 342A 342A 342A 342A Serial # 415909 415905 416945 417701 423258 42316/ 417701 420360 Transm. Pos'n 2 13 12 10 10 10 10 10 10 10 10 10 10 10 10 10 | Remarks: | رين و ها به ارساد. درين و ها به ارساد، | 12 | 11 | ch | ich | 24 | 9.1 | Lete | Z J | f 7 | 1/2 | rli | Z | 772 | 22 | CU-21 |
| Day FR! Signatures Al-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube 3424 Serial # 415909 Fil. Volts(Meter) Fil. Volts(Tube) 19.8 -20.10 Date Oct 4, 1957 Fil. Meter Hours 87102 3rd PA Bal.Div. 35 The Pos'n Type Tube 3424 | S. S | P | But | رکستها | 93 | is | [[| du | he | Ž. | | | | lo | - | er e gyrenr eg | |
| Day FRI. Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube 3424 Serial # 415909 415905 Fil. Volts(Meter) Fil. Volts(Tube) 19.8 19.8 19.5 19.9 19.9 19.1 19.8 19.7 19.1 19.8 19.7 19.8 19.7 19.8 19.7 19.8 19.7 19.8 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 10 | | | 12 | PG | 7.1 | eve | ese | 16% | Se | vil | ti-[] re-k1- | .19 | -91 | | 20. | 2 V | |
| Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n | denominated offers believes a spinion regional of containing a constituting of the | 2 | nd | PI | <i>†</i> | | 1.6 | | F \$ 849 - 113 mg . | 4 | ر د د د د د د د د د د د د د د د د د د د | | | | - | | |
| Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n | • | | | | | | | | | | ٠. | | | | | | |
| Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube 342A 5erial # 4/15909 4/15905 4/16945 4/1701 423278 42316/ 4/1701 420360 Transm. Pos'n A Fil. Volts(Meter) 10 10 10 10 10 10 10 10 10 1 | became and the second of the s | | | | | | w 19 4° 56 . 44 . | | a _{and} and a spec of | ,, - | | | ada aya ya Igaga . | | ********* | | ورورة وفاعفا |
| 2nd PA Bal.Div 72 Tube Pos'n Type Tube 342A 342A 342A 342A 342A 342A 342A 342 | FOI. | M.,APA114 & W/b | utghquhhadqu opia t Pavurgir qu ak p. Piug | - Personal de la capa - Nove de la capa | -pinskylu i naga Por a a i Palanga | e deret d'aggarges en Michael d'a | ur Ipal 16-14-,* F 4 46 - 16-4- , Fs | mysileng egs enser is | e _{de} to the colony of | , | | —A- | | | -9 | | i er egangina Er en Eran |
| Tube Pos!n | <u> </u> | Maria Para Para Para Para Para Para Para | uighquitheagu og eag e | l - Brahall add de 1946 - Nac'd - er a sel a er a | namadija uliya Koron Palaya | The state of the s | uar Igraff strong "t | Bysiles y dipe es der −4; | | | | | | | | - | . 45 *********************************** |
| Type Tube 342A 342A 342A 342A 342A 342A 342A 342A | Signatures AL-LP | M-,47411 d wjb | ul Bharatha dha a bha g i Phorethar dha dha a bha | l - Provident de Service de Servi | -pingg ja - magg Par ar - Prangg | e first daggraph | um tyret skriver, e r i edd reigen i dd g | mgudang mga anan 4 | | | | | | | | | en fan gewe |
| Serial # 4/5909 4/5905 4/6945 4/7702 423218 42326/ 4/7703 420 360 Transm. Pos'n / 2 / 2 3 4 5 6 Fil. Volts (Meter) 20 205 205 | Signatures AL-LP 2nd PA Bal.Div_72_ | П | er part an en esta el | | -pingal jila - pingal Pin an - Pin angal Pin an - Pin angal Pingal jilangan | Transfer and Mary | on toped and on the state of th | mpilme apr man "i man "i panagrepa pa panagrepa pa pa pa pa pa pa pa pa pa pa pa pa p | F 3 | il.M | leter A Ba | Hou l.Di | v | 871 35 | 0.2 | a state a . | |
| Transm. Pos'n | Signatures AL-LP 2nd PA Bal.Div 72 Tube Posin | 200 | 4 of Proper State | To seed acres. | | | | | F 3 | il.M rd F 3.ol | eter A Ba <i>PA</i> | Hou 1 . Di I | rs | 871 35 | 02 0PA | 300 | PA |
| Fil. Volts (Meter) 20 20.5 20.5 | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube | 2ND 34 | 24 | 34 | 12A | 34 | 2A- | 34. | F 3 20 21 | 11.M rd F 3.d 34 | leter A Ba PA 2 A | Hou 1 Di 3es | rs_ v PA (2A | 8,71 35 3R 34 | 07 0PA 12A | 3es | 2A |
| Fil. Volts (Tube) 19.8 20.1 19.8 10.1 19.9 20.2 19.9 20. | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # | 2ND 34 | 24 | 34 415 | 905 | 34. 416 | 2A- 945 | 34. 417 | F 3 2A 702 | 11.M rd F 3.06 34. | PA Ba | Hou 1 . Di 34 423 | PA (2A) | 871 35 3R 34 | 07 0PA 2A 701 | 320 34 420 | 2A 360 |
| Fil. Cur. Amps. 62.1 62.9 60. 6.9 62.3 63.1 62.0 629 64 65.0 64 65 63.9 64 63.1 64.1 Remarks: MIA Checked against North 772 - 20-20 V Siss on all lusts 280 V. 3RDPARLO Sec. 19.9 - 20.2 V | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n | 2ns 34 415 | 909 | 34 415 | 905 2 | 34. 416 1 | 2A- | 34. 417 | F 3 | 11.M rd F 3.00 34. 423 | PA Ba | Hou 1. Di 349 34 423 | PA (2A) | 3 s 3 s 34 41) | 0 PA 12 A 70 J | 320 34 420 | 2A 360 |
| Remarks: MIA Cherked spinist Nestar 772-20-20 V Diss on all lust 290 V. 3RDPARLO: Ses. 19.9-20.2 V | Signatures AL-LP 2nd PA Bal.Div_72_ Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 2ns 34 415 1 20 | 2A 909 20:5 | 34 415 0 | 905 2 205 | 34, 416 1 | 2A 945 | 34. 417 w. | F3 30 2A 702 2 12 2 12 2 12 2 12 12 12 12 12 12 12 | 11.M rd F 3.00 423 | PA Ba PA 2A- 2J8 70-5 | Hou 1.Di 349 34 423 | PA (2A) | 371 35 3R 34 41) 5 | 02 0PA 12A 70] | 340 34 420 6 | 2A 360 |
| 1200 m ell hub 290 V. 3RDPARLO: Ses: 19.9-20.2 V | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2223 34 415 1 23 | 29 909 20.5 20.1 | 34 415 20 100 14.8 | 905 2 2 205 201 | 34. 416 1 20 19.9 | 2A 945 20.5 | 34. 417 20. | 702 2A 702 20.5 | 11.M rd F 3.04 423 20 | PA PA 2A 2J8 70-2 | Hou 1.Di 3.es 34 423 2.00 | PA (2A) 26/ 20.5 | 371 35 34 41) 5 | 02 0A 70] 205 205 | 340 34 420 6 20 | 2A 360 201 |
| 1200 m ell hub 290 V. 3RDPARLO: Ses: 19.9-20.2 V | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2223 34 415 1 23 | 29 909 20.5 20.1 | 34 415 20 100 14.8 | 905 2 2 205 201 | 34. 416 1 20 19.9 | 2A 945 20.5 | 34. 417 20. | 702 2A 702 20.5 | 11.M rd F 3.04 423 20 | PA PA 2A 2J8 70-2 | Hou 1.Di 3.es 34 423 2.00 | PA (2A) 26/ 20.5 | 371 35 34 41) 5 | 02 0A 70] 205 205 | 340 34 420 6 20 | 2A 360 201 |
| 3RDPARIUS JUST 19.9 - 20.21 | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 2223 34 415 1 23 | 29 909 20.5 20.1 | 34 415 200 14.8 600 | 12 A 1905 1005 1001 | 34. 416 10 19.9 62.3 | 2A 945 20.5 20.2 63.1 | 34. 417 20: 19:1 62:0 | F3 2A 702 2005 1005 1005 | 11.M rd F 3.04 423 20 19.9 | PA Ba 2A 2J8 3 20-2 20-2 20-2 20-2 20-2 20-2 20-2 20 | Hou 1.Di 349 34423 200 199 | PA (2A) (26/ 20.5) (20.5) | 371 38 34 41) 5 20 139 | 02 0PA 2A 70] 201 201 201 | 340 34 420 6 20 19.9 63.1 | 2A 360 201 201 64.1 |
| | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 2223 34 415 1 23 | 29 909 20.5 20.1 | 34 415 200 14.8 600 | 12A 1905 1005 1001 1009 | 34. 416 10 19.9 62.3 | 2A 945 20.5 20.2 63.1 | 34. 417 20: 19:1 62:0 | 702 2A 702 20.5 20.5 20.5 | 11.M rd F 3.04 423 20 19.9 64 | PA 2A 2J8 2o-2 650 | Hou 1. Di 349 34 423 200 199 64 | PA (2A) (26/ 20.5) (20.5) | 371 38 34 41) 5 20 139 | 02 0PA 2A 70] 201 201 201 | 340 34 420 6 20 19.9 63.1 | 2A 360 201 201 64.1 |
| 11.0 10. | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 2223 34 415 1 23 | 29 909 20.5 20.1 | 34 415 200 19.8 600 11 | 12A 105 101 101 | 34, 416 10 19.9 62.3 | 2A 945 20.5 20.7 63.1 | 34. 417 c 20: 19:1 62:0 | 702 702 205 205 202 | 11.M rd F 3423 423 199 64 | PA Ba 2A- 2J8 3 20.2 65.0 | Hou 1. Di 3. Sep 3.4 42.3 2.00 13.9 64 | PA 26/ 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 | 371 38 34 417 5 20 139 | 02 0PA 2A 70] 201 201 202 | 340 34 420 6 (9.9 (3.1 | 2A 360 201 201 64.1 |
| | Signatures AL-LP 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 2223 34 415 1 23 | 29 909 20.5 20.1 | 34 415 200 19.8 100 100 100 100 100 100 100 100 100 10 | 12A 1905 170.1 170.1 170.1 170.1 170.1 170.1 170.1 170.1 170.1 | 34, 416 19.9 62.3 | 2A 945 10.5 10.5 63.1 cke | 34. 417 20: 19:1 62:0 | 702 2A 702 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20 | 11.M rd F 3423 423 199 64 | PA Ba PA 218 218 2005 2007 | 349 349 349 349 349 349 349 349 349 349 | PA (2A) (2A) (2A) (30.5) (45) (5.5) | 371 38 34 34 41) 5 20 12 63.9 | 02 0PA 2A 701 205 202 64 | 340 34 420 6 20 (9.9 63.1 | 2A 360 201 201 64.1 |

"Tube Filament Currents"

1st Tuesday

| Day 7/2/1/2/ Signatures LP 3-6. 2nd PA Bal. Div 72 | | Seine Armoyal o Sanifali | orfys begydd blywaio | بيائد كيانانام كوينانات | ng-duman sp.ns. | lago yas kabad ⁸ 40, | of 1584 arms part 1 | nd matelyte yn cen | Fil. | Met | er F | lours | 3 5 Z | 762 | | |
|---|--|-----------------------------------|---------------------------------|--|------------------------------------|------------------------------------|---|--|---|--|---|---|--|--|-----------------------------|----------------|
| Type Tube | 340 |) _[-) | 1.5% | 12 [] | 34 |)]) | 13/ |) [] | 34 | 911 | 13/ | 1/1 | 1/ | () | -7 | 12/1 |
| Serial # | 415 | 909 | 1/1 | 5705 | 1/16 | <i>j</i> 45 | 4/17 | 10) | 40.3 | 258 | 1103 | 1)(0.1 | 4/17 | 1/03 | 40 | 360 |
| Trans. Pos'n | 1.2 | · i) []] | () | | 21 | () | 3 | (/) | 1 | 12 | 3/ | Z(). | | (2/) | ; | 1/1) |
| Tube Position | | 1 | | 2 | | | 2 | | | 3 | | | | | (| () () |
| Fil. Volts(Meter) | 70. | 22.0 | 32.6 | 2015 | -12°·· | 22 · S | 22. | 12.0 | , 'C | -X-2 | , 20, | _2:.7 | . 21 | 27 1 | 20. | 20.5 |
| Fil. Volts(Tube) | 12.5 | | | | | | | | | | | | | | | |
| Fil. Cur. Amps. | 61.5 | 6.5 | (0.0 | (2.5 | 12.5 | 63.0 | 61,0 | 61.3 | 6.410 | 6110 | 640 | 64.5 | 620 | 62.5 | 12.0 | 630 |
| S | ļ | | أمر المعادية | e fram,1;_ | | | | | naman | | | | | | | l, |
| Remarks: MAA | | 5.61 | 1 | 12.4.12. | () [[]] | I., <u>L</u> | 1 | Entelm | 26 | is Signatur | | ". (₎ | م ميم.ز.ز | Z. V. | er ji biji ga ti bi a | er squee e cos |
| 277 | .5 , . / . | 166 | 7.6 | Bir | 5 | 2 % | 00 | | | | | | • | | | |
| JA ZN | 7-131 | 1 1 | 75.15] 1 | <u> </u> | 1 | Ži. |) | 13 | وي الم | · · · (| 26: | 2. | La.,,, | | | • 6 9 • |
| 12N | γ <i>[</i>] | | miner to p to | | ۱ ۱۰۰۰ ۲۰۰۰ | | <u> </u> | المالية | , ζο , <u>, Ω</u> , | د د موس ۱۹۹۰ مادوده | 276 | :l | ل | · 1 /1/2 * 60 · 1 · 2 · | | |
| | | | | - 18.5° may | | | ., | w==+++++++++++++++++++++++++++++++++++ | | | | رمريو مرساها | | b-14 *f., | | , · |
| 7 - 10 | | | | | | | | | | | | | | | | |
| Day 1721 Signatures (Carlot) 2nd PA Bal.Div 7 | | | | | A | y | | F | ate_ il.M rd P | eter | Hou | rs . | 5.5.4 | 12./ | | : |
| Signatures () | 17K | 77) | 1.74 | 720) | 132 | 7.7) | 36/ | 1 3 | il.M | eter A Ba | Hou l.Di | rs V | 3.5.4 | \ <u>\ </u> | | (2) |
| Signatures (1) 2nd PA Bal.Div 7 | 34 | وجد للسوسة لخاء | | 77. 700 | 1 | | | F 3 | il.M | eter A Ba | Hou 1.Di | rs v | 3/ | 13.1 2.1 | 34 | 365 |
| Signatures (1) 2nd PA Bal.Div 7 | ; ; ; ; ; ; ; ; | وجد للسوسة لخاء | 410 | | 416 | 545 | 417 | F 3 | 11.M rd P | eter A Ba | Hou 1 . Di 32 | rs | 3/ | 743 | 34 | 36.50 1919 |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube | ; ; ; ; ; ; ; ; | 10% | 410 | 700 | 416 | 545 | 4171 31 | F 3 | 11.M rd P | eter A Ba | Hou 1 . Di 32 | rs | 31 | S S S S S S S S S S S S S S S S S S S | 34 | Y) |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n | 34.5 | 107. | 4/0 | 705. 1712. | 31 | 545]/-} | 4/1/ | F 3 | il.M rd P 139 | eter A Ba 12/11 32/18 | Hou 1.Di 1.Zi | rs | 31/ | 743 | 31. 11.20 | //) |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 34. 4/15 2 | 1.07. [21] | 410 | 705 1712 2 71-5 | 31 | 545]]]][:8. | 11/1/10 | F 3 | 11.M rd P | eter A Ba 2/1/3 2/5 2/5 | Hou 1.D1 423 | rs | 3/2/3/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2 | 703 | 31 420 31 | 1) |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34. 4/15 20 17.5 | 101. 111. 11.5 | 415 201 100 1715 | 70S 12D 2 21-5 | 1/16 3.1 20 17.7 | 545][]][]][]] | 4171 31 11:1. | F 3 | 11.M rd P 139 142 137 | eter A Ba 12/1/ 32/5 2/5 2/5 | Hou 1.Di 32 423 | V | 31/13/2 | 703 | 31. 47. 31. (17.1. | 11.15 |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34. 4/15 20 17.5 | 101. 111. 11.5 | 415 201 100 1715 | 70S 12D 2 21-5 | 1/16 3.1 20 17.7 | 545][]][]][]] | 4171 31 11:1. | F 3 | 11.M rd P 139 142 137 | eter A Ba 12/1/ 32/5 2/5 2/5 | Hou 1.Di 32 423 | V | 31/13/2 | 703 | 31. 47. 31. (17.1. | 1) |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 37/. 1/1/. 2 1/. 1/. 1/. 1/. 1/. 1/. 1/. 1/. 1/. 1/. | 107. 201. 201. | 715 70 70 1715 60.0 | 70S 12D 2 21-5 | 1/16 3/ 1/1/ 1/2/5 | 543 112 113 11 12 63:3 | 417 31 16 16 16 16 16 16 16 16 16 16 16 16 16 | F 3 | 11.M rd P 12. 31 20 02. UHS | eter A Ba 12/13 32/18 2/15 12/15 45/4 | Hou 1.D1 32 423 27 27 423 64.7 | 78 - 200 200 200 200 200 200 200 200 200 200 | 3/2/3/2/3/2/6/3/3/3/3/3/3/3/3/3/3/3/3/3/ | 703 | 31. 47. 31. (17.1. | 20.05 |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34.5 20.17.5 17.5 13.2 | 107 21-1 20-5 20-1 39 | 715 20 115 60.0 | 705 1/12, 1/15 1/16-4 | 1/16 31 1/1/ 1/2/5 D \ | 543 717 1113 1113 133 | 4171 11:1 4:5 | 70 2 (1) (2) (2) (3) (4) (5) (5) (7) | 11.M rd P 12. 31 20 02. UHS | eter A Ba 12/13 32/18 2/15 12/15 45/4 | Hou 1.D1 32 423 27 27 423 64.7 | 78 - 200 200 200 200 200 200 200 200 200 200 | 3/2/3/2/3/2/6/3/3/3/3/3/3/3/3/3/3/3/3/3/ | 703 | 31. 47. 31. (17.1. | 11.15 |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34.5 20.17.5 17.5 13.2 | 107 21-1 20-5 20-1 39 | 7/3 20 1/3 60.0 | 705 12/12 12.5 12.1 160.4 | 1/16 3/ 1/1/ 625 D N | 543 112 113 113 15 | 417 11.1 11.1 4.5 | 7/1/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/ | 11.M rd P 34 32 37 43 45 | eter A Ba 3218 215 312 45 4 | Hou 1 . Di 123 123 123 127 127 | 78 - 200 200 200 200 200 200 200 200 200 200 | 3/2/3/2/3/2/6/3/3/3/3/3/3/3/3/3/3/3/3/3/ | 703 | 31. 47.6 31. | 11.15 |
| Signatures (1) 2nd PA Bal.Div 7 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 234. 4/15 20 11.5 62.2 | 107 21-1 20-5 20-1 39 | 7/0 200 1200 8/11 | 705 12/2 2 2/1-5 2/1 60-4 | 1/16 3/ 1/1/ 625 D N | 143 113 133 133 | 417 11:15 4:15 | 7 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 11.M rd P 34 32 37 43 45 | eter A Ba 12/13 32/18 12/15 12/15 12/15 13/16 | Hou 1.D1 32 423 423 64.2 | 78 | 3/2/3/2/3/2/6/3/3/3/3/3/3/3/3/3/3/3/3/3/ | 703 | 31. 47.6 31. | 20.05 |

"Tube Filament Currents"

1st Tuesday

| Day 12,0 Signatures Ae-1417 2nd PA Bal. Div 72 | .d | | and the second | | en e | | | | Fil. | Met | er H | lours | 159 | 249 | Z'' | |
|--|--|----------------------------------|----------------------------|-------------------------------------|--|--|---------------------------------------|--|--|--------------------------|--|---|---|---------------------------------|---|-------------------------------|
| per recommendation of the control of depth and a state of the per the through of the set | 100 | 7 /1 | 101 | 775 | -711- | 7 11 | 211 | 7 1 | 711 | グーク | 211 | 7-10 | 216 | 7-A | ウム | 7-17 |
| Type Tube | all transactors | gas, 30 at a 6 fe 4 | . 6 200 - 3 40 - 44 20 | ster man prome | \$1.000 m | - 4, | J | Ba+ 0 / 5 14 to | -,,,,, | > | * | | 3 | | | 2-11- |
| Serial # | | | | | | | | | | | | | | | | 1360 |
| Trans. Pos'n | Zv | 011 | 21 | [1] | 3 | PH | 31 | 1 | 3/ | P | 3/ | 99 | 31 | 11 | 3 | 11 |
| Tube Position | | 1 | | 2- | | İ | 2 | <u>_</u> | 1 | 3 | | 4 | C |) | (| C |
| Fil. Volts(Meter) | | | | | | | | | | | | | | | | 20.5 |
| Fil. Volts(Tube) | 17.8 | 201 | 19.8 | 201 | 19.9 | 20.2 | 19.9 | 20.2 | 199 | 20.2 | 19.9 | 20:2 | 19.9 | 20:2 | 17.9 | 2.2 |
| Fil. Cur. Amps. | 62.5 | 13.4 | 600 | WIL | 62,6 | 135 | 62.5 | 63.0 | 618 | 455 | 640 | 65.0 | 33.0 | 438 | 625 | 63.0 |
| and the second section of the second section (second section). | | | | | | | | | | | | | | | | |
| Remarks: | 111 | 17 | Che | Chi | 00 | 15 | (6)6 | 572 | 17 | 77. | 2 | 20 | V = | . 20 | U | |
| 1 | BIR | | | | | | | | | ages of the Parent State | ~q., , ,, ,,,,, | , , , = , , L +, ì | | | er, ar eer pr | ** |
| Emiliaria de la companya de servicio de la companya del companya de la companya de la companya del companya de la companya del la companya de | 3RH | 7 / | EU | <u>تح</u> ، | کری | | 19.9 | · - | | 20. | 20 | · ·· · · · · · · · · · · · · · · · · · | *: *: • • • • • • • • • • • • • • • • • | | ···· · · · | |
| · · · · · · · · · · · · · · · · · · · | 3RH DU |) | // | | ~ 1 | / | 17.8 | D | ٠٠.٠٠ | 20 | 10 | / | E | C- | M | 2 |
| The state of the s | | | | n | | | | | | ••••••• | | | | | | |
| Annual material content of the self-content report of a self-content to the self-content of the self-conte | | | | | | | | | | | | | | | | |
| Day 6-/ Signatures 7-/6/ 2nd PA Bal.Div_7 | 7 | | | erst - Augt | | Law of Community of the | | 3 | il.M Brd F | Ister A Ba | Hou l.Di | rs 🗎 | 377 | | | • • • • • |
| 2nd PA Bal.Div 7 | 7 Z- | | | Z- | 1 | The second of th | decent transport | 3 | il.M Brd F | leter A Ba | Hou l.Di | rs <u>}</u> .v | 377 a s | 08 L | | and the second |
| Signatures / / | | 7,3 | fraction | order transcriptions | | manus si sa manus si sa ma manus si sa manus si sa manus si sa ma manus si sa manus si sa | | F | il.N Brd F | leter A Be | Hou l.Di | v. | 377 | 08 8 | | garineratur 7 A |
| 2nd PA Bal.Div | 34 | | 34 | 2-17 | 34 | 7-1 | 3/2 | 7 3 | il.Mord F | leter A Be | Hou l Di | v. | 377 | 08 | 72 | |
| Signatures 7 // 2nd PA Bal.Div 7 / Tube Pos'n Type Tube Serial # | 34 415 | 909 | 54 | 2-17 | 34. 116 | 7-P | 3/2 4/7 | 70 Z | il.Mord F | leter A Be | Hou l.Di | v | 377 31 | 08 | 130 | TiD, |
| Tube Pos'n Type Tube Serial # Transm. Pos'n | 34 415 2n | 909 19A | 39 44 2 | 2-A 705 | 34 116 31 | 7-P 745 D | 340 417 | 70 Z | il.Mord I | leter A Be | Hou 1.Di 342 | 18 2 V 26/ VA | 777 811 1211 1211 | 08 8 700 | 130 (30) | BO. |
| Tube Pos'n Type Tube Serial # Transm. Pos'n | 34 415 2n | 909 19A | 39 44 2 | 2-A 705 | 34 116 31 | 7-P 745 D | 340 417 | 70 Z | il.Mord I | leter A Be | Hou 1.Di 342 | 18 2 V 26/ VA | 777 811 1211 1211 | 08 8 700 | 130 (30) | BO DA |
| Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34 41.5 22 17.8 | 909 9A 25 | 54 | 7-17 105 12-5 | 34 31 20 | 7.9 145 102 | 342 417 3 F 20 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.Mrd I | A Be | Hou 1.Di 3/2 1/2 1/2 1/2 1/2 1/29 | 18 2 V 26/ 26/ 25 2 | 7/7 21/2 1/1/2 20 199 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | 1, C) 1A 120 S 20, 2 |
| Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34 415 2n | 909 9A 25 | 54 | 7-17 105 12-5 | 34 31 20 | 7.9 145 102 | 342 417 3 F 20 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.Mrd I | A Be | Hou 1.Di 3/2 1/2 1/2 1/2 1/2 1/29 | 18 2 V 26/ 26/ 25 3 | 7/7 21/2 1/1/2 20 199 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | 1, C) 1A 120 S 20, 2 |
| Signatures / // 2nd PA Bal.Div / / Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 41.5 22 17.8 | 909 9A 25 | 54 | 7-17 105 12-5 | 34 31 20 | 7.9 145 102 | 342 417 3 F 20 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.Mrd I | A Be | Hou 1.Di 3/2 1/2 1/2 1/2 1/2 1/29 | 18 2 V 26/ 26/ 25 3 | 7/7 21/2 1/1/2 20 199 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | 1, C) 1A 120 S 20, 2 |
| Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34 41.5 2n 20 17.8 62.0 | 707 714 2.5 911 630 | 34.5 20 19.4 60 C | 2-17 10-8 10-8 | 34 116 34 20 199 124 | 7-9 745 20 70.5 12.5 12.5 | 3/2 4/7 20 199 6/4 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.M Brd I 39 20 779 6/10 | Tester A Be | Hou 1.Di 3/2 1/2 1/2 1/2 1/27 (38 | 7. 12. 12. 12. 12. 12. 12. 12. 12. 12. 12 | 7/1 2/1 2/1 20 199 128 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | 1, C) 1A 120 S 20, 2 |
| Signatures / // 2nd PA Bal.Div / / Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 41.5 2n 20 17.8 62.0 | 707 714 2.5 911 630 | 34.5 20 19.4 60 C | 2-17 10-8 10-8 | 34 116 34 20 199 124 | 7-9 745 20 70.5 12.5 12.5 | 3/2 4/7 20 199 6/4 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.M Brd I 39 20 779 6/10 | Tester A Be | Hou 1.Di 3/2 1/2 1/2 1/2 1/27 (38 | 7. 12. 12. 12. 12. 12. 12. 12. 12. 12. 12 | 7/1 2/1 2/1 20 199 128 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | J, Q JA J& S 20, ≥ |
| Signatures / // 2nd PA Bal.Div / / Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 4/5 22 198 29.0 | 909 15A 25 1911 1630 | 54 19.15 20 C | 2/1 205 205 201 208 208 | 34 20 199 124 00 | 79 75 20 20 20 20 20 20 20 20 20 20 20 20 20 | 3/2 4/7 3/8 20 199 614 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.M 37 37 20 7.7 6/0 | PA Be | Hou 1.Di 3/2 1/2 1/2 1/2 1/38 | V | 7/1 2/1 2/1 20 199 128 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | J, Q JA J& S 20, ≥ |
| Signatures / // 2nd PA Bal.Div / / Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 4/5 22 198 29.0 | 909 15A 25 1911 1630 | 54 19.5 20 C | 2/1 205 205 201 208 208 | 34 20 199 124 00 | 7-9 745 20 70.5 12.5 12.5 | 3/2 4/7 3/6 199 6/4 | 70 70 70 70 70 70 70 70 70 70 70 70 70 7 | 11.M 37 20 7.7 40.0 | PA Be | Hou 1 . Di 1/22 1/22 1/20 1/20 1/20 1/20 1/20 1/20 | 76/ 26/ 245 | 7/1 2/1 2/1 20 199 128 | 08 8 70.7 11.5 20.2 | 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 | 1, C) 1A 120 S 20, 2 |

"Tube Filament Currents"

1st Tuesday

| Day FRI Signatures PFGC 2nd PA Bal. Div 72 | er grader en Fleder | | 7p-1 V a 8 3 1 0 malas | مريد در پر دوه درون | processor of the | to the second se | 4 . have approximated | | Fil. | Met PA B | er H | ours | 70 | 7.7 8 | 4 | |
|--|---|---|----------------------------------|--|---|--|---|---|-------------------------------------|---|--|--|------------------------------------|----------------------------|------------------------|---------------------------------|
| Type Tube | | * * 4 | 4 | | P 41 - 4 | | 1 | | | | | | | | | 2-19 |
| Serial # | | | | | | | | | | | | | | | | 360 |
| Trans. Pos'n | 201 | 21/1 | 21 | 9/3 | 320 | PH. | SEP | 09. | 700 | PA | 3PM | PP) | 300 | PA | DRN. | PH |
| Tube Position | |] | | 2_ | ~ · · · · · · · · · · · · · · · · · · · | 1 | | 2 | |)) | 2 | n li tracis si | | 5 | 4 | 2 |
| Fil. Volts(Meter) | 2)4.000000000000000000000000000000000000 | N | 1244-11-00-0 | 30 10 1 mg . W.F. | P-40-0 2-0-144 | 11 HOUSE 12 17 17 19 11 | 1271-0415-10 | 27 Spinstern . | £ 4 * E SY SE TON OWN | D-01000 03000 | ******** | | **** 1. 5 ** *** | A ++ 10-4 5 100 | . ۵۰۰ محروده م | 540 |
| Fil. Volts(Tube) | 19.5 | | | | | | | | | | | | | | | |
| Fil. Cur. Amps. | 61.5 | 2.5 | 6.8 | 61.2 | 4.2 | 11.7 | 69.0 | 100 | 63.8 | 14.6 | 33 | 61.2 | 69.5 | 63.6 | (2.2 | 63.4 |
| | | أرجده هاهدور | و قو الجادو مين | ng tratuitie | ., | | **** tr ** | | . /1 | . # - + | \$1.5.00 ×1.00 ×1.00 | ,1,2 | , ton a la to 1 a l l l | ,. d. = 14 | | |
| Remarks: | | | | · | 5*********************** | عيد هو دو د اني ۱۹۰ | (m) + , n/m + 0 ; | ******* | دورو ا ۱۹۰۹ ماده | 90 in . e.g19 gives | ele lagratur. | , , , , , , , , , , , , , , , , , , , | ant jougange to | tet om le le le le | مرح د ۱۰۰۵ و ۲۰ | |
| MAAG | hechy | ÉD. | 129 | AIL | 5/3 | (0)= | STO | <i>M</i> | 77 | 2_ | | 109 6 | g 84 . 1 per 100 . 1 . | , | | ا ا ا |
| BIAS | 314 | | UDI | <u> </u> | ., | 70 | | ······ | ٠٠.٠٠٠ مود. ١ | ~ | , | e de la companya | *** ***** | | · ···- • | |
| 3RO PA A | EUE | 12511 | | ω | ٠د | 17. | J. 1. 1. | 2 | 0.0 | 2 | ****** *** * ** | range digitalika | | ty a tenner | | |
| L XND'' | | | | | | -/-/- | 80 | F | 20. | 10 | | P *** 2" * ** | | | | |
| Day FR Signatures #P 4/4. | | | | | | | | D | ate | - | | | | T-1811 1924 | | 7 44 |
| Signatures # 472 2nd PA Bal. Div 7 L | <i>.</i> - | 3 | , | $\overline{}$ | | | | F | il.M rd P | eter A Ba | Hou l。Di | v | 25 | 27 | _ | 1 1 1 1 1 1 2 |
| 2nd PA Bal.Div 7 L | |) | الم الم | ? | ine and the first of the first | | god no c ase t godfyygaes | F 3 | rd P | eter A Ba | l.Di | v | 28 | | | posteri |
| Signatures # 4" 2nd PA Bal.Div_7 L Tube Pos'n Type Tube |]]] | ~ | E 44W-0971.404 1 | 43 ~~~ 644 | 8-2-1-1 K 1-2-3 | [2-h] | enterente 24 | F 3 | rd P | eter A Ba | 1 . Di | V. | 25 | | - | |
| 2nd PA Bal.Div_7 L Tube Pos'n | 20 A 346 | 219 | 346 | 2-11 | 34 | 2-17 | 34 | 7 2 | rd P | eter A Ba | 1.Di | V | 25 | 5 2-19 | 34 | 3/2 |
| 2nd PA Bal.Div 7 L Tube Pos'n Type Tube Serial # | 2759 342 4159 | 217 109 | <i>392</i> 417 | 702 | 134 416 | 7-1) 945 | 34 K-10 | 7 F) 1d6 | rd P | eter A Ba 3 2/2 3258 | 1.Di 24 34 425 | 2. p | 25 39 | 5-19 2-19 | 34. | 360 |
| 2nd PA Bal.Div 7 L Tube Pos'n Type Tube Serial # | 2759 342 4159 | 217 109 | <i>392</i> 417 | 702 | 134 416 | 7-1) 945 | 34 K-10 | 7 F) 1d6 | rd P | eter A Ba 3 2/2 3258 | 1.Di 24 34 425 | 2. p | 25 39 | 5-19 2-19 | 34. | 360 |
| Znd PA Bal.Div_7\(\frac{7}{2}\) Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 200 1 200 1 200 1 200 1 | 219 09 205 | 342 417 21 | 702 7/1 205 | 34 416 31 | 2-17 945 20-5 | 34 K-16 31 | 7-12-12-12-12-12-12-12-12-12-12-12-12-12- | 34 24 31 20 | eter A Ba 3 2-17 3258 20-5 | 1.D1 34 425 34 20 | 2. A 26.1 20.5 | 39 4176 39 20 | 5 2-19 20-5 | 34 420- 31 20 | 3B 360 205 |
| Znd PA Bal.Div_7\(\frac{7}{2}\) Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 272 342 4159 0no 1 20 | 2A OP 265 26.5 | 342 417 21 24 118 | 702 702 703 701 | 34 416 31 | 2-17 945 205 202 | 34 K-10 31 70 | 7-19-106-120-2 | rd P 34 2 42 36 19.9 | eter A Ba 3 3-17 3258 20-5 20-5 | 1.D1 34 425 34 70 | 2. A 26.1 20.5 | 25 34 39 20 189 | 57 70 3 70 3 20 5 | 34 420 31 20 | 3B 360 205; 205; |
| Znd PA Bal.Div_7\(\frac{7}{2}\) Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 200 1 200 1 200 1 200 1 | 2A OP 265 26.5 | 342 417 21 24 118 | 702 702 703 701 | 34 416 31 | 2-17 945 205 202 | 34 K-10 31 70 | 7-19-106-120-2 | rd P 34 2 42 36 19.9 | eter A Ba 3 3-17 3258 20-5 20-5 | 1.D1 34 425 34 70 | 2. A 26.1 20.5 | 25 34 39 20 189 | 57 70 3 70 3 20 5 | 34 420 31 20 | 3B 360 205; 205; |
| Znd PA Bal.Div_7\(\frac{7}{2}\) Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 242 342 4155 0101 20 19.8 | 2A OA 265 261 625 | 34.7 34 24 11.8 60.0 | 702 702 205 201 605 | 34 416 31 24 19.9 61.2 | 7-19 945 019 20-5 20-7 62.0 | 34 K-16 30 149 186 | 2-19-100-5-10-5-10-5-10-5-10-5-10-5-10-5- | 34 34 34 36 39 | eter A Ba 3 2-12 3258 20-5 20-5 648 | 1.D1 34 425 34 79-9 638 | 2. A 26.1 20.5 20.2 64.9 | 39 39 39 20 189 612 | 57 70 3 70 3 20 5 | 34 420 31 20 | 3B 360 205; 205; |
| Znd PA Bal.Div_7\(\frac{7}{2}\) Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Cur. Amps. Remarks: | 272 4159 2001 20 19.8 61.7 | 219 109 265 265 161 1625 1625 | 392 417 21 20 60:0 | 702 702 7/1 205 201 608 | 34 416 3, 19, 2 61, 2 | 2-19 945 1205 202 62.0 | 34 K-16 31 20 11.9 1686 91.68 | 2 - P - Lab | 34 34 34 20 19.4 639 | eter A Ba 3 3-17 3258 7/9 20-5 20-7 648 | 1.D1 34 425 34 77 638 | 2. p 2. p 26.1 20.5 20.2 64.9 | 39 39 39 20 189 612 | 57 70 3 70 3 20 5 | 34 420 31 20 | 3B 360 205; 205; |
| Znd PA Bal.Div_7\(\frac{7}{2}\) Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 242 342 4155 0101 20 19.8 | 219 109 265 265 161 1625 1625 | 392 417 21 20 60:0 | 702 702 7/1 205 201 608 | 34 416 3, 19, 2 61, 2 | 2-19 945 1205 202 62.0 | 34 K-16 31 20 11.9 1686 91.68 | 2 - P - Lab | 34 34 34 20 19.4 639 | eter A Ba 3 3-17 3258 7/9 20-5 20-7 648 | 1.D1 34 425 34 77 638 | 2. p 2. p 26.1 20.5 20.2 64.9 | 39 39 39 20 189 612 | 57 70 3 70 3 20 5 | 34 420 31 20 | 3B 360 205; 205; |
| Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Cur. Amps. Remarks: | 272 4159 2001 20 19.8 61.7 | 219 109 265 265 161 1625 1625 | 346 417 21 60.0 Chr | 702 702 7/1 205 201 608 | 34 416 34 19.9 61.2 12 12 12 12 | 2-19 945 202 62.0 Agri | 34 K-16 31 20 11.9 186 91.83 | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 70 P 472, 31, 70, 19.4 (39, 19.4) | eter A Ba 3 3-17 3258 7/9 20-5 20-7 648 | 1.D1 34 425 34 77 638 | 2. p 26.1 20.5 20.2 64.9 | 39 39 39 20 189 612 | 57 70 3 70 3 20 5 | 34 420 31 20 | 3B 360 205; 205; |

"Tube Filament Currents"

lst Tuesday

ITEM (4

| Serial # Trans. Pos'n Tube Position Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 415 2n 20. | 2-A 909 PA 1 20.5 26.1 625 | 417 900 20 198 | 702 171 2 205 261 | 4169 3RD | 745 PA 20.5 | K-107 | 1067 | 4232 | 58 | 423. | 261 | 4177 | ٥3 | 420 | 360 |
|--|------------------|--|---|-------------------------------|--------------------------------------|-------------------|---------------|-------------|----------------------|----------------------------|---------------|-------------|-----------------|-------------------|---------------|----------------|
| Serial # Trans. Pos'n Tube Position Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 415 2n 20. | 909 PA 20.5 | 417 900 20 198 | 702 171 2 205 261 | 4169 3RD | 745 PA 20.5 | K-107 | 1067 | 4232 | 58 | 423. | 261 | 4177 | ٥3 | 420 | 360 |
| Trans. Pos'n Tube Position Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 20° | PA 70.5 | 20 19.8 | 177 2 25-5 26-6 | 30 | 20.5 | 250 | PA | 3rd | PA | 320 | PA | SKO | 79 | Sep. | DD - |
| Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 9.8 | 26.1 | 19.8 | 20-1 | 20 | 20.5 | - 2 | > | - | ٦ | / 1 | | | | | Y.H |
| Fil. Volts(Tube) | 9.8 | 26.1 | 19.8 | 20-1 | 20 | 20.5 | | i | ∡ مودد | <i>J</i> | | | | | (| |
| Fil. Cur. Amps. | 19:8 616 | 26.1 625 | 198 60.0 | 2K-1 | 10007 | mater 17 *** | 20 | 20.5 | 20 | 20.5 | .20 | 205 | 20 | 20.5 | 3L) | 200 |
| | lollo | 625 | 60.c | 100 | 11.1 | 26.2 | 197 | 20.2 | 19.9 | 20.2 | 19.7 | 20-2 | 19.5 | 2.2 | 17.7 | 20.Z. |
| | | |) 1 | 60.0 | 60.8 | 61.4 | 68.4 | 69.2 | 634= | 4.6 | <i>4,</i> 2.8 | 435 | 18 | (2.6) | 6/8 | 62.8 |
| | | | | | | | | | | | | , | | | | |
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| Signatures AP-GK-JC | - | | | | | | | F | il.M | eter | Hou | rs S | 7.7 | 273 | ت ا | |
| 2nd PA Bal. Div 72 | | | | | | | | 3 | rd P | A Ba | l.Di | v | | 5 | - | |
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| Tube Pos'n 5 6 Type Tube 964 374 | 30 | 17.0 | + | | | ر بحیجومعوت و د | }.r.c+v+r++++ | 4-14-5 | gg of all one segme. | the with the last the last | .cie | | F .* * | • • • • • • • • • | 74 | ساست. دیرسز |
| 1.000 M36 | | 5.90° | 1-11-21 | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | Y | | | | | | | | | |
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| Fil. Voltage 68.8 Fil. Volts (Tube) 68.8 | เมีย | Con | 140 | 30.7 | 70 | 200 | 196 | 100 | 100 | 000 | 1.WO. | 20.0 | 170 | 10.51 | 190 190 | Go S |
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| Fil. Cur. Amps. | 61.0 | 61.6 | 1035 | 05/4 | 67.0 | 6/8 | 6/4 | K3.1X | 6:4.9 | الالتكال | 620 | 600 | 6/4 | 601.C | 6/6 | Colo |
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"Tube Filament Currents"

1st Tuesday

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| Type Tube | 342 | -17 | 39 | Q-h | 342 | -17 | 342 | -1) | 34 | 2-1) | 342 | A | 54) | 1-17 | 34. | 2-17 |
| Serial # | 42030 | 60 | 4177 | 03 | 1406 | ८६५ | iK-10 6 | ٥٤٧ | 4232 | 258 | 423) | 61 1 | 7060 | 44 | H36 | 160 |
| Trans. Pos'n | 20 | 36) | 21 | 2() | 31 | | | | | 2/ | 31 | PA | 36 | A | 36 | P |
| Tube Position | 1 | | | _ _ | · | | | | | a | | 1 | <u>`</u> | | • | . |
| Fil. Volts(Meter) | 200 7 | | | | | | | | | | | | | | | |
| Fil. Volts(Tube) | 198 | | | | | | | | | | | | | | | |
| Fil. Cur. Amps. | 10.46 | 01.0 | 604 | 61.7 | 68.S | 1-9-10 | 62.8 | 66.6 | 61.6 | 69.6 | 61.4 | 13.0 | 3.6 | 49.8 | 68.8 | 69.6 |
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| Tube Pos'n Type Tube | 342 | PA -17 | 200 34 | 2PA | 34 | 2 <i>1</i>) 2- <i>1</i>) | 34 | PA 2-A | 34 | PA DH | 34 34 | ? [] 9- <i>[</i>] | 31 | PA DA | 34 | 12.19 |
| Type Tube | 210 342 4203 | -17 | 3.4 | 7-17 | 134 | <i>2-1</i>) | 340 | 2- <i>F</i> 1 | 34 | H | 5/ | 7-17 | 34 | 7.19 | :07 | (2)1) |
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"Tube Filament Currents"

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| 42-A | 34 | 2- <i>f</i>) | 34 | -2A | 347 | 2-1 | 34 | 2-11 | 342 | 2-A | 34 | 2-A | 34 | 2-19 |
| 42-A 3258 | 34 423. | 2-A 261 | 34 K161 | -2A 6664 | 34.2 40 66 | 2-A | 34 H3-6 | 2-A 691 | 340 N30 | 7-A | 34 1106 | 2-A 644 | 34. KIC 6 | 2-A 1668 |
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"Tube Filament Currents"

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| Type Tube | 312-1 | 349-11 | 312-17 | 312-11 | 342-A | 349-A | 849-1 | 349-1 |
| Serial # | 423258 | 423761 | 1106064 | 1210606 | 436091 | H36100 | 106014 | 11/06068 |
| Trans. Pos'n | 2000 | DEPPA | BROPA | 3 PA | 3PA | 3PA | 300 | 3PA |
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| Fil. Volts (Meter) | 126 30.5 | 20 205 | 20 20.5 | 20 205 | 20 205 | 20 260 | 20 20: | 70205 |
| Fil. Volts(Tube) | | | | | | | | 199300 |
| Fil. Cur. Amps. | 61.0 61.9 | 60.661.2 | 67.6 68.6 | 66.4672 | 69.8 10.8 | 453 695 | 65.669.5 | 18.5 70.0 |
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| Tube Pos'n | | 2 | | 2 | | | 3- | 6 |
| Type Tube | 316-11 | 312-11 | 342-11 | 017-1 | 34Z-A | 312-1 | 312-17 | 342-4 |
| Serial # | 423258 | 42324 | 1410606 | 1/10662 | M3607/ | 1136100 | 1466074 | K106068 |
| Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2100 | 240 | SRD | 300 | 3RD | 320 | 3RD | BRD |
| Fil. Volts(Meter) | 20 70.5 | 20 705 | 20 20.5 | 20 36.3 | 20 20.5 | 20 75.5 | 20 20 | 70 20.0 |
| Fil. Volts(Tube) | 19.5 20.1 | 17.8 30.1 | 19.9 262 | 19.9 30.2 | 19.9 20.2 | 19.9 20.2 | 199 30.2 | 15.9 2 2 |
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"Tube Filament Currents"

1st Tuesday

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| Signatures AC XIII | | | | | | | | | F11 | Me | t.er ' | Hour | , J | 173 | 7 | |
| 2nd PA Bal. Div | • | | | | | | | | 3rd | PA I | Bal. | Div. | D | · | ·/ | |
| و در در سو با در | 7.0 | | ********** | | ******** | | 7 | ********** | ng panasan ang | mailanair scant | مردروه والأراق | | 6h= .e .e. | | | |
| Type Tube | 30 | · | : 7 | 0/ | 1.5% | / K | | | | | 1 3 4 | enie ienie E. K | 1 | | 3 | |
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| Trans. Pos'n | 110. | 154 | 7 | 166 | - | 1.00 | 7.2. | 100 | | | | 1 /- | | | 1/3/ | 1 - i. 1 - L |
| Tube Position | | f | 24,000 | | 1000 | | MEN-SIN. | 1 | 3 | والمشتشور | 1.25 | | | يم مي گريم س | | 1 11 |
| Fil. Volts(Meter) | 120 | 244 | A 9 | 2 1.5 | 1 3 | 54 | 15 | 177.1 | | | 1700 | | | | | 200 |
| Fil. Volts(Tube) | 19.6 | 261 | 19.1 | 26 1 | 19.5 | 26.1 | 16.9 | 200 | 169 | 07.0 | 150 | 120 | 2:16. 100 12 | 3163 | 1.00 | 26.5 |
| Fil. Cur. Amps. | | 1.7 | 11.1 | 615 | 123 | | 151 | 1/1 | 1 | 7. 7 | 17.7. | 20 | 17.7 | 16.0 | 11/99 | 26.7 |
| | The state of the s | 42.2 | se 'mil': | RIII. | 9.29 | 126,2. | 12/ | ELL., | F. / 1.7. | 3.2. | 1. A. 3. | F.7.75. | | 1. | ينه ينا- | |
| Remarks: | سىسىدۇل. | l | l | | l, | | · | | | | | 1 | L | ļ | <i>i.</i> | ŧ |
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| | 1.5 | | 11/1 | ! | 6.6 | | ا بستانت افسالا | 2% | 6. 6 | | | | • | | | • |
| | RP J | '/.T | K' | K., . | 366 | , | 17.7 | | | 20 | , <u>, , , , , , , , , , , , , , , , , , </u> | <i>V.</i> | | ٠ | | • • • • • |
| | 124 | ~ | | | .7 | ٠, . | 1. Z.L. | | | 3 ,20 | <i>[</i> | | | | | |
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| emmente untragge o person d'option despendences, et les misper résigne nes ex- legarance l'actions estates de destress april estates april de l'action de l'action de l'action de | | | | | | | | | | | | | | • - | | |
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| Day FRF Signatures to - EF-PF | | | | | | | | | | | | <u> </u> | | 77.7 | | . :. |
| Day TOP Signatures to FE-PK 2nd PA Bal. Div 72- | | And a second | | | | ***** | • • • • • | F | il.M | eter | Hou | rs _ | 1990 | | | . :. |
| Signatures te-FF-YK | _ | | | | | andre o | | F: 3: | il.M rd P | eter A Ba | Hc u l "Di | v. | 99 99 | | | . :. |
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| Signatures to FERRAL 2nd PA Bal. Div 72- | |)) _H | 340 |) | 340 | <i>[</i> | 343 | F: 3: | il.M | eter A Ba | Hc u | v | 99 | | | <u> </u> |
| Signatures te-ge-ge-ge-ge-ge-ge-ge-ge-ge-ge-ge-ge-ge | 34 | 2.17 | 372 | -17 | 340 | - /- | 343) | F 3: | 11.M rd P. | eter A Ba | Hcu l.Di | v | 33 |) - / / | 34 | 1-11 |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # | 34; 39; | 2 /i 755 | 372 12 13 | 61 | 242 406 | 024 | 343) Klou | F 3: | 11.M rd P. 342 | eter A Ba | Heu 1.Di | rs | 33 |) -// | 342 |)-f) (c6) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # | 34; 39; | 2 /i 755 | 372 12 13 | 61 | 242 406 | 024 | 343) Klou | F 3: | 11.M rd P. 342 | eter A Ba | Heu 1.Di | rs | 33 |) -// | 342 |)-f) (c6) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 34; 493; 21 | 0 H VSS 217 25 T | 342 12 15 21 20 | (-17) (6) (9) (5) | 340 400 31 | -H 064 PG 20.5 | 345) 1300 31 | 7) 21 21 21 21 21 21 21 21 21 21 21 21 21 | 11.M rd P. 342 342 | eter A Ba | Heu 1.Di 342 4.36 | 7 7-77 100 100 | 341 341 31 | 5 1274 1279 1285 | 342 | (-f) (-f) (-f) |
| Signatures to CF-97 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 3 H 4833 2 P 20 | 2 H 753 2A 201 | 340 19.15 20.19.8 | 27) 27) 20.5 | 319 | 20.3 20.3 | 345) 1500 190 190 | F 3: 21 // 2000 2000 | 11.M 342 336 | eter A Ba 3 2 4 2 4 2 5 2 5 3 2 5 3 2 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 24 274 265 265 262 | 342 11/00 190 |)-H (c.6) (M) (20.0) |
| Signatures to CF-97 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34; 493; 21 | 2 H 753 2A 201 | 340 19.15 20.19.8 | 27) 27) 20.5 | 319 | 20.3 20.3 | 345) 1500 190 190 | F 3: 21 // 2000 2000 | 11.M 342 336 | eter A Ba 3 2 4 2 4 2 5 2 5 3 2 5 3 2 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 24 274 265 265 262 | 342 11/00 190 |)-H (c.6) (M) (20.0) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34;3; 483; 20 198 601 | 2 14 753 717 201 61.2 | 348 19.33 19.8 60.0 | 27) 27) 2005 2001 609 | 342 2/06 31: 19-9 65-9 | 20.7 20.7 20.7 20.9 668 | 342 1000 100 190 190 450 | 7. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. | 11.M 13.472 13.68.31 | eter A Ba 3 2 4 2 4 2 5 2 5 3 2 5 3 2 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 24 274 265 265 262 | 342 11/00 190 |)-H (c.6) (M) (20.0) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. Remarks: | 34 423 20 118 60 1 | 2 /4 155 2/1 201 61.2 | 376 42.13 40.19 60.00 | 27) 26) 20.5 20.1 | 340 20 31 19-9 65-9 | 200 200 200 200 200 200 200 200 200 200 | 342 1000 17.9 45.0 | 7. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. | 11.M 13.472 13.68.31 | eter A Ba 3 2 4 2 4 2 5 2 5 3 2 5 3 2 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 24 274 265 265 262 | 342 11/00 190 |)-H (c.6) (M) (20.0) (20.0) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. Remarks: | 342 32 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 | 0 A 153 217 201 201 61.2 Clif | 19.5 19.5 60.0 19.5 | 27) 61 27) 20 1 60 9 | 340 31. 30 19.9 65.9 | 2019 2019 2019 668 1090 | 349 1000 31 20 19.9 45.0 V | 7. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. | 11.M rd P 34/2 (3.6 (3.6 (3.6 (3.6 (3.6 (3.6 (3.6 (3.6 | eter A Ba July Josi Josi Jogi | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 24 274 265 265 262 | 342 11/00 190 |)-H (c.6) (M) (20.0) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. Remarks: | 34333 33 175 6 175 18 18 18 18 18 18 18 18 18 18 18 18 18 | 2 /4 253 2/7 20-1 20-1 61-2 CHF PH | 19.5 19.5 60.0 19.5 19.5 19.5 19.5 19.5 19.5 19.5 | 61 26) 20.5 20.1 60.9 | 340 31. 30 19.9 65.9 | 2019 2019 2019 2019 2019 2019 | 349 100 199 199 50 199 | 7) 31 21 30 30 30 30 30 30 30 30 30 30 30 30 30 | 11.M 13.472 13.68.31 17.2- 0.0) | eter A Ba July Josi Josi Josi | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 24 274 265 265 262 | 342 11/00 190 |)-H (c.6) (M) (20.0) |
| Signatures to Free 2nd PA Bal.Div 72- Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. Remarks: | 342 32 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 | 2 /4 253 2/7 201 201 201 201 201 17 17 17 17 | 19.5 19.5 60.0 19.5 19.5 19.5 19.5 19.5 19.5 19.5 | 27) 61 27) 20 1 60 9 | 340 31. 30 19.9 65.9 | 2019 2019 2019 2019 2019 2019 | 349 100 199 199 50 199 | 7. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. | 11.M 13.472 13.68.31 17.2- 0.0) | eter A Ba July Josi Josi Josi | Heu 1. Di 342 4.36 3.1 | 7. 17. 100 100 100 100 100 100 | 35 35 35 36 30 197 | 5 12-4 12-74 126-5 24-2 | 342 11/00 190 | () f) () f) () so d) |

"Tube Filament Currents"

1st Tuesday

| Day 3-27-59 Signatures FF430 2nd PA Bal. Div 12 | gir gilahn sad law sederan sad l | | from the comment | ega t sa sa s susmana | Fil. Me | 3-27-5 ter Hours | 9980 | | |
|---|--|--|---|---|--|--|--|---|------------|
| Type Tube | 342 A | | | | | 342-A | | | |
| Serial # | 11 | 7-11-2-1-11-1 | | | | H36100 | (in an amount and a | | |
| Trans. Pos'n | ZPA | 2 PA | 3PA | 3PA | 3PA | 3PA | SPA | 13F | PA |
| Tube Position | は本 | 12 | 22 | / 發 | 3 | 4 | 5 | 16 | <u>؛</u> ج |
| Fil. Volts (Meter) | Balance and a real case was | ele can , en ace alle con trans acas (| | | 4 | 20 205 | 1 | | |
| Fil. Volts(Tube) | 19.8 26.1 | 19.8 90.1 | 19.9 10.2 | 19.9 20.2 | 19.9 20.2 | 19.9 20.2 | 19.9 206 | 2 19.9 | 202 |
| Fil. Cur. Amps. | 590 600 | 60.0 69.0 | 65,066.0 | 66.0 67.0 | 68,069,0 | 67.0 68.0 | 67,0 68,5 | 67.0 | 68.0 |
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| Remarks: HAA | Guedre D | V5 W | ESTON 7 | 72 | and the second s | | | , | : |
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| 2ND | | | | — 20. | | | | | · • |
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| Day 75-1-59 | | | | r. | ate (5) | -1-59 | • • • | | |
| Signatures EF-JC | | | | F | il.Meter | -1-59 Hours_ | 631 | · | |
| | | | | F | il.Meter | | 631 | | |
| Signatures EF-JC 2nd PA Bal.Div_72 | 342-A | 342-4 | 342-A | F | il.Meter | Hours_ | 631 | 7/1/2 | - A |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Postn TVPE Type Tube SERIALE | 342-A 453257 | 342-A 423261 | 342-A H106664 | F | il.Meter | Hours_ | 631 | 342. | |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Postn TVPE Type Tube SERIALE TRANS. POSTM | 1 1344 A 174 CA 14 CE OF 1 6W- | 342-A H23261 2PA | | 3 3 342-A | il.Meter | Hours | 631 29 342-A 17106-74 | 17106 | 062 |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TVPE Type Tube SERIALE TRANS. POS'N Serial # TUBE | 4:3257 2 PA | LPA | H106664 | 3 342-A 17166062 | il.Meter rd PA Ba J42-A HJ609/ | Hours 1.01v | 342-A 17106074 | H1060 | 062 |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TVPE Type Tube SER/ALT TRANS. POS'N Serial # TVBE Transm. Pos'n | 453257 2 PA | 2 PA | 7106664 3PA 2 | 342-A 17166062 3P/4 | il.Meter rd PA Ba | Hours 1. Div | 631 29 342-A 17106-74 3PA | 17106 | 062 |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Postn TVPE Type Tube SER/ALE TRANS. POSTM Serial # Transm. Postn Fil. Volts (Meter) | 453257 2 PA 2 20 2°5 | 2 PA | 7106064 3PA 2 | 3 42-A 17166062 3 PA | il.Meter rd PA Be | Hours 1.Div 342-A HJC100 DPA 4 | 631 29 342-A 17106-74 3PA 3- | #1060 3PA | 062 |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Postn TVPE Type Tube SER/ALE TRANS, POSTN Serial # Transm. Postn Fil. Volts(Meter) Fil. Volts(Tube) | 423257 2 PA 2 20 255 19.8 251 | 2 PA 1 19.5 I.1 | 7 10 6064 3 P A 2 2 10 20 = | 342-A 17106062 3PA 20 = 55 19-9 202 | 11.Meter rd PA Be rd PA Be rd PA Be rd PA rd | Hours 1.Div. 342-A Hours Hours 1.794 179200 | 631 29 342-A 17106-74 3PA 3- 45 25-J 19-4 20-2 | #1060 3PA 6 | 06£ |
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| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TVPE Type Tube SERIALE TRANS. POS'N Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. | 453257 2 PA 2 20 205 14.7 201 59.0 60.0 | 2 PA 1 19.5 I.A.1 600 E1.0 | 7 PA 2 2 19.9 20.7 14.0 LJ.0 | 342-A 17106062 3PA 20 = 65 19-9 35-2 650 66.0 | 11.Meter rd PA Be | Hours 1.Div. 342-A Hours 1.Div. 4 199200 1994 199201 | 631 29 342-A 17106-74 3P/A 3- 25 25-3 19-4 20-2 | 6 3PA 6 19.92 | 06F |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TVPE Type Tube SER/ALT TRANS. POS'N Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Cur. Amps. Remarks: /4/A | 453257 2 PA 2 20 205 19.8 201 59.0 60.0 | 2 PA 1 49.7 2.1 60.0 61.0 | 7 10 6064 3 P A 2 10 20 20 2 11.9 20.2 64.0 65.0 | 3 42-A 17106062 3 P/A 1 20 = 6 5 19-9 20-2 65.0 5 7.0 N 7 | 11.Meter rd PA Be 1742-A H 3669/ 2 PA 2 2 2 2 5 5 6 5 7 2 2 | Hours 1.Div. 342-A HJC100 DPA 4 L0 19.9 26.2 | 631 29 342-A 17106-74 3PA 3- 25 25.7 19-4 20.2 | 6 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | 06£ |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TVPE Type Tube SER/ALA TRANS. POS'N Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. Remarks: /M/A | 453257 2 PA 2 20 205 19.8 201 59.0 60.0 CHEC | 2 PA 1 49. F \$ 1.1 60.0 61.0 T U B E | 7 10 6064 3 P A 2 19.9 20.2 19.9 20.2 64.0 65.0 5 WES | 3 42-A 17106062 3 PA 20 = 5 5 19-9 = 1 650 66.0 | 11.Meter rd PA Be rd PA Be rd PA Be rd PA Be rd | Hours 1.Div. 342-A HJC100 DPA 4 19.9 20.1 | 631 29 342-A 17106-74 3PA 3- 14-26-3 19-42-2 | 6 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | 06F |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TVPE Type Tube SERIALE TRANS. POS'N Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. Remarks: /M/A /// A // | 453257 2 PA 2 20 205 14.7 201 590 600 CHEC PA | 2 PA 1 49.F \$4.1 600 61.0 HED V TUBE | 7 PA 2 19.9 20.7 14.0 L5.0 5 WES \$ 290 5 W. | 342-A 17106062 3PA 20 = 65 19-9 3=2 650 66.0 | 11.Meter rd PA Be rd PA Be rd PA Be rd PA 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | Hours 1.Div. 342-A HJC100 DPA 4 19.9 20.1 | 631 29 342-A 17106-74 3PA 3- 14-26-3 19-42-2 | 6 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | 67.0 |
| Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n TYPE Type Tube SERIALE TRANS. POS'N Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. Remarks: /M/A /// A // A | 453257 2 PA 2 20 205 19.8 201 59.0 60.0 CHEC | 2 PA 1 49.F \$4.1 600 61.0 HED V TUBE | 7 PA 2 19.9 20.7 14.0 L5.0 5 WES \$ 290 5 W. | 342-A 17106062 3PA 20 = 65 19-9 3=2 650 66.0 | 11.Meter rd PA Be rd PA Be rd PA Be rd PA 3 2 2 2 2 5 7 2 5 7 2 2 7 2 2 7 2 2 2 2 7 2 2 2 2 | Hours 1.Div. 342-A HJC100 DPA 4 19.9 20.1 | 631 29 342-A 17106-74 3PA 3- 14-26-3 19-42-2 | 6 19.92 66.0 | 67.0 |

"Tube Filament Currents"

1st Tuesday

| Day 5-39-57 Signatures EF+4C 2nd PA Bal. Div 72 | L | n mrzypowiką włoski | -Spectra tropped | togan ka-ya | *************************************** | The state of the s | 4777 | d = 132° 3° dr. | Fil. | e . Met | ter I | lours | 0/ | | | و مدين |
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| Type Tube | | | | | | | | 2-17 | | | | | | | | |
| Serial # | 11 _ | | ì | | | | | | 1 | | | | 1 | | 4 | 6068 |
| Trans. Pos'n | 12 | PA | | | 3 | <u>P.A.</u> | 3 | PA | 31 | PA | 3 | DA. | 31 | 7/7 | 36 | $\mathcal{D}_{\mathcal{D}_{m,n}}$ |
| Tube Position | ;}! | | | 2 <u></u> | ļ | 1 | | 2 | | 3 | | 7 | | 5 | 6 | ; |
| Fil. Volts(Meter) | # AL /* : *** . + & * | \$1,00° mal (+) 1 mg/s | | ********* | P 70 -0 7 -0 .24 | 4 . 7 . 8 6 4 7 . 7 . 7 7 7 1 | 2001 - 411. | AFRICOLIFT ! | # 2 A 20 " 10 mg | A = a- a | h a a | illian to the last of | 1 | | k | 20.0 |
| Fil. Volts(Tube) | frankling i e. | | لم دروب بحوالية | | · | £ | | 4 100 100 1 1 1 - | diam'r. | | Lines and | J | 1 | i | | 20.2 |
| Fil. Cur. Amps. | 37.8 | 60.4 | 6.7.9 | 63.8 | 68.4 | 69.2 | 63.8 | 64.6 | 660 | 67.3 | 66.0 | 16.8 | 66.2 | 67.1 | 45.8 1 | 66.6 |
| | | | 7.7. | | í ! |] | | | | | , | l | | ļ | | |
| Remarks: | 1441 | | | | | | | | | we verden | | rw err | | | | : م |
| | \$10 | } <u></u> | ALL | 1 | DE | <u>S</u> | 4.70 | () (S. | د | | ٠ | | | 4 .* 1 1, | | |
| N | 313 | 1) <u></u> ? | 11 | K | ΞŲ, | <u>ي</u> رد. | <u>ب</u> | (T) | · 7 - | - 34 | <u>()</u> . 2 | ·V | | | | |
| 1 | 20 | り. ' | * * * * * * | ********* | | ٠, | | . 11.: | Ø | . 7 | <u>(</u> : / | , U | | e e | | |
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| Day Jar | *** ** * * | | · · · · · | | * . | | •. • | יייי. | nto | :: 7 | 7-3: | - \^6 | | . r | | |
| Day 7307 Signatures EF-5° | | | · | | | | •, ••• | F | il.M | | Heu | re_ | 02 | 117 | - • | |
| Day 7307 | | | · | ****** | | | •, •• | F | il.M | | Heu | re_ | 02 | 117 8 | - | |
| Day 7307 Signatures EF-5° 2nd PA Bal.Div_7° | |)A | 7.1 | DА | 1 2 | O A | -3 | F 3 | il.M | leter A Ba | Hcu l.Di | v | 02 Z | හි | | ΣΔ |
| Day 7307 Signatures EF-5° | 20 | | | | | | | г 3 РА | il.M | leter A Ba | He v | rs _ v | 02 2 | 8 DA | 3F | 1 /** |
| Day 77 77 Signatures EF-5° 2nd PA Bal.Div_72 Tube Pos'n Type Tube | 34 | 2A | 34 | 2-A | 34 | 2-7 | 34 | г 3 РА 2-А | 11.M rd F 34 | leter A Ba PA 2-A | Heu 1.Di 31 | v 2/A | 02 2 31/2 | 8 DA 2-A | 342 | 2-17 |
| Day 73 37 Signatures EF-5° 2nd PA Bal.Div_7° Tube Pos'n | 34 | 2A | 34 K106 | 2-A | 34 | 2-7 | 34 | PA 2-A 2-64 | 11.M rd F 34 | PA Ba PA 2-A | He w 1 . Di 34. | v. 2-A | 02 2 31/2 | 8 DA 2-A | 342 | 2-17 |
| Day 77 77 Signatures EF-5° 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n | 2-1 34 423 | 2A 258 | 34 K 166 | 2-A 662 2 | 34 134 | 2-A 96 1 | 34 K 160 | PA 2-A 664 | 11.M rd F 34 | PA Ba 2-A 2-7/ | He u 1 . Di 34 736 | 100 100 | 2 2 34 6 6 | 8 DA 2-A 6674 | 342 Kiec L | 2-A 668 |
| Day Told Signatures EF-5° 2nd PA Bal.Div_7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7 | 2-1 34 423 1 20 | 2A 258 | 734 K106 | 2-A 20.5 | 34 130 | 2-A , Sc 1 20.5 | 34 K160 20 | PA 2-A 2-64 | 11.M rd F 34 736 | PA Ba DA 2-A 27/ 3 | He u 1. Di 34. 436 | 7. PA 1000 | 3/2 | 8 DA G674 G65 | 342 KIEG L | 2-19 668 200 |
| Day 73 37 Signatures EF-5c 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2-1 34 423 1 20 | 2A 258 258 | 734 K106 20 | 2-A 20.5 20.5 | 34 136 20 | 2-A , 96 1 20.5 20.2 | 34 K100 20 19.9 | 2-A 2-A 205 205 | 11.M rd F 34 4.36 | PA Ba PA Ba 2-A 2-A 205 | He u 1. Di 34. 736 | 100 100 100 100 | 342 | 8 DA 2-A 6074 205 205 | 342 KIEG 20 199 | 2-P) 200 |
| Day 73 37 Signatures EF-5c 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2-1 34 423 1 20 | 2A 258 258 | 734 K106 20 | 2-A 20.5 20.5 | 34 136 20 | 2-A , 96 1 20.5 20.2 | 34 K100 20 19.9 | 2-A 2-A 205 205 | 11.M rd F 34 4.36 | PA Ba PA Ba 2-A 2-A 205 | He u 1. Di 34. 736 | 100 100 100 100 | 342 | 8 DA 2-A 6074 205 205 | 342 KIEG 20 199 | 2-P) 200 |
| Day 73 37 Signatures EF-5c 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2-1 34 423: 1 20 19.8 60.0 | 2A 258 258 301 61.0 | 34 K106 19.8 63.0 | 2-A 64.0 | 720 | 2-A 90 1 20.5 10.2 10.0 | 34 K 106 20 19.9 63.0 | PA 2-A 2064 205 200 40 | 11.Mrd F 34. 17.36 14.9 14.9 | PA Ba PA Ba 2-A 2-A 205 | He u 1. Di 34. 736 | 100 100 100 100 | 342 | 8 DA 2-A 6074 205 205 | 342 KIEG 20 199 | 2-P) 200 |
| Day Told Signatures FF-5° 2nd PA Bal.Div_7° 2nd | 2-1 34 423: 1 20 19.8 60.0 | 217 258 301 610 | 20 19.8 63.0 | 2-A 202 205 401 VS | 734 736 199 69.0 | 2-A 90 10.5 10.0 | 34 K100 20 19.9 19.0 19.0 | PA 2-A 205 205 201 64.0 | 11.Mrd F 134 1736 199 66.0 | PA Ba PA Ba 2-A 2-A 20-5 20-5 20-2 | Hay 1. Di 3/4. 3/4. 4/36. 4/20 19.9 | 100 100 100 100 | 342 | 8 DA 2-A 6074 205 205 | 342 KIEG 20 199 | 2-P) 200 |
| Day Told Signatures FF-5° 2nd PA Bal.Div_7° 2nd | 2-1 34 423: 1 20 19.8 60.0 | 217 258 301 610 | 20 19.8 63.0 | 2-A 202 205 401 VS | 734 736 199 69.0 | 2-A 90 10.5 10.0 | 34 K100 20 19.9 19.0 19.0 | PA 2-A 205 205 201 64.0 | 11.Mrd F 134 1736 199 66.0 | PA Ba PA Ba 2-A 2-A 20-5 20-5 20-2 | Hay 1. Di 3/4. 3/4. 4/36. 4/20 19.9 | 100 100 100 100 | 342 | 8 DA 2-A 6074 205 205 | 342 KIEG 20 199 | 2-P) 200 |
| Day Told Signatures FF-5° 2nd PA Bal.Div_7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7 | 2 1 20 17.8 60.0 HAI | 217 258 301 610 | 734 K106 19.8 63.0 ALL PA | 2-A 202 205 401 VS | 734 734 199 199 199 | 2-A 90 10.5 10.0 10.0 | 34 K106 20 199 63.0 | PA 2-A 2064 205 200 40 | 11.Mrd F 134 1736 14.9 16.0 | PA Ba PA Ba 2-A 2-A 20-5 20-5 20-2 67-0 | Hay 1. Di 34. 436 4 4 66.0 | 100 100 100 100 | 342 | 8 DA 2-A 6074 205 205 | 342 KIEG 20 199 | 200 |

"Tube Filament Currents"

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| Day FR. Signatures Sw-EF 2nd PA Bal. Div 72 | | e are she sade as full to be a sade for the sade as full for the sade as | | hinggy ya galangi, yi' - | o Provide god son. | birkan berka kan h | 4.1 mm | - r | Fil 3rd | e 7 | ter H Bal. | lour: | Z 2 | S | | |
|--|---------------------------------|--|--|--|---------------------------------|---------------------------------------|-----------------------------------|---|--|---|---|-------------------------------------|------------------------------|---------------------------|--------------------------|---|
| Type Tube | 31 | 12-17 | 34 | 12-F | 34 | 2-17 | 34 | 2- <i>P</i> | 34 | 12-17 | 34 | 2-17 | 34 | 2-17 | 34 | 2-A- |
| Serial # | 423 | 3208 | KIG | 6067 | 13 | 60.90 | KIO | 6064 | 143 | 6091 | 1136 | 100 | 2100 | 074 | K10 | 6068 |
| Trans. Pos'n | 12 | PA. | 2 | PA. | 3 | P/7. | 3 | DA | 3 | PA | 3/ | 2 | 31 | PA | 3 | PJ7 |
| Tube Position | <u> </u> | 1 | | ~~~ | ļ., | <u> </u> | | 2 | | 3 | | 1 | L | 5 | (| <u> </u> |
| Fil. Volts(Meter) | ig Marines over | - warne same | s} | ********** | · * * * * * * * * | ig a Henrice | n fr. 19 w n n re | | • • 2 . 6 1695 200 00 | A | | lance and | | | | 20.5 |
| Fil. Volts(Tube) | | | | | | | | | | | | | | | | 20.5 |
| Fil. Cur. Amps. | 57.0 | 60.5 | 620 | 63.c | 68.0 | 69.0 | 13.0 | 64,0 | 16.0 | 67.0 | 65.0 | 66.0 | 16.0 | 67.0 | 65,0 | 66.0 |
| } } ? | <u> </u> | | , ا | |) } } | <u> </u> | <u></u> | | | | |] | | | | , , |
| Remarks: | H1 | A | Cliec | · lieid | 2/7. | KP112 | 51 | W. | 570 | 0 Z | 72 | | | | | |
| Section of the sectio | Sib. | S | rll. | TO | BE | ! .S | 29 | ي ن | | | 4 | | | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| | BRI | ĪC | 2 <u>P</u> | R | ΞŲ., | Su | د | [. |].9 | | 20. | ک ا | | | | } |
|) } | 210 | O. | | ********** | | | | . 1. | 9.8 | <u> </u> | 70. | 1. | / | • | | |
| | - | • | | | | | | | | | | | | 1000 | 4 12 1 | |
| Therefore the second of the se | | | | | | | | • | | | And Air of | ,,,,,, | | | | |
| | | remark as a co | | | | | -, · . •, | • ;- •;• | • • | • • • • | forematic fire | | | | | |
| Day FRIC | | comes, as a second | • . | | | | · . •. | ······································ | _ | 5 | 2 | 3 | | u z s | ; | |
| | | | | | | | · · · • · | P | il.Ñ | • • • • | 2° | 3/ rs_6 | o3. | 433 | | |
| Day FR. Signatures EF-JC 2nd PA Bal.Div 72 | | | | 2 | The same by | in and the second | F1 22 80 | E F 3 | il.M | Sleter A Ba | 2° Hou 1.Di | 7 rs <u>-</u> v | 28 | 433 | 7 | |
| Day T2. Signatures FF-JC 2nd PA Bal.Div 72 Tube Pos'n | | | ************************************** | 2 | and a find of | carnylogia ari | Turning strains | F 3 | il.M | Sleter A Ba | 2° Hou 1. Di | rs c | 25 | 3220 | - | 3.2.2.4 |
| Day FR. Signatures EF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube | 34 | ZA | 34 | 2 (2/) | .39 | 1219 | 73.4 | 2 2 2 | il.M | Sleter A Ba | 2° Hou 1.Di | rs c v. | 28 28 | S A | 24 | 2 A |
| Day FR. Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # | 34 4232 | Z/A 258 | 34 K10 | 2 (2/1) 6062 | 34 436 | 1219 | 39 L-114 | 2 2 2 084 | 11.M rd F 34 | Sleter PA Ba | 2° Hou 1.Di 34. | 7 v | 28 28 24 | 5 219 07K | 34 | 6068 |
| Day FR. Signatures EF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # | 34 4232 | Z/A 258 | 34 K10 | 2 (2/1) 6062 | 34 436 | 1219 | 39 L-114 | 2 2 2 084 | 11.M rd F 34 | Sleter PA Ba | 2° Hou 1.Di 34. | 7 v | 28 28 24 | 5 219 07K | 34 | 6068 |
| Day FROM Signatures EF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # | 34 4232 | Z/A 258 | 34 K10 | 2 (2/1) 6062 | 34 436 | 1219 | 39 L-114 | 2 2 2 084 | 11.M rd F 34 | Sleter PA Ba | 2° Hou 1.Di 34. | 7 v | 28 28 24 | 5 219 07K | 34 | 6068 |
| Day FROM Signatures FF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34 4231 20 19.8 | ZA 258 20.5 20.5 | 34 K10 21 20 19.8 | 2/2/A 6062 705 20.5 | 34 436 31 20 | 12/A 690 200 200 200 | 34 L-114 37 20 | 2 2 2 084 203 203 | 11.M 17d F 1736 1736 170 | Sleter A Ba 2A 091 20-5 20-5 | 34. Hou 1.Di 1.Di 24. 436 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |
| Day +2. Signatures FF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 34 4232 | ZA 258 20.5 20.5 | 34 K10 21 20 19.8 | 2/2/A 6062 705 20.5 | 34 436 31 20 | 12/A 690 200 200 200 | 34 L-114 37 20 | 2 2 2 084 203 203 | 11.M 17d F 1736 1736 170 | Sleter A Ba 2A 091 20-5 20-5 | 34. Hou 1.Di 1.Di 24. 436 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |
| Day TROSSIGNATURES EF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 423: 25 17.8 | ZA 258 20.6 20.6 20.1 60.0 | 34 K10 21 20 19.8 | 2/2/A 6062 705 20.5 | 34 436 31 20 | 12/A 690 200 200 200 | 34 L-114 37 20 | 2 2 2 084 203 203 | 11.M 17d F 1736 1736 170 | Sleter A Ba 2A 091 20-5 20-5 | 34. Hou 1.Di 1.Di 24. 436 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |
| Day TROSSIGNATURES EF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 423 20 19.8 60.0 | ZA 258 20.6 20.6 20.1 | 34 K10. 20 19.8 62.0 | 2 (2/A) 6062 20.5 20.1 63.0 | 31 436 20 19-9 68-0 | 1/2/19 090 2002 2002 69.0 | 34 L-114 20 19.9 68.0 | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 11.M 1734 1736 17.9 65.0 | Sleter A Ba 2A 2A 2A 2091 20-5 (6.0 | 2° Houlond 34. 436. 31 20 19.9 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |
| Day TROSSIGNATURES EF-JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 34 423 20 17.8 60.0 | ZA 258 20.5 20.1 60.0 | 34 K10. 20 19.8 62.0 | 2 (2/A) 6062 20.5 20.1 63.0 | 31 436 20 19-9 68-0 | 1/2/19 090 2002 2002 69.0 | 34 L-1140 19-9 68.0 | 2-1205 2054 2057 2057 2007 700 | 11.M Prd F 436 20 17.9 65.0 | Sleter A Ba 2A 291 20-5 20-5 20-5 20-5 | 34. Hou 1.Di 1.Di 14.86 20 19.9 65.0 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |
| Day FR. Signatures EF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. | 34 423 20 19.8 60.0 | ZA 258 20.5 20.1 60.0 | 34 K10. 20 19.8 62.0 | 2 (2/A) 6062 20.5 20.1 63.0 | 31 436 20 19-9 68-0 | 1/2/19 090 2002 2002 69.0 | 34 L-1140 19-9 68.0 | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 11.M Prd F 436 20 17.9 65.0 | Sleter A Ba 2A 291 20-5 20-5 20-5 20-5 | 34. Hou 1.Di 1.Di 14.86 20 19.9 65.0 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |
| Day FR. Signatures EF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. | 34 423 20 17.8 60.0 | ZA 258 20.5 20.1 60.0 | 34 K10. 20 19.8 62.0 | 2 (2/A) 6062 20.5 20.1 63.0 | 31 436 20 19-9 68-0 | 1/2/19 090 2002 2002 69.0 | 34 L-1140 19-9 68.0 | 2-1205 2054 2057 2057 2007 700 | 11.M Prd F 436 20 17.9 65.0 | Sleter A Ba 2A 291 20-5 20-5 20-5 20-5 | 34. Hou 1.Di 1.Di 14.86 20 19.9 65.0 | 7 V. 7 160 26.5 26.2 | 34 28 1406 34 20 | 57 07K 20.5 20.5 | 34 16-10- 34 26 | 20.8 20.8 20.2 |

"Tube Filament Currents"

1st Tuesday

| Day Fizi Signatures JC-EF-WA 2nd PA Bal. Div 72 | ۷ | - manual and affect | g-b | 0 1 8 m 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | · · · · · · · · · · · · · · · · · · · | or an area of the second | f | | Fil. | Met | er H | loure | | 263 | | are. Is our flow |
|--|------------------------|---------------------------|---|---|---------------------------------------|--------------------------|--------------------------|-----------------------------------|--|--|-----------------------------------|----------------------------|---------------------------------|----------------------------|--------------------------|---------------------------------------|
| Type Tube | 34 | 2-A | 34 | 2-A | 34 | 2-A | 34 | 7-17 | 34 | 9-A | 340 |)-A | 34 | 9-17 | 34 | 2-A |
| Serial # | | 258 | | | | | | | | | 11361 | | | | | 6068 |
| Trans. Pos'n | | PA | ·6, · | | | | | | | • • • • • • • • • • • | 36 | 2/ | 31 | PA | 21 | 7A |
| Tube Position | | | | 2 | | | | 2_ | | 3 | 2 | 1 | | <u> </u> | | ୍ର ଦୁ |
| Fil. Volts(Meter) | | | | | | | | | | | | | | | | 20.0 |
| Fil. Volts(Tube) | 19.8 | 20.1 | 19.8 | 20.1 | 19.9 | 20.2 | 19.9 | 20.3 | 19.9 | 30.2 | 19.9 | 20.7 | 19.9 | 20.2 | 19.9 | 20.2 |
| Fil. Cur. Amps. | | | | | | | | | | | | | | | | 166.0 |
| , mandaning appropriate from 1974 to 1 to | | | | | | | | | | | | | | | | , |
| Remarks: | | | | | | har a record | | | ** * ******** | | | | | | | |
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| Annual Control of the | | | • • • · · · · · · · · · · · · · · · · · | | | | | | | | | **** | | | | ; ; |
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| Signatures EF tIC | | | | | | | | F | 11.Ñ | eter | Heu | rs 🗸 | | | | |
| Day FRIC Signatures EF + JC 2nd PA Bal. Div 72 | - | | | | g | rocke froge se | F | F | 11.Ñ | | Heu | rs 🗸 | | | er F | cut instant |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n | | 9 P | | | | Forest Prod on | 3 - 6-12 - 313-1 | F | il.M rd F | eter | Heu | rs 🗸 | | | 6 | |
| Signatures EF + JC 2nd PA Bal. Div 72 | | 2-19 | | 4-2004-1-2-1- | 34 | 1 2- <i>А</i> | 347 | F 3 | 11.M | eter A Ba | Heu 1.Di | rs ⊆ v | 28 | | 6 | ≥=A |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n | 342 423 | 2- <i>19</i> 258 | 39 | 12-A | 136 | 090 | 4-11 | 2-A 6084 | 11. rd F | eter A Ba 3 2- <i>P</i> 698 | Heu 1.Di 347 | v. V. 2-A | 390 | ?- <i>]</i> } -6074 | 113-6 | |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n Type Tube | 342 423 | 2- <i>19</i> 258 | 89 K-10 | 12-A | 136 | 090 | 4-11 | 2-A 6084 | 11. rd F | eter A Ba 3 2- <i>P</i> 698 | Heu 1.Di 347 | v. V. 2-A | 390 | ?- <i>]</i> } -6074 | 113-6 | 608/ |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # | 342 | 2- <i>19</i> 258 | 89 K-10 Z | 12-A | 136 31 | 090 DA | 4-11 | F 3 2-A 6084 DA | 11.1 rd F 192 193 | eter A Ba 3 2- <u>A</u> 6098 | 11.01 1.01 347 1136 | rs < v. 7 100 | 395 | 9-17 6074 PA | 113-6 37 | 608/ |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 342 423 21 | 2-19 258 29 20.5 | 89 K-10 2 20 | 12-17 6067 P17 | 136 31 20 | 090 DA 20.5 | 4-11 31- 20 | 2-12-13 6084 120.5 | 11. rd F 1/3-1/20 | eter A Ba 3 2- A 6098 7A | 11.01 1.01 134 136 20 | 7 - A 100 100 205 | 28 345 1-10 20 | 7-17 6074 PH 20.5 | 113-6 37 20 | 408/ 47 |
| Signatures EF + JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 342 423 21 20 | 2-19 258 29 20.5 | 89 K-10 2 20 19.8 | 12-A 6067 PA 20.5 | 136 31 20 149 | 090 DA 20.5 | 4-11 31- 20 199 | 2-A 6084 7A 20.5 20.5 | 11.M rd F 342 43.0 20 199 | 2- A 2- A 2- A 2- A 20.5 20.5 | 11:01 1:01 136 136 20 | 78 C V | 28 39: 1-10 20 17:9 | 2-17 6074 205 205 | 13.6 37 20 19.9 | 7) 7) 70.5 |
| Signatures EF + JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 342 423 21 20 | 2-19 258 29 20.5 | 89 K-10 2 20 19.8 | 12-A 6067 PA 20.5 | 136 31 20 149 | 090 DA 20.5 | 4-11 31- 20 199 | 2-A 6084 7A 20.5 20.5 | 11.M rd F 342 43.0 20 199 | 2- A 2- A 2- A 2- A 20.5 20.5 | 11:01 1:01 136 136 20 | 78 C V | 28 39: 1-10 20 17:9 | 2-17 6074 205 205 | 13.6 37 20 19.9 | 20.5 20.5 |
| Signatures EF + JC 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 342 423 21 20 | 2-19 258 29 20.5 | 89 K-10 2 20 19.8 | 12-A 6067 PA 20.5 | 136 31 20 149 | 090 DA 20.5 | 4-11 31- 20 199 | 2-A 6084 7A 20.5 20.5 | 11.M rd F 342 43.0 20 199 | 2- A 2- A 2- A 2- A 20.5 20.5 | 11:01 1:01 136 136 20 | 78 C V | 28 39: 1-10 20 17:9 | 2-17 6074 205 205 | 13.6 37 20 19.9 | 20.5 20.5 |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 342 423 21 20 | 2-19 258 29 20.5 | 89 K-10 2 20 19.8 | 12-A 6067 PA 20.5 | 136 31 20 149 | 090 DA 20.5 | 4-11 31- 20 199 | 2-A 6084 7A 20.5 20.5 | 11.M rd F 342 43.0 20 199 | 2- A 2- A 2- A 2- A 20.5 20.5 | 11:01 1:01 136 136 20 | 78 C V | 28 39: 1-10 20 17:9 | 2-17 6074 205 205 | 13.6 37 20 19.9 | 20.5 20.5 |
| Signatures EF tJC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 342 423 21 20 | 2-19 258 29 20.5 | 89 K-10 2 20 19.8 | 12-A 6067 PA 20.5 | 136 31 20 149 | 090 DA 20.5 | 4-11 31- 20 199 | 2-A 6084 7A 20.5 20.5 | 11.M rd F 342 43.0 20 199 | 2- A 2- A 2- A 2- A 20.5 20.5 | 11:01 1:01 136 136 20 | 78 C V | 28 39: 1-10 20 17:9 | 2-17 6074 205 205 | 13.6 37 20 19.9 | 20.5 20.5 |

"Tube Filament Currents"

1st Tuesday

| Day FRIC | | ************ | | TOTAL . | ••••••• | | | | | | | | | | | |
|--|---------------------|----------------------------|---|--|-------------------|--|--|---|---|--|-------------|----------------------|---------|-----------------------|--------------------|----------------|
| Signatures Chr. 2nd PA Bal. Div 77 | <u>-</u> | | | | | | | | Fi | te 1. M d PA | eter | How | rs C | 553 | | |
| Type Tube | 12 | 43-1 |)34: | 2 <i>f</i>) | 31 | 12-1 | 7134 | 12-1 |) [3 | 42-1 | 13 | 42-7 | 9/3 | 47-7 | 9 3 | 42-A |
| Serial # | 72:3 | 258 | 1270 | ELL | 4H3E | 090 | 141 | -1.68° | H H? | 11098 | 1/3 | 1 | 1. 1.1. | 15.7 57.7 | יע או | 19.17 3-607 |
| Trans. Pos'n | Zi | UDA |)21 | 76 | 3 | DA | 13 | PA | 3 | PA | 3 | DA | 7 | | | P/)- |
| Tube Position. | |] | 7 | Z | ـ د مدمه ما موادد | J Enyaga | ni placeti | 2 | | 3 | | 4 | | 17/1 |) | アノナ |
| Fil. Volts (Meter) | 20 | 205 | 70 | 20.5 | 120 | | | | 5 2 | 0 20 | 5 2 | 20. | 7 | | | 20, |
| Fil. Volts(Tube) | 17.8 | 12c 1 | 19.8 | 30.1 | 119.1 | 20.2 | 19.5 | i 20 | 119. | 9 300 | 2 19. | 7 90 | 1 10 | 9 22 | 2 16 | 7 96 2 |
| Fil. Cur. Amps. | 158.5 | 57.8 | 61.0 | 61.8 | 675 | 1.8.4 | 118. | 570 | 16 | 0/7/ | 3/24 | 175 | 1/1 | 7/5 | 4 11 | 5 65 |
| The state of the s | (Confident | ch. Pat (fee) | 2.5 25.0 | - + tw - ers | | 1 | | - | - | ٠٠٠ الجناد | - 101 | | 167 | (63) | 161 | 3 EC |
| Remarks: | •• | زير در سرسيد الد | da e e e e e e e e e e e e e e e e e e e | ******** | ·ł | .d., | -d ,,, | | , I | | | . I | | | i | 1 |
| The second secon | | \$ 252 m or 14 | ******* * | | | ************************************** | mar takara | | ********* | T 4.00-00-1 * 0-19. | | *20 * r | | •••• | | |
| American desiration of graphical and approximate and approximation of the approximation of th | ********** | | * 70 0. 54 \$ 4544 | | n+h/\+ +11+ | | ******* | , | | | in all the | * | ******* | | | |
| 1 | • | | | * ***** .*. | e egitera e rec. | Terr week | | · · · · · | *1 ***#. | semile agrae . | n s mars e. | : . | ****** | ·········· | · · · • • • | • • • • • |
| | • • • | - • | **** * *** * | P************************************* | man of and | | | • | | * #**. *1 | | ·*** * **** « | | . , | . , | |
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| and the state of t | | | *** * * * * * * * * * * | | | | . | ~ | | * * | ••••• | *.*** - • • | | | . • • • | |
| Day FRI | e presente e porque | tubert grun ya 1-4m / . | *** ******** * * ***** ** | | | | •,, | ^ • | | | | turius signi | | | . • • • | |
| Signatures EF-JC | * | remert wast in | ##6 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | | * | | • | Meter | · | | 064 | 404 | ··· | • • • • |
| | | rubert gales ya | | | | | • • | F | Hi. | // Meter | Hot | urs _ | 06 | 404 P | | |
| Signatures EF-JC 2nd PA Bal.Div 72 | 342 | 4 | 3 - 7 2 | 11 1 1 1 1 1 1 1 1 1 | 7 200 | menering an | \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ | 3 | Fil. | Meter PA Ba | Hou l.D | v | 2. | e Sulvi | | abs) inter |
| Signatures EF-JC 2nd PA Bal.Div 71 Tube Postn type Type Tube Level | 342 | A | 3 -7 2 F-101 | 2-/1 | 3 42 M2- | -/4 -/4 | 3 4 ; | 3 2-/+ | Fil. | Meter PA Ba | Hou l.Di | V | 2 | <u> </u> | - - 34 34 | 12-14 |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type | 423 | 5.7 | M-101 | 662 | M3- | 6090 | Lil | 1 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | 711.33 74 | Meter PA Ba 12-74 | Hou l.D. | V - 6/00 | 3, | P 12-/4 1332 | 34 | - (e a 1 |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type Type Tube Serial Serial | 423 | A PA | M-101 | 662 | M3- | 6090 | Lil | 1 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | 711.33 74 | Meter PA Ba | Hou l.D. | V - 6/00 | 3, | P 12-/4 1332 | 34 | - (e a 1 |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type Type Tube Level Time Posin Serial f Transm. Posin | 2 2 | 5.7 | 7-101 | PA | 3 P | 6090 A | 1111 3P | 1014 1014 | 711.13rd | Meter PA Ba 12-74 | Hou l.D. | V - 6/00 | 3, | P 12-/4 1332 | 34 | - (e a 1 |
| Signatures EF-JC 2nd PA Bal.Div 71 Tube Posin type Type Tube Serial Serial # Transm. Posin Fil. Volts(Meter) | 2 20 | P4- | 7-101 2 2 26 | PA 20.5 | 3 P | 20.5 | 2 2 2 2 2 2 2 2 2 5 1 1 1 1 1 1 1 1 1 1 | 1 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | 3 3 4 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | Meter PA Be | Hotal . Di | 178 | 3,44,3 | P 12-14 1532 P14 | 3. M3 3 | -60 91 PA |
| Signatures EF-JC 2nd PA Bal.Div 71 Tube Posin type Type Tube Screet Tune Posin Serial # Transm. Posin Fil. Volts(Meter) Fil. Volts(Tube) | 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P | 6090 A I*. T | 2 2 2 2 19.9 | 2-3- 20.2 | 34 34 34 19.9 | Meter PA Ba 1/2-/4 1/2-7 P/4 | Hotal . Di | z-/4 -6/00 2/4 | 3 444 | P 12-14 1532 P14 | 3. M3 3 | -60 91 PA |
| Signatures EF-JC 2nd PA Bal.Div 71 Tube Posin type Type Tube Serial Serial # Transm. Posin Fil. Volts(Meter) | 2 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P | 6090 A I*. T | 2 2 2 2 19.9 | 1 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | 34 34 34 19.9 | Meter PA Be | Hotal . Di | z-/4 -6/00 2/4 | 3 444 | P 12-14 1532 P14 | 3. M3 3 | -6091 PA |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type Type Tube Level Fine Posin Fine Posin Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P | 6090 A I*. T | 2 2 2 2 19.9 | 2-3- 20.2 | 34 34 34 19.9 | Meter PA Ba 1/2-/4 1/2-7 P/4 | Hotal . Di | z-/4 -6/00 2/4 | 3 444 | P 12-14 1532 P14 26.7 | 34 M3 3 | -6091 PA |
| Signatures EF-JC 2nd PA Bal.Div 71 Tube Posin type Type Tube Screet Tune Posin Serial # Transm. Posin Fil. Volts(Meter) Fil. Volts(Tube) | 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P 3 P 120 | 6090 A I*. T | 2 2 2 2 19.9 | 2-3- 20.2 | 34 34 34 19.9 | Meter PA Ba 1/2-/4 1/2-7 P/4 | Hotal . Di | 2-/4 2-/4 20.5 | 3 444 | P 12-14 1532 P14 26.7 | 34 M3 3 | -6091 PA |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type Type Tube Level Fine Posin Fine Posin Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P 3 P 120 | 6090 A I*. T | 2 2 2 2 19.9 | 2-3- 20.2 | 34 34 34 19.9 | Meter PA Ba 1/2-/4 1/2-7 P/4 | Hotal . Di | 2-/4 2-/4 20.5 | 3 444 | P 12-14 1532 P14 26.7 | 34 M3 3 | -6091 PA |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type Type Tube Level Fine Posin Fine Posin Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P 3 P 120 | 6090 A I*. T | 2 2 2 2 19.9 | 2-3- 20.2 | 34 34 34 19.9 | Meter PA Ba 1/2-/4 1/2-7 P/4 | Hotal . Di | 2-/4 2-/4 20.5 | 3 444 | P 12-14 1532 P14 26.7 | 34 M3 3 | -6091 PA |
| Signatures EF-JC 2nd PA Bal.Div 72 Tube Posin type Type Tube Level Fine Posin Fine Posin Fil. Volts(Meter) Fil. Volts(Tube) Fil. Cur. Amps. | 20 | P4 201 | F-101 2 2 26 26 27 | PA 10.5 | 3 P 3 P 120 | 6090 A I*. T | 2 2 2 2 19.9 | 2-3- 20.2 | 34 34 34 19.9 | Meter PA Ba 1/2-/4 1/2-7 P/4 | Hotal . Di | 2-/4 2-/4 20.5 | 3 444 | P 12-14 1532 P14 26.7 | 34 M3 3 | -6091 PA |

"Tube Filament Currents"

1st Tuesday

ITEM §4

| Type Tube 342 ft 342 | Day FRIC Signatures FF 2nd PA Bal. Div 72 | | h Webstern god gl | Forpstrucks product | | | n.Tes + har es had | to glotton | t dastifygg | Fil | e / . Me PA | ter : | Hour | 80 | 107 | | |
|--|---|--|--|--|---------------------------------------|--------------------------------------|--|--|---|--|--|---|--|----------------------|---|---------------------|-----------------------|
| Serial # | Type Tube | 34. | 2-11 | 34 | 2-17 | 34 | Z-A | 34 | 12-A | 3 | 42-17 | 134 | 2- <i>P</i> 1 | 39 | 12-17 | 139 | 12-A |
| Trans. Pos'n Tube Position | ها علومية البخية بيواعد بعد فعد عدسية البخيين وغيناسه بحييد بالمستجنبات الله المتحدد | 466 | 674 | KIDG | 1062 | 13-6 | 6090 | 1-11. | 6054 | 441 | 127 | 13- | 6100 | 141 | J.32 | 42 | 796 |
| Fil. Volts (Meter) 20 25 20 20 30 20 20 30 20 30 20 30 3 | Trans. Pos'n | ZN | PA | 2 | PA: | 3 | PA | 3 | PA | 3 | PA | 31 | 01 | 3 | DP. | 3 | PA |
| Fil. Volts (Meter) 20 20 5 20 20 5 20 20 5 20 20 | | : 1 | / | | _ | 1 | / | } | _ | į | | 1 ' | 4 | 1 | \ | 1 / | |
| Fil. Cur. Amps. 30 44 61.2 170 650 171 655 66 67 61.5 657 657 Remarks: | Fil. Volts(Meter) | 20 | 20.5 | 20 | Z0.5 | 20 | 20.5 | 20 | 20.5 | 20 | 20.5 | Sa | 20.5 | ZU | 2c. | 30 | 20.5 |
| Remarks: | Fil. Volts(Tube) | 198 | 20.1 | 19.8 | 26.1 | 19.9 | 20.2 | 19.9 | 202 | 19.9 | 20.2 | 17.9 | 2 2 | 17.9 | 20.0 | 18.9 | 2c - |
| Day Fil. Cur. Amps. 1988 1999 1999 1998 1998 1998 1998 1999 1999 1998 | Fil. Cur. Amps. | 630 | 64.0 | 604 | 61.2 | 67.0 | 680 | 67.6 | 18.6 | 66 | 67 | 6.2.5 | 63.5 | 65 | 65.7 | 654 | 66, |
| Day 721° Signatures 4K17-Jc 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # ################################## | or and a second | | و و . | | | |] | - H | <u></u> | . , , , , , , , , , , | | | | | | 1 | |
| Date 3/6 Co 1/8 1/9 | Remarks: | f Cf | <u> </u> | ٧.Ş | 10 | E51 | ON | 72 | 2 | ***.5 4 5.000 95.0 | 1 T | | | ,,,,, | Indian Circ | | |
| Day F121° Signatures aktrocal PA Bal. Div 72 Date 3 6 6 6 Fil. Meter Hours 1736 3rd PA Bal. Div 72 Tube Pos!n Type Tube 312 P 312 | 421/45 | 9/4 | 10) | カビニ | 5 | 29 | 0 0 | / | | | | | | · · · · · · | | | |
| Day 121° Signatures (KEF-JC) 2nd PA Bal.Div_72 Tube Pos'n Type Tube 3/2A 3/12P 5/12A 3/12P 3/12A 3/12P 3/12A 3/12P 3/12A 3/12B 3/12A 3/12B 3/1 | | A RI | ZU | \supset \setminus \bigcirc | ٠. سيري | []: | 7— | 20 | رج , | ν | | | | | • • • • • • | ***** | |
| Day 721° Signatures 4Kth-Jc 2nd PA Bal.Div_72 Tube Pos'n Type Tube Seriel # #106074 / 106062 1/3-690 1/16881 / 25/88 4/1527 4/1532 4/35/7 Transm. Pos'n Fil. Volts (Meter) JC 205 205 | | | | | | ·, | • | | | | • | | | | | | |
| Signatures (K-FI-JC 2nd PA Bal.Div_72 Fil.Meter Hours | LND. | · | | t | | 19: | をニ | 2.6 | ?/ _{2.} . | V | | | | | | | |
| Signatures (K-FI-JC) 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # ################################## | ZND ' | | · · · · · · · | + · · · · · · · · · · · · · · · · · · · | | 19:1 | F | 7.6 | | V | | t de con later at | the of the sea | •• ••• | e cares o | | |
| 2nd PA Bal.Div_72 Tube Pos'n Type Tube 312A 312B 312B 312B 312B 312B 312B 312B 312B | JND. | ************************************** | · · · · · · · · · · · · · · · · · · · | # * | · · · · · · · · · · · · · · · · · · · | !9 : . | F.T. | <i>7.</i> 6 | | V :.:::::::::::::::::::::::::::: | ************************************** | * 10 to 2 10 10 0 0 1 | Prograduiese Prograduiese Prograduiese Prograduiese | ·· ···· | e (1966). | • • • • | • |
| Tube Pos'n Type Tube 312 P 312 P 312 P 312 P 342 P 34 | Day 721° | ************************************** | | # ⁶ | • • • • • • • • • • • • • • • • • • • | !9 : .; | ₹. <u>-</u> . | | | ate_ | | | | 6 | | | • see see |
| Type Tube 342 B 3 | Day Fillo Signatures (KEF-JC | | | 1 6 | eterster of | !9 : .; | を ********************************* | <u> </u> | D F | ate_ | éter | 7 · g | 76 - | 60 | 736 | | * |
| Seriel # # # # # # # # # # # # # # # # # # # | Day Fillo Signatures (KEF-JC | | | *** | | /9 : | \$ | <u> </u> | D F | ate_ il.M rd P | eter A Ba | Hou l.Di | 76 - | 60 | 736 | ** | |
| Seriel # # #0614 106062 13-680 116684 125681 141527 14 | Day 721° Signatures AKEF-JC 2nd PA Bal.Div_72 | | | 2 | a tempera | 19:1 | | econo | D F 3 | ate il.M rd P | eter A Ba | Hou 1.Di | 76 | 60 25 | 736 | | and least |
| Transm. Pos'n Fil. Volts (Meter) JC 96.5 20 96.5 30 | Day 721° Signatures AKEF-JC 2nd PA Bal.Div_72 | | | 2 | a tempera | 19:1 | | econord | D F 3 | ate il.M rd P | eter A Ba | Hou 1.Di | 76 | 60 25 | 736 | | 7.A |
| Fil. Volts(Tube) 19.8 201 19.8 201 19.9 20.2 1 | Day 721° Signatures (K-F-JC) 2nd PA Bal.Div 72 Tube Pos!n Type Tube | 342 | ? A | 311 | P | 19 : 1 34 | 7 | 34. | D F 3 | ate_ il.M rd P | eter A Ba | Hou 1.Di | 78 | 607.25 | 736 2 2 2 19 | 34 | 796 |
| Fil. Cur. Amps. 17.8 36.1 19.8 36.1 19.9 36.9 19.9 36.9 19.9 36.9 19.9 36.2 19.0 19.0 19.9 36.2 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0 | Day Fill Signatures aktifus 22 2nd PA Bal. Div 72 Tube Pos'n Type Tube Serial # | 342 14106 | ? P. | 342 K1960 | 7P. | 543 U3: | D D (696) | SH SH | D F 3 | ate 11.M rd P | eter A Ba | 7 | 78_v | 34 | 736)) 132 | - 342 425 | 196 |
| Fil. Cur. Amps. 12.2 3.4 59.7 60.5 65.6 16.8 67.6 8.5 64.5 65.6 65.6 65.5 65.6 65.5 65.6 65.6 | Day F121° Signatures (K+F-JC) 2nd PA Bal.Div_72 Tube_Pos'n Type Tube Serial # Transm. Pos'n | 342 4106 DP | ? P. | 31/2 K1660 | 7P. | 19 1 13 1 3 1 | 0 B 4090 7 B | 34 316 | D F 3 | ate_ 11.M rd P 3/3 | eter A Ba | 9 9 Hou 1. Di 1413 | 76 V• | 34 34 34 | 736 2A 132 | - 342 425 | 796 20. |
| Remarks: | Day 721° Signatures (K+F-JC) 2nd PA Bal.Div_72 Tube Pos'n Type Tube Seriel # Transm. Pos'n Fil. Volts(Meter) | 342 4106 2 P | P. P | 342 K1066 21 | 7P. | 19 13: 31 20 | 919 219 215 | 342 11160 20 | D F 3 | ate_ il.M rd P 3//250 5/ | eter A Ba 7-A 7-A 90-S | 9 - 9 Hou 1 . Di 1 - H/3 H/3 A/1 | 06- rs_ v 0-19 07 | 34 34 34 30 | 7.36 2.19 132 132 | 342 135 31 | 796 D |
| we will be a sum of the second of I and I are I and I and I are I and I and I are I | Day 721° Signatures AK-FF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) | 312 1106 20 20 | ? P 674) P 96.5 | 3112 8166 21 20 | 2P 262 265 | 543 (13:0 3) | 2 P 2 P 2 P 2 P S | 31/2 13160 31, 30 | DF 3 | 345 345 1250 36 | eter A Ba 7-A 7-A 905 | 9 · 9 Hou 1 · Di 1 · Di 14/3 14/3 19/9 | 0 6 - v 27 27 20 20-5 30-2 | 34 34 31 30 | 7.36 2/1 132 132 90.5 20.2 | 3425 425 3.1. | 796 Jo. 8 Ao. D |
| HILA CIG 115 10:45 -51 H 175 | Day 721° Signatures AK-FF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) | 312 1106 20 20 | ? P 674) P 96.5 | 3112 8166 21 20 | 2P 262 265 | 543 (13:0 3) | 2 P 2 P 2 P 2 P S | 31/2 13160 31, 30 | DF 3 | 345 345 1250 36 | eter A Ba 7-A 7-A 905 | 9 · 9 Hou 1 · Di 1 · Di 14/3 14/3 19/9 | 0 6 - v 27 27 20 20-5 30-2 | 34 34 31 30 | 7.36 2/1 132 132 90.5 20.2 | 3425 425 3.1. | 796 Jo. 8 Ao. D |
| | Day 721° Signatures (Ktf-JC) 2nd PA Bal.Div_72 Tube Pos!n Type Tube Serial # Transm. Pos!n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. | 312 1106 20 20 | ? P 674) P 96.5 | 3112 8166 21 20 | 2P 262 265 | 543 (13:0 3) | 2 P 2 P 2 P 2 P S | 31/2 13160 31, 30 | DF 3 | 345 345 1250 36 | eter A Ba 7-A 7-A 905 | 9 · 9 Hou 1 · Di 1 · Di 14/3 14/3 19/9 | 0 6 - v 27 27 20 20-5 30-2 | 34 34 31 30 | 7.36 2/1 132 132 90.5 20.2 | 3425 425 3.1. | 796 Jo. 8 Ao. D |
| BIAS ALL TUBES 290 V | Day 121° Signatures AKEF-JC 2nd PA Bal.Div 72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. | 342 4106 20 30 30 30 30 | 2.A 274 P 90.1 3.4 | 34 8166 91 90 19.8 | 2P 262 205 205 205 | 19 1 13: 31 20 199 | 200 200 200 200 200 200 200 200 200 200 | 31/2 31/2 20 19:9 | DF 3 | 342 342 342 343 343 343 | eter A Ba 7-A 7-A 905 | 9 · 9 Hou 1 · Di 1 · Di 14/3 14/3 19/9 | 0 6 - v 27 27 20 20-5 30-2 | 34 34 31 30 | 7.36 2/1 132 132 90.5 20.2 | 3425 425 3.1. | 796 Jo. 8 Ao. D |
| JUD PA REV. Sw 19.8 v-20.1 V | Day 721° Signatures (Ktf-JC) 2nd PA Bal.Div_72 Tube Pos!n Type Tube Serial # Transm. Pos!n Fil. Volts (Meter) Fil. Volts (Tube) Fil. Cur. Amps. | 342 342 30 30 30 30 30 30 30 30 30 30 30 30 30 | 2.0 12 12 13.4 3.4 | 3112 3112 20 19.8 19.7 | 2P 262 205 205 | 19 13: 31 20 199 15.6 | 200 200 200 200 200 200 200 200 200 200 | 31/2 31/2 19.9 19.9 | DF 3 | 342 342 342 343 343 343 | eter A Ba 7-A 7-A 905 | 9 · 9 Hou 1 · Di 1 · Di 14/3 14/3 19/9 | 0 6 - v 27 27 20 20-5 30-2 | 34 34 31 30 | 7.36 2/1 132 132 90.5 20.2 | 3425 425 3.1. | 796 Jo. 8 Ao. D |
| 3RD " " 19.9V-20.2V | Day Filo Day Filo Cur. Amps. | 342 406 20 198 422 | 2.P. 1 2.5 3.4 3.4 | 31/2 8/264 21- 19.8 19.8 79.7 | 2/2 262 265 265 265 | 19 19 19 19 15 6 S | 21 21 20 20 20 20 20 20 20 20 20 20 20 20 20 | 342 342 36 30 199 199 17.6 | DF 3 30 84 10 90 5 90 90 90 90 90 90 90 90 90 90 90 90 90 | 345 345 395 395 395 395 | eter A Ba 37-19 20-19 20-51 20-51 | 3/10 Hou 1.Di 3/13 4/13 4/13 4/13 4/13 | 0 6 - v 27 27 20 20-5 30-2 | 34 34 31 30 | 7.36 2/1 132 132 90.5 20.2 | 3425 425 3.1. | 796 Jo. 8 Ao. D |

"Tube Filament Currents"

1st Tuesday

ITEM § 4

| Day Fr Signatures OK-JC 2nd PA Bal. Div 19 | ngo grasso walion | ع مرد و وشوب | eg overphronum | dopao ahilyi 11' ' ' | ight≪ is mysk bab mid | ty e 8 Swer 10 ket " o | ور دو و | | Fil. | Met PA B | er F | lours | 09 | | 0 | |
|--|---|---|--------------------|---|--------------------------------|--|---|--|--|-------------------------------------|---|---|---|--------------------------------|-----------------------|----------------------------|
| Type Tube | 340 | 2-17 | 34 | 5-A | 34 | 9-11 | 34% | 7-17 | 34 | 1-A | 34 | 9-17 | 348 | 7/7 | 340 | 7-J |
| Serial # | Lice | c07H | 445 | 13:3 (6:30) | 4461 | 83. | ililo | 084 | 425 | 684 | 4415 | 727 | 4413 | 33 | 425 | 776 |
| Trans. Pos'n | 2 1 | PA | F . | • | ! | | BF |)) | 31 | D/) | 3 | P/7- | 31 | DA | | _ |
| Tube Position | | | | Z | |) | 2 | | (| 3 | | / ;~ | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | <u> </u> | 6 | • |
| Fil. Volts(Meter) | the framewood | | bares estate | | \$ 40 6. 2.84. | m steriot for | ないしゅ そったい | *** *** * *** | \$\$.a s. e. :> | 4.T age 4 17524 | # d*+ D-2 4+1 | fre - net | # 24 et ;# P en P* | € `: •}' *** • • • • | P | 20.5 |
| Fil. Volts(Tube) | | 30.1 | | | | | | | | | | | | | | |
| Fil. Cur. Amps. | 61.6 | 62.3 | 64.0 | 65.0 | 1.4.8 | 66.0 | 67.0 | 63.0 | 62.0 | 66.0 | 64.8 | 65.6 | 64.8 | 68.8 | 65.1 | 66.0 |
| A second second section, reconstruction as a second | H.,, | l | | |] |] | | ,,.,, p, | | | |] | l | . | 1 [| |
| Remarks: HAA | Chd | 1/5 | U | UES | roų. | TYPI | E. 7. | 72 | ********* | weg konga | | , e, e, e J. | ng (* n. g.) - 1 | | 4 - 4** - 4 | |
| BIRS | All | ŢŲ | 0E | S. | 290 | | bar 670. Tr | | . , | | | ., | • • • • • | | | |
| | YH. | KE | ع برلا | يكنت. | | 19. | J. v | | | | | | | | | |
| 300 | | | | | | 19. | 8 v | ~ J | 0 | l.v | | **** * 15 1.10 | | | 10.00 | |
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| - 12 | | | | | | | | | | | | | | | | • |
| Day Day | | | | | | | | | | _ | | | , | | | |
| Signatures (ill-of | | | | | | | | D F | ate_ | (c. | <u></u> | 7 | (c |) - \$-C | - | |
| Day PA Bal. Div 77 | 2 | | | | | | | F | il.M | رے leter A Ba | Heu | rs .c | . 95 | 78C | • | |
| 2nd PA Bal.Div_77 | | en o o o o o o o o o o o o o o o o o o o | J | engen englis mise | composed constant | er seriese es | ליי אין אין אין אין אין אין אין אין אין א | F 3 | il.M rd F | leter A Ba | Hou l.Di | .v | 7.5 | 180 | | <u> </u> |
| 2nd PA Bal.Div_ 7 Z | 12 | 1977 - 10-10 | | | | | | F 3 | il.M | leter A Ba | Hev 1.Di | rs .c .v | 75 | 3 | e e | |
| 2nd PA Bal.Div_ 7 Z Tube Pos'n Type Tube | 2,34 | 12-19 | 34 | Q-f) | 34 | 9-19 | 34 | F 3 2-/9 | 11.M rd F | leter A Ba)-/2 | Hev 1.Di | v 7 7-/- | 34 | 5 5 19-11 | G 34 | 2-11 |
| 2nd PA Bal.Div_772 Tube Pos'n Type Tube Serial # | 27 | t2- <i>f</i> 9 c74 | 34 43- | 9-f) 609c | 34 4461 | 9-1 1 183 | 34 | F 3 2-19 84 | 11.M rd F 3/47 4250 | leter A Ba)-/) -84 | Hou 1.Di | 7 7 7-19 577 | 34 | 5 5 5 5 32 | G 34 420 | 2-19 796 |
| 2nd PA Bal.Div_77 Tube Pos'n Type Tube Serial # Transm. Pos'n | 27 | t2- <i>f</i> 9 c74 | 34 43- | 9-f) 609c | 34 4461 | 9-1 1 183 | 34 | F 3 2-19 84 | 11.M rd F 3/47 4250 | leter A Ba)-/) -84 | Hou 1.Di | 7 7 7-19 577 | 34 | 5 5 5 5 32 | G 34 420 | 2-19 796 |
| 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 2.37 1.14 2.0 | 12-19 674 PA 205 | 34 43- 9 | 9-1) 6090 PA | 343 | 9-17 8.3 PA 205 | 34. i.11 bo 31. | 7. P. | 11.M rd F 2/4/ 4250 90 | eter A Ba | Here 1. Di 34. | 7 7 9-19 00-19 20-5 | 34 441 21 20 | 5 5 532 017 | 34 420 30 | 2-A 796 19 |
| 2nd PA Bal.Div_772 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 2 34 114 2 20 | 12-19 674 PA 1205 | 34 43-19 198 | 2-f) 6090 PA 305 | 34, 446, 30 | 9-17 8:3 PA 20:5 9:2 | 34. i.11 60 31 20 | F 3 | 11.M rd F 3/1/2 4250 90 | 3 7-12 13-12 13-12 13-2 | Heu 1. Di 34: 441: 20: | 7 7 7 7 7 7 7 7 7 7 7 7 9 9 7 | 34 34 441 20 197 | 507 532 0A 505 903 | 34 420 31 30 | 2-A 796 20 5 90 2 |
| 2nd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) | 2 34 114 2 20 | 12-19 674 PA 1205 | 34 43-19 198 | 2-f) 6090 PA 305 | 34, 446, 30 | 9-17 8:3 PA 20:5 9:2 | 34. i.11 60 31 20 | F 3 | 11.M rd F 3/1/2 4250 90 | 3 7-12 13-12 13-12 13-2 | Heu 1. Di 34: 441: 20: | 7 7 7 7 7 7 7 7 7 7 7 7 9 9 7 | 34 34 441 20 197 | 507 532 0A 505 903 | 34 420 31 30 | 2-A 796 20 5 90 2 |
| Znd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 2.37 1214 20 17.8 65.9 | 12-19 074 PA 205 205 166-8 | 343-198 | 2-P) 6090 PA 205 201 655 | 3461 | 9-17 73 70 A 20 S 20 A 11.0 | 34. 61.60 81.80 19.9 65.6 | 20-19 20-19 20-5 20-5 41.8 | 11.M rd F 4250 90 19.9 65.0 | 3 7-12 13-12 13-12 13-2 | Heu 1. Di 34: 441: 20: | 7 7 7 7 7 7 7 7 7 7 7 7 9 9 7 | 34 34 441 20 197 | 507 532 0A 505 903 | 34 420 31 30 | 2-A 796 20 5 90 2 |
| Znd PA Bal.Div_72 Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Volts(Tube) | 20 37 414 2 178 65.5 119 | 12-19 074 PA 205 205 1068 | 343-19 90 198 643 | 9-A 6090 PA 305 201 65.5 | 34 4461 30 199 (53 | 9-17 8-3 PA 205 902 66.0 | 34. 61.60 189 656 | 772 | 11.M rd F 4250 90 19.9 65.0 | 3 7-12 13-12 13-12 13-2 | Heu 1. Di 34: 441: 20: | 7 7 7 7 7 7 7 7 7 7 7 7 9 9 7 | 34 34 441 20 197 | 507 532 0A 505 903 | 34 420 31 30 | 2-A 796 20 5 90 2 |
| Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Cur. Amps. Remarks: | 20 30 F8 85 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | 12-19 PA 1205 1205 1004 | 198 | 0-A 6090 PA 201 1055 | 34 4461 30 199 153 | 9-17 8-3 PA 205 902 66.0 | 34. 65.6 90 | 70-19 20-19 20-5 20-5 20-7 17-2 | 11.M rd F 4250 90 19.9 | Sty | Hou 1.Di 34/2 44/6 20/2 19.9 | 7 7 7 7 7 7 7 7 7 7 7 7 9 9 7 | 34 34 441 20 197 | 507 532 0A 505 903 | 34 420 31 30 | 2-A 796 20 5 90 2 |
| Tube Pos'n Type Tube Serial # Transm. Pos'n Fil. Volts(Meter) Fil. Cur. Amps. Remarks: | 20 30 F8 85 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | 12-19 074 PA 205 205 1068 | 198 | 0-A 6090 PA 201 1055 | 34 4461 30 199 153 | 9-17 8-3 PA 205 902 66.0 | 34. 65.6 90 | 70-19 20-19 20-5 20-5 20-7 17-2 | 11.M rd F 4250 90 19.9 | Sty | Hou 1.Di 34/2 44/6 20/2 19.9 | 7 7 7 7 7 7 7 7 7 7 7 7 9 9 7 | 34 34 441 20 197 | 507 532 0A 505 903 | 34 420 31 30 | |

"Tube Filament Currents"

1st Tuesday

ITEM §4

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| Type Tube | 34 | ()- <i>P</i> | 34 | 12-A | 34 | D-19 | 34 | 2) - A | 24 | ::::::::::::::::::::::::::::::::::::: | 34 | 1-D | 100 |) _ 11 | 1.01 | Λ. Λ |
| Serial # | 1 | i - Aidi . | 1: < .2: | 4. sa. lo 1 | 12.20 | z .,,(| 1: 7.63 | | 17.7.2 | 7[.] | 11.7.2 | | 2.73 | d. 11. | \$2.7 <u>2</u> | 7.77 |
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| Fil. Volts (Meter) | 20 | 1)6.5 | 120 | 20.5 | 36 | 36.5 | 1)0 | 36.5 | 20 | 20.5 | 20 | 74.5 | 9. | 12.5 | 100 | 100 |
| Fil. Volts(Tube) | 19.8 | 20.1 | 19.5 | 176.1 | 199 | 20) | 19.9 | 2/ () | 199 | 177.5 | 199 | 70.0 | 199 | 100 | 190 | ، الما |
| Fil. Cur. Amps. | 65.1 | 66.0 | 63.8 | 648 | 65.6 | 65.8 | کارا ایا ارای | 655 | 64.4 | 65.4 | 64.0 | 11/8 | 1.1.7.1. 1.4.C | 13.25 14.32 | 1.1:1. | 15: |
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"50 KW Trans. & Ant. Equip. Meint."

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1ST TUESDAY

ITEH 5

(a) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Front of this Unit, open Glass Front Window proceed to Measure the Bias Voltage at Grid Terminal on Tube "V2F".

To get Bias Voltage with Transmitter Enclosure Door open, Put "ON" Switch "D17P".

Switch "D17P" is mounted on the end of "High Voltage Grounding Switch and

Door Interlock Mechanism".

To get Bias Voltage with Glass Front Window Open use a short Test Lead fitted with Battery Clips, and connect Terminals #8 and #11 on "2nd Power Amplifier Tube Unit" #4 (F) Shorting Window Switch "D27".

When available, use the Weston Model 45 DC Voltmeter, if not available, use Jewell Model 171, or other Type D.C. Voltmeter.

These meters are kept in the "Fortable Fuse and Test Unit" in the Transmitter Room, as well as in the "Measuring Bench" in the Easement.

This is performed directly after Item #4 (h) is completed, but occasion may prime when the Supervisor may order Item #4 (a) to (h) not to be performed.

If so, this Item is to be done directly after taking 50 kW Transmitter Carrier "OFF" the Air, (1650 Volt Rectifier "OFF", and 17,000 Volt Rectifier "OFF",) but prior to shutting down the Rotating Machinery.

Ist Technician to proceed to the Front of the "Control Unit" and adjust "Bias Generator Rheostat" "R18A" to read exactly 500 volts on "Bias Woltage" Voltmeter "M2A".

2nd Technician to connect measuring Leads to the 0 to 300 Volt Terminals of the Model 45 Voltmeter.

Set Voltmeter on Portable Maintenance Table, connect the Voltmeter Positive Fred to a good "Ground" and connect the Voltmeter Negative Prod to the Grid Terminal on the Tube.

Continued on next Page

FOR OPERATING MANUAL

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (19)

1ST TUESDAY

ITEM 5

lst Technician to adjust "Bias Generator Rheostat" "R18A" until Model 45 Voltmeter at the Tube Grid Terminal and "Ground" reads exactly 300 Volts; 1st Technician to note what reading is on "Bias Voltage" Voltmeter "M2A".

This is done to check the amount or error in "Bias Voltage" Voltmeter "MRA" caused by Flash-arcs and Arc-backs.

Always operate 50 KW Transmitter with Bias Voltage Voltmeter "M2A" reading whatever value will provide exactly 300 volts at 2nd and 3rd Power Amplifier Tube Grid to "Ground" Terminals.

If reading on "Bias Voltage" Voltmeter "M2A" differs from the reading of 300 Volts at Grid Stems of tubes in 2nd and 3rd Power Amplifier Units, enter this information on the "50 KW M.O.L."

Use of Hickok Voltmeter in measuring Bias Voltage is same as described in Item #4 (e). Leave Switch "Dl7P" "ON".

Close Glass Front Window.

Remove Test Lead from Terminals No. 8 and No. 11 on "2nd Power Amplifier Tube Unit" #4 (F), thus removing short from Window Switch "D2F".

(b) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Front of this Unit, open the Glass Front Windows and measure the Bias Voltage at Grid Terminal on Tubes "V2H" - "V4H" and "V6H".

Procedure same as Item #5 (a) except that in order to get Bias Voltage with Window open use short Test Lead fitted with Battery Clips and connect Terminal No. 23 to No. 24 on "3rd Power Amplifier Tube Unit" #6 (H), Shorting Window Switch "DlH".

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit and measure the Bias Voltage at Grid Terminal on Tube "VIF".

Procedure same as Item No. 5 (a).

Continued to next Page

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| ITEM 5 | 1ST TUESDAY | |
| (d) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to | the Rear of | this |
| Unit and measure the Bias Voltage at Grid Terminal on Tubes "Vl | H _H = #A2H _H | |
| and "V5H". | | |
| Procedure same as Item 5 (a). | • | |
| Put "OFF" Switch "D17P". | | |
| Remove Test Lead from Terminals #23 and 24 on "3rd Power Amplif | ier Tube Uni | ∟t# : |
| #6 (H). | | |
| Observe that "Bias Voltage" Voltmeter "MCA" is reading ZERO. | | |
| Enter Bias Voltage Measurements on Form "Tube Filament Currents | э ^п , | |
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| Page No. () () () () () | | |
| End Item 5 | | |

"50 KW Trans. & Ant. Equip. Maint."

BOOK No.

SEC. No. (C)

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C

PAGE No. (21)

1ST TUESDAY

ITEM 6.

(a) "Switch Room": Proceed to this room and put "OFF" Switch #2, "50 KW Distribution Oil Circuit Breaker" for SAFETY REASONS.

Merely Grasp handle of this Oil Circuit Breaker and lift it up.

(b) "Basement": While in the Pasement put "OFF" Switch "DIP" - "Master 180 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove Wood "Preventer" from between operating handle and overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

- (c) "Control Unit" #1 (A): Proceed to Rear of this Unit and put "OFF".
 "Safety Switch" "DLA" for SAFETY REASONS.
- (d). "Control Unit" // (A): Proceed to space directly behind Main Panel of this Unit and clean Armature and Contacts of Rheostats "R16A" "R17A" "R18A" and "R19A".

Inspect all Connections to Rheostats "R16A" - "R17A" - "R18A" and "R19A".

Inspect resistors in series with Rheostats "R16A" and "R18A".

Thoroughly Vacuum Clean equipment and floor adjacent to Rheostats "R16A" - "R17A" "R18A" and "R19A".

Clean Armatures and Contacts of Theostats with Crocus Cloth.

While it is desireable to use Crocus Cloth for this work, it may be necessary to use "00" Sand Paper to clean severely worn or rough contacts; finally finishing off with Crocus Cloth.

Wipe off Dust from Entire Rheostat, Contacts and all.

Wipe Residue off Rheostat Armature and Contacts with a rag dampened in Carbon-tet. Lightly coat Armatures and Contacts with "Walscolube", kept in Transfile #44. Tighten Armature Locking Bolts.

Check all connections to Rheostats.

Inspect Fixed Resistors in Series with Rheostats.

Measure same if excessive discolorations, cracking, chipping or pitting warrants it.

Renew Series Resistors if not within safe operation tolerances.

Continued to Next Page

| OPERATING MANUAL | BUCK NO. (/) |
|---|---------------------------------|
| | SEC. No. (C) |
| "50 KW Trans. & Ant. Equip. Maint." | PAGE No. (22) |
| ITELI 6. | 1ST TUESDAY |
| Spare 50 KW Transmitter Resistors are kept in Transfile | #68, 69, 70, and 71. |
| When Voltage Reading controlled by a given Rheostat is e | rratic or unsteady, |
| it may be necessary to clean contacts or armature a seco | nd time, or lightly coat |
| with "Walscolube". | |
| Do not confuse variations in voltage or current readings | caused by Generator |
| Fluctuations or Public Service Line Variations with thos | |
| Contacts, Armatures or other Rheostat troubles. | |
| Smooth operation of Rheostat may be checked with Weston | Model #663 or Model #772 |
| Analyzer, after disconnecting one lead to Rheostat. | "112 |
| / | is Unit and Clean Armatur |
| and Contacts of Rheostat "R7C". | TEO OTTO TOTAL OTTOMI AT ME DUI |
| Inspect all connections to Rheostat "R7C". | |
| | Non-the upgan |
| Thoroughly Vacuum Clean Equipment and floor adjacent to I | meostat "R/U". |
| Procedure same as Item #6 (d). | • |
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| Page No. () () () () (|) |

End Item 6.

"50 KW Trans. & Ant. Equip. Maint."

BOCK No. (7

SEC. No. (C)

PAGE No. (23)

1ST TUESDAY

ITEM 7.

(a) "3rd Power Amplifier Tuning Unit" #7 & 8 (I): Proceed to the Rear of this Unit, open Enclosure door, clean all equipment and check all connections. In cleaning equipment, start at the top and clean down toward the Floor, finally wiping up the Copper Floor with a clean cloth slightly dampened with Water.

Wipe off Wood Form of Inductance Coil "LLI" with a clean dry cloth.

Polish "LLI" Tuning Coil with Moxon Metal Polish, exercising care to wipe off all excess dry polish.

Remove and then, Polish with Noxon all "LII" Inductance Clips, exercising care to return clips to marked positions on Coil turns from which same were removed to clean.

Polish all Cadmium plated metal busses, strips, and plates with Noxon Metal Polish. Wipe off all condenser cases with rag dampened in Carbon-tet.

Tighten all Wire connections, Bolts, Muts and Busses to all Parts.

Where busses are bolted together at a Stand-off Insulator, exercise care not to

(b) "3rd Power Amplifier Tuning Unit" #8 (I): Proceed to the Front of this Unit, open 2 Metal Front Doors, clean all equipment and check all connections.

Inspect Bakelite and Wood forms of Harmonic Shunt Coils "L2I" and "L8I" for evidences of OVERHEATING.

Burn marks, charred areas, hot connections are evidences of OVERHEATHNG.

Scrape away any Burned areas with a Knife or sharp edge of file.

All partially charred or burned Bakelite must be removed, or this condition will continue until a FIRE RESULTS, doing DAMAGE TO EQUIPMENT.

Clean all equipment, starting at the Tops of Sections and cleaning down toward the Floor, finally wiping up Floor with Cloth slightly dampened in Water.

Wipe off Condenser Cases with Cloth dipped in Carbon-tet.

Tighten all Wire Connections, Bolts, Nuts, and Busses to all Parts.

Continued to Next Page

strip Threads on Insulator.

World Radio History

Enter all repairs made to equipment, on the "50 KW M.O.L."

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End Item 7.

"50 KW Trans. & Ant. Equip. Maint."

| BOOK No. | (| 7 |) |
|----------|---|----|---|
| SEC. No. | (| С |) |
| PAGE No. | (| 25 |) |

1ST TUESDAY

ITEM 8.

(a) "2nd Power Amplifier Tube Unit #4 (F): Proceed to this Unit and clean rear and front Tubes "VIF" and "V2F" respectively.

Wipe off the Metal parts with a Rag dampened in Carbon-tet.

Wipe off Glass Envelopes of Tubes, using Clean Cloth dampened with water, then wipe off with Clean Dry Cloth.

If this is insufficient to clean the Glass envelope of tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to high Lustre.

When Transmitter is started, observe the condition of the Glass, and if Lint is present, clean off with Clean Dry Cloth.

If this is not the Remedy, use Skin of hand, which will attract Lint, since it discharges the Static Electricity on Glass, originally accumulated from Dry Cloth. The small amount of remaining Lint may be Blown off the Glass.

In cleaning Glass envelope of tubes, exercise Caution, not to scratch.

Do Not Wear a Ring while cleaning or polishing the Power Amplifier Tubes.

Always be sure to take a Clean New Cloth when Cleaning or polishing Power Amplifier Tubes.

- (b) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and clean.

 Rear Tubes "VlH" "V3H" "V5H" and front Tubes "V2H" "V4H" "V6H".

 Procedure same as Item #8 (a).
- (c) "Control Unit" #1 (A): Proceed to this Unit and clean 1650 Volt Rectifier Tubes and sockets positions #1 to #6 inclusive.

Wipe off Tube Glass envelopes with a Rag Dampened in Water, then dry off with Clean Dry Cloth.

Continued on Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (26)

1ST TUESDAY

ITEM 8.

If this is insufficient to clean the Glass Envelope of tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to High Lustre.

Wipe off the Bakelite Socket with Clean Dry Cloth.

(d) "Oscillator-Modulator Unit" #2 (D): Proceed to this Unit, Clean Tubes and Sockets positions "VIY" "V2Y" "VID" "V2D" "V3D" "V4D" "V5D".

Procedure for "VIY" and "V2Y": Proceed to Front of this Unit, and clean 2

Type 271-A Tubes in Crystal Oscillator, Type 700-A Boxes #1 and #2.

Wipe off tube Glass envelopes with Rag dampened in Water, then dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelope of tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to High Lustre.

Procedure for "V1D" "V2D" "V3D" "V4D" "V5D": Ascertain if each of these Tubes is in its socket properly.

Gently push down on Tube to "FEEL IF FILAMENT, PLATE AND GRID Tube Prongs are resting against socket Prong Properly".

Check Tension of Socket Prongs, which should be sufficient to hold Socket Prong tightly against Tube Prong, this Providing GOUD ELECTRICAL CONNECTION.

If Tension is insufficient, (as evidenced WHEN 1650 VOLTS IS APPLIED BEFORE OR AFTER SHUT DOWN, Overheating of Prongs, or variations in Tube Currents when Tube is pushed down in Socket,) increase same by Lifting Socket Prong upward Slightly.

Continued on Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (27)

1ST TUESDAY

ITEM 8.

CAUTION: Do not adjust tension of Socket Spring Contacts with Transmitter Rotating Equipment "ON", use "Tube Change Switch" "D3A", pushing same "OFF" to stop all rotating machinery while this adjustment is made, or during period when Transmitter is completely shut down.

Exercise care in bending Socket Prongs, so as not to break same. Wipe off tube Glass Envelopes with rag dampened in Water, then dry off with Clean Dry Cloth.

If this is insufficient to clean the glass envelope of tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to High Lustre.

- (e) "lst Power Amplifier Unit" #3 (E): Proceed to this unit, Clean Tubes and Socket Positions "VIE" and "V2E".

 Procedure same as Item 8 (d) except Tubes are not removed from sockets and prongs are not inspected for overheating.
- (f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this unit, Clean Tubes and Sockets Position "V7H".

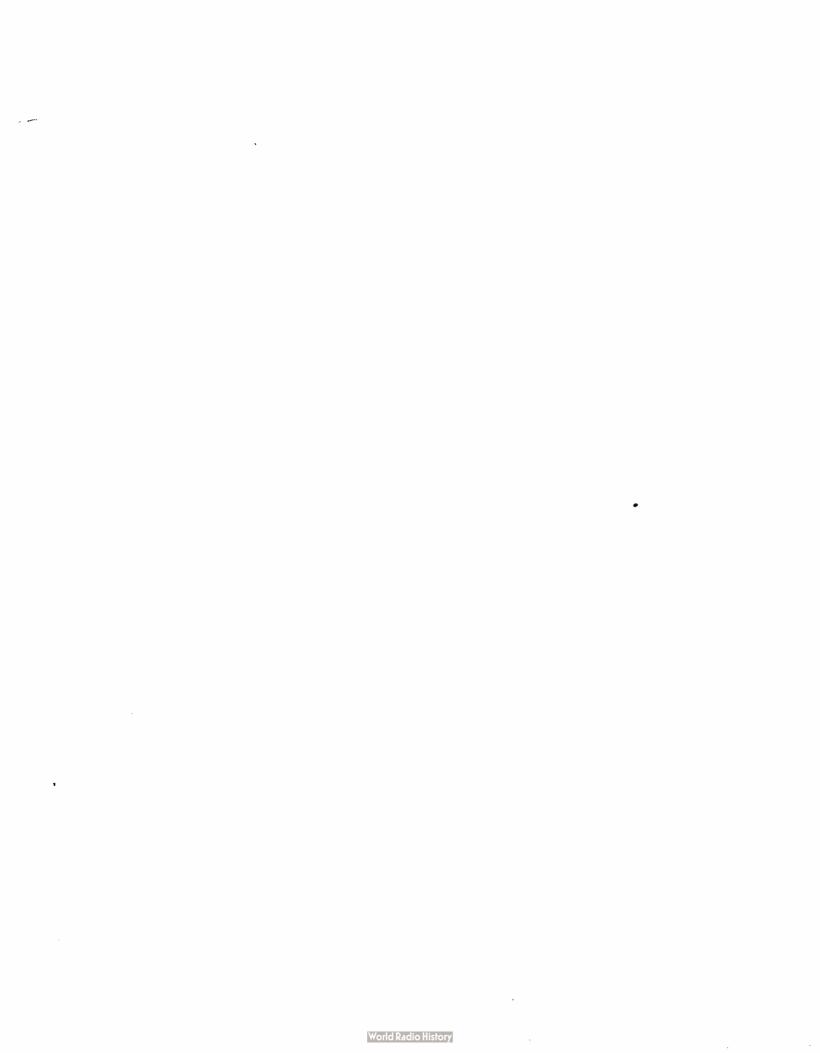
 Procedure is same as Item #8 (d) except Tube is not removed from socket and Prongs are not inspected for overheating.

Continued on Next Page

| | SEC. No. | . (C |) |
|--|----------|-------|---|
| | PAGE No | . (28 |) |
| | 1ST TUE | SDAY | |
| ITEM 8. | | | |
| (g) "3rd Power Amplifier Tuning Unit" #8-(I): Pro | ceed | | |
| to this Unit, Clean Tube and Socket Position "VII". | | | |
| Procedure same as Item #8 (d) except Tube is not removed f | rom | | |
| socket and prongs are not inspected for overheating. | | | |
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BOOK No. (7)



"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

PAGE No. (29)

2ND TUESDAY

BCOK No.

ITEM 9.

(a) "Control Unit" #1 (A): Proceed to the Rear of this Unit, feel and at the same time inspect Condensers "Cl.lA" - "Cl.2A" - "Cl.3A" - "Cl.4A" - "Cl.5A" "Cl.6A" - "C2.lA" - "C2.2A" - "C3.lA" - "C3.2A" - "C1.1A" - "C4.2A" - "C5.lA" and "C6A" for OVERHEATING.

Feel Tops and Sides of Metal Cases for OVERIEATIN: .

Feel Insulating Bushings on Tops of these Condensers for OVERHEATING.

Inspect Cases and Insulator Bushings for Breakage and Oil Leakage.

(b) "lst Power Amplifier Unit" [3 (E): Proceed to the rear of this Unit, open Enclsure Door, feel and inspect Condensers "ClE" - "C2E" - "C5E" - "C6E" - "C7E" - "C8E" for OVERHEATING.

Use AC Extension Light to locate and check Condensers.

Feel Tops and Sides of Metal Cases of Mica Condensers for OVERHEATING and Leakage of Insulating Compound.

Feel Metal End Plates and Isolantite Cases of Cornell-Dubilier Condensers for Overhea ting and Leakage of Insulating Compound.

Observe if Four Counter Sunk Screws in the Top End-Plates of Cornell Dubilier Condensers are all the way in or partly unscrewed.

CAUTION: DO NOT TURN ANY OF THESE FOUR COUNTER SUNK SCREWS IN THE END PLATES OF DUBILIER CAPACITORS, AS THIS WILL ALTER THE CAPACITY.

Report same on the "50 KW M.O.L."

Note on the "50 KW M.O.L." any Condensers that have excessively warm or Hot Spots.

BEWARE of this "Spotty" Condition since this indicates a Capacitor Going Bad.

With a Rag lightly dampened with Naptha, clean all Isolantite Cases of Condensers.

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, feel and at the same time inspect Condensers "CIF" - "C2F" - "C3F" - "C4F" and "C6F" for OVERHEATING.

Procedure some as Item #9 (b).

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (30)

2ND TUESDAY

ITEM 9.

Use "Shorting Stick" and short across the End-Plates (The 2 Connections) and then feel and inspect Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.1F" "C9.2F" - "C10.1F" - "C10.2F" for OVERHEATING.

Procedure same as Item #9 (b).

Leave Enclosure Door Open.

(d) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.lG" - "Cl.2G" - "Cl.3G" "Cl.lG" - "Cl.5G" - "C2.1G" - "C2.2G" - "C2.3G" - "C2.4G" - "C2.5G" - "C3G" and "ClG" for OVERHEATING.

Procedure same as Item #9 (b).

Leave Enclosure Door Open.

Use the Small Step Ladder to reach the Cutside Top of Enclosure, feel and inspect Condensers "C7G" and "C8G" for OVERHEATING.

Procedure same as Item #9 (b).

(e) "3rd Power Amplifier Tube Unit" #6 (II): Proceed to the Rear of this Unit, feel and inspect Condensers "C2H" - "C3.2H" - "C4.2H" - "C4.2H" - "C5.1H" and "C5.2H" for OVERHEATING.

Procedure same as Item #9 (b).

Use "Shorting Stick" and short across the End-Pl ates (The 2 Connections) and then Feel and Inspect Condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" - "C8.1H" - "C8.2H" - "C9.1H" - "C9.2H" for GVERHEATING.

Procedure same as Item #9 (b).

(f) "3rd Power Amplifier Tuning Unit" #7 & #8 (I): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.1I" - "Cl.2I" "Cl.3I" - "C2.1I" - "C2.2I" - "C2.3I" - "C3.1I" - "C3.2I" - "C3.3I" - "C4.1I" "C4.2I" - "C12.3I" - "C10.1I" - "C10.2I" - "C11.1I" - "C11.2I" - "C12.2I" "C12.3I" - "C12.4I" - "C12.5I" - "C16I" for OVERHEATING.

Procedure same as Item #9 (b).

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

(

7)

PAGE No. (31)

2ND TUESDAY

BOOK No.

ITEM 9.

Leave Enclosure Door Open.

(g) "3rd Power Amplifier Tuning Unit" #8 (I): Proceed to the Front of this Unit, open the Metal Panel #2, feel and inspect Condensers "C17I" - "C18I" - "C19I" - "C20.1I" - "C20.2I" - "C21I" for OVERHEATING.

Procedure same as Item #9 (b).

Leave Enclosure Door Open.

On the Front of this Unit, open the Metal Panel #3, feel and inspect Condensers "C7.11" - "C7.21" - "C13.11" - "C13.21" for OVEPHEATING.

Procedure same as Item #9 (b).

(h) "Antenna Coupling Unit" #9 (J): Proceed to this Unit, open Enclosure Door, feel and inspect Condensers "Cl.lJ" - "Cl.2J" - "Cl.3J" - "C2.1J" - "C2.2J" "C2.3J" - "C3.1J" - "C3.2J" - "C3.3J" - "C4.1J" - "C4.2J" - "C4.3J" and "C4.4J" for OVERHEATING.

Procedure same as Item #9 (b).

Leave Enclosure Door Open.

(i) Units Listed Item #9 (a) to (h): Proceed to these Units listed in this sequence, use the AC Extension Light and tighten all Bolted Connections.

In some instances, it will be found that Condensers are bolted to Support Insulators, and that these Bolts also connect Two busses together.

In this work, exercise CARE NOT TO BREAK OR CHIP Threaded Bolt Hole in End of Stand-off Insulator, which will cause LOOSE BOLTED CONNECTION OF BUSSES.

Inspection will show that some of these Insulators do not have Metal Ends, but that Threaded Holes are in the Isolantite itself.

DO NOT TIGHTEN SUCH BOLTS TOO MUCH - DO NOT JERK.

At the same time, feel Filament Connections of Water-Cooled Power Amplifier Tubes for OVERHEATING.

These Connections are Normally Warm but NOT HOT.

| | W O R OPERATING MANUAL | BOOK No. (7) |
|----------|-------------------------------------|-----------------|
| | "50 KW Trans. & Ant. Equip. Maint." | SEC. No. (C) |
| | oo ka mana, a mio, mano, | PACE No. (52) |
| | ITEM 9 | 2ND TUESDAY |
| Book No. | (/)(/)(/)(/)(4)(2 | 1 (1)(1)(1) |
| Sec. No. | (A)(D)(E)(F)(G)(H |) (I)(I)(b) |
| Page No | | 1/ 1/ 16) |

End Item 9.

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"50 KW Trans. & Ant. Equip. Maint".

BOOK No. (7)

SEC. No. (C

PAGE No. (33)

2nd TUESDAY

ITEM 10.

- (a) "Switch Room": Proceed to this Room and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.
- (b) "Control Unit" #1 (A): Proceed to the Rear of this Unit, put "OFF"

 "Safety Switch" "DIA", open hinged door and feel Fuses "F1.1A" "F1.2A" "F1.3A"

 "F2.1A" "F2.2A" "F3.1A" "F3.2A" "F4.1A" "F4.2A" for OVERHEATHY.

 Be sure to rotate Fuses in their Holders, since Burned Spots may be an Lower

 Sides, or sides toward the Panel.

Fuses normally run Warm but Not Hot.

Technician should be able to keep hand on fuses when checking same.

Replace any Fuse showing a burned or OVERHEATED place on Insulated Body of same. Spare Fuses are located in the "Portable Fuse and Test Unit" kept in the Main Transmitter Room and in the "Fuse Tester Rack" kept in the Basement Areaway at the foot of the Stairs to the Basement.

Fuses should be gripped tightly in Clips and Fuse Block Holders, so that OVERHEATING does not take place at these Connections.

Some Fuses are provided with Compression (Variable) Clamps, to prevent OVEHHEATING and assure full voltage and current throughout the Circuit.

Be sure that proper Tensionis on these Clamps.

After checking these Fuses, be sure to Close Metal Door and put "Safety Switch" "DlA" - "ON".

(c) "Control Unit" #1 (A): While at the rear of this Unit, feel Fuses
"F5A" - "F6A" - "F7A" - "F8A" - "F9A" and "F10A", for OVERHEATING.

Procedure same as Item #10 (b).

Exercise care not to break the single socket holding each Fuse.

(d) "Oscillator-Modulator Unit" /2 (D): Proceed to the rear of this Unit, and feel Fuse "F3D".

Same Procedure as Item #10 (b).

Fuse is located on the Lightning Protective Device Apparatus Panel on bottom Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOCK NC. (7)

SEC. No. (C)

PAGE No. (34)

21D TUESDAY

ITM 10.

of the Unit.

(e) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit and feel Fuses "Fl.1C" and "Fl.2C" for OVERHEATING.

Same Procedure as Item #10 (b).

These Fuses are located on the Metal Panel supporting "Rectifier Air Blast" Relays on bottom of this Unit.

(f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and feel Fuses "FlH" - "F2H" - "F3H" - "F5H" and "F6H" for QVERHEATING.

Same Procedure as Item #10 (b) except that Knife Type fuse clears Panel Sufficiently to observe any Abnormal Condition.

These Fuses are located on the Bakelite Panel just above the Rear Tubes.

(g) "Basement": Proceed to the Basement, put "OFF" Switch "DIP" - "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove Wood "Preventer" from between Operating Handle and Overload Tripping Lever then grasp Handle of O.C.B. and lift it UP.

(h) "Basement": While in the Basement, put "OFF" Switch "D.1.1P" - "Main Power Disconnect Panel", open Metal Door and feel Fuses"Fl.1P" - "Fl.2P" - "Fl.3P" "F2.1P" - "F2.2P" - "F2.3P" - "20.1P" - "F20.2 and "F20.3P" for OVERHEATING.

Procedure same as Item #10 (b) except that Knife Type fuses clear the Panel sufficiently to observe for any Abnormal Condition.

Feel Blades and Contacts of Switch "Dl. 1P" for OVEREATING.

Technician should be able to lay Hand on these parts, they should be Warm not Hot. If Blades or contacts are too hot, tighten up Compression nuts, clean off contacts with Crocus Cloth, wipe with rag dampened in Carbon-tet and lightly coat with "3-in-1" Oil.

After checking Fuses and Switches, put Switch "Dl. IP" - "ON".

(i) "Basement": While in the Basement, put "OFF" Switch "D15P" - "Motor Distribution Panel", open Metal Door and feel Fuses "F4.1P" - "F4.2P" - "F4.3P" Continued to Next Page

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BOOK No. (7)

SEC. No. (C)

End Item 10.

SEC. No. (C

BOOK No.

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (36)

2HD TUESDAY

ITEM 11.

(a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it up.

(b) "Basement": While in the Basement, put ""OFF" Switch "DIP" - "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp handle of O.C.B. and lift it up.

(c) "Control Unit" #1 (A): Proceed to the Rear of this Unit and feel Field
Coils of Relays "SPA" - "SJA" - "SJA" and "SLLA" for OVERHEATING.

These Relays are located in top rear of this Unit, mounted on a Metal Sub-Panel. These Relay Field Coils will normally run WARM, but NOT HOT.

Technician should be able to keep Hand on them.

Log any that are excessively Warm or Hot on the "50 KW M.O.L."

While at the rear of this Unit, open Door of Metal Box housing Relay "SLA" and feel Field Coil for OVLINIEATING.

Procedure same as Item #11 (c).

Close Door of Metal Box housing Relay "SlA".

While at the Rear of this Unit, Put "OFF" the Series Switch on "1650 Volt Magnetic Switch Contactor" Metal Box, Open Box and feel this Relay Contactor "S7A" Field Coil for OVERNEATING.

Procedure same as Item ill (c).

Close Door of Metal Box and put Series Switch "ON".

(d) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.1F" - "C9.2F" - "C10.1F" - "C10.2F", then feel Field Coils of Relays "S1F2 - "S2F" - "S3F" and "S4F" for OVERHEATING.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

7)

BOCK No. (

PAGE No. (37)

211D TUESDAY

ITEM 11.

To discharge Condensers, merely place Metal part of "Shorting Stick" across the two End-Plates of these Condensers.

As Each Condenser is discharged, a moderate Arc will be observed when "shorting stick" first touches the End-Plates.

Log any Relay Field Coils that are excessively Warm or Hot, on the "50 KW M.C.L."

(e) "3rd Power Amplifier Tube Unit" %6 (H): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" - "C8.1H" - "C8.2H" - "C9.1H" - "C9.2H", then feel Field Coils of Relays "S3H" - "S4H" - "S5H" - "S6H" - "S7H" - "S8H" - "S9H" - "S10H" - "S12H" "S13H" - "S14H" for OVERHEATING.

Same Procedure as Item #11 (d).

(f) "17 KV Rectifier Tube Unit" #10 (C): Proceed to this Unit and feel Field Goils of Relays "S1C" - "S2C" - "S3C" - "S1C" - "S5C" - "S7C" - "S6C" - "S8C" - "S9C" - "S1C" and "S12C" for OVERIEATING.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

While at this Unit, open door of Metal Box housing "17 KV Rectifier Air Blast Heater Relay" - "S170" and feel Field Coil for CVERTEATING.

This Field Coil winn run normally Warm not Hot.

Technician should be able to keep hand on it.

If excessively Warm or Hot, Log on the "50 KW M.O.L."

(g) "17 KV Rectifier Switching Unit" #11 (B): Proceed to this Unit and Feel Solenoids of Magnetic Contactors "S4B" and "S5B" for OVERWEATING.

Solenoids of these Contactors run normally VERY WARM, with Temperature distributed evenly around outside of Casings.

Inspections should be made for OVERHEATING, UNEVENLY distribution of Temperature (HOT 3POTS), loose connections, and condition of Insulation covering around Outside of Solenoids.

Continued to Next Page

| Uro VIII Manage C And Tomain 35-int II | DEO. 140. (0) |
|---|-----------------------------|
| "50 KW Trans. & Ant. Equip. Maint." | PAGE No. (38) |
| | 2ND TUESDAY |
| ITEM 11. | <u> </u> |
| Then Insulating Covering around Solenoids of "Sl $_1$ B" and " $_2$ | S5B" begins to get bare, |
| apply coat of "BLACK INSULATING VARNISH." | • |
| On the Bottom of this Unit, feel Field Coils of Relays " | S2B" and "S3B" for |
| OVERHEATING. | |
| Log any abnormal Condition and work performed on the "50 | KM M.O.T. |
| (h) "17 KV Filter Condenser Charging Contactor and R | esistor Unit" #12 (L): |
| Proceed to this Unit and feel Solenoid of Magnetic Conta | ctor "SlL" for OVERHEATING. |
| Procedure same as Item #11 (g). | |
| Book No. (1)(1)(/)(/) | (1)(1) |
| Sec. No. (5)(BA)(A)(F)(H) | (C)(B) |
| Page No. (1)(1)()() | () |
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BOOK No. (7)

W O R OPERATING MANUAL

End ITEM 11.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C

PAGE No. (39)

2MD TUESDAY

ITHI 12.

(a) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit, clean both sides of Isolantite Slabs Tube Position "V1C" to "V7C", clean Metal Covers of Relays "S7C" - "S8C" - "S9C" - "S10C - "S11C" and "S12C".

With a Rag lightly dampened in Maptha clean both sides of Isolantite Slabs, tube positions "VIC" to "V7C" inclusive.

Exercise care not to damage equipment mounted on Slabs while cleaning.
Start at front of Slabs, cleaning from Top to Bottom.

Clean Rear of Slabs, removing Metal Covers or Relays "S7C" to "512C" inclusive, then cleaning Slabs at points where Covers were Removed.

GENTLY CLEAN ISOLANTITE OPERATING ROD for Relays "S7C" to "S12C" inclusive, with a rag slightly dampened in Naptha.

Exercise care not to damage "Pig-tail" connections on bottom hinges of Isolantite Rods.

Carefully brush off the top and bottom Hinges of Isolantite Operating Rods for Relays "S7C" to "S12C" inclusive, using soft Camel's Hair Maintenance Brush.

Carefully brush off Field Coils of Plate Overload Relays "S1C" to "S6C" inclusive.

Carefully brush off all connections on Isolantite Slabs, using Soft Camel's Hair Maintenance Brush.

Clean covers of "D-Spec" Relays "S7C" to "S12C" and replace over Relays.

(b) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the rear of this Unit, clean both sides of Isolantite Slabs, tube positions "VIF" and "V2F", clean metal covers of Relays "S3F" and "S4F".

Procedure same as Item #12 (a) except that Anti-sing Choke Assemblies "L5F"

"R7F" - "L6F" - "R4F", Plate Overload Relay Voltage Dropping Resistors "R8F"

"R9F" and Field Coils of Plate Overload Relays "S1F" and "S2F" are brushes off

with soft Camel's Hair Maintenance Brush.

Continued to Next Pa ge

"50 KW Trans. & Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (LO)

2MD TUESDAY

ITEM 12.

- (c) "3rd Power Amplifier Tube Unit" #6 (II): Proceed to the Rear of this Unit, clean both sides of Isolantite Slabs tube positions "VIH" to "V6H", clean Metal covers of Relays "S9H" "S10H" "S11H" "S12H" "S13H" and "S11H".

 Procedure same as Item #12 (a) except that Anti-Sing Choke Assemblies "L1H" "R2H" "I6H" "R1H" "R6H" "R6H" "L5H" "R3H" "L7H" "R5H" "L9H "R7H"; Plate Overload Relay Voltage Dropping Resistors "R8H" "R9H" "R10H" "R11H" "R12H" "R13H" and Field Coils of Plate Overload Relays "S3H" "S1H" "S5H" "S6H" "S7H" and "S8H" are brushes off with Soft Camel's Hair Maintenance Brush.
- (d) "17 KV Rectifier Unit" #1 0 (c): Proceed to this Unit and Test Plate
 Overload Relays "310" to "360" inclusive for normal operation directly after
 Transmitter is Started, but prior to putting Carrier "ON" the Air.
 On morning following classing of Jackstite Claim at the contract of Jackstite Claim.

On morning following cleaning of Isolantite Slabs ctc., as per Item No. 12, (a) to (c), after Filament are applied to the Tubes of 50 KW Transmitter, it is the duty of One Technician to test all Tube Plate Overload Relays.

First note whether or not Isolantite Operating Rod is Clear and not Binding. If it is Binding, GENTLY LIFT UP Rod and reseat in Hinge.

Second, Touch Relay Armature and pressure exerted on same should cause Relay Contacts to open and "Plate Voltage Trip Relay" "ShA" to drop Out, energizing Lockout Relay "SSA".

Associated Lamp Indicating Relay should work, extinguishing light.

Reset "Lockout Relay" - "S5A" (Turn Knurled adjustment nut counter-clockwise,) and Push "Lamp Reset Key" Switch "D5A".

This will assure us all Relays are clear and possible Lint between Contacts show up. If contacts of Plate Overload Relays are held open by piece of Lint or dirt, associated Indicator Lamp will remain extinguished, but "ShA" - "Plate Voltage Trip Relay" will "Drop Out" with its back contacts energizing Solenoid of Lockout Relay "SSA".

Continued to Next Page

150 KW Trans. & Ant. Equip. Maint.

BOOK No. (7)

SEC. No. (C)

PAGE No. (41)

2ND TUESDAY

ITEM 12

In this condition, Plunger of "Lockout Relay" "S5A" will be up with relay notched in position #1, 2, or 3. If notched in Position #3, Red Light over "Lockout Relay" "S5A" will be illuminated, but it will NOT BE POSSIBLE TO RESET "S5A" "Lockout Relay". Remedy is to clean contacts of Plate Voltage Overload Relays "S1C" to "S6C" using "265-B Relay Cleaning Tool" kept in the "Portable Fuse and Test Unit".

Make this Inspection and Test VERY CAREFULLY.

Log this Test on reverse of T. & A.E. TALLY SHEET per examples: Tuesday, March 9, 1943.

5:40 am. - T. & A.E. Item #12 completed, all relays tested OK. - FN.

or

3:40 am. - T. & A.E. Item #12, paragraph #f completed, all relays tested OK. - Rob. If not OK, indicate on reverse of T. & A.E. TALLY SHEET the nature of trouble and what was performed to remedy cause.

- (e) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit and test Plate Overload Relays "SIF" and "S2F".

 Procedure same as Item #12 (d).
- (f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the rear of this Unit and test Plate Overload Relays "S3H" "S4H" "S5H" "S6H" "S7H" and "S8H".

 Procedure same as Item #12 (d).

| Book No. | (|) |) | (| 1 |) | (| - 1 |) | (| I |) | (| 12 | () | (|) |
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| Sec. No. | | | | | | | | | | | | | | _ | | |) |
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End Item 12

"50 KW Trans. & Ant. Equip. Maint."

BOCK No. (7

SEC. No. (C)

PAGE No. (42)

2MD TUESDAY

ITEM 13.

- (a) "Transmitter Room": Go to the "High Voltage Grounding Switch and Door Interlock Mechnism" Dl3P" and remove ONE KEY FROM LOCK POSITION No. 2 to No. 5, KEEP ON PERSON UNTIL ALL OF ITEM No. 13 IS COMPLETED, for SAFETY REASONS.
- (b) "Switch Room": Proceed to this Room andput "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely graps the Handle of the Cil Circuit Breaker and lift it up.

- (c) "Basement": Proceed to the Basement, and put "OFF" "DIP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.
- (d) "Transformer Vault": Proceed to this Vault, clean up all Equipment, Special Oil Levels in High Voltage Transformers, then have Porter clean up floor of Vault.

Begin to clean-equipment at the top and work toward the Floor.

Wipe off all High Voltage A.C. and D.C. Busses (Lacquered) with clean dry choth.

Wipe off all Wall Insulators with Rag dampened in Carbon-tet, then polish with

Soft Dry Cloth.

Loosen Metal Clamps on two ends of "R5P" 20 KV Voltmeter "MAA" Multiplier, remove the Resistor, wipe off entire Unit with Rag dipped in Carbon-tet.

Polish Cadmium Plated Ends of "R5P" Resistor with "NOXON" Metal Polish, being careful to clean off excess dry Polish with Soft Dry Cloth.

Replace "R5P" Resistor in Metal Mounting Clips and tighten Metal Clamps on ends of "R5P"

Wipe off Entire "Thyrite" "PIP" Buss, Insulator, and Iron Case with Soft Dry Cloth.

If Dry cloth is insufficient to clean insulator, clean it with Rag dampened in

Øarbon-tet.

Clean and Polish Ball-Gap "GLP" and Brass Support Rods and mounting Muts with Moxon Metal Polish.

Wipe off excess Polish with Dry Cloth.

Continued to Next Page

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SEC. No. (C

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (43)

2ND TUESDAY

BOOK No.

ITEM 13.

If "Noxon" Metal Polish is insufficient to properly clean "G4P" Ball Gap, use "00" Sandpaper.

Use Crocus Cloth.

Polish off with "Noxon" Metal Polish, wiping off excess metal polish.

Be sure the "G4P" Ball Gap is Polished SMOOTH AS SILK, otherwise we will have to renew.

After Cleaning "G4P" Ball Gap measure Spacing, which should be exactly 5/8 on an inch.

Use "Allen Set Screw Wrench" to loosen Locking Nut, set "G4P" Ball Gap to correct spacing and tighten locking Nut.

Special Tool for adjustment of Ball Gap are kpt in Leather Tool Kit "In Portable Fuse and Test Unit."

Wipe off "Varistors" R8P" and "R9P" with clean Dry Cloth.

Wipe off insulators on Transformer "TlP" with Carbon-tet then polish with dry cloth.

Wipe off entire Metal Case of High Voltage Transformer "TIP" (No. 1) with Rag lightly dampened with Carbon-tet.

Wipe off Temperature Indicators and Oil Level Gauge Glasses.

Polish Oil Drain Valve with Noxon Metal Polish.

Proceed to High Voltage Transformer "T2P" (No. 2); High Voltage Transformer "T3P" (No. 3); also Spare 17 KV Transformer, and perform same Maintenance work as performed on Transformer "T1P" (No. 1.)

Wipe with A Dry Cloth the Tops, Fronts, Left and Right Sides of "Carteret and Rahway" - "120 A.C. Volt Emergency Service" Transformers; "115 Volt A.C. Transformers No. 1, No. 2, and No. 3; "230 Volt A.C. Transformers No. 1, No. 2, and Continued on Next Page

BOOK No. OPERATING MANUAL SEC. No. "50 KW Trans. & Ant. Equip. Maint." PAGE No. 2ND TUESDAY ITEM 13. No. 3; "480 Volt A.C. Transformers No. 1, No. 2, No. 3 and Spare. DO NOT WIPE IN THE REAR OF THESE TRANSFORMERS AS THERE IS 4150 VOLTS A.C. ON TRANSFORMER PRIMARIES AND CONNECTING BUSSES. Inspect No. 1, No. 2, No. 3 and Spare High Voltage Transformer Gauge Glasses for Proper Oil Level. Correct Oil Level is even with the mark when Transformer is in use, or shortly after Load has been removed; this Level will be too low when Transformers have been idle for an hour or more. Correct Level then will be one half inch above the Mark on Gauge Glasses. If Oil Level should be low, report this to Supervisor and enter data on reverse Product of the "50 KW M.O.L." If any Oil should show at the drain Plugs of any other transformer, tighten Plug N. S. J. The " DO NOT CLEAN HOLE WITH WIRE, wipe it off. Enter data on reverse of the "50 KW M.O.L." After work is completed in Transformer Vault, have Porter clean floor behind 17 Special person KV High Voltage Transformers. Remove the Rug and thoroughly sweep with corn Broom, then Clean and Buff Main Floor, replacing the Rug Runner. PORTER IS NOT TO CLEAN BEHIND transformers of "Rahway" and "Carteret" - "120 Volt Emergency Service"; "116 Volt A.C.; "230 Volt A.C." and "480 Volt A.C." Technician will be the ONLY PERSON TO CLEAN BEHIND THESE TRANSFORMERS, AND ONLY Devocati WHEN DIRECTLY AUTHORIZED TO DO SO.

Continued To Next Page

NOTE:

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| | | W O R OPERATING MANUAL | | | | | | | | | | | No. | (| 7 |) |
|----------|---|---------------------------|-------------------------------------|-------|------|-------|-------|-------|-----|-------------------|-----|-------|-------|----|---|---|
| | | | #50 | KW Tr | ans. | & Ar | nt. E | auin. | Mai | nt. ^{fl} | | SEC. | No. | (| C |) |
| | | | "50 KW Trans. & Ant. Equip. Maint." | | | | | | | PAGE | No. | (| 45 |) | | |
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| Book No. | (|) | (|) | (|) | (|) | (|) | (|) | | | | |
| Sec. No. | | | | | | | | | | | |) | | | | |
| Page No. | | | | | | | | | | | | ` | | | | |

End Item 13.

SEC. No. (C)

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (46)

2ND TUESDAY

BOOK No.

ITEM 14.

(a) "Control Unit" #1 (A): Proceed to the rear of this Unit and thoroughly clean the floor.

Equipment required to perform this Item will be:

A.C. Extension Light.

Maintenance Kit No. 1 and No. 3.

Clean Rags.

Vacuum Cleaner, brush and nozzel attachments.

Wipe off adjacent Iron Framework and equipment, then clean the Concrete Floor under this Unit with a lightly dampened rag.

Use Vacuum Cleaner with Special Attachement to get dirt from corners, etc.

(b) "Oscillator-Modulator Unit" #2 (D): Proceed to the rear of this Unit and thoroughly clean the floor.

Procedure same as Item No. 14 (a).

(c) "lst Power Amplifier Unit" #3 (E): Proceed to the rear of this Unit and Thoroughly clean the floor.

Procedure same as Item No. 14 (a).

(d) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the rear of this
Unit Open Right Metal Door and thoroughly clean the Floor.

Procedure same as Item No. 14 (a).

(e) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the Rear of this Unit, and thoroughly clean the floor.

Procedure same as Item No. 14 (a).

(f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, and thoroughly clean the floor.

Continued to Next Page

BOOK No. (7)

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)
PAGE No. (47)

2ND TUESDAY

ITEM 14.

Procedure same as Item No. 14 (a).

- (g) "3rd Power Amplifier Tuning Unit" #7 & #8 (I): Proceed to the Rear of this Unit, open Enclosure Door, and thoroughly clean the Floor.

 Procedure same as Item No. 14 (a).
- (h) "Antenna Coupling Room" #9 (J): Proceed to this Room, open the Door, polish Inducatnace Coil "LlJ" and "2J"; Polish Meters "MlJ" "M2J" "M3J" "M4J" and "M5J"; check all connections, and thoroughly clean the Floor.

 Polish with Noxon All Cadmium plated turns of Inductance Coils "LlJ" and "L2J".

 Remove Inductance Clips From "LlJ" and "L2J", polish Coil turns at these points, clean and polish Clips with Noxon Metal Polish, BEING CAREFUL TO REPLACE CLIPS

 ON THE MARKED PLACES FROM WHICH THEY WERE REMOVED.

TO AVOID ERROR, IT IS BEST TO REMOVE CLIPS ONE AT A TIME, CLEAN, POLISH AND REPLACE ON THE COIL.

Be sure to clean excess Metal Polish from Coil and Isolantite Insulators supporting turns of Inductances.

Wipe off Wood forms of Inductance Coils "LlJ" and "L2J" with a dry cloth. Clean all insulators with rag dampened in Naptha.

Polish Ammeters, "MlJ" - "M2J" - "M3J" - "M4J" and "M5J" with Stafford's Polish. Tighten all Connections.

Clean cases of Condensers "Cl.1J" - "Cl.2J" - "Cl.3J" - "C2.1J" - "C2.2J" - "C2.3J" - "C3.1J" - "C3.2J" - "C3.3J" - "C4.1J" - "C4.2J" - "C4.4J".

Polish all Camium plated Busses and connector strips on Condensers with Nxon.

Wipe off Copper Busses to Coil "LlJ" and "L2J".

<u>CAUTION:</u> If 5 KW Transmitter Carrier is "ON" the Air during performance of this Maintenance Item, STAY AWAY FROM ANTENNA CHANGEOVER SWITCH.

| W O R OPERATING MANUAL | BOOK No. (7) |
|--|--------------------------------------|
| HEO VIII Thomas II Ant Frais | SEC. No. (C) |
| "50 KW Trans. & Ant. Equip. | PAGE No. (48) |
| | 2ND TUESDAY |
| ITEM 14. | |
| TUNING ADJUSTMENTS - ANTENNA AND TRANSMISSION | LINE COUPLING CIRCUITS. |
| ANTENNA COUPLING ROOM UNIT #9 (J). | |
| "LlJ" | 10.1 Turns |
| "L2J" | 2.9 ¹¹ |
| "ClJ"; | 0024 MFD. |
| uCSlu | ,0018 MFD. |
| "C3J" | 0018 MFD. |
| "C4J" | 002 MFD. |
| All settings as made, are marked with Red Pair | nt, directly on the Inductance Turns |
| The Top 6 turns and bottom 6 turns (End Turns |) of Inductance Coil "LlJ" are |
| shorted. | |
| Book No. $(1)(1)(1)(1)$ | (1)(1)(1)(1) |
| Sec. No. (A) (D) (E) (F) | (G)(H)(I)(J) |
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End Item 14.

| | | | | | | ITEM | 15 | | | | | 2 | ND TUESDAY | Z | |
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| | | | | | | | | -4- | | | | | | | |
| (a) | "17 ! | KA I | <u>lect</u> | ifier | Un | it" #10 | (C |): | Pr | oceed | to | this | Unit and o | clean | |
| Brass Pa | rts d | of F | lect | ifier | Tu | be Flat | e C | onnec | tor | Plugs | "PG | ilon – | "PG2C" - | "PGZC | |
| "PG4C" - | "PG | 5C" | _ 11 | PG6C# | - 1 | "PG7C" | and | large | e br | ass Cl | amp | ing N | uts on fro | onts of | f |
| Rectifie | r Pla | ate | Con | ne c to: | r J: | acks "J | ıc" | _ "J; | 5C11 | _ "J30 |) ¹¹ - | . "J4C | " - "J5C" | - "J60 | C# |
| and "J7C | wi. | th N | охо | n ^M eta | al l | Polish. | | | | | | | | | |
| Remove t | he " | PG#C |)" P | lugs, | fr | om Term | ina | l Jac | k cl | ean wi | Lth | Noxon | Metal Pol | lish, | then wipe |
| off exce | ss Po | olis | sh r | ith re | ag (| dampene | d i | n Carl | bon- | tet. | | | | | |
| While Pl | ug i | s re | emov | ed fro | oin « | Jack, c | l∙∍a | n bra | ss f | ront o | of t | ine Ja | ck with No | oxon | |
| Metal Po | lish | , vi | .pin | ıg exc | eas | polish | of | f wit | h Ra | ig dang | oe ne | ed wit | h Carbon- | tet. | |
| After ea | ch " | PG//C | ;" P | lug m | nd (| Jack is | cl | eaned | and | poli | shed | l, rep | lace Plug | in Jac | ck, |
| pushing | it f | irınl | y i | n plac | ce. | | | | | | | | | | |
| Straight | en b | raid | lod | connec | e to: | r Plugs | 80 | that | san | e are | syn | metri | cally in I | place | |
| directly | abo | ve t | the | Cadmi | ten] | Plated | Hin | ged Re | ecti | fier : | l'ube | Plat | e Connect | or. | |
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| Sec. No. | | | | | | | | | | | | |) | | |
| Page No. | (| |) | (|) | (|) | (|) | (|) | (|) | | |
| | | | | | | | | | | | | | | | |

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (49)

End Item 15.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (50)

2ND TUESDAY

ITEM 16.

(a) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to this Unit and clean Rear and Front Tubes "VIF" and "V2F" respectively.

Wipe off the Metal parts with a Rag dampened in Carbon-tet.

Wipe off Glass Envelopes of Tubes, using Clean Cloth dampened with water,

If this is insufficient to clean the Glass envelope of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe offwiwith Clean Dry Cloth, polishing Glass to high lustre.

then wipe off with Clean Dry Cloth.

When Transmitter is started, observe the condition of the Glass and if Lint is present, clean off with Clean Dry Cloth.

If this is not the remedy, use Skin of hand, which will attract Lint, since it discharges the Static Electricity on Glass, originally accumulated from Dry Cloth. The small amount of remaining Lint May be Blown off the Glass.

In cleaning Glass envelope of tubes, exercise Caution, not to Scratch.

Do Not Wear a Ring while cleaning or polishing the Power Amplifier Tubes.

Always be sure to take a Clean New Cloth when Cleaning or polishing Power Amplifier Tubes:

- (b) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and clean Rear Tubes "V1H" "V3H" "V5H" and Front Tubes "V2H" "V4H" "V6H".

 Procedure same as Item 8 (a).
- (c) "Control Unit" #1 (A): Proceed to this Unit and clean 1650 Volt

 Rectifier Tubes and sockets positions #1 to #6 inclusive.

 Wipe off Tube Glass envelopes with a Rag Dampened in Water, then dry off with Clean Dry Cloth.

Continued on Next Page

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 |) |
|------|-----|---|---|---|
| SEC. | No. | (| С |) |

(51)

2ND TUESDAY

PAGE No.

ITEM 16.

If this is insufficient to clean the glass Envelope of Tubes, a apply a small amount of "Windex" using the Spray Nozzle on the Bottle. Wipe off with Clean Dry Rag, polishing Glass to High Lustre. Wipe off the Bakelite Socket with Clean Dry Cloth.

(d) "Oscillator-Modulator Unit #2 (D): Proceed to this Unit,
Clean Tubes and Sockets Positions "VIY" "V2Y" "V1D" "V2D" "V3D" "V4D"
"V5D".

Procedure for "VlY" and "V2Y": Proceed to Front of this Unit, and Clean 2 Type 271-A Tubes in Crystal Oscillator, Type 700-A Boxes #1 and #2.

Wipe off Tube Glass envelopes with Rag dampened in Water, then dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelopes of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to High Lustre.

Procedure for "VlD" "V2D" "V3D" "V4D" "V5D": Ascertain if each of these Tubes is in its socket properly.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (52)
2ND. TUESDAY

ITEM 16.

Gently push down on Tube to "FEFL IF FILAMENT AND GRID Tube Prongs are resting against socket Prongs Properly".

Check Tension of Socket Prongs, which should be sufficient to hold Socket Prong tightly against Tube Prong, thus providing GOOD ELECTRICAL CONNECTION. If Tension is insufficient, (as evidenced WHEN 1650 VOLTS IS APPLIED BEFORE OR AFTER SHUT DOWN, Overheating of prongs, or variations in Tube Currents when Tube is pushed down in Socket), increase same by Lifting Socket Prong upward Slightly.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (53)

2ND TUESDAY

ITEM 16.

CAUTION: Do not adjust tension of Socket Spring Contacts with Transmitter Rotating Equipment "ON", use "Tube Change Switch" "D3A", pushing same "OFF" To Stop all Rotating Machinery while this adjustment is made, or during period when Transmitter is completely shut down. Exercise care in bending Socket Prongs, so as not to break same. Wipe off Tube Glass Envelopes with Rag Dampened in Water, then Dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelope of Tubes, apply a small quantity of "Windex" using Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth Polishing Glass to High Lustre.

- (e) "lst. Power Amplifier Unit" #3 (E): Proceed to this
 Unit Clean Tubes and Socket Positions "VIE" and "V2E".

 Procedure same as Item #8 (d) except Tubes are not removed from sockets
 and prongs are not inspected for overheating.
- (f) "3rd. Power Amplifier Tube Unit" #6 (H): Proceed to this Unit, Clean Tubes and Sockets Position "V7H".

Procedure is same as Item #8 (d) except Tube is not removed from Socket and Prongs are not inspected for overheating.

| (g) | "3r | d. Po | wer . | Amplii | fier | Tuni | ng U ni | t# | #8-(| <u>ı):</u> | Pro | ceed | |
|--|------|-------|-------|--------|-------|------|----------------|-----|------|-------------|-----|------|--|
| to this Unit, Clean Tube and Socket Position "VII". | | | | | | | | | | | | | |
| Procedure same as Item #8 (d) except Tube is not removed from Socket | | | | | | | | | | | | | |
| and Prong | s ar | e not | ins | pecte | d for | ove | rheati | ng. | | | | | |
| Book No. | | | | | | | | | | | | | |
| Sec. No. | () | =) | (| H) | (/- | 1) | (D |) | (L | <i>(=)</i> | (; | 7) | |
| Page No. | (|) | (|) | (|) | (| j | (|) | (|) | |

"50 KW Trans. & Ant. Equip. Maint."

ITEM 16.

BOOK No. (7)

SEC. No. (C)

PAGE No. (54)

2ND TUESDAY

End Item 16.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C

PAGE No. (55)

3RD TUESDAY

ITEM 17.

(a) "Control Unit" #1 (A): Proceed to the Rear of this Unit, feel and at the same time inspect Condensers "Cl.lA" - "Cl.&A" -

Feel Tops and Sides of Metal Cases for OVERHEATING.

Feel Insulating Bushings on Tops of these Condensers for OVERHEATING.

Inspect Cases and Insulator Bushings for Breakage and Oil Leakage.

(b) "lst Power Amplifier Unit" #3 (E): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "CLE" - "C2E" - "C5E" - "C6E" "C7E" - "C8E" for OVERHEATING.

Use AC Extension Light to locate and check Condensers.

Feel Tops and Sides of Metal Cases of Mica Condensors for OVERHEATING and LEAKACE of Insulating Compound.

Feel Metal End-plates and Isolantite Cases of Cornell-Dubilier Condensers for OVERHEATING and Leakage of Insulating Compound.

Observe if the Four Counter Sunk Screws in the Top End-plates of Cornell-Dubilier Condensers are ALL THE WAY IN OR PARTLY UNSCREWED.

<u>CAUTION:</u> DO NOT TURN ANY OF THESE FOUR COUNTER SUNK SCREWS IN THE END-PLATES OF DUBILIER CAPACITORS, AS THIS WILL ALTER THE CAPACITY.

Report same on the "50 KW M.O.L."

Note on the "50 KW M.O.L." any Condensers that have excessively Warm or Hot Spots.

BEWARE of this "SPOTTY" Condition since this indicates a Capacitor "Going Bad".
With a Rag lightly dampened with Naptha, clean all Isolantite Cases of Condensers.

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this

"50 KW Trans. & Ant. Ecuip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (56)

3RD TUESDAY

ITEM 17.

Unit, feel and at the same time inspect Condensers "ClF" - "C2F" - "C3F" - "C4F" and "C6F" for OVERHEATING.

Procedure same as Item #17 (b).

Use "Shorting Stick" and short across the End-plates (The 2 connections) and then feel and inspect Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.1F" "C9.2F" - "C10.1F" - "C10.2F" for OVERHEATING.

Procedure same as Item #17 (b).

Leave Enclosure Door Open.

(d) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.1G" - "Cl.2G" - "Cl.3G" - "Cl.4G" - "Cl.5G" - "C2.1G" - "C2.2G" - "C2.3G" - "C2.4G" - "C2.5G" "C3G" and "C4G" for OVERHEATING.

Procedure same as Item #1.7 (b).

Leave Enclosure Door Open.

Use the Small Step Ladder to reach the Outside Top of Enclosure, feel and inspect Condensers "C7G" and "C8G" for OVERHEATING.

Procedure same as Item #17 (b).

(e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, feel and inspect Condensers "C2H" - "C3.1H" - "C3.2H" - "C4.1H" - "C4.2H" "C5.1H" and "C5.2H" for OVERHEATING.

Procedure same as Item #17 (b).

Use "Shorting Stick" and short across the End-plates (The 2 connections) and then feel and inspect Condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" - "C8.1H" - "C8.2H" - "C9.1H" and "C9.2H" for OVERHEATING.

Procedure same as Item #17 (b),

BOOK No. (7)

"50 AW Trans. & Ant. Equip. Maint"

SEC. No. (C)
PAGE No. (57)

3RD TUESDAY

TTFM 17,

(f) "Stil Power Amplifier Turing Unit" #7 % #8 (I): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.ll" "Cl.2I" = "Cl.3I" = "C2.1I" = "C2.2I" = "C2.3I" = "C3.1I" = "C3.2I" = "C3.3I" = "C3.3I" = "C4.1I" = "C4.5I" = "C10.1I" = "C10.2I" = "C11.1I" = "C11.2I" = "C12.2I" =

Leave Enclosure Door Open.

(g) "3rd Power Amplifier Tuning Unit" #8 (I): Proceed to the Front of this Unit, open the Metal Panel #2, feel and inspect Condensers "C17I" - "C18I" "C19I" - "C20.1I" - "C20.2I" - "C20.1I" for CVERHEATING.

Procedure same as Itcm #17 (b).

Leave Enclsor Enclosure Poor Open.

On the Front of this Unit, open the Metal Fanel #3, feel and inspect Condensers "C7.11" - "7.21" - "13.11" - "C12.kI" for OVERHEATING.

Procedure state as Item #17 (b).

Leave Enclosure Door Open.

(h) "Antenna Coupling Unit" #9 (J): Proceed to this Unit, open Enclosure Door, feel and inspect Condensers "Cl.LJ" - "Cl.2J" - "Cl.3J" - "C2.1J" - "C2.2J" "C2.3J" - "C3.1J" - "C3.2J" - "C3.2J" - "C4.1J" - "C4.2J" - "C4.2J" - "C4.3J" and "C4.4J" for OVERHEATING.

Procedure same as Item #17 (b).

Leave Enclosure Poor Open.

(i) Units Listed Item #4 (a) to (h): Proceed to these Units listed in this sequence, use the A.C. extension Light and tighten all Bolted Connections.

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| "50 KW Trans. & Ant. Fquip. Maint." | PAGE No. (58 |
| | ERD TUESDAY |
| <u>ITEM 17</u> . | |
| In some instances, it will be found that Conlensors are bol | ted to support |
| Insulators, and that these Bolts also connect Two Busses to | gether. |
| In this work, exercise CARE NOT TO BREAK OR CHIP Threaded E | olt Hole in End |
| of Stand-Off Insulator, which will cause LOOSE BOLTED CONNE | CTIONS OF BUSSES |
| Inspection will show that some of these Insulators do not h | ave Metal Ends, |
| but that Threaded Holes are in the Isolantite Itself. | |
| DO NOT TIGHTEN SUCH BOLTS TOC MUCH - DO NOT JERK. | |
| At the same time, feel Filament Connections of Water-cooled | . Power Amplifier |
| Tubes for OVERHEATING. | |
| These connections are normally Warm, Not Hot. | |
| Book No. () () () () () | 1 (1) |
| Sec. No. (A) (E) (F) (G) (H) (I | |
| Page No. () () () () (|) () |
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BCCK No. (7)

SEC. No. (C)

End Item 17.

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| BOOK | Fo. | (| 7 |) |
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IT: 13.

(a) "Switch Recom: "Proceed to this Bear, or light "OFF" Switch (B "50 KW Distribution Oil CAT Spector" for CAPOTI PL.SCHE.

Merely Grasp Hondle of the Oil Circuit Bresher and lift it up.

(b) "Control Unit" / (A): Proceed to the Rear of this Unit, put "OFF"

"Safety Switch" "DlA", or on hinged door, and feel Fuses "Fl.LA" - "Fl.CA"
"FD.SA" - "FR.LA" - "FR.LA" - "FR.LA" - "FZ.LA" - "F4.LA" - "F4.LA" for OVERHEATING.

Be sure to rotate Fuses in their Helders, since Burned Spots may be on Lower

Sides or sides toward the Fancl.

Fuses normally run Warm not Hoi.

Technician should be able to keep hand on fower when checking same.

Replace any Fuse showing a burned or OVERHEATED place on Insulated Body of same. Spare Fuses are located in the "Portable Fuse and Test Unit" kept in the Maint Transmitter Room and in the "Fuse Tester Rack" kept in the Basement Areaway at the foot of the Stairs to the Basement.

Fuses should be gripped bightly in Clips and Fuse Block Holders, so that OVERHEATING does not take place at these Connections.

Some Fuses are provided with Compression (Variable) Clamps, to prevent OVERHEATING and assure Full Voltage and Current Throughout the Circuit.

Be sure that proper Tensica is on these Clamps.

After checking these Fuses, be sure to Close Metal Door, and put "Safety Switch" "DlA" "CN".

(c) "Control Unit" #1 (A): While at the rear of this Unit feel Fuses

"F5A" - "F6A" - "F7A" - "F8A" - "F9A" and "F1CA" for OVERHEATING.

Procedure same as Item #18 (t).

Exercise Care not to break the single socket holding each Fuse.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (60)

3RD TUECDAY

ITEM 18.

(d) "Oscillator-Modulator Unit" #2 (D): Proceed to the rear of this Unit, and feel Fuse "F3D".

Same Procedure as Item #18 (b).

Fuse is located on the Lightning Protective Device Apparatus Panel on bottom of the Unit.

(e) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit and feel Fuses "Fl.1C" and "Fl.2C" for OVERHEATING.

Same Procedure as Item #18 (b).

These Fuses are located on the Metal Panel supporting "Rectifier Air Blast" Relays on bottom of the Unit.

(f) "5rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and feel Fuses "F1H" - "F2H" - "F3H" - "F5H" and "F6H" for OVERHEATING.

Same procedure as Item #18 (b) except that Knife Type fuse clears Panel sufficiently to observe any Abnormal Condition.

These fuses are located on the Bakelite Panel just above the Rear Tubes.

(g) "Basement": Proceed to the Basement, put "OFF" Switch "DlP"

"Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of B.C.B and lift it UP.

(h) "Basement": While in the Basement, put "OFF" Switch "Dl.lP"

"Main Power Disconnect Panel", open Metal Door and feel Fuses "Fl.lP"
"Fl.2P" - "Fl.3P" - "F2.1P" - "F2.2P" - "F2.3P" - "F20.1P" - "F20.2P"

and "F20.3P for OVERHEATING.

Procedure same as Item #18 (b), except that Knife Type fuses clear the Panel sufficiently to observe for any Abnormal condition.

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)
PAGE No. (Sl)

7)

3RD TUESDAY

BOOK No.

ITEM 18.

Feel Blades and Contacts of Switch "D1.1P" for GVERHEATING.

Technician should be able to lay Hand on these parts, they should be Warm not Hot.

If Blades or Contacts are too hot, tighten up Compression Nuts, clean off contacts with Crocus Cloth, wipe with rag dampened in Carbon-tet and lightly com with "3-in-1" Oil.

After checking Fuses and Switches, put Switch "Dl. 1P" "ON".

(i) "Basement": While in the Basement, put "OFF" Switch "D15P" "Motor
Distribution Panel" open Metal Door and feel Fuses "F4.1P" - "F4.2P" - "F4.3P"

"F5.1P" - "F5.2P" - "F5.3P" - "F7.1P" - "F7.2P" and "F7.3P" for OVERHEATING.

Procedure same as Item #18 (b).

Feel Blades and Contacts of Switch "DL5P" for CVERHEATING. Procedure same as Item #18 (h).

(j) "17 KV Rectifier Switching Unit #11 (B): Proceed to the front of this Unit and test "Delta-Star" Transfer Switch "DlB" for binding.

If the Switch does bind, or does not move freely when placed in the "10 KV" or "17 KV" positions, coat lightly with "3-in-1" Oil.

If the Switch still binds following this, loosen Compression Nuts and remove Bolts and compression Washers, from the "Swingers" pulling the "Swingers free of rest of the Switch.

Clean the "Swinger" Contact surfaces with Crocus Cloth, wipe off with .
Rag dampened in Carbon-tet.

Wrap a piece of Crocus Cloth around Narrow Flat File and clean inside of switch contacts, then wrap Rad dampened in Carbon-tet about the File and wipe residue from Switch Contacts.

Put Switch back together again, replace the Bolts, Compression Washers and

Continued to Next Page

World Radio History

| W C R OPERATING MANUAL | BOOK | No. | (| 7 |) |
|-------------------------------------|-------|--------|---|----|---|
| *50 KW Trans. & Ant. Equip. Maint." | SEC. | No. | (| C |) |
| oo cambe of raine injurys accumen | PAGE | No. | (| 33 |) |
| <u>ITEM 16.</u> | 3RD 7 | ruesda | X | | |

Nuts, tightening them JUST ENOUGH TO SEE THE COMPRESSION WASHERS BEGIN TO FLATTEN.

Lightly Coat "Swingers" and Switch Contacts with "3-in-1" Oil and again test

for Binding.

Technician should be able to move Switch from one position to the other freely and smoothly.

Wipe up all Copper dust and other Residue from floor and section where Switch was cleaned.

| Book | No. | (| 1 |) | (| 2 |) | () |) | () |) | (1 |) | (| } |) | (1) |) |
|------|-----|---|----|---|---|---|---|-----|---|---------------|---|-----|---|---|---|---|-----|---|
| Sec. | No. | (| FU |) | (| С |) | (A |) | \mathcal{D} |) | (C |) | (| 4 |) | |) |
| Page | No. | (| 1 |) | (| 1 |) | (|) | (|) | (|) | (| |) | (|) |

End Item 18.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C

PAGE No. (63)

3RD TULSDAY

ITEM 19.

(a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it up.

(b) "Basement": While in the Basement, put "OFF" Switch "DIP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

(c) "Control Unit" #1 (A): Proceed to the Rear of this Unit and feel Field Coils of Relays "S2A" - "S3A" - "S4A" and "S14A" for OVERHEATING.

These Relays are located in top rear of this Unit, mounted on a Metal Sub Panel. These Relay Field Coils will normally run WARM, but not HOT.

Technician should be able to keep Hand on them.

Log any that are excessively Warm or Hot on the "50 KW M.O.L."

While at the rear of this Unit, open Door of Metal Box housing Relay "SIA" and feel Field Coil for Overheating.

Procedure same as Item No. 19 (c).

Close Door of Metal Box housing Relay "SlA".

While at the Rear of this Unit, put "OFF" the Series Switch on "1650 Volt Magnetic Switch Contactor" Metal Box, Open Box and feel this Relay Contactor "S7A" Field Coil for OVERHEATING.

Procedure same as Item #19 (c).

Close Door of Metal Box, and put Series Switch "ON".

(d) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C7.1F" - "C7.2F" - "C8.1F" "C8.2F" - "C9.1F" - "C9.2F" - "C10.1F" - "C10.2F", then feel Field Coils of Relays "S1F" - "S2F" - "S3F" and "S4F" for OVERHEATING.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint"

BOOK No. (7)

SEC. No. (C)

PAGE No. (64)

3RD TUESDAY

ITM 19.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

To discharge Gondensers, merely place Metal part of "Shorting Stick" across the two End-Plates of these $C_{\mathrm{ondensers}}$.

As each Condenser is discharged, a moderate Arc will be observed when "Shorting Stick" first touches the End-Plates.

Log Any Relay Field Coils that are excessively Warm or Hot, on the "50 KW M.O.L."

(e) "Srd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C6.1H" - "C5.2H" - "C7.1H" - "C7.2H" - "C8.1H" - "C9.2H" - "C9.2H" - "C9.2H", then feel Field Coils of Relays "S3H" - "S4H" - "S5H" - "S6H" - "S7H" - "S8H" - "S9H" - "S10H" - "S12H" "S13H" - and "S14H" for OVERHEATING.

Same Procedure as Item #19 (d).

(f) "17 KV Rectifier Tube Unit" #10 (C): Proceed to this Unit and feel.

Field Coils of Relays "SIC" ? - "S2C" - "S3C" - "S4C" - "S5C" - "S6C"
"S7C" - "S8C" - "S9C" - "S10C" - "S11C" - and "S12C" for OVERHEATING.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

While at this Unit, open door of Metal Box housing "17 KV Rectifier Air Blast Heater Relay" "S17C" and feel Field Coil for OVERHEATING.

This Field Coil will run normally Warm not Hot.

Technician should be able to keep Hand on it.

If excessively Warm or Hot, Log on the "50 KW M.O.L."

(g) "17 KV Rectifier Switching Unit" #11 (B): Proceed to this Unit and feel Solenoids of Magnetic Contactors "SAB" and "S5B" for OVERHEATING.

| WOR OPERATING MANUAL | BOOK No. | (7 |) |
|---|--------------|--------|---|
| "50 KW Trans. & Ant. Equip. Maint." | SEC. No. | (C |) |
| oo waa at canbe of Milot induction. | PAGE No. | (65 |) |
| ITEM 19. | 3RD TUESD | ΑΥ | |
| Solenoids of these Contactors run normally very WARM, wit | h Temperatur | e | |
| distributed evenly around outside of Casings. | | | |
| Inspections should be made for OVERHEATING, UNEVENLY dist | ributed Temp | eratur | e |
| (HOT SPOTS), loose Connections, and condition of Insulati | | | |
| Outside of Soleroids | | | |

When Insulating Covering around Solenoids of "SAB" and "S5B" begins to get bare, apply coat of "BLACK INSULATING VARNISH."

On the Bottom of this Unit, feel Field Coils of Relays "S2B" and "S5B" for OVERHEATING.

Log any abnormal condition and work performed on the "50 KW M.O.L."

(h) "17 KV Filter Condenser Charging Contactor and Resistor Unit" #12 (L):
Proceed to this Unit and feel Solenoid of Magnetic Contactor "SIL" for OVERHEATING.
Procedure same as Item #19 (g):

| Book | No. | (| 1 |) | (| 1 |) | (| 1 |) | (| 1 |) | (| 1 |) | (|) | C1. |) |
|------|-----|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|----|---|-----------------|---|
| Sec. | No. | (| S |) | (| BA |) | (| A |) | (| F |) | (| H |) | (C |) | (\mathcal{B}) | j |
| Page | No. | (| 1 |) | (| ı |) | (| |) | (| |) | (| |) | (|) | (|) |

End Item 19.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (66)

3RD TUESDAY

ITEM 20.

(a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it up.

(b) "Control Unit" #1 (A): Proceed to the rear of this Unit and put "OFF" "Safety Switch" "DIA".

Merely pull down the Handle on the right Side of Metal Fuse Box stencilled "DlA".

- (c) "Basement": Proceed to the Basement and put "OFF" Switch "DlP"
 "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.
- (d) "Basement": While in the Basement, put "OFF" Switch "Dl.lp"
 "Main Power Disconnect Panel" for SAFETY REASONS.
- (e) "Basement": While in the Basement, put "OFF" Switch "D15P"
 "Motor Distribution Panel" for SAFETY REASONS.
- (f) "Transmitter Room": Proceed to this Room and gather all Cleaning Equipment and Tools needed to properly clean Relays, A.C. Contactors, and Motor Switch Contacts.

Relay Cleaning Tools are kept in Small Leather Kits in "Portable Fuse and Test Unit." .
Maintenance Kit No. 3 is kept in Bin No. 3 in "Spare Tube Room".

List of Tools and equipment needed to perform Relay Cleaning Maintenance Item #20:

Leather Kit of Relay Tools, containing "H429621 Cleaning Tool", "265-B Burnishing Tool" - "Crocus Cloth Tools" - "Pieces of Wrapping Paper" cut to size 1/4 inch by 2 inches.

Small Bottle of Carbon-tet.

One half sheet of Crocus Cloth.

One A.C. Extension Light.

One Soft Clean Polishing Cloth.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC, No. (C)

PAGE No. (67)

3RD TUESDAY

ITEM 20.

One 4 inch small Flat Steel File.

Place all in Maintenance Tray No. 3.

(g) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit and clean Contacts of Relays "SlC" - "S2C" - "S3C" - "S4C" - "S5C" and "S6C" with Relay Cleaning Tool "H429621".

Gently push Contacts of Relay Open with forefinger of left hand, grasp "H429621"
Burnishing Tool in right hand and insert it between contacts with flat side of the tool against Contacts.

Allow Relay contacts to close on the Burnishing Tool, placing forefinger of left hand on back side of movable contact arm and exert TRIFLE amount of pressure.

Rub Burnishing Tool through Contacts 2 or 3 times.

Remove Burnishing Tool from between Relay Contacts.

GENTLY Push Relay Contacts apart and inspect with A.C. Extension Light.
They should appear Clean and Bright.

If they are not, clean them a second time.

<u>CAUTION:</u> These Relays are delicate, and should be cleaned with Care to avoid damaging or altering adjustments.

- (h) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit and clean contacts of Relays "SIF" and "S2F" with "H429621 Burnishing Tool." Procedure same as Item #20 (g).
- (i) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit and clean contacts of Relays "S3H" "S4H" "S5H" "S6H" "S7H" and "S8H" with "H429621 Burnishing Tool."

Procedure same as Item #20 (g).

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C

PAGE No. (68)

3RD TUESDAY

ITEM 20.

(j) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit, remove Metal covers of Relays "S7C" - "S8C" - "S9C" - "S10C" - "S11C" and "S12C", then clean contacts of Relays with PIECE OF WRAPPING PAPER.

Cut piece of Stiff Wrapping Paper into several Strips 1/2 inch by 2 inches. GENTLY PUSH Armature to the Left, place Piece of Paper dipped in Carbon-tet, between Right Contacts, push armature contact against the paper, exert trifle pressure and pull paper out.

Do this 3 times.

Keep Wrapping Paper West with Carbon-tet.

GENTLY Push the Relay Armeture to the Right then Left, inspecting Contacts with aid of the A.C. Extension Light.

They should appear clean and bright.

If they do not, it may be necessary to clean them with the "265-B Burnishing Tool." In using the "265-B Burnishing Tool", First dip in Carbon-tet, then RUB ONCE between contacts in same manner as the Wrapping Paper was used.

Again inspect Relay Contacts with the aid of the A.C. Extension Light.

It is important that no paper particle, dirt or residue of cleaning be left between contacts, hence the use of Carbon-tet, which not only cleans and polishes, but will remove this Residue at the same time.

After cleaning these Relays, do not replace Metal Covers, place on the floor adjacent to the Relays.

(k) ""2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, remove the Metal Covers of Relays "S3F" and "S4F" and then clean contacts of Relays with PIECE OF WRAPPING PAPER.

Procedure Same as Item #20 (j).

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (69)

3RD TUESDAY

ITEM 20.

(1) "3rd Power Amplifie: Tube Unit" #6 (H): Proceed to the Rear of this Unit remove the Metal Covers of Relays "S9H" - "S10H" - "S11H" - "S12H" - "S15H" "S14H" - "S15H" and "S16H" - then clean contacts of Relays with PIECE OF WRAPPING PAPER.

Procedure same as Item #20 (j).

(m) "Oscillator - Modulator Unit" #2 (D): Proceed to the Rear of this Unit remove the Metal Cover of Relays "SlD" and "S2D", and Clean Contacts of these Relays. Place "H429621 Burnishing Tool" against the right stationary contact of Relay "SlD" with right hand, push armature of Relay into the operating position with thumb of left hand and exert Pressure on right movable contact of Relay with forefinger of left hand.

Rub Burnishing Tool between Contacts 2 or 3 times.

Clean left contacts of Relay "SlD" by same procedure.

After cleaning Contacts, inspect with aid of A.C. Extension Light.

Relay Contacts should be clean and bright, if they are not, clean them a second time.

Unscrew small holding Bolt, remove Metal Cover, from Relay "S2D".

CAUTION: DO NOT REMOVE OR CHANGE THE PLACING OF THE THIN PIECE OF PAPER BETWEEN THE Armsture and end of Magnet.

Purpose of this paper is to reduce RESIDUAL.

TIMING OF RELAY OPERATION IS DETERMINED BY THIS PIECE OF PAPER, AS WELL AS OTHER ADJUSTMENTS.

Cut piece of Wrapping Paper 1/2 inch by 2 inches.

Dip Paper in Carbon-tet place between contacts of Relay, GENTLY squeeze contacts together and pull the paper out.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (70)

3RD TULSDAY

ITHM 20.

Do this operation 3 times.

Inspect Relay Contacts with aid of A.C. Extension Light.

Relay Contacts should be clean and bright.

After cleaning Relay "S2D", carefully replace cover and secure in place by tightening the Holding Bolt.

(n) "17 KV Rectifier Switching Unit" #11 (B): Proceed to this Unit, remove covers of Relays "S2B" and "S3B" and clean relay contacts.

"S2B" Procedure: GENTLY PUSH Armsture to the Left, place "265-B Burnishing Tool" dipped in Carbon-tet between right Contacts, push Armsture Contact against the burnishing tool and rub contacts ONCE.

GENTLY Push Armature to the Right, place "265-B Burnishing Tool" dipped in Carbontet between Left Contacts, push Armature contact against the burnishing tool and rub ONCE.

"S3B" Procedure same as Item #20 (j).

(o) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit, remove the covers of Relays "S13C" and "S14C" and then clean contacts of Relays.

"Sl3C" and "Sl4C" Procedure same as Item #20 (j).

"S15C" Procedure same as Item #20 (n) (Procedure for Relay "S2B".)

(p) "Control Unit" #1 (A): Proceed to the rear of this Unit and clean contacts of Relays "S2A" - "S3A" - "S4A" - "S14A" - "S10A" - "S13A" - "S12A" - "S8A" - "S9A" - "S6A" - "S1A" and "S7A".

Cleaning Procedure "S2A" and "S3A" and "S14A":

Place flat side of Crocus Cloth Tool against Stationary Right Contact.

Grasp "Crocus Cloth Tool" in right Hand, placing flat part against Stationary Right Contact.

"50 KW Trans. & Ant. Equip. Meint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (71)

3RD TUESDAY

ITEM 20.

Push Armature up to operating position with thumb of left hand and exert Pressure on right movable contact of relay with Forefinger of Left Hand.
Rub "Crocus Cloth Tool" between contacts several times.

After cleaning Contacts with Crocus Cloth Tool, wrap small piece of clean cloth about a second Crocus Cloth Tool, dip in Carbon-tet, and wipe off both right contacts by same method as they were cleaned.

After cleaning contacts inspect with aid of A.C. Extension Light.

Relay Contacts should be clean and bright.

If they are not, clean them a second time.

Clean left Contacts of these Relays by same procedure.

Cleaning Procedure "S4A":

This Relay is fitted with Front and Back Stationary Contacts.

Clean Front Stationary and Movable Contacts with the "H429621" Cleaning Tool.

Grasp Cleaning Tool in Right hand, place against the stationary Contact, push the relay Armature into the Operating Position with thumb of the left hand, exert pressure on movable contact with forefinger of the left hand and rub the tool between the contacts several times.

Clean the back stationary and movable Contacts with the "H429621 Cleaning Tool".

Grasp Cleaning Tool in right hand, push armature up trigle to permit placing

Relay cleaning tool against back stationary contact, allow the armature to drop

back, and exert pressure on movable contact with forefingers of the

left hand, and rub the tool between the Contact several times.

After cleaning Contacts, inspect with aid of A.C. Extension Light.

Contacts should be clean and bright.

If they are not, clean them a second time.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)
PAGE No. (72)

3RD TUESDAY

ITEM 20.

Cleaning Procedure Relays "SlOA" - "SlSA" - "SllA" - "Sl2A is a same procedure as Item #20 (j).

Cleaning Procedure Relays S&A and "S9A":

Remove Glass Front metal covers, GENTLY separate the contacts of the Relay with forefinger of left hand, place "H429621 Cleaning Tool" between contacts, allow them to close, exert pressure against the Movable contact with foreginger of left Hand, and rub cleaning tool between contracts several times.

Push contacts apart and inspect them with aid of A.C. extension light.

They should be clean and bright.

If they are not, clean them a second time.

Cleaning procedure for Relay "S6A":

Pull out the Spring Locking Catches on top and bottom of Relay cover, then carefully remove Cover from Relay.

OBSERVE THE STRING TIED TO THE BAKELITE CATCH PASSING THROUGH THE HOLE IN THE SIDE OF THE RELAY COVER.

Move Cover along the String and place it on top of "DlC" Fuse Box.

Lift the Movable contact of the Motor operating pair, place "H429621 Cleaning Tool" against the stationary contact, allow movable contact to drop, exert pressure against this movable contact with finger of the left hand and rub between the contacts several times.

Place "H429621 Cleaning Tool" against the stationary contact of the 17 KV Time Delay Pair of Contacts, lift the movable contact with forefinger of the left hand exerting pressure, then rub tool between contacts several times.

After cleaning contacts, inspect them with aid of A.C. Extension Light.

Contacts should be clean and bright.

If they are not, clean them a second time.

Continued to Next Page

#50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (73)

3RD TUESDAY

ITEM 20.

Straighten out a small paper Clip. secure one drop of oil to wire and apply at each small Oil Tube on bakelite base of Relay.

These Oil Tubes may be located just above the Field Coil against the bakelite base of relay.

After cleaning and oiling Relay, replace the Cover on relay, pull out Spring clamps, put clamps in place and release against the catches.

Cleaning Procedure Relay "SlA": Push "IN" the Catch on the right side of door of metal box housing Contactor "SlA" and swing Door open.

Remove the Hard Asbestos Flame Arrestor by lifting it straight up about 1/2 inch then pull out.

Exercise care not to break the Flame arrestor as it is Fragile.

Note that Flame arrestor is supported by two bakelite flanges, which also serve as the front halves of the Hinge of the Contactor.

Remove the two Bolts holding Bakelite front halves of Hinge, exercising care not to break bakelite.

Bakelite assembly holding the 6 movable contacts may now be pulled out and let down carefully.

Remove each pair of Movable Contacts (2 are on one support, 3 pairs total) by squeezing the ends of the Spring Clips where they protrude through the Bakelite mounting assembly.

Clean contacts by rubbing with Crocus Cloth until all burn marks and Oxidation marks are cleaned off.

Note that these contacts are CONVEX, consequently rub the whole contact evenly so as to retain the CONVEX surface, avoid excessive rubbing across the peak of the surface which WILL FLATTEN THE CONTACT.

After cleaning Contacts wipe residue off with a rag dipped in Carbon-tet.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (74)

3RD TUESDAY

ITEM 20.

Then squeeze Flange ends of the Contact supporting mechanism and insert in the Bakelite support assembly.

Clean the two other pairs of Movable contacts by the same procedure.

Clean the 3 pairs of stationary Contacts with Crocus Cloth.

These Contacts may be cleaned without removing them.

Note that they are also CONVEX, consequently rub whole contact evenly so as to retain the CONVEX Sufface, avoid excessive rubbing across the peak of the surface which will FLATTEN THE CONTACT.

After cleaning contacts wipe residue off with rag dipped in Carbon-tet.

Replace the Bakelite Assembly holding the 3 pairs of Movalbe contacts in the Bakelite Hinge half, then replace the movable Bakelite Front hinge halves in place and bolt in place.

AVOID TIGHTENING THE BOLT TOO MUCH AS IT IS EASY TO BREAK THESE BAKELITE PARTS.
BOLTS ARE FITTED WITH LOCK WASHERS, MERELY TIGHTEN UNTIL THE LOCK WASHER IS
FLATTENED.

After reassembling Contactor, test it for free motion by lifting the Armature, which should operate the Contactor to the "Operating Position" with no Binding.

Movable part of the Contactor is mounted in the Hinge very loosely to avoid Binding.

After cleaning Contactor, close and latch the Door of Metal Box housing same.

Cleaning Procedure Relay "S7A": Put "OFF" safety Switch on right side of the Metal box housing this Contactor (Pull it toward you and then down), open the door and clean and service all 6 contacts.

Cleaning procedure is same as Item #20 (p) (Procedure for cleaning "SlA".)

After cleaning Contacts, close the door of the Metal Box housing the Relay,

place associated Safety Switch "ON" (Lift it up and push away from you.)

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

(75)

ERD TUESDAY

BOOK No.

PAGE No.

ITEM 20.

(q) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit and clean contacts of Relays "S17C" and "D1C".

Cleaning Procedure Relay "S17C": Cleaning Procedure is same as Item #20 (p). (Procedure for Cleaning Relay "S7A".)

Cleaning Procedure Contactor "DIC": Cleaning Procedure is same as Item #20 (p). (Cleaning Procedure for Relay "SIA".)

(r) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the rear of this Unit, remove Metal Cover and clean contacts of Relay "S5F" with "H429621 Burnishing Tool".

Lift off the Metal Cover.

Open Contacts of Relay by lifting the openating linkage with forefinger of left hand.

Grasp "H429621 Burnishing Tool" in right Hand, place against the stationary contact, allow movable contact to close against the tool.

Pinch the 2 contacts together with thumb and forefinger of left hand and rub Burnishing Tool between contacts several times.

After cleaning Contacts, inspect them with aid of the A.C. Extension Light. They should be clean and bright.

If they are not, clean them a 2nd time.

After cleaning contacts, replace the Metal Cover being careful to seat it properly over the Base.

(s) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the rear of this Unit, remove the Metal Covers of Relays "SlH" and "S2H", and clean contacts with "H429621 Burnishing Tool."

Procedure same as Item #20 (r).

Continued to Next Page

"50 KW Trans, & Ant. Equip. Maint."

SEC. No. (C)

PAGE No. (76)

SRD TUESDAY

BOOK No.

ITEM 20.

(t) "17 KV Filter Condenser Assembly Unit" #12 (L): Proceed to this Unit and Clean Contacts of "SlL" with Crocus Cloth.

Clean off Large Stationary Copper Contact and two small movable contacts on Resistor "RLL" shorting portion, and the 2 Cadmium plated Indicator Light "ON" contacts with Crocus Cloth.

Wipe off all Contacts with cloth dipped in Carbon-tet.

After cleaning contacts, inspect them with aid of the A.C. Extension Light. They should be clean and bright.

If they are not, clean them a second time.

If the large Copper Contact on "RLL" shorting portion of the Contactor is pitted too deeply for Crocus Cloth to clean, clean it with "00" Sandpaper, then Crocus Cloth and finally wipe off residue with a rag dampened in Carbon-tet.

(u) "Control Unit" #1 (A): Proceed to the front of this Unit, remove Glass front metal cover, and clean contact of "S5A".

Push down catch on front of Relay, lift up and out the Glass front Metal Cover of Relay "S5A".

Clean Front and tack contacts with "Crocus Cloth Tool" rubbing each contact surface until clean and bright.

After cleaning contacts, wrap small piece of clean cloth about 2nd "Crocus Cloth Tool" dip in carbon-tet, and wipe residue from Contacts.

Replace Glass front Metal Cover, EXERCISING CARE NOT TO DAMAGE IT BY TURNING THE KNURLED RESETTING ADJUSTMENT A TRIVLE COUNTER CLOCKWISE SO THAT IT WILL CLEAR FRONT EDGE OF METAL FLANGE BELOW THE LEATHER BELLOWS.

Cover should seat flat and without Binding.

After cleaning contacts, inspect them with aid of A.C. Extension Light. They should be clean and bright.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (77)

SED TUESDAY

ITTM 20.

If they are not, clean them a Second Time.

- (v) "3rd Power Amplifier Tuning Unit" #6 (I): Proceed to the front of this Unit, open top Metal Panel Door and clean contacts of Relays "SlI" "SZI" "SZI" "SZI". Cleaning Procedure is same as Item No. 20 (j). Cleaning Procedure Relays "SZI" and "SZI": Cleaning Procedure is same as Item 20 (g).
- (w) "Basement": Proceed to Basement, clean Contacts of Relays listed in following sequence: "SIP" "S4P" "S7P" "S2P".

Cleaning Procedure Relay "SIP": Open Hinged Metal Cover marked "SIP" on left front of "Motor Distribution Panel" Box.

Turn the 3 Tension Springs Clockwise until free, then lift off.

Lift the 3 flat Cadmium plated Contactors off.

Clean all burn and pit marks from these flat movable contactors with "00" Sandpaper, then Crocus Cloth, finally wiping off with rag dampened in Carbon-tet. Clean the Stationary Contacts with short 1/2 inch wide flat file, then Crocus Cloth and finally wipe off with cloth dampened in Carbon-tet.

After cleaning Contacts, inspect them with A.C. Extension Light they should be clean and bright.

If they are not, clean them a Second Time.

After cleaning contacts, replace the movable contacts, replacing the Tension Springs and turning springs Clockwise to lock them in place.

Test Contactor by pushing Armature in to the operating position.

Note that Contactor operates without binding.

Cleaning Procedure Relay "S4P": Procedure same as Item No. 20 (p) procedure for cleaning Relay "S2A".

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (78)

3rd TUESDAY

ITEM 20.

Cleaning Procedure Relay "SSP": GENTLY Force the 2 contacts of this relay apart, place "H429621 Burnishing Tool" between contacts, exert pressure on Contacts with Thumb and Forefinger of left hand and rub contacts several times.

After cleaning, inspect Contacts with air of A.C. Extension Light. Contacts should be clean and bright.

If they are not, clean them a Second Time.

Cleaning Procedure "S2P": Procedure same as Item No. 20 (p) cleaning procedure for Relay "SlA".

(x) "Basement": While in the Basement, clean the contacts of 50 KW Transmitter Motor Switches "D2P" - "D3P" - "D6P" - "D7P" - "D4P" - "D5P" uD9P" and "D10P".

Remove the cover from Motor Switch Box.

Turn the Contact Tension Spring Counter-Clockwise and lift off.

Lift off the Cadmium Plated movable Contacts.

Clean Movable and stationary contacts with Crocus Cloth.

After Cleaning Switch Contacts, wipe off with a cloth dampened in Carbon-tet.

Inspect both Movable and stationary contacts with aid of A.C. Extension Light.

Switch Contacts should be clean and bright.

If they are not, clean them a second time.

(y) "Transmitter": Directly after Transmitter is Started per Book

No. (3) Sec. No. (A) Page No. 1 to 69 inclusive, Technician No. 1

will enter the transmitter Enclosure and Test Relays S1C to to "S6C inclusive.

Relays "S1F" - "S2F" - "S3H to "S8H" inclusive; and "S8A" and "S9A".

Procedure in testing all these relays escept "S8A" and "S9A" is as follows:

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

| BO | OOK | No. | (| 7 |) |
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(79)

3RD TUESDAY

PAGE No.

ITEM 20.

Touch Armature of Relay, pushing it GENTLY in to the "Operating Position".

As each Armature is touched the Associated Lamp Indicator Relay will operate and extinguish such indicating lamp on the Front of the "Control Unit" #1 (A). Remove the Glass front metal covers of Relays "S8A" and "S9A", lift Armature and allow it to fall back in place.

Replace the Metal Covers.

These two relays are located on the left side of the channel iron at Bottom of the "Control Unit" #1 (A).

Proceed to front of the "Control Unit" #1 (A) and observe that all the Associated Indicator Lamps are extinguished.

Push "Lamp Reset" Button to relight these indicator Lamps.

This is normal operation - relays function correctly.

(z) "Summary of Cleaning Methods and Relay Operating Data" The following Summary is written to aid Technician in knowing that Adjustments are Correct following Cleaning.

On FLAT SURFACE CONTACTS, the Armature movement is such that the CONTACTS TOUCH THEN WIPE INTO POSITION.

If cleaning caused undue Pressure on the Contact Arms, Contacts may not wipe when Operated.

It is ABSOLUTELY NECESSARY TO USE THE EXTENSION LIGHT WHEN CLEANING ALL RELAYS, thereby assuring yourself that Adjustments are not being altered in the Process of Cleaning.

Where Crocus Cloth or "Crocus Cloth Tool" is used to clean contacts, BE CAREFUL TO WIPE CONTACTS OFF WITH PIECE OF CLEAN CLOTH DIPPED IN CARBON-TET, as RESIDUE MIGHT HOLD A PAIR OPEN, RENDERING RELAY AND OTHERS ASSOCIATED WITH THIS RELAY INOPERATIVE.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (80)

3RD TUESDAY

ITEM 20.

On HEAVY CURRENT CARRYING RELAY CONTACTS, and Contactors, be careful NOT TO CLEAN MORE THAN IS NECESSARY.

Remember that Contacts wear very easily and CARELESS RUBBING WILL MAKE SURFACES CONVEX, thereby reducing Contact Surfaces.

POOR SURFACE CONTACTS ARE DANGEROUS TO OPERATION AND MOST DIFFICULT TO LOCATE IN CASE OF TROUBLE.

If power amplifier tube Plate Overload Relay Contacts or 17 K.V. Rectifier Tube Overload Contacts are held open, Plate Trip Relay S4A will remain inoperative, thus prevent the application of High Voltage.

Residue between Contacts on the Lamp Relays will cause abnormal condition also, i.e., if Armature is held to the LEFT, Lamp indicator will be out, now push "D5A", and if Lamp relights, condition is normal and Armature will move to the right. This is normal operation.

If not normal, first be sure that the Tube Overload Relay Contacts are clean and CLOSED, then the only remaining thing to check is Contacts of Lamp Relay, (LEFT PAIR).

If they are still dirty, Clean them again.

With Armature of Lamp Relay in the RIGHT Position, the Lamp Indicator will be lit. If such is not the case, clean these Contacts again.

Improper or non-operation of Lamp Indicator Relay will not prevent Transmitter
Radio Frequency Carrier Output, it will fail to indicate Flash-arcs or Arc-backs,
in Tube in question, since Indicator Lamp will either remain LIT or remain
EXTINGUISHED.

Clean Contacts of the A.C. Contactors of the "SlA" type, using Crocus Cloth, these Contacts may easily be cleaned by removing Contacts.

If condition of movable Contacts do not warrant removing them for cleaning,

Continued to Next Page World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (81)

3RD TUESDAY

ITEM 20.

they may be cleaned in position with Crocus Cloth, then wiped with clean rag dipped in Carbon-tet.

Clean all burned marks and oxidation.

Note that these Contacts are CONVEX.

Flat surface Relay Contacts requiring the use of Crocus Cloth must be cleaned by the small Crocus Cloth Tool - this will prevent too much cleaning.

NO ADJUSTMENTS TO RELAYS ARE TO BE MADE BY TECHNICIAN PERFORMING MAINTENANCE.

IF RELAY OPERATED CORRECTLY BEFORE CLEANING, IT IS OBVIOUS THAT INCOMPLETE CLEANING IS RESPONSIBLE FOR LACK OF OPERATION, AND NOT ADJUSTMENTS.

Cleaning Relay Contacts requires very careful work, performed with definite precision.

Discussion of methods with Supervisor is in order.

Method of adjusting 50 KW Relays follows:

The method of adjusting the 2nd and 3rd Power Amplifier Plate Current Overload Relays and the High Voltage Rectifier Arc-back Relays is outlined below.

The mechanical adjustments are the same for both groups of Relays; the difference being only in the Current requirements.

The residual Air-gap of the Relay is adjusted by means of the residual screw in the center of the Armature so that the distance between the armature and the Core is 0.005 inch, when the Relay is operated.

A 74-D Gauge may be used to measure this separation.

It is necessary to remove the Relay from the Isolantite Base (Slab) in order to adjust the Heel-piece Air-gap.

The Armature Yoke Screw is then loosened and with the aid of a 74-D Gauge, the distance between the Armature and the Heel-piece is adjusted to a separation

Continued to Next Page

"50 KW Trans, & Ant, Equip, Maint,"

| BOOK | No. | (| 7 |) |
|------|-----|---|----|---|
| SEC. | No. | (| С |) |
| PAGE | No. | (| 82 |) |

SRD TUESDAY

ITEM 20.

between the limits of 0.004 Inch and a Just Perceptible clearance as indicated by light visible across the length of the Heel-piece as required to meet the Electrical and Contact pressure requirements.

This separation is measured when the Armature is in the operating position.

In remounting the Relay on the Isolantite Plate it should be placed so that
the Armature arm rests—slightly to the left of the bend in the rod operating arm.

If it is impossible to move the Relay far enough to accomplish this, it will
be necessary to flatten the end of this spring so that no extra Friction will
be caused by the motion of the arm at this point.

Align and adjust the Isolantite Rod Bearings for light tension which will permit easy rotation without looseness.

Lock these adjustment.

Reduce the pressure as far as possible on the Tension Spring by means of the Tension Screw of Detail 1-A ESL-603294.

The fixed Contact should now be adjusted so that the Contact Separation is approximately 0.020 inch when the Relay Armature is operated.

Then adjust the Tension Screw on the Spring Assembly until approximately 25 Grams Contact Pressure is obtained as measured by means of a No. 68 Tool or equivalent. The final adjustments of these Relays are made by the use of a Storage Battery to check the Operating Values.

/The final adjustments of the Plate Current Overload Relays are made so that when a Current of 2.4 Amperes is passed through the Shunt "RX", the Relay will not operate and when the Current is increased to 2.6 Amperes, the Relay will operate.

Continued to Next Page

#50 KW Trens. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (85)

3RD TUESDAY

ITEM 20.

Final adjustment of the Tension Springs and the position of the Fixed Contact will cause the relay to operate at 2.6 Amperes and non-operate at 2.4 Amperes and provide approximately 25 Grams Contact Pressure with 0.015 inch to 0.020 Contact separation when the Relay is Operated.

Adjust the Armature Arm-Back-Stop so that when in a non-operative position, the Armature does not have excessive play.

The Adjustment of the High Voltage Rectifier Arc-back Relays is the same with the exception that the relay should operate when a 6 volt Storage Battery is connected across the Relay's Shunts R_X and R_Y by means of two 10 foot leads of No. 12 Copper Wire with the positive lead connected to R_{X} .

These Relays should be adjusted so that the least possible voltage will operate them while maintaining the Contact Pressure and separation requirements.

The Relay should not operate at 6 volts when the polarity is reversed.

The following is Relay and Magnetic Switch Data, 50 KW Transmitter:

"S17C - "S2P" - and "S1A" are all alike, - data is:

CR 2811 - C2A Magnetic Switch, 110 Volts, 60 cycles.

Catalogue 3885954 - G 102 GEJ 22 9.

Solenoid #22 D 2 G 2.

S7A Data: CR 7008 AlA.

Cat. 4386954 - G 102.

110 Volts, 60 cycles.

Solenoid #22 D 2 G 2.

DIC Data: DIC Motor Starting Switch.

CR 7008 ALA.

Cat. 4386954 G 104

440 Volts, 60 Cycles GEH 882 A.

Continued to Next Page

BOOK No. WOR OPERATING MANUAL SEC. No. "50 KW Trans. & Ant. Equip. Maint" PAGE No. 3RD TUESDAY ITEM 20 Solenoid #22 D 2 G 4. Antenna Transfer Switch Data: Monitor Controller Company #124581, 20 Amperes. 120 Volts, 60 Cycles. Type SP 730, Solenoid #34 M 19 Interlocking Antenna Switch is #124582 120 - 240 Volts 60 Cycles. Type SP 755, Monitor Controller Co. (3 Coils) Coils are OSL2G The following are Rectifier Relay Adjustments: The Contacts will open a minimum of 3/64 inch when a 6 volt Storage Battery is connected through two 10 foot lengths of #12 wire across the Shunt (Rx - Ry); The polarity should be such that the Positive side of the Battery is connected to the Terminal Rx. The Current will drain should be approximately 50 Amperes. The Contacts will not open when the Polarity of the Battery connections are reversed. The Contacts will not open when the 6 volt Storage Battery is replaced with 4 Volts. The Contact Pressure at Contact points is a minimum of 20 Grams, correct Pressure being between 20 and 50 Grams. Additional information for testing of Relays will be found in the "W.E. 306-A" 50 KW Transmitter Instruction Book" Page 51. Book No. (

Continued on next Page

Sec. No.

Page No.

1 1 1 TEN MOR World Radio History

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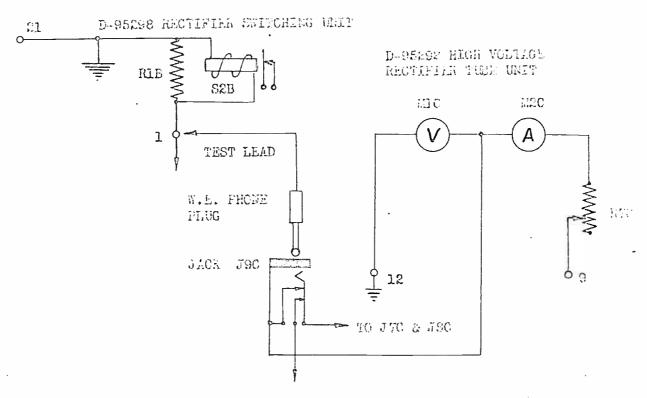
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17 E.V. D.C. OVERLOAD RALAY SEB THEY CHECKET

ARC TOBETAN



INSTRUCTIONS:

Remove Feed Wire from Terminal #1 on the D-95198 Rectifier Evilching Unit.
Place Test Lead on Terminal #1 - Insert Western Liectric Phone Plug into Jack
J90 and vary Pheostet R7C to read between 15 and 20 Ampères on Maior 200.
Relay S2B should operate. If help operates it less than 15 Amperes, increase
Termion adjustment on CVE. If more than 20 Ampères are necessary to operate
S2B, decrease Termion adjustment on t2h.

Turning the Serew Bearing on the Armeture Spring in the <u>Glockwise</u> direction increases the Current required to trip Belay SEE.

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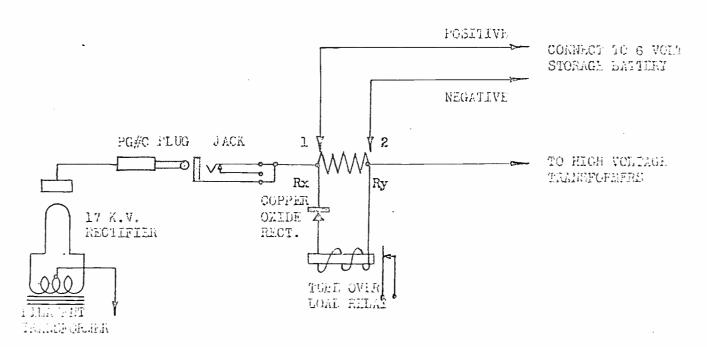
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PAGE No. 1 87 }

17 K.V. RECTIFTER TUBE OVERLOAD RELAY TEST CIRCUIT

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INSTRUCTIONS:

Clip Positive Lead on Jack side of Relay Shunt R. (#1) Touch the Negative Lead for an instant to the huss side of Short Ry (#2) Relay should operate at 6 Volts and be hon-operative at 4 Volts. If Polarity is reversed, Relay will not operate.

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#50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (88)

3RD TUESDAY

ITEM 20.

DATA ON WESTERN ELECTRIC INDICATOR LAMPS:

"Control Unit" #1 (A): Type A-1 Lamps are used in sockets of the following;
"L.P.D."

"Blower".

"17,000 V. A.C. Overload" (Top) (Phase "A").

"17,000 V. A.C. Overload" (Bottom) (Phase "C").

"17,000 V. Rectifier Tubes" 1-2-3-4-5-6.

"2nd Power Amplifier Tubes" 1-2.

"3rd Power Amplifier Tubes" 1-2-3-5-4-6.

"17,000 V. D.C. Overload".

"1600 V. D.C. Overload".

These Type A-1 Lamps are supplied by the "Rectox" Unit "XlP" - Output of which is 21 Volts D.C.

A-1 Lamp Ratings are: 24 Volts at 33 to 45 Milliamperes.

All Lamps are connected in parallel, with the Main Positive Feed from the "Rectox" and then wired to Resistor "R43.1A" (10 Ohms), placing this Resistor in Series with all Lamps for "Ground" Negative Return to the "Rectox" thru Resistor "R43.2A" (10 Ohms.)

"R43.1" Is mounted adjacent to Indicator Lamp Sockets on rear of "Control Unit".

"R43.2A" Is mounted inside the "Rectox" Unit "X1P" which is located on the Iron

Frame Work supporting the "High Voltage Grounding and Door Interlock Mechanism"

Switch "D13P".

"XlP" Rectox Unit is rated 24 Volts at 1.1 Amperes.

Procedure in replacing Type A-1 Lamps.

Use the Type 319-B Special Pliers to remove the outer "Marker Bullseye".

Merely squeeze the sharp edges of the Pliers GENTLY OVER the rim of the Bullseye

Continued to Next Page

World Radio History

™50 KW Trans. & Ant. Equip. Maint.

BOOK No. (7)
SEC. No. (C)
PAGE No. (89)

SRD TUESDAY

ITEM 20.

and lift straight out.

Push "D5A" - "Lamp Reset" Key, holding finger on it while removing lamp.

This will extinguish all Type A-1 Indicator Lamps by shutting off the D.C. Supply from the "Rectox" - "XIP" to these Lamps. (Will not shut off the "Rectox" itself.)
GENTLY Insert the Western Electric Type 116 Tool into the Socket and GENTLY push it over the Lamps, then lift lamp straight out.

Remove the defective Lamp from the Type 116 Tool.

Hold Finger on "Lamp Reset" switch "D5A" then insert the Lamp into the Socket with the Middle Flat side of each Lamp Contact resting against the Socket Flat Spring Comtact. (Insert Lamp with Fingers only.)

Lamp is IMPROPERLY place in the Socket when either flat outside edge of the Lamp Contact is placed against the Socket Flat Spring Contact.

After inserting the Lamp, lift finger off the "Lamp Reset" Button "D5A".

Lamp should Light.

If it does not (Adjacent Lights being illuminated) remove it and insert another.

Push the "Marker Bullseye" back in the Lamp Socket (Use Fingers only.)

Straighten "Marker Bullseye" so that numbers are vertical.

A Type A-1 Lamp, improperly placed in any one of these Indicator Light Sockets, supplied by 24 Volts D.C. from the "Rectox" Unit "XIP" will "Short Circuit" the "Rectox" D.C. Output Voltage, by "Grounding" the positive Socket Contact, and extinguish all such lights.

These Lamps are properly mounted in the Socket when the Middle Flat side of each Lamp contact rests against the Socket Flat Spring Contact.

Lamp is IMPROPERLY placed in Socket when either Flat outside edge of the Lamp Contact is placed against the Socket Flat Spring Contact.

WOR BOOK No. OPERATING MANUAL SEC. No. "50 KW Trans. & Ant. Equip. Maint." PAGE No. (90) 3RD TUESDAY ITEM 20. With the "Rectox" Unit "XIP" - "ON" and all these Lamps extinguished, the remedy is to test for an improperly mounted Indicator Lamp. Merely remove these Lamps one at a time until the "Short Circuit" is removed. (Lamps will light.) "Con-trol Unit" #1 (A): Type B-2 Lamps are used in sockets of the . following: "Cooling Water". "Coupling House Gate". "Windows". "Transmitter Gate". Green Light over "Master Control Switch" "D2A" (Power Available.) (Power "ON".) Green Light over "1600 Volt Rectifier" Switch "DlOA" (Power Available.) (Power "ON".) Green Light over "17,000 Volt Rectifier" Switch "D9A" (Power Available.) 11 (Power "ON".) Type B-2 Lamps are operated from 115 Volts A.C. from Control Transformer "TlA"

Through Resistors each of which is 2500 Ohms.

These Resistors are Western Electric "H" Type; they are located on sub-panel in rear of this Unit, just below Relay "SZA".

Type B-2 Lamp Ratings are: 18 Volts at 36 to 48 Milliamperes.

The procedure in changing Type B-2 Lamp is exactly same as changing type A-1 Lamps, except that it is not necessary to Hold Finger on "Lamp Reset" Button "D5A" since power supply is not from "Rectox."

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| Type E-3 | Indicat | tor | Lamp | is t | ısed | in th | he T | ype " | 1126 | -A Pro | ograi | n Ampli | fie: | c.ª | | | | |
| It is nec | essary | to | remov | re al | ll t | he co | ntro | ls an | d ta | ke fr | ont r | mat off | th | 9 41] | L126- | -A | | |
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| a pilot l | amp. | | | | | | | | | | • | | | i | | | | |
| It is Ope | erated o | on (| 6 Vol | ts A | .c. | | | | | | | | | | | | | |
| Lamp Rati | ing is: | | 6 V | olts | at | 120 t | o 16 | o Mil | l i am | peres | • | | | | | | | |
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BOOK No. (7)

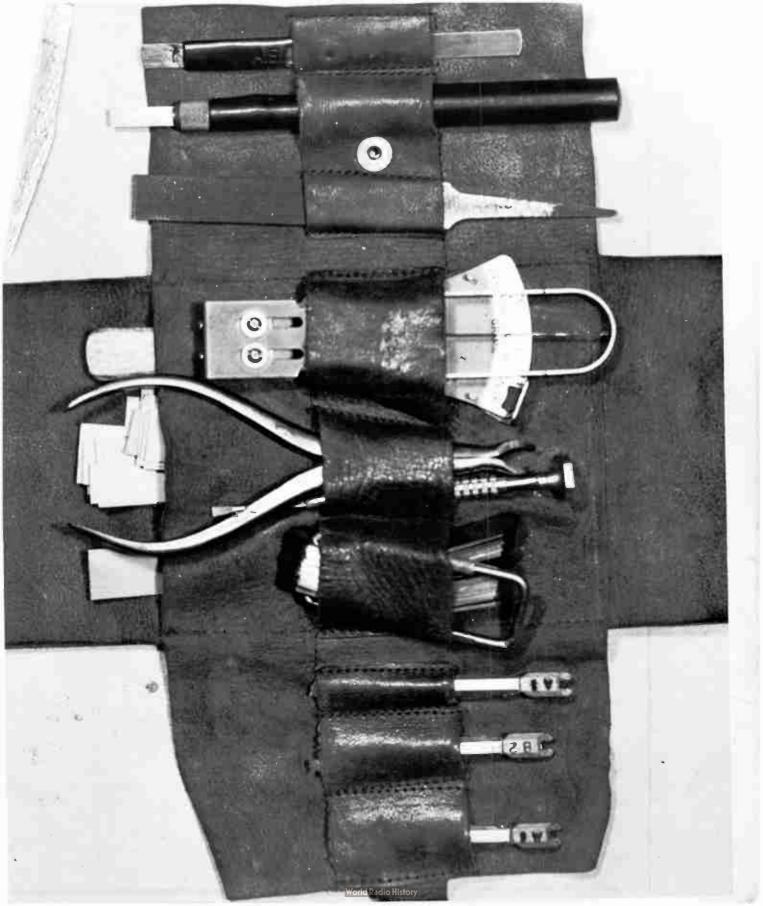
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PAGE No. (91)

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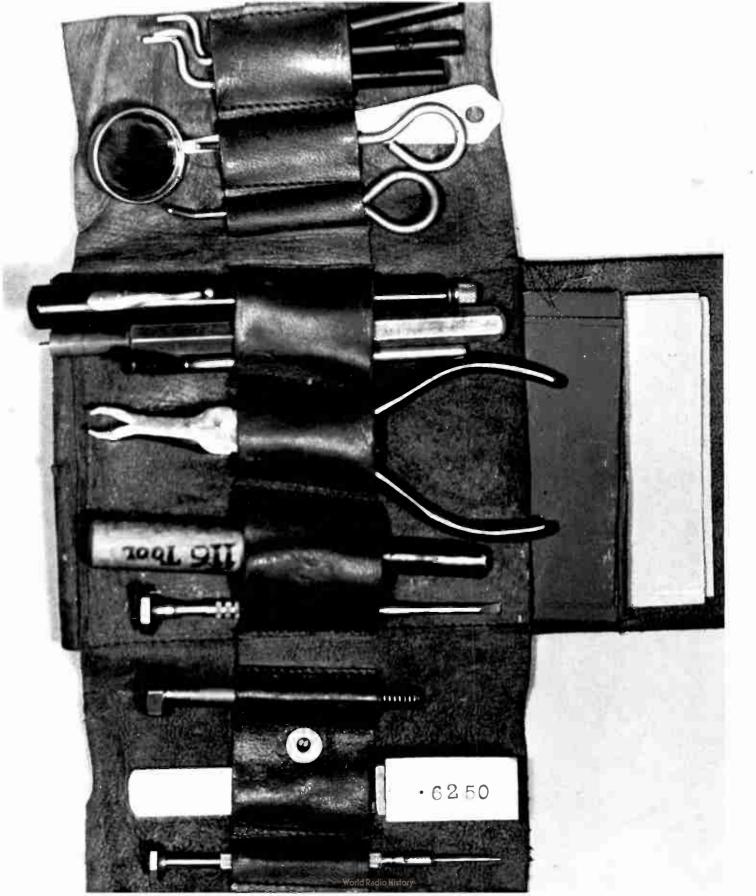
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"50 KW Trans. & Ant. Equip. Maint."



WOR OPERATING MANUAL SEC. No. (C) "50 KW Trans. & Ant. Equip. Maint." PAGE No. (91.1) "Relay - Ball Gap - Indicator Lamp Tools - Kit No. 1" 3RD TUESDAY

ITEM 20.



BOCK No. (7)

SEC. No. (C

250. No. (C)

PAGE No. (91.2)

3RD TUESDAY

"50 KW Trans. & Ant. Equip. Maint."

ITEM 20.

"Relay - Ball Gap - Indicator Lamp Tools - Kit No. 2"

"50 KW Trans. & Ant. Equip. Maint."

"Relay Cleaning and Adjusting Tools"

ITEM 20.

BOOK No. (7)
SEC. No. (C)
PAGE No. (91.3)
3RD TUESDAY

Fig. No. 3.

Fig. No. 4.

WOR
OPERATING MANUAL
SEC. No. (C)
"50 KW Trans. & Ant. Equip. Maint."
PAGE No. (91.4)

ITFM 20

Fig. No. 7.

Fig. No. 8.

SRD TUESDAY

| W O R | BOOK No. | (7) |
|---|-----------|--------|
| OPERATING MANUAL | SEC. No. | (c) |
| "50 KW Trans. & Ant. Equip. Maint." | PAGE No. | (91.5) |
| "W.E. Indicator Lamp Replacement Tools" | SRD TUESE | |
| ITEM 20 | | |

Fig. No. 10:

- (a) Western Electric Type 319-B Bull's-eye Removing Pliers.
- (b) Western Electric Type 116 Indicator Lamp removing Tool (Lamps A-1, B-2, E-3).

SEC. No. (C

Book No.

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (91.6)

"Relay - Ball Gap - Indicator Lamp Tools - Kit No. 1"

3RD TUESDAY

ITEM 20

91.6

Fig. No. 1:

Contents Kit No. 1: (Top to Bottom)

- 1 - - Western Electric Type H-429621 Relay Cleaning Tool.
- 1 - - Western Electric Type 265-B Relay Cleaning Tool.
- 1 - Fine cut Flat File 3" X 7/16" X 1/16", Relay & Switch Contact Cleaning Tool.
- 1 - - Western Electric Type 70-D Gram Pressure Tool.
- 1 - Western Electric Type 319-B Indicator Lamp Bull's-eye removing Pliers.
- 1 - Small Precision Screwdriver 32" with 3/32" Screwdriver Edge.
- 1 - Type R-1931 Set of Thickness Gauges, Relay Contacts & Ball Gap Spacing Tool.
- 1 - - Western Electric Type "A-1" Indicator Lamp.
- 1 - - Western Electric Type "B-2" Indicator Lamp.
- 1 - Western Electric Type "A-1" Indicator Lamp.

 (Kept in Sleeve Compartment, top to bottom.)
- 1 - - Crocus Cloth Cleaning Tool (Relay Contacts)
- 15 --- Pieces of Wrapping Paper 2" $X \frac{1}{4}$ " (Relay Contacts Cleaning Tool.)

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"50 KE Truns. & Ant. Equip. Maint."

BOOK No.

SEC. No. (C)

(91.7)

Relay - Bal Gap - Instator Lamp Tools - Kit No. 2"

ERD TUESDAY

PAGE No.

1TE 20

Fig. No. 2:

Top to bettom)

- 2 - Western Electric Type 240 Relay Adjusting Tools.
- 1 - - "Utility" Type Dentists off-set Mirror.
- 2 - Western clectric Type 212 Relay Adjusting Tools.
- 1 - - Western Electric Type 265-B Relay Cleaning Tool.
 - 1 - - Western Electric Type 72 Screwdriver and Hexagon Nut Tightening Tool.
 - 1 - Wor Type 340-A Relay Adjusting Tool size $3\frac{1}{2}$ X 3/16".
 - 1 - Western Electric Type 319-B Indicator Lamp Bull's eye removing pliers.
 - 1 - - Western Electric Type 116 Indicator Lamp Removing Tool (For Type A-1 and B-2 Lamps)
- 1 - Small Precision Screwdriver 32" with 1/16" Screwdriver edge.
- 1 - WOR Type No. 10-A $\frac{1}{4}$ " Ball Gap Spacing Tool.
- 1 - WOR Type No. 12-A Ball Gap Spacing Tool .089 .6250 $\frac{1}{2}$ " 5/8".
- 1 - Small Precision Screw Driver $3\frac{1}{2}$ " with 3/32" Screw Driver Edge. (Kept in Sleeve Compartment, left to right.)
- 6 - Pieces of Crocus Cloth, cut to size 5" X 5".
- 6 - Pieces of #00 Sandpaper cut to xize 5" X 3".

SEC. No. (C)

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (91.8)

"Relay - Ball Gap - Indicator Lamp Tools"

3RD TUESDAY

BOOK No.

ITEM 20

Fig. No. 3:

- (a) Western Electric Type H-429621 Cleaning Tool.
- (b) Crocus Cloth Cleaning Tool.
- (c) Fine Cut Flat Steel File 3" long X7/16" wide X 1/16" thick.
- (d) Western Electric 265-B Cleaning Tool.

Fig. No. 4:

- (a) Crocus Cloth Cleaning Tool.
- (b) Fine Cut Flat Steel File 3" X 7/16" X 1/16"

Fig. No. 5:

- (a) Western Electric 265-B Cleaning Tool.
- (b) Piece of Wrapping Paper cut to size 2" X 1"
- (c) Western Electric Type H-429621 Cleaning Tool.

Fig. No. 6:

Western Electric Type 70-D Gram Pressure Measuring Tool.

Fig. No. 7:

- (a) WOR Type 340-A Adjusting Tool.
- (b) Western Electric Type 212 Adjusting Tool.
- (c) Western Electric Type 340 Adjusting Tools.

WORDPELLITING MANUAL

BOOK No. (7

SEC, No. (C

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (91,9)

"helpy - Brill Gap - Indicator Lump To.ls"

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Fig. No. 5:

- (a) Presiston Secondariver 32 long with 1/16 Screwdriver edge.
- (b) "Utility" Type Dentists off-set Mirror.
- (c) Western Electric Type 72 Screwdriver and Hexagon Nut Tightening Tool.

Fig. No. 9:

- (a) Type R-1931 Set of Thickness Gauges.
- (b) WOR Type No. 12-A Ball Gap Spacing Tool $.089 .6250 \frac{1}{2}$ " 5/8".

Fig. No. 10:

- (a) Western Electric Type 319-B Bull's eye Removing Pliers.
- (b) Western Electric Type 116 Indicator Lamp Removing Tool (for Type A-1, B-2, and E-3 Lamps).

INSTRUCTIONS

DEFINITE-TIME CONTROL RELAY

TYPE MC-16

GENERAL ELECTRIC

SCHENECTADY, N.Y.

926 76 m 200

DEFINITE-TIME CONTROL RELAY

TYPE MC-16

The Type MC-16 relay is for use on a-c circuits and is essentially a contact mechanism, actuated by an induction motor and an electromagnet.

The contact mechanism is furnished in two different forms.

One form has one set of time-delay circuitclosing contacts, one set of time-delay circuit opening contacts, and one set of instantaneous circuit-closing contacts.

The other form has two sets of time-delay circuit-closing contacts and one set of time-delay circuit-opening contacts.

The different sets of contacts in either form are electrically separate from each other.

The relay may be furnished with frequency ratings of 25, 30, 40, 50, or 60 cycles at 115, 230, 460, or 575 volts.

All of the contacts can carry 3 amp. They can make 10 amp at 230 volts, a-c; 0.75 amp at 125 volts, d-c; 0.15 amp at 275 volts, d-c; or 0.10 amp at 600 volts, d-c.

The motor coils take about 0.12 amp at 230 volts, 60 cycles, and the holding coils take about 0.10 amp at 230 volts, 60 cycles.

The relay will operate satisfactorily at 75 per cent rated voltage or more. Time delay is not appreciably affected by ordinary voltage changes.

INSTALLATION

Unpacking

Unpack and closely examine the relay to see that it has not been damaged in shipment. After the relay is mounted in its permanent location, take off the cover and remove the cords or bands which temporarily hold the movable parts.

Location

Mount the relay in a vertical position. The relay should be placed in a clean, dry, well lighted place where it will be subjected to minimum vibration.

The general dimensions of the relay, size of spacing studs, etc., are shown in Fig. 4.

Connections

Before connections are made, see that the contact surfaces of the nuts and the terminals are bright, and that the threads have not been injured. If a nut tends to screw on too tightly, the stud or nut should be rethreaded.

ADJUSTMENTS

- 1. Make sure that the armature is loose and free to move in its cradle.
 - 2. The latch should move freely.
- 3. With the relay in normal de-energized condition, the pawl is not in mesh with the train of small gears. Closing of the magnet armature meshes the pawl in one of the gears rotated by the motor. The armature should move a short distance before meshing the pawl. When the armature is completely closed, the pawl arm should just start to move from the slotted guide in which it rests.
- 4. For proper operation of relay, certain air gaps should be maintained in the mechanism. The latch prevents the contact in contact arm (A), Fig. 1, from closing with contact (B) until a definite time has elapsed. There should be 1/8-in. gap between the end of the latch and contact arm (A) when the armature is open and against the stop. There should be a gap of 3/16 in. between the contact in arm (A) and contact (B) when the armature is closed and the latch in its normal position. The contact in arm (G) must be closed with contact (C) at all times, except when the latch has released contact arm (A) at which time, with the magnet energized, the distance between the contact in arm (G) and contact (C) should be at least 1/16 in. When the latch releases contact arm (A) the contact in the arm should close with contact (B). The contact in arm (H) should be closed with contact (D) when the armature is closed.

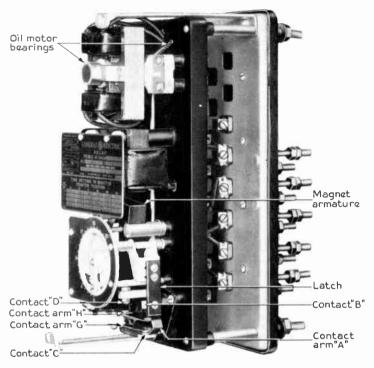


Fig. 1. Type MC-16 Definite-time Control Relay, Right Side, Front View with Cover Removed

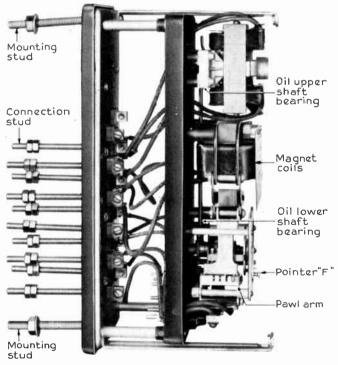


Fig. 2. Type MC-16 Definite-time Control Relay, Left Side, Front View with Cover Removed

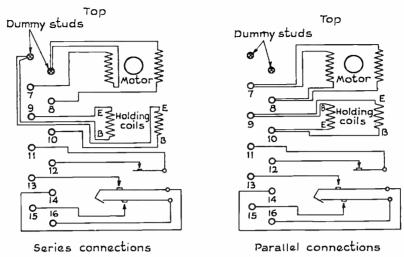


Fig. 3. Internal Connections

Time Delay

There are two means by which time-delay adjustments may be obtained.

The first or coarse adjustment is made by placing the pawl arm, which is located behind the left-hand corner of the circular scale plate, in one of the four notches.

The second or fine adjustment is made by rotating the pointer (F), Fig. 2, on the circular scale to the desired setting.

Time delays corresponding to the various pointer positions with each of the four pawl positions are tabulated on the index plate mounted on the front of the relay. The approximate maximum and minimum calibration which may be obtained is shown in the table below.

For accurate time adjustment the values on the index plate of a particular relay should be followed.

OPERATION

A complete operating cycle of the relay may be described as follows:

When the relay is not energized, contact arms (A) and (H) are in the open position, and contact arm (G) is in the closed position. Closing the magnet circuit by a push button or other means causes the pawl arm to engage the planitary gear train, and contact arm (A) is pulled against the end of the latch, closing the instantaneous circuit-closing contacts consisting of the contact in arm (H) and contact (D). External connections should be such that the relay motor starts simultaneously when the magnet circuit is energized; also the magnet circuit is energized continuously. Due to rotation of the relay motor the latch releases contact arm (A) after a definite time delay, determined by the pointer and pawl arm settings. When the latch releases contact arm (A), spring action of the arm causes the

TIME IN MINUTES

| Pawl | 60 c | YCLES | 50 cr | CLES | 25 CYCLES | | |
|----------------------------------|------------------------------|-------------------------------|-------------------------------|--------------------------------|------------------------------|---------------------------------|--|
| Position | Min | Max | Min | Max | Min | Max | |
| Back Second Third Front | 0.04 0.19 0.74 2.64 | 0.48 2.33 8.80 33.50 | 0.045 0.18 0.79 3.12 | 0.59 2.67 10.90 43.50 | 0.16 0.57 2.80 8.00 | 1.88 9.20 37.00 142.00 | |

time-delay circuit-closing contacts, consisting of the contact, this arm, and contact (B) to close. Contact arm (A), after being released by the latch, pulls on contact arm (G) causing the

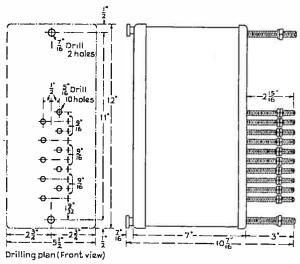


Fig. 4. Outline Dimensions and Panel Drilling

time-delay circuit-opening contacts, consisting of the contact in arm (G) and contact (C), to open. Opening the holding-coil circuit allows the relay to reset to its original (de-energized) position and the relay is then ready for another operating cycle.

Ordinarily the time-delay circuit-opening contacts, consisting of the contact in arm (G) and contact (C), are used to shut down the relay motor. If these contacts are used for some other purpose, external provisions should be made to shut down the relay motor immediately after the latch releases contact arm (A), since further rotation may injure the mechanism.

RENEWAL PARTS

Periodic inspections should be made to see that all movable parts move freely and that no excessive wear has occurred at any point. At intervals of approximately 100 hours of running time, a few drops of a good grade of light spindle oil should be applied to the bearings of the moving parts, see Fig. 1 and 2. Particular care should be taken to see that the relay motor bearings are properly lubricated or trouble is sure to result. When oiling the relay or making mechanical inspection, care should be taken to keep away from all live circuits.

MAINTENANCE

When ordering renewal parts, refer to the nearest sales office of the General Electric Co. Give the Cat. No. and the complete nameplate rating, and describe the part in detail.



WHEN SERVICE IS REQUIRED

THE facilities of our engineering departments and factories are available to purchasers of G-E apparatus through G-E service shops and sales offices, a list of which is given below.

When it is necessary to renovate, repair, or change apparatus to meet a new operating condition or a new application, the facilities of the nearest G-E service shop are at your disposal. Each of them is equipped to turn out work of the same high quality, both as to workmanship and materials, as at the factory. If it is necessary that the work be done on the customer's premises, the service shop is prepared to send trained, competent, and dependable men who will do it promptly and efficiently. Similarly, the sales office nearest you will be glad to help you with any engineering problems that may be involved.

SERVICE SHOPS

| Buffalo, N. Y | Wis. 940 West St. Paul Avenue Minn 410 Third Avenue, North N. Y. 416 West Thirteenth Street Pa. 429 North Seventh Street Pa. 6519 Penn Avenue O. 1110 Delmar Boulevard ty, Utah 141 South Third West Street to, Calif. 361 Bryant Street h. 1508 Fourth Avenue, South Mass. 920 Western Avenue the Company: Erie, Pa.; Ft. Wayne, Ind.; Mass. (West Lynn Works) |
|---------------|---|
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|--|--|
| Jacksonville, Fla. 237 West Forsyth Street Kansas City, Mo. 108 West Fourteenth Street Knoxville, Tenn. 602 South Gay Street Los Angeles, Calif. Louisville, Ky. 455 South Fourth Street | Washington, D. C |
| Memphis, Tenn | Youngstown, Ohio |

Canada: Canadian General Electric Company, Ltd., Toronto Hawaii: W. A. Ramsay, Ltd., Honolulu Motor Dealers and Lamp Agencies in all large cities and towns



PRINTER

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (92)

3RD TUESDAY

ITEM 21.

(a) "Antenna Coupling Room" #9 (J): Proceed to this Room, open Enclosure door and clean Contacts of "Antenna Changeover Switch".

CAUTION: Perform this Maintenance Item when Transmitter IS CLOSED DOWN &
THE CARRIER IS "OFF" THE AIR COMPLETELY.

Before proceeding to do this Item, enter 5 KW Transmitter Enclosure, place Switch "D18C" - "5 KW Crystal Selector & Master Start Relay S5A" to the Left, thus supplying 115 Volts A.C. for "Crystal Heater" and "S5A" - "Master Start Relay" from secondary of Transformer "T1C".

Now proceed to "Audio Facilities Control Room" and put "OFF" Switch #34 in Wall Panel Box.

This Switch #34 shuts "OFF" 115 Volts A.C. Power from "Antenna Changeover Switch" and shuts "OFF" the "1-C Frequency Monitor" located on right side of the Transmitter Room Desk.

Clean Cadmium-plated Large Surface Contacts of 50 KW Transmitter, 5 KW Transmitter, and "Swingers" positions with Crocus Cloth.

Clean Residue from Contacts using a clean cloth dampened in Carbon-tet.

Inspect Contacts with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a Second Time.

Clean all Cadmium-plated "Operating" Contacts and all Cadmium-plated "Inter-locking" Contacts with "Crocus Cloth Tool."

Merely separate these Contacts, place "Crocus Cloth Tool" between contacts, pinch them together with Thumb and fore finger of Left hand and rub Tool between them several times.

After cleaning these contacts, wrap small piece of Clean cloth about a second "Crocus Cloth Tool", dip in Carbon-tet, and clean off residue by same method Continued To Next Page World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

PAGE No. (93)

C)

3RD TUESDAY

SEC. No.

ITEM 21.

as they were cleaned.

Inspect Contacts with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a Second Time.

NOTE: The "Antenna Changeover Switch" may manually be put to 5 KW position or 50 KW Position at will by merely pushing Armature "IN" or lifting the mechanical Catch and allowing the Armature to "Drop Out" respectively.

(b) "Engine Driven Generator Room": Proceed to this Room, open metal Box housing "Ant. Transfer Switch Controls" and clean "Selector Contactors" also the "Xmtr Interlocks" of 50 KW Transmitter and 5 KW Transmitter.

Flace small piece of Crocus Cloth flat against the stationary contacts of "Selector Contactors", exert trifle pressure with flat part of Thumb and twist left and right several times.

This method will assure a clean contact and at the same time maintain the flat surface.

Clean all 4 of these flat Stationary Contacts of "Selector Contactors" by the same procedure.

After cleaning contacts wipe off with cloth dipped in Carbon-tet.

Inspect contacts with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a Second Time.

Place a small piece of Crocus Cloth against the rounded movable Contacts of "Selector Contactors" and rub them with circular motion several times.

This will assure clean contacts and at the same time maintain the rounded surfaces.

Clean all 4 of these rounded movable contacts of Selector Contactors by the same procedure.

Continued to Next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 |) |
|------|-----|----|----|---|
| SEC. | No. | (| С |) |
| PAGE | No. | •(| 94 |) |

SRD TUESDAY

ITEM 21.

After cleaning contacts, wipe off with cloth dipped in Carbon-tet.

Inspect contacts with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a Second Time.

Place the "H429621" Tool between Movable and Stationary Contacts of "Xmtr Interlocks" exert trifle pressure against the back Stationary Contact (It is fitted with a Spring and will move slightly) then rub tool between contacts several times. Clean both "Xmtr Interlocks" by the same procedure.

After cleaning, inspect the contacts with aid of A.C. Extension Light and small. "Dentist's Mirror".

They should be clean and bright.

If they are not, clean them a Second Time.

After cleaning "Selector Contactors" and "Xmtr Interlock" proceed to the "Audio Facilities Control Room" and put "ON" Switch #34 in the Wall Panel Box.

Enter 5 KW Transmitter Enclosure and put Switch "510" to the Right, thus supplying ll5 Volts A.C. for operation of "Crystal Heaters" and "S5A" - "Master Start" Relay from regular ll5 Volt A.C. Service.

After this Item is thoroughly completed, test "Antenna Changeover Switch" by transferring it from 50 KW to 5 KW Transmitter positions several times.

Proceed to the right Turret of the Transmitter Room Desk, put "ON" - "Ant. Switch" Button (Normally is "ON".)

Push "Ant Transf 50 KW". . "Antenna Changeover Switch" in "Antenna Coupling Room" should swing over to 50 KW Transmitter.

Amber Light marked "Antenna Transfer 50 KW should Light.

Push "Ant Transf 5 KW" . . "Antenna Changeover Switch" in "Antenna Coupling Room" should swing over to 5 KW Transmitter.

Continued to Next Page

World Radio History

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| | | | | | ITE | M 21 | LL. | | | | 3RD 1 | ruesi | DAY · | | |
| Purple Li | ght ma | rke | d ⁿ Ar | nten | na Tra | nsfe | r 5 | KW ⁿ s | hou | ld Light. | | | | | |
| Repeat th | is pro | ces | s two | or | three | tin | es, | leavi | ng | "Antenna | Change | ver | Swi | tch | et |
| in 50 KW | Transr | itt | er po | sit | ion. | | | | | | | | | | |
| Book No. | (/ |) | . (|) | . (|) | (|) | (|) (|) | | | | |
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End Item 21.

"50 KW Trans, & Ant, Equip, Maint,"

| BOOK | No. | . (| 7 |) |
|------|-----|-----|----|---|
| SEC. | No. | (| С |) |
| PAGE | No. | (| 96 |) |

3RD TUESDAY

ITEM 22.

(a) "Switch Room": Proceed to this Room and clean the contacts of the "Emergency 120 Volt Service Relay" with "Crocus Cloth Tool".

These Switches are located in small Metal Box in this Room.

It is not necessary to shut "OFF" the Current to clean these Contacts.

<u>CAUTION:</u> TO AVOID GETTING SHOCK FROM 115 VOLTS A.C., DO NOT TOUCH CONTACTS WITH FINGERS WHILE CLEANING.

Merely place flat part of "Crocus Cloth Tool" against contact, and rub several times to clean.

There are a total of 27 Contacts to be cleaned.

After cleaning contacts, wrap a small piece of clean cloth about a 2nd "Crocus Cloth Tool", dip in Carbon-tet and wipe residue off all these contacts.

Inspect Contacts with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a Second Time.

(b) <u>Summary of Operation of "Emergency 120 Volt Service"</u>: Note that when Contacts are separated to clean, "Emergency Lights" will be extinguished, and Transmitter Room also Basement Electric Clocks will stop; after cleaning and wiping, Lights and Clocks will go "ON" again.

White this Maintenance Item will require about 15 Minutes, great care is necessary to be sure that all contacts are clean and wiped dry.

After finishing this Maintenance Item, check position of "Voltage Hunting Armature".

It is important that it be in position to illuminate the Emergency Light directly over this Relay Box in "Switch Room" which will indicate to the Technician correct operation of the "Emergency 120 Volt Service Relay".

This will also indicate that Transmitter Room and Basement Clocks are running, and all "Emergency Service Lights" will be illuminated.

Continued to Next Page

World Radio History

| | | ITE | M 22. | | | 3RD TUES | DAY | |
|--------------|------------------------|------------|-----------|------------|------------|-----------|-----------|----|
| CAUTION: | Both Clock | ks will be | between | 15 second | ls to 1 mi | lnute SLO | W due to | |
| short period | s of *10pen | Circuit" | while cl | eaning and | wiping, | | | |
| Get correct | time check | from WR M | aster Co | ntrol or o | ther sour | ce and r | eset Cloc | ks |
| Inspect the | ^e Voltage H | unting Arm | ature" of | r "Emergen | cy 120 Vo | lt Servi | ce Relay | ١. |
| Normally it | is in the] | DOWN posit | ion, tha | t is set t | o the "Ca | rteret | Feeders, | |
| and will rem | ain thus so | long as | "Cartere | t" 4150 Vo | lt Servic | e is OK, | no matte | er |
| which Servic | | | | | _ | | mitters. | |
| Book No. (| /) (|) (|) (|) (|) (|) | | |
| Sec. No. (| 5) (|) (|) (· |) (|) (|) | | |

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (97)

End Item 22.

Page No. () () () () ()

#50 KW Trans. & Ant. Equip. Maint.

BOOK No. (7)

SEC. No. (C)

PAGE No. (98)

5RD TUESDAY

ITEM 25.

- (a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (b) "Basement": While in the Basement, put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

- (c) Basement While in the Basement, put "OFF" Switch "Dl.1P" "Main Power Disconnect Panel" for SAFETY REASONS.
- (d) "Basement": While in the Basement, put "OFF" Switch "D15P" "Motor Distribution Panel" for SAFETY REASONS.
- "Safety Switch" "DLA" for SAFETY REASONS.
- (f) "Transmitter Room": Gather all Tools and Equipment needed for performance of this item.

TOOL WHERE KEPT

Maintenance Tray No. 1 - - - - - Bin No. 5 in Spare Tube Room

Maintenance Tray No. 3 - - - - - Bin No. 3 in Spare Tube Room

Relay Tools - Kit No. 1 ----- Compartment No. 11 in "Portable Fuse and

Test Unite.

Relay Tools - Kit No. 2 ----- Compartment No. 11 in "Portable Fuse and Test Unit".

One Small Flat File 6"Xl" Xl/8" - - - - Drawer No. 9 of Basement Work Bench

O to 6 Lbs. "Fisherman's Scale" - - - Maintenance Tray No. 2 on "Maintenance

Bench" in Basement.

115 Volt A.C. Extension Light - - - - Basement

Continued on next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

| SEC. | No. | (| C |) |
|------|-----|---|---|---|
| | | • | | • |

PAGE No. (99)

ITEM 23.

SRD TUESDAY

BOOK No. (

TOOL

WHERE KEPT

115 Volt A.C. Vacuum Cleaner

ent Special attachments - - - - - "Maintenance Bench" Basement

Place all Tells and Equipment except contents of Maintenance Tray No. 1 in

Maintenance Tray No. 3.

Unit and lift the Asbestos Flume Arrestor Guards off stationary contacts of A.C. Contactors "S4B" and "S5B".

Be careful not to drop Guards as they are FRAGILE and will break.

File the Contacts of both Stationary and Movable Arms of "S4B" and "S5B" until all burns, pits, or raised places are removed.

HOTE THAT CONTACT SURFACES ARE FLAT CROSS-WISE, and SLIGHTLY CURVED LENGTHWISE.

Exercise care in filing Contacts, so as not to remove either the FLAT OR CURVED SURFACES.

Be sure to use Fine File, but most of all, have surfaces smooth.

After cleaning contacts, inspect them with aid of A.C. Extension Light.

They should be clean and bright, free of burns and pits, etc.

If they are not, clean them a Second Time.

After cleaning contacts, thoroughly brush out all associated parts with Soft Dry Maintenance Brush.

This will remove all Copper particles, etc., from equipment.

Place Heel of Hand against the top edge of the Armature and GENTLY push in until Contacts just Close.

All 6 Contacts should be making contact at the same instant.

If they are not, adjust for correct closing.

Place heel of right hand against top edge of the Armature and quickly force it against the end of the Field Piece.

Continued on next Page

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 |) |
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| SEC. | No. | (| С |) |
| PAGE | No. | (| 100 |) |

SRD TUESDAY

ITEM 23.

Note that Movable Contacts touch Stationary Contacts and then they rock into place.

Check Pressure on Contacts as follows: Place "Weighing Clip" on end of Scale at about the middle position of Movable Contactor and pull straight out.

Contactor should move out against its coiled steel spring at approximately 82 lbs pressure.

(h) "17 KV Rectifier Switching Unit" #11 (B): While at this Unit, clean
Contacts of "Associated Pendulum Relays" - "S4B" and "S5B" with Crocus Cloth Tool.
Grasp the "Crocus Cloth Tool" in Left Hand and place flat against the Stationary
Contacts of "Associated Pendulum Relay" "S4B", rest backs of forefinger and
2nd Finger of the Right Hand against "Crocus Cloth Tool", exerting trifle pressure.
Rub Contacts with "Crocus Cloth Tool" several times.

After cleaning these 2 Stationary Contacts, take 2nd "Crocus Cloth Tool", place small piece of clean cloth about it, dip in Carbon Tet, and wipe residue off Contacts.

Tear a piece of Crocus Cloth about 1 inch by 4 inches and clean the Convex Movable Contacts of "Associated Pendulum Relay" - "S4B".

After cleaning Contacts, wipe off residue with a small piece of clean cloth dampened in Carbon Tet.

After cleaning Contacts, inspect them with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a second time.

Remove the Knurled Locking Nut, carefully remove the Bakelite Cover and inspect the Mechanical Ratchet operating mechanism and gears, also the linkage on this Relay. Apply a very small amount of "3-in-1" Oil if required.

Replace Bakelite Cover, tighten knurled locking nut a trifle until compression Continued on next Page. World Radio History

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)
PAGE No. (101)

3RD TUESDAY

BOOK No.

ITEM 23

washer is tight, but not flat.

Service "Associated Pendulum Relay" - "S5B" by the same procedure,

"17 KV Rectifier Switching Unit" #11 (B): While at this Unit clean that the of Asbestos Flame Arrestors previously removed from A.C. Magnetic Contacts "S4B" and "S5B".

Clean inside of Asbestos Flame Guards with small piece of Crocus Cloth, wiping out residue with rag dempened in Carbon Tet.

AVOID TOO MUCH RUBEING OF INSIDES OF FLAME ARRESTORS, MERELY CLEAN OFF THE COPPER PARTICLES DEPOSITED THERE BY OPERATION OF THE CONTACTORS.

Wipe off ousides of Flame arrestors with clean dry cloth.

After cleaning replace Asbestos Flame Arrestors over stationary contacts of A.C. Contactors "S4B" and "S5B".

Place neel of hand against Armatures and push to "Operating Position" to test for binding caused by flame armestors.

If Flame Guards are properly placed, they will not cause binding.

(j) Brief Summary of Operation of A.C. Magnetic Contactors "S4B" and "S5B".

DO NOT TEST TRANSMITTER AT THIS INSTANT, UNLESS NECESSARY, but following Data
is for guidance of Technician when starting STransmitter.

Push "ON" Switch "D9A" - "17,000 Volt Rectifier" and operation of "Main Starting Contactor" - "S4B" is instantaneous.

"Operating Contactor" - "S5B" will automatically go "ON" 3 seconds after "S4B" operated to "ON" Position.

"SIL" - "Filter Condenser Charging Resistor Short-Circuiting Contactor" will automatically go "ON" 4 seconds after "S5B" operated to "ON" position.

Continued on next Page.

W O R BOOK No. (7 OPERATING MANUAL SEC. No. (C

PAGE No. (101.1)

"50 KW Trans. & Ant. Equip. Maint."

ITEM 23

If the A.C. Magnetic Contactors "S4B" and "S5B" and "S1L" do not come up in the proper time, Item 25 (a) - (b) - (c) - (d) - (e) - (f) and (h) must be performed again in sequence, if time allows, before going on the Air for the Day. If there is no time for adjustment, enter Data on reverse of T & AE Tally Sheet. Maintenance Watch on next Shut-down will adjust or clean "Associated Pendulum Relay" Contacts.

Write details on separate report to Supervisor.

Wipe all copper dust from top and sides of large Rectangular Conduit Box directly below "S4B" with a soft clean cloth.

Use Maintenance Brush to clean all Copper Dust off both sides of Relay

Apparatus Panel including "RIB" - "S2B" - "S3B" and Terminal Strip "TS1B".

Thoroughly Vacuum Clean floor in front of and adjacent to 17,000 Volt Rectifier Switching Unit.

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End Item 23.

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 |) |
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SEC. No. (C)

PAGE No. (102)

SRD TUESDAY

ITEM 24.

(e) "Control Unit" #1 (A): Proceed to this Unit and check the Time Delay Adjustment of "Plate Voltage Delay Relay" - "S6A".

Directly after putting "ON" - "D2A" - "Master Control" Start Button per Book

No. (3) Sec. No. (B) Page No. (1) to (16), Item on "Analysis

Method Procedure Before Placing 50 KW Transmitter Carrier on the Air" Paragraphs (f)

begin to count the time.

"S6A" Minimum Time 10 Minutes, Maximum Time 12 Minutes.

(b) "Control Unit" #1 (A): Proceed to this Unit and check Time Delay
Adjustment of Lockout Relay "S5A".

No. 2 Technician will go to the "2nd Power Amplifier Tube Unit" and touch the Armature of Plate Overload Relay "SIF" slowly 3 times until "S5A" Relay has locked out.

Each time Technician touches armature of Plate Overload Relay "SIF", "Plate Voltage Trip Relay" - "S4A" will drop out and its back contacts will energize the Solenoid of "Lockout Relay" - "S5A" causing it to move up One Notch.

On the third test, Lockout Relay "S5A" will Lock out as evidenced by the Red Pilot light over "S5A" being "ON".

At this instant No. 1 Technician will begin to observe time required for Plunger Latching Device to come to rest by dropping down, i.e., the Notch on "S5A flips outward and Spring automatically turns Clockwise.

"S5A" Relay is now restored to "Operating Position" and Time Delay Sequence is finished.

After Sequence is finished, to turn knurled Reset Knob Counter-Clockwise.

"S5A" Minimum Time 25 seconds Maximum time 35 seconds.

(c) "Control Unit" #1 (A): Proceed to this Unit and Check time required for A.C. Magnetic Contactors "S4B" - "S5B" and "S1L" to operate.

Continued To Next Page

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BOOK No. (7)

End Item 24.

"50 KW Trans. & Ant. Equip. Maint."

"Time Delay Adjustments Of Relays"

ITEM 24

MOOK No. (7)

SEC. No. (C)

PAGE No. (104)

3RD TUESDAY

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"50 KW Trans. & Ant. Equip. Maint."

"Time Delay Adjustments Of Relays"

BOOK No. (7)

SEC. No. (C)

PAGE No. (104)

3RD TUESDAY

ITEM 24

YEAR 1954

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"50 KW Trans. & Ant. Equip. Maint."

"Time Delay Adjustments Of Relays"

3RD TUESDAY

BOOK No. (7)

SEC. No. (C)

PAGE No. (104)

ITEM 24

| Month | Day | S4B | S5B | S6A | S5A | Sign |
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"50 KW Trans. & Ant. Equip. Maint."

"Time Delay Adjustments Of Relays"

BOOK No. (7)

SEC. No. (C)

PAGE No. (104)

RD TUESDAY

YEAR 5

ITEM 24

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"50 KW Trans. & Ant. Equip. Maint."

"Time Delay Adjustments Of Relays"

BOOK No. (7)

SEC. No. (C)

PAGE No. (104)

3RD TUESDAY

YEAR /957

ITEM 24

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WOR
OPERATING MANUAL

"50 KW Trans. & Ant. Equip. Maint."
PAGE No. (C)

"Time Delay Adjustments of Relays"

ITEM 24
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OPERATING MANUAL
SEC. No. (C)
"50 KW Trans. & Ant. Equip. Maint."
PAGE No. (104)
"Time Delay Adjustments of Relays"

ITEM 24

3RD TUESDAY
YEAR: 1959

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7)

3RD TUESDAY

BOOK No.

ITEM 25.

- (a) "Switch Room": Proceed to this Room in the Basement and put "OFF"
 Switch #2 "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (b) "Basement": While in the Basement, put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

- (c) "Transmitter Room": Proceed to the "High Voltage Grounding Switch and Door Interlock Mechanism" "Dl3P", remove one Key from any one of Lock positions No. 2 to No. 5 inclusive and keep on person until Item No. 25 is completed.
- (d) "3rd Power Amplifier Tuning Unit" #7 & 8 (I): Climb up on top of this Unit, clean and polish 3rd P.A. Meters and Extension Antenna Ammeters,

 M1-I" "M2I" "M3I" "M7I" "M8I" "M9I" with Stafford's Polish or Simoniz.

 Procure 9 foot Step Ladder and "Working Boards".

Place Step Ladder against the Iron Cage of this unit, take boards, climb up the ladder, and lay boards across the top of the cage of this Unit.

Technician may sit on or walk on these "Working Boards" while doing this Item, to prevent damaging Grille work on top of Unit.

Wipe off Cases of meters with soft clean cloth.

Polish cases of Meters with Stafford's Polish.

If no Stafford's Polish is on hard, use Simonis.

Wipe off glass Fronts of these Meters with SLIGHTLY DAMP RAG.

Wipe off Isolantite Stand-off Insulators with SLIGHTLY DAMP RAG.

If this is insufficient for cleaning Insulators, clean them with Naptha.

Wipe off Plate Current Ammeter Shunts with Dry Cloth.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

| BOOK 1 | No. | (| 7 |) |
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| SEC. | No. | (| C |) |
| PAGE ! | No. | .(| 106 |) |

3RD TUESDAY

ITEM 25.

Check Connections on all these Meters.

Tighten any loose Mounting Screws and Bolts holding Meters on Supposting Insulators. Wipe off sides and bottoms of these Meter Recessed Spaces with SLIGHTLY DAMP RAG. Clean insides of Glass Windows with small amount of "Windex" applied from Spray Nozzle, polishing Glass with Soft Clean Dry Cloth.

(e) "Srd Power Amplifier Tuning Unit" #7 (I): While on Top Rear of this Unit, clean Plaster Wall above.

Wipe off Entire Wall above the (I) Unit Meters with soft dry cloth.

Start at the top as far as can be reached, and clean down toward the bottom.

When finished, remove the "Working Boards" and Step Ladder.

Proceed to the Front of this Unit and Clean outsides of Glass Windows with "Windex".

Apply small amount with Spray Nozzle, and polish off to a high Lustre.

Wipe all finger marks and smudges from front of Panels and Style Strips.

(f) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the front of this Unit, remove Glass Front Panel, clean and polish Meters "MIG" - "M2G" and "M3G" with Stafford's Polish or Simoniz.

Remove the 4 Chromium plated Bolts holding Each Black Metal Style Strip in place. Remove Style Strips.

Remove Screws on Glass Front Panel in following Order:

Remove 2 middle lower screws.

Remove all the screws on the Left and Right Sides.

Remove the 2 screws on top of the Panel, and at same time hold panel in place from falling.

Use Handles and exercise extreme care in handling, lifting off the Glass Front Parel.

Polish Meter cases with Stafford's Polish or Simoniz.

Continued to next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (107)

3RD TUESDAY

ITEM 25.

Wipe off Glass fronts of these Meters with SLIGHTLY DAMP RAG.

Polish Bakelite Sub-panel behind Meters with Stafford's Polish.

Check position of Indicating Needles of these 3 Meters.

Reset to Zero if required.

Stand directly in front of the Meter and turn Zero Corrector with small Screwdriver. Enter on T. & A.E. TALLY SHEET when Meters are Reset, and how much Plus or Minus they were observed to be in error.

Clean both sides of Glass Window with small amount of "Windex".

Apply with Spray Nozzle, polishing to high lustre with soft clean cloth.

After cleaning Meters and Glass Front Panel, replace Panel, replacing the 2 Middle Top Screws first, then Screws on both sides and finally those on the Bottom.

Replace the 2 Style Strips and tighten Chromium plated mounting screws.

(g) "2nd Power Amplifier Tuning Unit #5 (G): Proceed to the Rear of this Unit, clean Meter Shunts, Stand-off Insulators and associated busses of Meters "MIG" - "M2G" and "MSG".

Procure small 9 foot Step Ladder, climb up on top of this Unit, CAREFULLY clean Meters with dry cloth.

Wipe off Stand-off Insulators with SLIGHTLY DAMP RAG.

If this is insufficient to clean insulators, wipe them off with Naptha. Wipe off Cadmium-plated Busses.

Tighten all bolted connections to and from Meters, Shunts and Insulators. Wipe off top of this Unit with SLIGHTLY DAMP RAG.

Inspect this Maintenance work with A.C. Extension Light to be sure all is clean and all connections are tight and in order.

Continued to next Page

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End Item 25.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (109)

3RD TUESDAY

ITEM 26.

(a) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to this Unit and clean Rear and Front Tubes "VIF" and "V2F" respectively.

Wipe off the Metal parts with a rag dampened in Carbon-tet.

Wipe off Glass Envelope of Tubes, using Clean Cloth dampened with Water, then wipe off with Clean Dry Cloth.

If this is insufficient to clean the Glass envelope of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to High Lustre.

When Transmitter is started, observe the condition of the Glass and if Lint is present, Clean off with Clean Dry Cloth.

If this is not the remedy, use Skin of Hand, which will attract Lint, since it discharges the Static Electricity on Glass, originally accumulated from Dry Cloth.

The small amount of remaining Lint may be blown off the Glass.

In cleaning glass envelope of Tubes, exercise caution, not to scratch.

Do Not Wear a Ring while cleaning or polishing the Power Amplifier Tubes.

Always be sure to take a Clean New Cloth when Cleaning or polishing Power Amplifier Tubes:

- (b) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and clean Rear Tubes "V1H" "V3H" "V5H" and Front Tubes "V2H" "V4H" "V6H" procedure same as Item 8 (a).
- (6) "Control Unit" #1 (A): Proceed to this Unit and clean 1650 Volt Rectifier Tubes and sockets positions #1 to #6 inclusive.

Wipe off Tube Glass envelopes with a rag dampened in Water, then dry off with Clean Dry Cloth.

Continued on Next Page.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No (C)

PAGE No. (110)

ITEM 26

3RD TUESDAY

If this is insufficient to clean the glass envelope of Tubes, apply a small amount of m"Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Rag, polishing Glass to High Lustre.

Wipe off the Bakelite Socket with Clean Dry Cloth.

(d) "Oscillator-Modulator Unit #2 (D): Proceed to this Unit,
Clean Tubes and Sockets Positions "Vly" "V2Y" "V1D" "V2D" "V3D" "V4D"
"V5D".

Procedure for "VIY" and "V2Y": Proceed to Front of this Unit, and Clean 2 Type 271-A Tubes in Crystal Oscillator, Type 700-A Boxes #1 and #2.

Wipe off Tube Glass envelopes with Rag dampened in Water, then dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass envelopes of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth. polishing Glass to High Lustre.

Procedure for "VlD" "V2D" "V3D" "V4D" "V5D": Ascertain if each of these Tubes is in its socket properly.

Continued on Next Page.

BOOK No. (7)

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

(111)

3RD TUESDAY

PAGE No.

ITEM 26.

Gently push down on Tube to "FEEL IF FILAMENT AND GRID Tube Prongs are resting against socket Prongs Properly".

Check Tension of Socket Prongs, which should be sufficient to hold Socket Prong Tightly against Tube Prong, thus providing GOOD ELECTRICAL CONNECTION. If Tension is insufficient, (as evidenced WHEN 1650 Volts is applied before or after shut down, Overheating of prongs, or variations in Tube Currents when Tube is pushed down in Socket), increase same by Lifting Socket Prong upward Slightly.

Continued on Next page.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7-)

SEC. No. (C)

PAGE No. (112)

ITEM 26.

3RD TUESDAY

CAUTION. Do not adjust tension of S cket Spring Contacts with

Transmitter Rotating Equipment "ON", use "Tube Change Switch" "D3A",

pushing same "OFF" To stop all Rotating Machinery while this adjustment

is made, or during period when Transmitter is completely shut down.

Exercise care in bending Socket Prongs, so as not to break same.

Wipe off Tube Glass Envelopes with Rag Dampened in Water, then dry off

with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelope of Tubes, apply a small quantity of "Windex" using Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth Polishing Glass to High Lustre.

- (e) "lst. Power Amplifier Unit" #3 (E): Proceed to this
 Unit Clean Tubes and Socket Positions "VIE" and "V2E".

 Procedure same as Item #8 (d) except Tubes are not removed from sockets and prongs are not inspected for overheating.
- (f) "3rd. Power Amplifier Tube Unit" #6 (H): Proceed to this Unit, Clean Tubes and Sockets Position "V7H".

Procedure is same as Item #8 (d) except tube is not removed from Socket and Pr ngs are not inspected for overheating.

Continued on Next Page.

| | PAGE No. | (113) |
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| (g) "3rd. Power Amplifier Tuning Unit" #8 (I): Proceed | | |
| to this Unit, Clean Tube and Socket Position "VII". | | |
| Procedure same as Item #8 (d) except Tube is not removed from | om Socket | |
| and Prongs are not inspected for overheating. | | |
| Book No. (1) (1) (1) (1) () | | |
| SEC No. $(F)(H)(E)(I)()$ | | |
| Page No. () () () () () | | |

BOOK No.

SEC. No.

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W O R OPERATING MANUAL

"50 KW Trans. & Ant. Equip. Maint."

End Item 26.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7 -)
SEC. No. (C)

PAGE No. (114)

4TH TUESDAY

ITEM 27.

(a) "Control Unit" #1 (A): Proceed to the Rear of this Unit, feel and at the same time inspect Condensers "Cl.lA" - "Cl.2A" - "Cl.3A" - "Cl.4A" "Cl.5A" - "Cl.6A" - C2.lA" - "C2.2A" - "C3.lA" - "C3.2A" - "C4.lA" - "C4.2A" "C5.lA" - C5.2A" and C6A" for OVERHEATING.

Feel Tops and Sides of Metal Cases for OVERHEATING.

Feel Insulating Bushings on Tops of these Condensers for OVERHEATING.

Inspect Cases and Insulator Bushings for Breakage and Oil Leakage.

(b) "lst Power Amplifier Unit" #5 (E): Proceed to Rear of this Unit, open Enclosure Door, feel and inspect Condensers "ClE" - "C2E" - "C5E" - "C6E" "C7E" and "C8E" for OVERHEATING.

Use A.C. Extension Light to locate and check Condensers.

Feel Tops and Sides and Metal Cases of Mica Condensers for OVERHEATING and Leakage of Insulating Compound.

Feel Metal End Plates and Isolantite Cases of Cornell-Dubilier Condensers for OVERHEATING and Leakage of Insulating Compound.

Observe if the Four Counter Sunk Screws in the Top End-Plates of Cornell-Dubilier Condensers are all the way in or partly unscrewed.

CAUTION: DO NOT TURN ANY OF THESE FOUR COUNTER SUNK SCREWS IN THE END PLATES
OF DUBILIER CAPACITORS, AS THIS WILL ALTER THE CAPACITY.

Report same on the "50 KW M.O.L."

Note on the "50 KW M.O.L." any Condensers that have excessively Warm or Hot Spots.

BEWARE of this "Spotty" Condition since this indicates a Capacitor "Going Bad".

With a Rag lightly dampened with Naptha, clean all Isolantite Cases of Condensers.

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, feel and at the same time, inspect Condensers "ClF" - "C2F" - "C3F" - "C4F" and "C6F" for OVERHEATING.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (115)

4TH TUESDAY

ITEM 27.

Use "Shorting Stick" and short across the End-plates (The 2 Connections) and then feel and inspect Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.1F" "C9.2F" - "C10.1F - "C10.2F" for OVERHEATING.

Procedure same as Item #27 (b).

Leave Enclosure Door Open.

(d) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.lG" - "Cl.2G" - "Cl.2G" - "Cl.3G" "Cl.4G" - "Cl.5G" - "C2.1G" - "C2.2G" - "C2.3G" - "C2.4G" - "C2.5G" - "C3G" and "C4G" for OVERHEATING.

Procedure same as Item #27 (b).

Leave Enclosure Door Open.

Use the Small Step Ladder to reach the Outside Top of Enclosure, feel and inspect Condensers "C7G" and "C8G" for OVERHEATING.

Procedure same as Item #27 (b).

(e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, feel and inspect Condensers "C2H" - "C3.1H" - "C3.2H" - "C4.1H" - "C4.2H" "C5.1H" and "C5.2H" for OVERHEATING.

Procedure same as Item #27 (b).

Use "Shorting Stick" and short across the End-plates (The 2 Connections) and then Feel and Inspect Condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" - "C8.1H" "C8.2H" - "C9.1H" - "C9.2H" for OVERHEATING.

Procedure same as Item #27 (b).

(f) "3rd Power Amplifier Tuning Unit" #7 & #8 (I): Proceed to the Rear of this Unit, open Enclosure Door, feel and inspect Condensers "Cl.1I" - "Cl.2E"

"Cl.3I" - "C2.1I" - "C2.2I" - "C2.5I" - "C3.1I" - "C3.2I" - "C3.3E" - "C4.1I" - "C4.1I" - "C4.2I" - "C4.5I" - "C10.1I" - "C10.2I" - "C11.1I" - "C11.2I" - "C12.1I" -

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (116)

4TH TUESDAY

ITEM 27.

"Cl2.21" - "Cl2.51" - "Cl2.41" - "Cl2.51" and "Cl61" for OVERHEATING.

Procedure same as Item #27 (b).

Leave Enclosure Door Open.

(g) "3rd Power Amplifier Tuning Unit" #8 (I): Proceed to the Front of this Unit, open the Metal Panel #2, feel and inspect Condensers "C17I" - "C18I" "C19I" - "C20.1I" - "C20.2I" - "C21I" for OVERHEATING.

Procedure same as Item #27 (b).

Leave Enclosure Door Open.

On the Front of this Unit, open the Metal Panel #3, feel and inspect Condensers "C7.ll" - "C7.2I" - "C13.2I" and "C13.ll" for OVERHEATING.

Procedure same as Item #27 (b).

Leave Enclosure Door Open.

(h) "Antenna Coupling Unit" #9 (J): Proceed to this Unit, open Enclosure Door, feel and inspect Condensers "Cl.lJ" - "Cl.2J" - "Cl.3J" - "C2.1J" - "C2.2J" "C2.3J" - "C3.2J" - "C3.3J" - "C4.1J" - "C4.2J" - "C4.3J" and "C4.4J" for OVERHEATING.

Procedure same as Item #27 (b).

Leave Enclosure Door Open.

(i) Units Listed Item #27 (a) to (h): Proceed to these Units listed in this sequence, use the A.C. Extension Light and tighten all Bolted Connections. In some instances, it will be found that Condensers are bolted to Support Insulators, and that these Bolts also connect Two Busses together.

In this work, exercise CARE NOT TO BREAK OR CHIP Threaded Bolt Hole in End of Stand-off Insulator, which will cause LOOSE BOLTED CONNECTIONS OF BUSSES.

Inspection will show that some of these Insulators do not have Metal Ends, but that Threaded Holes are in the Isolantite itself.

Continued to Next Page

| HEO IVE Brown a And Province Hodge H | SEC. No. (C |
|--|------------------|
| "50 KW Trans. & Ant. Equip. Maint." | PAGE No. (117 |
| ITEM 27. | 4TH TUESDAY |
| | |
| OO NOT TIGHTEN SUCH BOLTS TOO MUCH - DO NOT JERK. | |
| At the same time, feel Filament Connections of Water-Coole | d Power Amplifie |
| Tube for OVERHEATING. | |
| These Connections are normally Warm, not HOT. | |
| Book No. () () () (/) (1) (. | 1)(1) |
| Sec. No. (A) (E) (F) (G) (H) (1 | (T) |
| Page No. () () () () (|) () |
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BOOK No. (7)

End Item 27.

"50 KW Trans. & Ant. Equip. Maint."

BOCK No. (7)

SEC. No. (C)

PAGE No. (118)

4TH TUESDAY

ITEM 28.

(a) "Switch Room": Proceed to this Room and rut "OFF" Switch #2, "50 KW Distribution Oil CKT breaker" for SAFETY REASONS.

Merely Grasp Handle of the Oil Circuit Breaker and lift it up.

(b) "Control Unit" #1 (A): Proceed to the Rear of this Unit, put "OFF"

"Safety Switch" - "DlA", open hinged door, and feel Fuses "Fl.lA" - "Fl.2A"
"Fl.3A" - "F2.lA" - "F2.2A" - "F5.lA" - "F3.2A" - "F4.lA" - "F4.2A" for OVERHEATING.

Be sure to rotate Fuses in their Holders, since Burned Spots may be on

Lower Sides, or sides toward the Panel.

Fuses normally run Warm but not HOT.

Technician should be able to keep hand on fuses when checking same.

Replace any Fuse showing a burned or OVERHEATED place on Insulated Body of same. Spare Fuses are located in the "Portable Fuse and Test Unit" kept in the Main Transmitter Room and in the "Fuse Tester Rack" kept in the Basement Areaway at the foot of the Stairs to the Basement.

Fuses should be gripped tightly in Clips and Fuse Block Holders, so that OVERHEATING does not take place at these Connections.

Some Fuses are provided with Compression (Variable) Clamps, to prevent OVERHEATING and assure Full Voltage and Current throughout the Circuit.

Be sure that proper Tension is on these Clamps.

After checking these Fuses, be sure to Close Metal Door, and put "Safety Switch"
"DlA" - "ON".

(c) "Control Unit" #1 (A): While at the rear of this Unit feel Fuses
"F5A" - "F6A" - "F7A" - "F8A" - "F9A" and "F1OA" for OVERHEATING.

Procedure same as Item #28 (b).

Exercise care not to break the single socket holding each Fuse.

(d) "Oscillator-Modulator Unit" #2 (D): Proceed to the Rear of this Unit,

Continued to Next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

PAGE No. (119)

4TH TUESDAY

BOOK No.

ITEM 28.

and feel Fuse "F3D" .

Same Procedure as Item #28 (b).

Fuse is located on the Lightning Protective Device Apparatus Panel on bottom of the Unit.

(e) "17 KV Rectifier Unit" #10 (c): Proceed to this Unit and feel Fuses "F1.10" - "F1.20" for OVERHEATING.

Same Procedure as Item #28 (b).

These Fuses are located on the Metal Panel supporting "Rectifier Airblast" Relays on bottom of the Unit.

(f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and feel Fuses "FlH" - "F2H" - "F5H" - "F5H" - "F6H" for OVERHEATING.

Same Procedure as Item #5 (b) except that knife Type fuse clears Panel Sufficiently to observe any Abnormal Condition.

These fuse are located on the Bakelite Panel just above the Rear Tubes.

(g) "Basement": Proceed to the Basement and put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it UP.

(h) "Basement": While in the Basement, put "OFF" Switch "Dl.1P" - "Main Power Disconnect Panel", open Metal Door and feel Fuses "Fl.1P" - "Fl.2P" - "Fl.3P" - "F2.1P" - "F2.2P" - "F2.3P" - "F20.1P" - "F20.2P" and "F20.3P" for OVERHEATING.

Procedure same as Item #28 (b) except that Knife Type fuses clear the Panel sufficiently to observe for any Abnormal Condition.

Feel Blades and Contacts of Switch "Dl. 1P" for OVERHEATING.

Technician should be able to lay Hand on these parts, they should be Warm, not HOT.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

| BOOK No | . (| 7 |) |
|---------|------|------------|---|
| SEC. No | . (| C |) |
| PAGE No | . (1 | 2 0 |) |

4TH TUESTAY

ITEM 28.

If Blades or Contacts are too hot, tighten up Compression nuts, clean off contacts with Crocus Cloth, wipe with rag dampened in Carbon-tet and lightly coat with "3-in-1" Oil.

After checking Fuses and Switches, put Switch "Dl.1P" "ON".

(i) "Basement": While in the Basement, put "OFF" Switch "D15P" - "Motor Distribution Panel" open Metal Door and feel Fuses "F4.1P" - "F4.2P" - "F4.3P" "F5.1P" - "F5.2P" - "F5.3P" - "F7.1P" - "F7.2P" and "F7.3P" for OVERHEATING. Procedure same as Item #28 (b).

Feel Blades and contacts of Switch "DISP" for OVERHEATING.

Procedure same as Item #28 (h)

(j) "L7 KV Rectifier Switching Unit #11 (B): Proceed to the Front of this Unit and test Delta-Star Transfer Switch "DlB" for binding.

If the Switch does bind, or does not move freely when placed in the "10 KV" or "17 KV" positions, coat lightly with "3-in-1" Oil.

If the Switch still binds following this, loosen Compression Nuts and remove
Bolts and compression Washers, from the "Swingers", pulling the "Swingers" free of
rest of the Switch.

Clean the "Swinger" Contact surfaces with Crocus Cloth, wipe off with Rag dampened in Carbon-tet.

Wrap a piece of Crocus Cloth around Narrow Flat File and clean inside of Switch Contacts, then wrap Rag dampened in Carbon-tet about the File and wipe the residue from Switch Contacts.

Put Switch back together again, replace the Bolts, Compression Washers and Nuts, tightening them JUST ENOUGH TO SEE THE COMPRESSION WASHERS BEGIN TO FLATTEN.

Continued to Next Page

| WOR | BOOK No. (7 |) |
|---|-----------------|------|
| OPERATING MANUAL | SEC. No. (C |) |
| "50 KW Trans. & Ant. Equip. Maint." | PAGE No. (121 |) |
| | 4TH TUESDAY | |
| ITEM 28. | | |
| Lightly coat "Swingers" and Switch Contacts with "3-in-1" O | il and again te | st |
| For Binding. | | |
| Technician should be able to move Switch from one position | to the other fr | eely |
| and smoothly. | | |
| Wipe up all Copper dust and other Residue from floor and se | ction where Swi | tch |
| was cleaned. | | |
| Book No. (1)(2)()()(|) | |
| Sec. No. (FU) (C) () () (|) | |
| Page No. (1) (1) () () (|) | |
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End Item 28.

"50 KW Trans. & Ant. Equip. Maint."

SEC, No. (C)

PAGE No. (122)

4TH TUESDAY

BOOK No.

ITEM 29.

- (a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (b) "Basement": While in the Basement, put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

(c) "Control Unit" #1 (A): Proceed to the rear of this Unit and feel Field Coils of Relays "S2A" - "S3A" - "S4A" and "S14A" for OVERHEATING.

These Relays are located in top rear of this Unit, mounted on a Metal Sub Panel. These Relay Field Coils will normally run WARM, but not HOT.

Technician should be able to keep Hand on them.

Log any that are excessively Warm or Hot on the "50 KW M.O.L."

While at the rear of this Unit, open Door of Metal Box housing Relay "SlA"

and feel Field Coil for OVERHEATING.

Procedure same as Item #29 (c).

Close Door of Metal Box housing Relay "SlA".

While at the Rear of this Unit, Put "OFF" the Series Switch on "1650 Volt Magnetic Switch Contactor" Metal Box, Open Box and feel this Relay Contactor "S7A" Field Coil for OVERHEATING.

Procedure same as Item #29 (c).

Close Door of Metal Box, and put Series Switch "ON".

(d) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.1F" = "C9.2F" - "C10.1F" - "C10.2F", then feel Field Coils of Relays "S1F" - "S2F" - "S2F" and "S4F" for OVERHEATING.

Continued to Next Page

#50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (123)

4TH TUESDAY

ITEM 29.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher then Room Temperature.

To discharge Condensers, merely place Metal part of "Shorting Stick" across the two End-plates of these Condensers.

As each Condenser is discharged, a moderate Arc will be observed when "Shorting Stick" first touches the End-plates.

Log any Relay Field Coils that are excessively Warm or Hot, on the "50 KW M.O.L."

(e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" - "C8.1H" - "C8.2H" - "C9.1H" - "C9.2H" - then feel Field Coils of Relays "S3H" - "S4H" - "S5H" - "S6H" - "S7H" - "S8H" - "S9H" - "S10H" - "S11H" - "S12H" "S15H" and "S14H" for OVERHEATING.

Same Procedure as Item #29 (d).

(f) "17 KV Rectifier Tube Unit" #10 (C): Proceed to this Unit and feel Field Coils of Relays "S1C" - "S2C" - "S3C" - "S4C" - "S5C" - "S6C" - "S7C" - "S8C" - "S9C" - "S1C" - and "S12C" for OVERHEATING.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher then Room Temperature.

While at this Unit, open door of Metal Box housing "17 KV Rectifier Air Blast Heater Relay" - "S170" and feel Field Coil for OVERHEATING.

This Field Coil will run normally Warm not Hot.

Technician should be able to keep Hand on it.

If excessively Warm or Hot, log on the "50 KW M.O.L."

(g) "17 KV Rectifier Switching Unit" #11 (B): Proceed to this Unit and feel Solenoids of Magnetic Contactors "S4B" and "S5E" for OVERHEATING.

Solenoids of these Contactors run normally very WARM, with Temperature distributed

| OP13 | W O R RATING LIANUAL | | | BOOK No. | (| 7 |) |
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| | s. & Ant. Equ | | .+ 11 | SEC. No. | (| С |) |
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| | ITEM 29. | | | 4TH TUES | DAY | | |
| evenly around outside of Casi | ings. | | | | | | |
| Inspections should be made for | or OVERHEATIN | G, UNEVE | CMLY distri | Lbuted Te | mpera | ıtur | 'e |
| (HOT SPOTS), loose Connection | ns, and condi | tion of | Insulation | o coverin | g aro | und | l |
| Outside of Solenoids. | | | | · | _ | | |
| When Insulating Covering arou | und Solenoids | of "S48 | i ⁿ and "S51 | o ^m begins | to g | æt | bare. |
| apply cost of "BLACK INSULATI | | | | J | | • | , |
| On the Bottom of this Unit, i | Teel Field Co | ils of R | elays "S2F | B" and "S | 3Bª f | or | |
| CVERHEATING. | | | • | | | | |
| Log Any abnormal Condition ar | nd work perfo | rmed on | the "50 KT | V N.O.L. 41 | | | |
| (h) *17 KV Filter Condens | | | | | | 2 (| L): |
| Proceed to this Unit and feel | | | | | | | |
| Procedure same as Item #29 (g | | | | | | | |
| Book No. (1)(1)(| () (|) (|) (|) | | | |
| Sec. No. (S) (BA) (| () (|) (| |) | | | |
| Page No. (1) (1) (| |) (|) (|) | | | |
| <u> </u> | End Item 29. | | | | | | |

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (125)

4TH TUESDAY

ITEM 30.

- (a) "Transmitter Room": Proceed to the "High Voltage Grounding Switch and Door Interlock Mechanism" "Dl3P", remove One Key from any One of Lock Positions No. 2 to No. 5 inclusive and keep on person until Item No. 30 is completed.
- (b) "Switch Room": Proceed to this room in the Basement and put "OFF"
 Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (c) "Basement": While in the Basement, put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

 Remove the Wood "Preventer" from between Operating Handle and Overload Tripping
 Lever, then graps Handle of O.C.B. and lift it up.
- (d) "Basement": While in the Basement, put "OFF" Switch "Dl.1P" "Main Power Disconnect Panel" for SAFETY REASONS.
- (e) "Basement": While in the Basement, put "OFF" Switch "D15P" "Motor Distribution Panel" for SAFETY REASONS.
- (f) "Basement": Gather all tools needed to measure Hose Nipples and Targets for Electrolytic Disintegration.

| TOOL: | WHERE I | KEPT: | | |
|--|---------|------------|------|------------|
| 50 KW Nipple Disintegration Measuring Tool | Display | Board, | Work | Bench. |
| 12 Inch Rule | 11 | 11 | 11 | ŧī |
| Open End Wrench 1/2" & 7/16" | n | 1 1 | 11 | 21 |
| 12 Inch Monkey Wrench | n | 31 | п | 11 |
| 9 Inch Monkey Wrench | n | u | 11 | 11 |
| Small Pair of Gas Pliers | XI | 41 | 41 | es es |
| Pair of Tin Shears | ŧī | 11 | বা | 1 1 |
| 5 Gallon Water Pail | Pump Ro | oom. | | |
| Can of Wraplock | Transf | ile No. | 106. | |

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (126)

4TH TUESDAY

ITEM 30.

2 Quart Kitchen Skillet.

Kitchen.

Maintenance Tray No. 3

Bin No. 3, Spare Tube Rm

Place all Tools and equipment in the Maintenance Tray except the 5 Gallon Pail and the 2 Quart Skillet.

(g) "Pump Room": Proceed to this Room, open Drain Valve "X" and drain approximately 25 Gallons of Water from the 50 KW Distilled Water System.

Do not open Valve "X" Wide, merely open it 1 turn for 15 seconds, then close tightly.

Valve "X" is located between 50 KW Distilled Water Pumps #1 and #2.

The Above pertains to Procedure when Storage Tank is full.

When Tank is partially Empty or entirely empty, all that is necessary when removing Hose Nipples is to drain the Distilled Water back into the Tank and procedure executed.

(h) "Basement": Go out into Basement, climb Step Ladder at the Header over Pump Room Door, and close Valves "A2" - "B2" - "C2" - "D2" - "E2" - "F2". These Valves are located directly over the Pump Room Door.

These are Input and Output Valves to each Individual Hose leading from the Header to "2nd Power Amplifier Tube" Sockets "3rd Power Amplifier Front" and "3rd Power Amplifier" Rear Tube Sockets.

DO NOT TOUCH THE THROTTLE VALVES "G2" - "H2" and "I2".

(i) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, measure the Top Curved Targets in the Porcelain Pipes in Output of Tube Socket No. 2 and Input to the Tube Socket No. 1.

Use the Small Open End Wrench; twist the Hexagonal Clamping Nut Counter-clockwise, removing the Nut.

Use the Gas. Pliers and lift out the Curved Target.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

(127)

4TH TUESDAY

PAGE No.

ITEM 30.

Use the 12 Inch Rule to measure length of the Target.

Renew the Top Curved Targets when same are shortened 2 inches or more.

Refer to Print of Top Curved Target "Template" Book No. (7) Sec. No. (C)
Page No. (145).

When New, the Top Curved Targets are 5 inches Long.

Hexagonal Clamping Nuts are fitted with small Asbestos filled Copper ring Gaskets. Because of flattening of washer due to its use, it remains on the Clamping Nut; it will not fall off.

Renew these gaskets only in emergency when leaks develop.

After measuring Targets, push back into the receptacle on Metal Elbow.

Replace the Hexagonal Clamping Nut and turn clock-wise until just trifle more than hand tight.

Observe that Vertical Porcelain Pipes in these 2 positions, are fitted with Chromium plated Metal Elbows.

The Coupling Nuts on ends of Metal Elbows are fitted with regular Nipple Rubber Washers.

It is not necessary to touch these couplings, or renew these Washers each time the Targets are measured unless Leaks Develop.

(j) "2nd Power Amplifier Tube Unit" #4 (F): While at the Rear of this Unit measure the Electrolytic Disintegration of Hose Nipples in Output of Socket Position No. 2 and Input to Socket Position No. 1.

Remove the Battery Clip connection from Tube Socket Mounting Nut.

This Clip bonds "Wraplock" Loops to the Water-Cooled Tube Socket. (17 KV D.C.)

Use the 9 inch Monkey Wrench to loosen, then remove Nipple Coupling Nut.

Unscrew the Coupling Nut entirely and pull end of Hose away from the tube Socket.

Use 2 Qt. Skillet to catch small amount of water dripping from tube socket nipple.

Continued to Next Page

#50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (128)

4TH TUESDAY

ITEM 30.

Rubber hoses will remain in upright position, being held there by the Horizontal Clamping Bar directly beneath Tube Sockets.

Remove the Rubber Gasket from Coupling Nut and put in 2 quart Skillet.

Push "Disintegration Measuring Tool" into the open end of Hose and "Feel for end of Nipple" with the Hook on end of "Disintegration Measuring Tool".

In using the Tool, remember that Disintegration is uneven, so rotate the Tool to find point of Greatest Disintegration which will be point at which the Tool goes least distance into the Hose during Rotations

"Disintegration Measuring Tool" is calibrated in iches; will register amount of Electrolytic Disintegration in inches on Scale of the Tool at point even with end of the Nipple. (Not Coupling Nut.)

Renew Hose Nipple when same is shortened 2 inches or more.

Procedure in renewing Nipple is as follows:

Use the Tin Shears to cut "Wraplock" loops loose.

Remove Bonding Connection from End of Rubber Hose.

Use Gas Pliers to twist Nipple in end of Hose until Free.

Keep a twisting motion and pull the Nipple out of Hose.

Slip the Large Hexagonal Nut off the Removed Nipple, put it over a new Nipple and with the aid of the Gas Pliers and a twisting motion, insert a new Full Length Nipple in the Hose, leaving 3/4 of one inch of Nipple exposed on Hose End. (3/4 Inch of Nipple Exclusive of the Coupling Nut.)

Lay flat Bonding connection on hose end, so that 2 loops of "Wraplock" will cover it.

Cut 2 pieces of "Wraplock" 12 & 1/4 inches long.

Fold 1/2 inch of one end of each "Wraplock" strip over, slip through flat Metal Locking Loop and flatten end of the "Wraplock" strip over same.

Continued to Next Par

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 |) |
|-------|-------|------|----|---|
| SEC. | No. | (| С |) |
| PAGE | No. | . (1 | 29 |) |
| 4TH 1 | ruesi | YAC | | |

ITEM 50.

Make One turn of "Wraplock" around the Rubber Hose about 1/2 inch down from end.
"Wraplock" is passed around the hose once, then through the Loop, again around
the Hose at same point and again through the Loop.

Approximately 3/4 inch of "Wraplock" will be showing through the Flat Locking Loop.

Use the "Wraplock Tightening Tool" and twist end of "Wraplock" Strip under itself until tight.

Do not tighten too much as it will score the Rubber Hose, causing Cracks, Breaks and Buldges later on.

Tighten "Wraplock" using the Tool with steady even pull.

"Wraplock" will be tight when same bends the "Flat Metal Locking Loop" through which the Strip was passed without making a depression in the Hose.

Install a 2nd "Wraplock" loop around the Hose about 1/2 inch down from first "Wraplock" Loop.

Place new Black Rubber Gasket in Hose Nipple, laying flat against end of Nipple.

Move End of Hose to point directly below nipple on Tube Socket, turn Hose Nipple coupling Nut until it "Catches" the Threads on Sockets, then tighten Coupling Nut.

Avoid tightening too much as Gasket may be scored and will leak when Transmitter is started.

Use 9 inch Monkey Wrench and tighten 1/2 turn beyond Hand tight.

Replace Battery Clip Bonding Connection on Tube Socket Mounting Nut.

New Bruss Nipples are kept in Transfile No. 108.

New Rubber Washers for Coupling Nuts are kept in Transfile No. 103.

Enter all Data on Form "Hose Nipple Disintegrations" - Book No. (7)

Sec. No. (C) Page No. (147)

When Hose Nipple is renewed put an Asterisk in the Space, and in the "Remarks"

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (130)

4TH TUESDAY

ITEM 30.

Column write the Date and "Renewed".

When it is not necessary to renew a Hose Nipple after measuring its Electrolytic Disintegration, install a new Black Rubber Washer and screw the Nipple Coupling Nut back on Tube Socket.

Tighten the Coupling Nut with 9 inch Monkey Wrench 1/2 inch turn beyond Hand Tight.

Enter amount of Disintegration in proper Space on Form "Hose Nipple Disintegration"

Book No. (7) Sec. No. (C) Page No. (147).

When the "2nd Power Amplifier Series Loop" (Hose from Front Socket #2 Output to Rear Socket #1 Rear Input) was installed, it was not "Grounded" at mid-point. It has been found that there is No Electrolytic Disintegration in Any Targets, Nipples or Couplings in this "Series Loop".

With the aid of the A.C. Extension Light, inspect Ends of Hoses near Coupling Nuts for Buldges, Breaks and Cracks.

Inspect "Wraplock" Loops to see that Loops are tight and that Wire used to connect Loops to Tube Sockets are actually connecting Loops to terminations.

EXAMPLE OF INSPECTION AND RESULT.

beneath tube sockets.

A serious Bulding of a Water Hose at the Coupling Nut to the Tube Socket is found. Procedure same as Item No. 30 (f) (g) and (h), then add the following:

Remove the Battery Clip Connection from Tube Socket Mounting Nut.

This Clip bonds the "Wraplock" Loop to the Water-Cooled Tube Socket.

Use the 9 inch Monkey Wrench to loosen, then remove Nipple Coupling Nut.

Unscrew the Coupling Nut entirely and pull end of Hose away from the tube Socket.

Hose will remain upright, being held in position by Horizontal clamping bar

Use 2 Quart Skillet to catch small amount of Water dripping from the Tube Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (151)

4TH TUESDAY

ITEM 30.

Socket Nipple.

Remove the Rubber Gasket from Coupling Nut and put in the & Qt. Skillet.

Use the Tin Shears to cut "Wraplock" Loops loose.

Remove the Bonding Connection from End of Rubber Hose.

Use Gas Pliers to twist Nipple in end of Hose until free.

Keep a twisting motion and pull the Nipple out of Hose.

If it is extremely difficult to remove Nipple from buldged End of the Hose, take a Razor Blade or sharp knife and slit end of hose length-wise about 5 inches down from end of hose.

Cut the Slit through the Hose till Knife touches the Nipple.

Twist the Nipple free and remove it from end of Hose.

After cutting End off the Hose, loosen Thumb Nuts on Wood Clamping Bar and pull Hose up into operating position and measure clearance between the Hose and the square hole in Concrete Floor.

If the clearance is sufficient (5 Inches or more,) merely put old coupling

Nut over a new Nipple, insert Nipple into Hose-end, place Bonding Wire on hose,

install "Wraplock" Loops and replace Coupling Nut and Bonding Connection on Tube

Socket as previously outlined.

If there is not enough clearance between Hose and Concrete Ceiling to cut out bad portion and replace Nipple, procedure is as follows:

Take the "Wraplock" Bonding Clip and Coupling Nut off the Tube Socket as outlined. Remove the Washer, Nipple and Coupling Nut as outlined.

Cut off the bad postion of the Hose.

Hose will remain upright, being supported by the Wood Clamping Bars just below the Tube Socket.

Put old Coupling Nut over new Nipple.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (132

4TH TUESDAY

ITEM 30.

Install new Nipple, Bonding Connection and "Wraplock" as outlined.

Proceed to the Basement, climb up on Step Ladder with 5 Gallon Pail.

Balance yourself, hold the pail in left hand, and loosen the Nipple Coupling Nut on end of this Hose.

As soon as the Nut is loosened, water will begin to drip; have the 5 Gallon Pail ready and catch this water until this one hose is empty.

Entirely remove the Coupling Nut from Header but not from hose.

Go back to tube socket and of the Hose, loosen the Thumb Nuts on Wood Clamping
Bar, pull up the Hose, place the Coupling Nut on Tube Socket Nipple, turn Coupling
Nut until it "Catches" the Threads and tighten in place 1/2 turn beyond Hand tight.

A new piece of Hose must be cut exactly 2 inches shorter than the piece of Hose cut off; (Brass Coupling will make up the difference.)

Take 2 new Hose Nipples, put Coupling nuts over them and insert the Nipples in the ends of the Hose, with approximately 3/4 inch of nipple extending out of Hose. (Exclusive of the Coupling Nut.)

Use Special double ended Brass Coupling to connect Hose to new Repair Section. Put New Rubber Washer in ends of both Hoses, screw in the Coupling and tighten both Coupling Nuts 1/2 turn beyond hand tight.

Now put a new Rubber washer in far end of the repair section, and screw this coupling onto the Header, tightening 1/2 turn beyond hand tight.

Another type of Hose nipple is kept in stock also.

This Nipple is One piece and is fitted with Male . Threaded end.

When Used, it is placed in one end of a Hose, but a regular Nipple fitted with separate coupling Nut must be used in end of Hose to be joined to it.

Where possible, Hoses are always installed 6 to 8 inches too long, to permit cutting off ends at the tube sockets when these ends show Serious Buldging,

Continued to Next Page

¶50 KW Trans. & Ant. Equip. Maint. ™

BOOK No. (7

SEC. No. (C)

PAGE No. (133)

4TH TUESDAY

ITEM 30.

Cracking, Breaking or Leaks which cannot be stopped with new "Wraplock".

(k) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit and measure the Electrolytic Disintegration of Hose Nipples in Input to Socket position No. 1; in Output of Socket position No. 5; Input to Socket position No. 2; and Output of Socket position No. 6.

Procedure same as Item #30 (j) except add the following:

Note that the Series Lopps between Rear Sockets No. 1 Output to No. 3 Input; No. 3 Output to No. 5 Input; and Front Sockets No. 2 Output to No. 4 Input; No. 4 Output to No. 6 Input are Porcelain Pipes.

These Porcelain Pipes are fitted with Chromium Plated Elbows.

There are no Targets in these Pipes sincd both ends of Pipes are at the same potential of 17 KV at all times.

The Coupling Nuts on ends of Metal Elbows are fitted with regular Nipple Rubber Washers.

It is not necessary to touch these Couplings, or renew these Washers each time
Hose Nipples in "3rd Power Amplifier Tube Unit" are measured, unless Leaks develop.
Observe that a small square of "Insulating Fibre Board" is placed between end
of Metal Elbow of Series Porcelain pipes and the Rubber Hose where it passes
adjacent to keep from pushing sharp indentation in the Rubber Hose.

In measuring Rubber Hoses in this Unit, first remove the piece of "Insulating Fibre Board".

After replacing Hoses, replace the "Insulating Fibre Board" in positions from which they were removed.

A small amount of pressure of Rubber Hoses keeps "Insulating Fibre Boards" in place.

(1) "Basement": Proceed to Basement, Climb on Step Ladder and measure

Continued to Next Page World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (134)

4TH TUESDAY

ITEM 30.

the Electrolytic Disintegration of bottom Horizontal Target and Nipple at Output of Front Socket Position No. 2; and bottom Horizontal Target and Nipple at Input to Rear Socket Position No. 1.

Hold Skillet in left Hand to catch Water that will drip from Target Socket.

Countil Cheleges Socket.

Use small open-end wrench, twist streets and remove the Target.

Hexagonal Clamping Nut is soldered to the Target itself.

Use the 12 inch Rule to measure Length of the Target.

Renew the Bottom Straight Targets when same are shortened One Inch or More.

Refer to Print of Bottom Straight Target "Template", Book No. (7)

Sec. No. (C) Pagen No. (').

When new, the Bottom Straight Targets are 9 inches long.

Hexagonal Clmaping Nuts are fitted with small Asbestos filled Copper Ring Gaskets. Because of flattening of Washer due to its use, it remains on the Clamping Nut; it will not fall off.

Renew these Gaskets only in emergency when leaks develop.

After measuring Targets, push back into the Receptacle on Metal Elbow.

Turn Hexagonal Clamping Nut counterclocker, tightening until just trifle more than hand tight.

Observe that Vertical Porcelain Pipes are fitted with chromium plated Metal Right Angle fittings.

The coupling Nuts on end of Hoses are secured to these metal right angle fittings. If the Bottom Straight Targets SHOW NO ELECTROLYTIC DISINTEGRATION, it will not be necessary to measure the Hose Nipple.

If however, Bottom Straight Target measures shorter than specified, Electrolytic Disintegration is taking place as will be evidenced by the Shortened Target and the "Crumbly Red End" of the Target.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

| BOOK No. | (| 7 |) |
|----------|----|-----|---|
| SEC. No. | (| С |) |
| PAGE No. | (1 | .35 |) |

4TH TUESDAY

ITEM 30.

In this case also measure the Hose Nipple for Electrolytic Disintegration as outlined.

Entire Procedure same as Item No. 30 (j).

(m) "Repair Sections": Measure Hose Nipples on both ends of all Repair Sections of Rubber Hose.

Refer to Form

for list and locations of these "Repair Sections".

When "Repair Sections" are in use, "Wraplock" Loops on joining ends of Hoses and the Special Double ended Threaded Coupling are all bonded together by means of piece of wire.

Merely push the wire thru the circular ends of the "Wraplock" made by the "Wraplock Tightening Tool" then twist about the "Special Double Ended" Coupling and pass thru the looped ends of other two "Wraplock Loops".

If a piece of Rubber Hose is cut off the end of the "Series Loop" merely insert new Nipple and tighten back on the Metal Elbow of Vertical Porcelain Pipe.

Note that Hose of "Series Loop" is one piece, laying flat in the "Hose Trough".

Hose Trough is fitted with a Center Dividing Wall of Wood.

When piece of Hose is cut off the end, remaining Hose must be long enough to lay flat on Trough at the extreme end, not be held up in top of dividing Wall of wood. This will shorten the Hose too much and place it too close to Concrete Ceiling. In this case a New Piece of Hose must be cut and inserted as a "Repair Section". Procedure same as Item #30 (j).

(n) Return 50 KW Transmitter Distilled Water System to Normal and test for :
Leaks as follows:

Inform all Technicians that 50 KW Transmitter Rotating Machinery is about to be started to test Distilled Water System for Leaks before placing any Switches "ON".

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (136)

4TH TUESDAY

ITEM 30.

All Technicians doing Maintenance Work requiring Switches to be "OFF" will at once stop such work.

"Basement": Proceed to the Basement, climb Step Ladder at the Header over the Pump Room Door, and open Valves "A2" - "B2" - "C2" - "D2" - "E2" and "F2".

These Valves are located directly over the Pump Room Door.

DO NOT TOUCH THE THROTTLE VALVES "G2" - "H2" and "I2".

"Switch Room": Proceed to this Room in the Basement and put on "ON" Switch #2, "50 KW Distribution Oil CKT Breaker".

Merely grasp the Handle of the Oil Circuit Breaker and push it down firmly until "Latched in place".

"Basement": While in the Basement, put "ON" Switch "DlP" -"Master 480 Volt
Oil Circuit Breaker".

Merely Grasp the Handle of the Oil Circuit Breaker and push it firmly down until "Latched in place".

Place the Wood "Preventer" between the Operating Handle and Overload Tripping Lever.

"Basement": While in the Basement, put "ON" Switch "Dl.1P" - "Main Power"

"Basement": While in the Basement, put "ON" Switch "D15P" - "Motor Distribution Panel".

"Transmitter Room:" Proceed to the Transmitter Room, enter the 50 KW Transmitter Enclosure, and put "ON" - "Rectox" 115 volt A.C. Power Supply Switch.

"Pump Room": One Technician to go to the Pump Room and "Stand-by" to look for Leaks.

If there are any Leaks in the "Pump Room" or out in the Basement during the process of refilling the 50 KW Transmitter Distilled Water System, this Technician will immediately shut off Switch "DlOP" located on the Wall in the Pump Room.

Continued to Next Page

Disconnect Panel".

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (137)

4TH TUESDAY

ITEM 30.

This will stop the 50 KW Transmitter Filler Pump

"Measuring Equipment Room": Proceed to this Room, push "ON" Switch "DllP".

This Switch is located on the Rear Wall just to the right of the "5 KW Distilled Water System Expansion Tank",

A gurgling noise in the Expansion Tank will indicate that Water is being pumped into the System by the Filler Pump, located in the Basement Pump Room.

Continue to operate this Pump until Water in the "50 KW Distilled Water Exap Expansion Tank" is even with "Water Level" mark.

If Water should leak out of the Air Release Valve ______during the time of filling the System, GENTLY TAP it with Hammer to properly seat the Valve.

To prevent Water from leaking out of the Air Release Valve ______ in the Pump Room, because of Air in the Hose that was repaired, or improper seating of Air Release Valve _____ when filling the system, proceed in the following manner:

First, open Valves at the Header of Hoses not worked on, Start the Transmitter as outlined in Item #30 (n) Paragraph "Control Unit" #1 (A) and after Distilled Water is circulating (Air Release Valve ______is properly seated if IT DOES NOT LEAK) open Valves at the Header of the Repaired Section.

"Control Unit" #1 (A): Proceed to the Front of this Unit turn "Filament Generator Rheostat" - "R16A" all the way to minimum (Clockwise).

Push "ON" - "D2A" - "Master Control Start" Button.

Look through the front windows of the "2nd Power Amplifier Tube Unit" and "3rd Power Amplifier Tube Unit" for leaks at all Hose Coupling Nuts.

If any leaks are found, quickly go inside 50 KW Transmitter and push "OFF" "D5A" - "Tube Change Switch".

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (138)

4TH TUESDAY

ITEM 30.

This will stop (All Rotating Machinery) Distilled Water Circulating Pump. First expedient is to tighten coupling nut, etc., at point where leak is. If unable to stop a leak by tightening a coupling nut, a new Rubber Washer must be installed.

In any case it is necessary to drain some of the Water out of the System and take connection loose, then install Washer, and put Coupling back and again test for leaks.

After assuring yourself that no leaks are present, go to the "Measuring Equipment Room" and again put "ON" Switch "DllP" to bring Level of Water in the 50 KW Transmitter Distilled Water Expansion Tank to Correct Level Mark.

It will be necessary to repeat this 3 or 4 times during the 15 minute that Rotating Machinery is operating in order to test for Leaks and properly Fill the System.

Continue to add Water to the System until Water Level in Expansion Tank remains constant.

Use A.C. Extension Light to inspect for leaks at Tube Sockets.

Normal Pressures are:

Distilled Water Pump Output Pressure: Minimum 45 Lbs., Maximum 100 Lbs.

Trans. Room Dist. Water Pressure Minimum 38 " Maximum 55 "

"2nd P.A. Differential Pressure" Minimum 13 " Maximum 21 "

"3rd P.A. Front Differential Pressure"Minimum 13 " Haximum 21 "

"3rd P.A. Rear Differential Pressure" Minimum 13 " Maximum 21 "

If all Differential Pressures are wrong, adjust by means of Main Throttle Valve "D" located in the Pump Room.

Turn Valve Handle Clockwise to lower Pressure and counter-clockwise to raise Pressure.

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

PAGE No. (139)

4TH TUESDAY

BOOK No.

ITEM 30.

If one or more Differential Pressures should be wrong, adjust the Vertical Throttle Valve for the Section at the Header over the Pump Room.

"Control Unit" #1 (A): As soon as all is checked as normal, proceed to the front of this Unit, and push "OFF" - "D2A" - "Master Control Stop" Button.

"RIGA" - "Filament Generator Rheostat" remains adjusted to minimum.

(o) "Pump Room": Maintain Level of Water in Distilled Water Storage
Tank Full to the Top before going off Watch by filling from 5 Gallon Bottles.
Put the "Still" - "ON" and proceed to have all Bottles refilled.

50 KW TRANSMITTER DISTILLED WATER HOSES AND NIPPLES - PORCELAIN PIPES:

All ODD numbered Nipples are INPUTS - All EVEN numbered Nipples are OUTPUTS.

Inputs are in the Center of the Water Jacket.

Outputs are on the edge of the Water Jacket.

All Nipples and Wraplock are bonded to the Equipment to which they are attached, except at the Header.

-- Indicates Hose Nipple.

- Indicates Venturi Tube.

- - Indicates Porcelain Pipe.

X -- Indicates Throttle Valve.

Porcelain Pipes connecting Nipples 7 to 23 and 6 to 24 are mounted vertically, and are fitted with Standard Top Curved Diagonal Targets and Bottom Horizontal Targets; One Top and One Bottom Target to each Pipe.

Porcelain Pipes between 3rd P.A. Jackets 1 to 3 - 3 to 5 - 2 to 4 and 4 to 6 are not fitted with any Targets at all.

When measuring Nipples and Targets, enter Date, Signature and amount of Electrolytic Disintegration in Inches.

#50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (140)

4TH TUESDAY

ITEM 30.

METHOD OF CALCULATING RATE OF WATER FLOW:

- G Equals Gallons of Water per Minute.
- K Equals Venturi Tube Constant.
- P Equals Differential Tube Constant.

FORMULA: G = K Square Root of P.

Venturi Tube Constants: 2nd P.A. Unit - K is 3.804

3rd P.A. Unit - K is 6.192

Main - K is 3.23

LENGTHS OF RUBBER HOSE - OTHER DATA - DISTILLED WATER SYSTEM 50 KW TRANSMITTER:

On Monday and Tuesday, October 6 and 7, 1941, all New Rubber Hoses were installed in the 50 KW Transmitter, total length of Rubber Hose 231 Feet 2 Inches.

Rubber Hose is White Shawmut Brewer's Hose P-802, 4 Ply, manufactured by the United States Rubber Company.

Complete Renewal Time 6 Hours.

Repair Section Nipples 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21 and 22 have been eliminated.

HOSE LENGTHS:

2nd P.A. Front Input, from Header to Tube Socket Input Nipple 32 Ft. 10 Inches.

2nd P.A. Front Output, from Tube Socket position #2 to Input of Tube Socket #1, known as Series Loop, 47 Ft. 3 Inches.

Series Loop connects to both 51 Inch Vertical Porcelain Pipe Assemblies below the Tube Sockets.

2nd P.A. Rear Output, from Header to Tube Socket Output Nipple 31 Ft. 10 Inches.

2nd P.A. Rear Output, from Header to Leakage Current Meter Metal Insert $9\frac{1}{2}$ Inches.

3rd P.A. Front Input, from Header to Tube Socket Input Nipple 28 Ft. 32 Inches.

3rd P.A. Front Output, from Header to Tube Socket Output Nipple 29 Feet.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

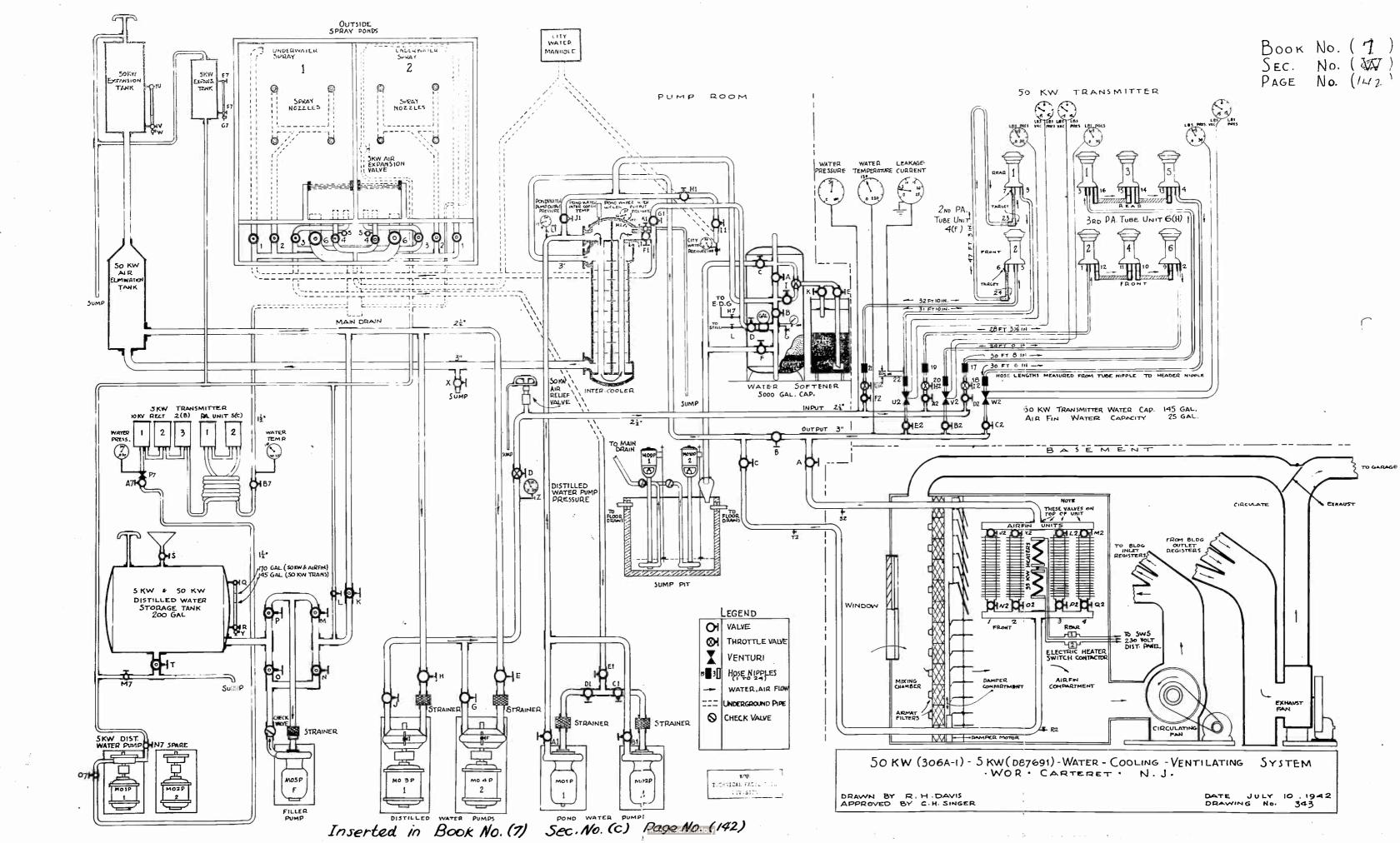
PAGE No. (141)

4TH TUESDAY

ITEM 30.

3rd P.A. Rear Input, from Header to Tube Socket Input Nipple 30 Ft. 8 Inches. 3rd P.A. Rear Output, from Header to Tube Socket Output Nipple 30 Ft. 6 Inches. NOTE: If it should be necessary to replace Porcelain Pipes between sockets of 3rd P.A., cut Rubber Hose to exactly 2 Ft. and fit regular Nipples to each end. If it should be necessary to replace Porcelain Pipes in 2nd P.A., cut Rubber Hose to same length of Porcelain Pipe Assemblies, i.e., 51 inches, fit regular Nipples to each end.

Regular Nipples and Coupling Nuts are "KS-6432".



"50 KW Trans, & Ant, Equip. Maint."

"50 KW (506A-1) Water Cooling System."

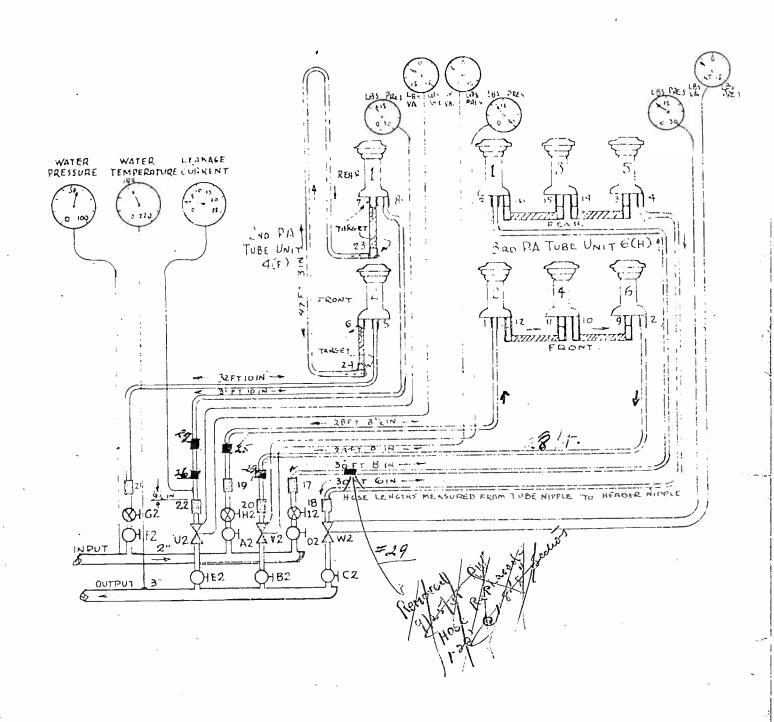
ITEM 50.

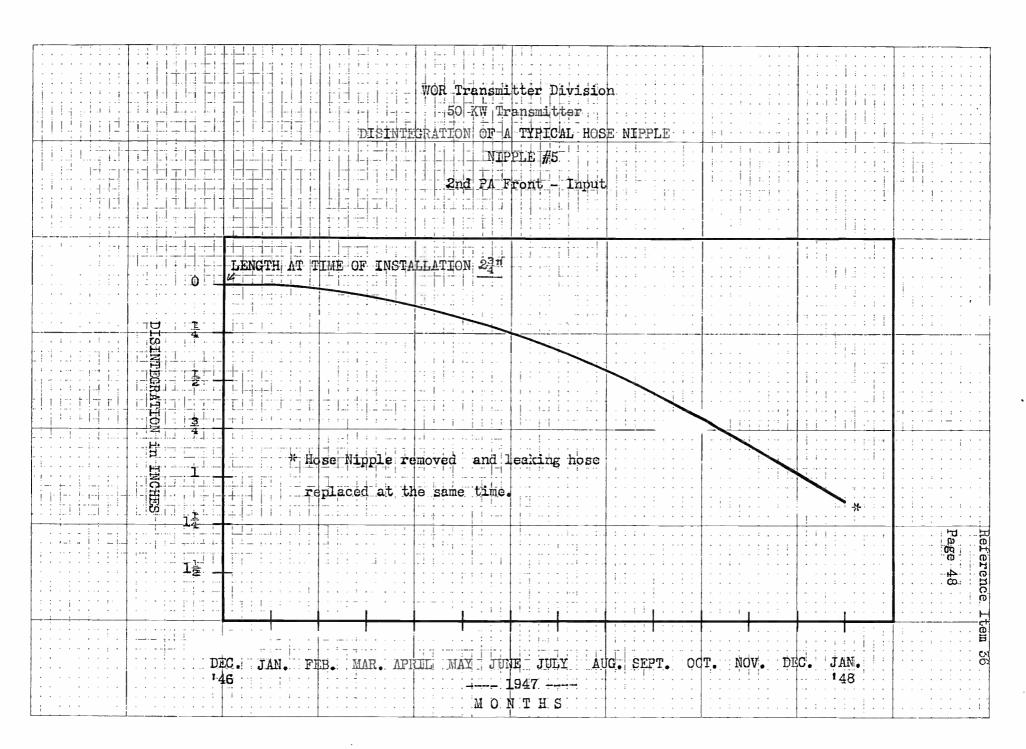
BOOK No. (7

SEC, No. (C

PAGE No. (143)

4TH TUESDAY





WOR Transmitter Division 50 KW Transmitter DISINTEGRATION OF A TYPICAL HOSE NIPPLE NIPPLE #5

2nd PA Front - Input

| | 1ដ្ឋ | |
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| ט | 1 <u>‡</u> i | |
| דשכעבה | | replaced at the same time. |
| T T | 1 | * Hose Nipple removed and leaking hose |
| TOT T | 4. | |
| DTRINGERS ATOM | ī S | |
| חומו | 1. 4 | |
| | 0 | LENGTH AT TIME OF INSTALLATION $\frac{23}{4}$ " |

Reference Item 36

JAN.

*

DEC. JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

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c

"List of Repair Sections"

| BOOK | No. | (| 7 |) |
|------|-----|---|---|---|
| SEC. | Non | (| O |) |

PAGE No. (1/4)
YEAR

| DATE INSTALLED | HIPPLE NO'S | Location and Description of Repair Section |
|-------------------|--------------------|--|
| FEB 27 1945 | Same | Mew pose length of which is 30'6" installed in 3rd PA Rear with new nipple at # 4 4# 18 RW-RS-(FG) |
| June 19 | 421 | Repair section of 26" length installed, at nipple #21, 2nd P.A. input header |
| 5 ept 3.6 | #3 60. #17 HOOD | New Hose 3rd PA +1 Rear. & Heador. |
| Oct 1 | #1 | New Hose 3RD PA Front Input |
| 1945 | 25 | New Hore 3RD PA Front Input 28 Feet 3/2 Long. AL-5G-GS |
| J4N.25 | #8 \$ | New Hose 2 ND PA Output (Rear) |
| 1946. | 22 | 31 teet 10" Long. FN-AL-FG |
| May 14, | #5to | New Hose 2nd (PA Injout (FRONT) |
| 1946 | 21 | New Hose 2nd (PA Injout (FRONT) 3.2 Feet 10" Long. FB-JG-AJ |
| AUG 6, | # 23 70 | NEW HOSE AND P.A. LOOP |
| 1946 | 24 | 47 FEET 3" LONE FE-RQ-AM |
| Oct 1. | 4 to | 24" Repair Sertine installed at |
| 1946' | 18 | repple \$18.300 PA Output Header AL-FG. |
| Nov 20, | #5 to | 36" Repair Section installed at Nipple # 21 - 2 ND PA Input Hender. AL-RW |
| 1946 | 21 | hipple # 21 - L MPA Tupout Hender. AL-XW |
| | | |
| MAR. 13 | #1 | New Hose 3rd PA Front Duput 28'31/2" |
| 1947 | 25 | Long. AL-FG |
| MAR 14 | 20 | Remarkage sepain section 3 and PA Front out. |
| 1947 | 28 | lingth 21/2: To increase lingth of kose to |
| MAR 14 | 12, | Replaced repair section to increase overall length of love to normal - FG |
| 1947 | 29 | CONT'D NEXT PAGE |

"List of Ropair Sections"

| BOOK | No. | (| ;n | ř |
|------|-----|---|-----|---|
| SEO. | No. | (| 0 | Ì |
| PAGE | Ho. | { | 100 |) |
| YEAR | | | | |

| DATE INSTALLED | NO'S | Location and Description of Repair Section |
|-----------------------------|----------------|---|
| Opil | 2 t | New hose installed 3RD PA Front authors 1 28'3" Long. AL-FG. |
| 1947 Juby 157 1947 | #5# 21 | 94" Repair Action installed at. might 21, 2 rd (A mont Hender. AL-AJ |
| Feb.15 | #86 | New Hose 2nd PA autput (Rear) |
| 1948 | #22 | 31 fect 10" long, RW-AL. |
| 0 15/42 | 3-17 | han it is the first of |
| A . 418 | 8-234 | The thing and the suffer to a fine |
| 1.498 | 5-27 | West the and PA incit-= 7 |
| Nov 9 | 2.26 | New More 5th PA Frest Entert 125 / Cont. |
| 7948 | 1-19 | |
| May 12 1949 | 5-21 | New Hore 2nd PA inject (2 pieces) |
| June 5, | #21 | 24" repair section installed at 2nd PA Imput header, ripple #21- |
| 12 / 1/ | Jerpage Curent | PA Output hosen in talled in Ind. |
| 11,1951 | Pipe | Mosen comments to Jeogrape Comment Proper |
| 13,1951 | 林红 | F.A. Input header nigsple # 21 H.S. + QK |
| AUG-16 | 3-17 | 3'6" repair section motelled at 3125 PA impute bender AL-JK |
| 1951 1951 | 8-27 | 7' repair pertion installed at 2nd PA out but headen. GM-LL |
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| Star Here 318 - 80 August 30'8" SFN SATE 2018" 11 11 11 11 11 11 11 11 11 11 11 11 11 | 81+11 | 1281 101 YAM |
| News Hose 318 Par ingut 30'8" GFUZ | 2115 | |
| (FF)"+91.0"+91." (EF) | 1118: | 2561 |
| how-thos 2ml AA bold 32'10" (ER) | 5+18 | 'ei how |
| 47,3" - FN-AJ-EF | 48 | 656101 |
| New horn a with Foot | 7 8 8 | YAM, |
| 34/0A Fers, 9 - 2-5V 91/1 Setter - Deces commons | 11 | L561'E -4w |
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| door it was seen was | ナピゼ | Leaw |
| Now how 3rd Poll Frank Broke - 2-8' (B) | 0671 | |
| New- Low 3-2 PA Frank grand -28'3'1" | 1,19.1 | Hub. |
| Now hose 3nd 1211 Olem Bulgare -30'6" Per | 3124 | 156/36 |
| Now how 3nd PA Ofen Jugars - 30'8" | 6178 | .नगर्म |
| 1 4 10 18 - Supplied AG A-G -2011 10 14 4 | 1128 | 195/20 |
| Nov 100 1 9 9 9 9 - 31, 10" | 5416 | -971 H |
| 1 3 - Ko/IR | 4-6 | 156/Lt |
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BOOK BOS (4)

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"Mint of Repair Sections"

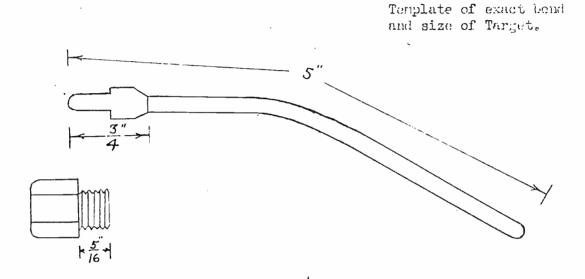
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| DATE INSTALLED | HIPPLE HO'S | Location and Description of Repair Section |
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WOR OPERATING MANUAL SEC. No. (C) "50 KW Trans. & Ant. Equip. Maint." PAGE No. (145) "Top Curved Diagonal Targets Lengths" 4TH TUESDAY

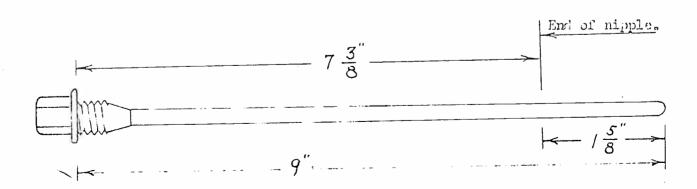
ITEM 30

Below is a diagram and measurements of the Top Curved Diagonal Targets installed in all porcelain pipes this date. Note that targets are in E parts, the target itself and the clamping nut.



"Bottom Horizontal Target Lengths."

Actual length of the #6 tinned copper wire making up the target for bottom positions is 9 and 1/4 inches which when set in the screw fitting will measure 9 inches from end of wire to flat end of screw fitting where same rests against the fitting on end of pipe. This permits 1 and 5/8 inches of target wire extending beyond end of nipple. Actual length of trass nipple with its rubber washer is 3 and 5/4 inches.



"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

PAGE No. (146)

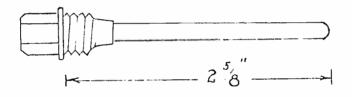
"Top Diagonal Target Lengths"

4TH TUESDAY

BOOK No.

ITEM 30

Actual length of the $\neq 6$ timed copper wire making up the target for the top Diagonal politions is 2 and 7/4 inches, which when set in the screw fitting will measure 2 and 5/8 inches from end of wire to flat end of screw fitting where same rests against the fitting on pipe.



Discontinue use except in case of Emergency 1/20/40 Use "Top Curved Diagonal Target" in Top Position.

(1)

"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintergration"

BOOK No. (7)

SEC. No. (C)

PAGE No. (147)

4TH TUESDAY

YEAR 1956

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"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintergration"

BOOK No. (7)

SEC. No. (C)

PAGE No. (147)

4TH TUESDAY

ITEM 30

YEAR 1957

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"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintegration"

SEC. No. (C)

BOOK No. (7

PAGE No. (147)

4TH TUESDAY

ITEM 30

YEAR /958

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"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintegration"

SEC. No. (C)

PAGE No. (147)

4TH TUESDAY

BOOK No. (

ITEM 30

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"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintegration"

PAGE No.

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4TH TUESDAY

BOOK No. (7)

ITEM 30

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"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintegration"

ITEM 30

BOOK No. (7)

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4TH TUESDAY

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"50 KW Trans. & Ant. Equip. Maint."

"Hose Nipple Disintegration"

| SEC. No. (C | • |
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BOOK No. (7

PAGE No. (147)

4TH TUESDAY

ITEM 30

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"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (148

4TH TUESDAY

ITEM 31.

- (a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (b) "Basement": While in the Basement, put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

- (c) "Basement": While in the Basement, put "OFF" Switch "Dl.lP"
 "Main Power Disconnect Panel" for SAFETY REASONS.
- (d) "Basement": While in the Basement, put "OFF" Switch "D15P"
 "Motor Distribution Panel" for SAFETY REASONS.
- (e) "Control Unit" #1 (A): Proceed to the rear of this Unit, and put "OFF" "Safety Switch" "DlA" for SAFETY REASONS.
- (f) Proceed to the Basement, climb up on tall Step Ladder, clean Distilled Water Hose Troughs, Hoses and Insulators.

Use a Rag dipped in VERY SMALL AMOUNT OF KEROSENE, climb on Step Ladder wipe off the sides and bottoms of all wood Hose Troughs.

Clean out insides of Hose troughs with Vacuum Cleaner with Special Nozzle.

If Vacuum Cleaner does not properly clean Inside of Hose Troughs because of Guminess, etc., clean them by raising Hoses and wiping out with Rag dipped in Naptha.

Use A.C. Extension Light and check all Hose Nipples for Water Leaks.

If any Hose Nipples at Repair Sections show evidences of leaking, Distilled Water must be removed from Hose, new Rubber Gasket installed, coupling Nuts Tightened, then Water replaced in System per Book No. (7) Sec. No. (C) Item No. 30.

#50 KW Trans. & Ant. Equip. Maint."

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4TH TUESDAY

ITEM 31.

Carefully inspect entire length of Water Hoses for pin hole leaks.

These cause high voltage arcing between leaking places and Wood Hose Trough base, burning the Hose Trough and damaging the hose.

Careful performance of this Item will prevent Time Off the Air due to defective Hose.

Wipe off all Isolantite Stand-off Insulators with rag dipped in Naptha.

- (g) "Basement": While in the Basement touch up with aluminum where needed, on Metal End Plates of Isolantite Stand-off Insulators supporting Hose Troughs.
- (h) "Engine Driven Generator Room": Proceed to this room in the Basement clean all Single (Main), and Double Concentric Transmission Lines and Junction Boxes on Transmission Lines.

Use the Tall Step Ladder to reach Concentric Transmission Lines. Wipe Lines and Junction Boxes off with soft Clean Cloth.

(i) "Basement": Proceed out into the Basement, wipe off Insulators and Wood covering of 17 KV D.C. Buss.

Stand on tall Step Ladder and wipe off Insulators with a rag dampened in Carbon-tet.

Stand on Step Ladder and wipe off Wood Covering of 17 KV. Buss from Transformer

Vault wall to Opening in 3rd P.A. Tube Unit, with dry cloth.

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End Item 31.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (150)

4TH TUESDAY

ITEM 32.

- (a) "Transmitter Room": Proceed to the "High Voltage Grounding Switch and Door Interlock Mechanism" "Dl3P", remove one Key from any ONE of Lock Positions No. 2 to No. 5 inclusive and keep on person until Item No. 32 is completed.
- (b) "Switch Room": Proceed to this room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (c) "Basement": While in the Basement, put "OFF" Switch "DlP"
 "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

- (d) "Basement": While in the Basement, put "OFF" Switch "Dl.lp"
 "Main Power Disconnect Panel" for SAFETY REASONS.
- (e) "Basement": While in the Basement, put"OFF" Switch "D15P"
 "Motor Distribution Panel" for SAFETY REASONS.
- (f) "Basement": Gather Tools and cleaning equipment needed for performance of this Maintenance Item.

TOOL:

WHERE KEPT

Maintenance Tray No. 1

Bin No. 3, Spare Tube Room.

Supply of Cleaning Rags

Storage Room.

9 Foot Step Ladder.

Switch Room.

115 Volt A.C. Extension Light.

Basement.

Vacuum Cleaner.

Basement.

(g) "Basement": Proceed to the Basement, climb up on the Step Ladder, Inspect Inside and Outside of "Square Ducts", then thoroughly clean Outside. Connect the 115 Volt A.C. Extension Light Plug into a convenience Outlet on Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

| BOOK No. | (-7 | ') |
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| SEC. No. | (0 | ;) |
| PAGE No. | (151 |) |

(151)

4TH TUESDAY

ITEM 32.

Basement Wall.

Place Step Ladder under Ducts over the 20 Volt Filament Motor-Generators. Climb up on Ladder and open the front Hinged sides of Each Duct, beginning on top Duct.

Side nearest the Transformer Vault Wall is the Hinged Side.

Lift up the Side and inspect Wires and Cables inside for signs of Fraying. or deterioration of Insulation.

Use Maintenance Brush or Brush Nozzle on the Vacuum Cleaner to clean Cables and insides of Duct.

There are 3 of these "Square D Ducts" extending from directly above the 20 Volt Motor-Generators to the Wall adjacent to the 300 Volt Bias Motor-Generators. After inspecting all in One Duct within Reach, close the Duct and Wipe off Top, Bottom and Sides of that Duct, with Rag dipped in Naptha.

Get down off the Ladder, move it to new position, again climb up, open up the same Duct, inspect and clean within the Duct, close it and clean outside. Repeat this process until all three Ducts are thoroughly inspected and cleaned, doing one Duct at a time.

Cover all frayed wires or breaks in insulation with Friction Tape, then apply .coat of Black Insulating Varnish over the Tape to keep it from drying out. Repair any connections found to be wroken or about to break.

Never jerk on wires.

Enter all Abnormal conditions observed and any repairs made on the Reverse of the "50 KW M.O.L."

Also include this information on Routine Report to Supervisor.

Following Inspections and Cleaning Work, close Covers of all "Square D Ducts" then remove Step Ladder from position under the Ducts, replacing same in the

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End Item 32.

BOOK No. (7)

SEC. No. (C)

"50 KW Trans. & Ant. Equip. Maint."

PAGE No. (153)

ITEM 33.

4TH TUESDAY

(a) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to this Unit and clean Rear and Front Tubes "VIF" and "V2F" respectively.

Wipe off the Metal parts with a Rag dampened in Carbon-tet.

Wipe off Glass envelope of Tubes, using Clean Cloth dampened with Water, Then wipe off with Clean Dry Cloth.

If this is insufficient to clean the Glass envelope of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Glass to High Lustre.

When Transmitter is started, observe the condition of the Glass and if Lint is present, Clean off with Clean Dry Cloth.

If this is not the remedy, use Skin of Hand, which will attract Lint, since it discharges the Static Electricity on Glass, originally accumulated from Dry Cloth. The small amount of remaining Lint may be blown off the Glass.

Do Not Wear a Ring while cleaning or polishing the Power Amplifier Tubes.

Always be sure to take a Clean New Cloth when Cleaning or polishing Power

Amplifier Tubes:

- (b) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and clean rear Tubes "V1H" "V3H" "V5H" and Front Tubes "V2H" "V4H" "V6H". Procedure same as Item 8 (a).
- (c) "Control Unit" #1 (A): Proceed to this Unit and clean 1650 Volt Rectifier Tubes and sockets positions #1 to #6 inclusive.

Wipe off Tube Glass envelopes with a Rag Dampened in Water, then dry off with Clean Dry Cloth.

BOOK No. (7)

"50 KW Trans. & Ant. Equip Maint.

SEC. No. (C)

PAGE No. (154)

4TH TUESDAY

ITEM 33.

If this is insufficient to clean the glass envelope of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle. Wipe off with Clean Dry Rag, polishing Glass to High Lustre. Wipe off the Bakelite Socket with Clean Dry Cloth.

(d) "Oscillator-Modulator Unit #2 (D): Proceed to this Unit,
Clean Tubes and Sockets Positions "Vly" "V2Y" "V1D" "V2D" "V3D" "V4D"
"V5D".

Procedure for "VIY" and "V2Y": Proceed to Front of this Unit, and Clean 2 Type 271-A Tubes in Crystal Oscillator, Type 700-A Boxes #1 and #2.

Wipe off Tube Glass envelopes with Rag dampened in Water, then dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelopes of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth, polishing Flass to High Lustre.

Procedure for "VID" "V2D" "V3D" "V4D" "V5D": Ascertain if each of these Tubes is in its socket properly.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. ()

SEC. No. (C)

PAGE No. (155)

4TH TUESDAY

ITEM 33.

Gently push down on Tube to "FEEL IF FILAMENT AND GRIS Tube Prongs are resting against socket Prongs Properly".

Check Tension of Socket Frongs, which should be sufficient to hold Socket
Prong tightly against Tube Pro g, thu providing GOOD ELECTRICAL CONNECTION.

If Tension is insufficient (as evidenced WHEN 1650 VOLTS IS APPLIED DEFORE

OR AFTER SHUT DOWN, Overheating of prongs, or variations in Tube Currents
when tube is pushed down in Socket), increase same by Lifting Socket Prong upward
Slightly.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (156)

4TH TUESDAY

ITEM 33.

CAUTION: Do not adjust tension of Socket Springs Contacts with Transmitter Rotating Equipment "ON", use "Tube Change Switch" "D3A", pushing same "OFF" To stop all Rotating Machinery while this adjustment is made, or during period when Transmitter is completely shut down. Wipe off tube Glass Envelopes with Rag dampened in Water, then dry off with Clean dry Cloth.

If this is insufficient to clean the Glass Envelope of Tubes, apply a small quantity of "Windex" using Spray Nozzle on the Bottle.

Wipe off with clean dry Cloth Polishing Glass to High Lustre.

- (e) "1st. Power Amplifier Unit" #3 (E): Proceed to this
 Unit Clean Tubes and Socket Positions "V1E" and "V2E".

 Procedure same as Item #8 (d) except Tubes are not removed from sockets
 and prongs are not inspected for overheating.
- (f) "3rd. Power Amplifier Tube Unit" #6 (H): Proceed to this Unit, Clean Tubes and Sockets Position "V7H".

Procedure is same as Item #8 (d) except Tube is not removed from Socket and Prongs are not inspected for overheating.

OPERATING MANUAL SEC. No. (c)"50 KW Trans. & Ant. Equip. Maint. PAGE No. -(157)4TH TUESDAY LTE: 55. "End Power Amplifier Tuning Unit" F8 (I): Proceed (g) to this unit, Clean Tube and bocket Polition "VII". Procedure same as Item #8 (d) except Tube is not removed from Socket and Prongs are not inspected for overheating. Book No. () Sec. 110. (F) (H! (A) (E) (Page No. () () (

End Item 8.

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BOOK No. (7)

450 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C

PAGE No. (158)

5TH TUESDAY

ITEM 34.

(a) "Control Unit" (a #1 (A): Proceed to the Rear of this Unit. Feel and at the same time inspect Condensers "Cl.lA" - "Cl.2A" - "Cl.3A" - "Cl.4A" "Cl.5A" - "Cl.6A" - "C2.lA" - "C2.2A" - "C3.lA" - "C3.2A" - "C4.lA" - "C4.2A" "C5.lA" - "C5.2A" and "C6A" for OVERHEATING.

Feel Tops and Sides of Metal Cases for OVERHEATING.

Feel Insulating Bushings on Tops of These Condensers for OVERHEATING.

Inspect Cases and Insulator Bushings for Breakage and Oil Leakage.

(b) "lst Power Amplifier Unit" #3 (E): Proceed to the Rear of this Unit; open Enclosure Door; feel and inspect Condensers ClE" - "C2E" - "C5E" - "C6E" "C7E" - "C8E" for OVERHEATING.

Use A.C. Extension Light to locate and check Condensers.

Feel tops and Sides of Metal Cases of Mica Condensers for OVERHEATING and LEAKAGE of Insulating Compound.

Feel Metal end-plates and Isolantite Cases of Cornell-Dubilier Condensers for OVERHEATING and Leakage of Insulating Compound.

Observe if the Four Counter-sunk Screws in the Top End-plates of Cornell-Dubilier Condensers are all the way in or partly unscrewed.

CAUTION: DO NOT TURN ANY OF THESE FOUR COUNTER SUNK SCREWS IN THE END PLATES

OF DUBILIER CAPACITORS, AS THIS WILL ALTER THE CAPACITY.

Report same on the "50 KW M.O.L."

Note on the "50 KW M.O.L." any Condensers that have excessively Warm or Hot Spots.

BEWARE of this "Spotty" Condition since this indicates a Capacitor "Going Bad."

With a Rag lightly dampened with Naptha, clean all Isolantite Cases of Condensers.

(c) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, feel and at the same time, inspect Condensers "ClF" - "C2F" - "C3F" - "C4F" and "C6F" for OVERHEATING.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (159)

5TH TUESDAY

ITEM 34.

Procedure same Irem #34 (b).

Use Shorting Stick and short across the End-Plates (the 2 connections), and then feel and inspect Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.1F" - "C9.2F" - "C10.1F" and "C10.2F" for OVERHEATING.

Procedure same as Item #34 (b).

Leave Enclosure Door 'Open.

(d) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the Rear of this Unit, open Enclosure Door; Feel and inspect Condensers "Cl.1G" - "Cl.2G" - "Cl.3G" "Cl.4G" - "Cl.5G" - "C2.1G" - "C2.2G" - "C2.3G" - "C2.4G" - "C2.5G" - "C3G" and "C4G" for OVERHEATING.

Procedure same as Item #34 (b).

Leave Enclosure Door Open.

Use the Small Step Ladder to reach the Outside Top of Enclosure, feel and inspect Condensers "C7G" and "C8G" for OVERHEATING.

Procedure same as Item #34 (b).

(e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, feel and inspect Condensers "C2H" - "C3.1H" - "C5.2H" - "C4.2H" - "C4.2H" - "C5.1H" and "C5.2H" for OVERHEATING.

Procedure same as Item #34 (b).

Use "Shorting Stick" and short across the End_Plates (the 2 connections) and then feel and inspect Condensers "C6.1H" - "C6.2H" - "C7.1H" - "C7.2H" - "C8.1H" - "C8.2H" - "C9.1H" and "C9.2H" for OVERHEATING.

Procedure same as Item #34 (b).

(f) "3rd Power Amplifier Tuning Unit" #7 & #8 (I): Proceed to the Rear of this Unit, open Enclosure Door; feel and inspect Condensers "Cl.11" - "Cl.21" - "Cl.31" - "C2.11" - "C2.21" - "C2.31" - "C3.11" - "C3.21" - "C3.31" - "C4.11"

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

.

BOOK No. (7)

SEC. No. (C)

PAGE No. (160)

5TH TUESDAY

ITEM 34.

"C4.2I" - "C4.3I" - "C10.1I" - "C10.2I" - "C11.1I" - "C11.2I" - "C12.3I" - "C12.4I" - "C12.5I" and "C16I" for OVERHEATING.

Procedure same as Item #34 (b).

(g) "3rd Power Amplifier Tuning Unit" #8 (I): Proceed to the Front of this Unit, open the Metal Panel #2, feel and inspect Condensers "C17I" - "C18I" "C19I" - "C20.1I" - "C20.2I" - "C21I" for OVERHEATING.

Procedure same as Item #34 (b).

Leave Enclosure Door Open.

On the Front of this Unit, open the Metal Panel #3, feel and inspect Condensers "C7.1I" - "C7.2I" - "C13.1I" and "C13.2I" for OVERHEATING.

Procedure same as Item #34 (b).

Leave Enclosure Door Open.

(h) "Antenna Coupling Unit" #9 (J): Proceed to this Unit, open Enclosure

Door, feel and inspect Condensers "Cl.lJ" - "Cl.2J" - "Cl.3J" - "C2.1J" - "C2.2J"

"C2.3J" - "C3.1J" - "C3.2J" - "C3.3J" - "C4.1J" - "C4.2J" - "C4.3J" - "C4.4J"

for OVERHEATING.

Procedure same as Item #34 (b).

Leave Englesme Door Open.

(i) Units Listed Item #34 (a) to (h): Proceed to these Units listed in this sequence.

Use A.C. Extension Light and tighten all Bolted Connections.

In some instances it will be found that Condensers are bolted to Support Insulators and that these Bolts also connect Two Busses together.

In this work, exercise CARE NOT TO BREAK OR CHIP Threaded Bolt Hole in End of Stand-off Insulator, which will cause LOOSE BOLTED CONNECTION OF BUSSES.

| "50 KW Trans. & Ant. Equip. Maint." | PAGE No. (161) |
|--|----------------------|
| | TAUD NOT (LOZ) |
| | 5TH TUESDAY |
| ITEM 34. | |
| Inspection will show that some of these Insulators do not | have any Metal Ends, |
| but that Threaded Holes are in the Isolantite itself. | |
| DO NOT TIGHTEN SUCH BOLTS TOO MUCH - DO NOT JERK. | , |
| At the same time, feel Filament Connections of Water-coole | d Power Amplifier |
| Tubes for OVERHEATING. | |
| These Connections are normally Warm, NOT HOT. | |
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| Page No. () () () () (| |

BOOK No. (7)

SEC. No. (C)

End Item 34.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (162)

5TH TUESDAY

ITEM 35.

(a) "Switch Room": Proceed to this Room and put "OFF" Switch #2,
"50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp Handle of the Oil Circuit Breaker and lift it up.

(b) "Control Unit" #1 (A): Proceed to the Rear of this Unit and put "OFF"

"Safety Switch" - "DlA", Open hinged door and feel Fuses "Fl.lA" - "Fl.2A" - "Fl.3A"

"F2.lA" - "F2.2A" - "F3.lA" - "F3.2A" - "F4.lA" - and "F4.2A" for OVERHEATING.

Be sure to rotate Fuses in their Holders, since Burned Spots may be on Lower

Sides, or Sides turned toward the Panel.

Fuses normally run Warm, Not HOT.

Technician should be able to keep hand on fuses when checking same.

Replace any Fuse showing a burned or OVERHEATED place on Insulated Body of same. Spare Fuses are located in the "Portable Fuse and Test Unit" kept in the Main Transmitter Room and in the "Fuse Tester Rack" kept in the Basement Areaway at the foot of the Basement Stairs.

Fuses should be gripped tightly in Clips and Fuse Block Holders, so that OVERHEATENG does not take place at these connections.

Some Fuses are provided with Compression (Variable) Clamps to prevent

OVERHEATING and to assure full Voltage and Current Throughout the Circuit.

Be sure that proper Tension is on these Clamps.

After checking these Fuses, be sure to Close Metal Door, and put "SAFETY SWITCH"

"DlA" - "ON".

(c) "Control Unit" #1 (A): While at the rear of this Unit feel Fuses
"F5A" - "F6A" - "F7A" - "F8A" - "F9A" and "F1OA" for OVERHEATING.

Procedure same as Item #35 (b).

Exercise care not to break the single socket holding each Fuse.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (163)

5TH TUESDAY

ITEM 35.

(d) "Oscillator-Modulator Unit" #2 (D): Proceed to rear of this Unit and feel Fuse F3D".

Same Procedure as Item #35 (b).

Fuse is located on the Lightning Protective Device Apparatus Panel on bottom of the Unit.

(e) "17 KV Rectifier Unit" #10 (C): Proceed to this Unit and feel Fuses "F1.1C" and "F1.2C" for OVERHEATING.

Same Procedure sa as Item #35 (b).

These Fuses are located on the Metal Panel supporting "Rectifier Air Blast Relays" on bottom of the Unit.

(f) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and feel

Fuses "FlH" - "F2H" - "F3H" - "F5H" and "F6H" for OVERHEATING.

Same Procedure as Item #35 (b) except that Knife Type Yuse clears Panel sufficiently to observe any Abnormal Condition.

These Fuses are located on the Bakelite Panel just above the Rear Tubes.

(g) "Basement": Proceed to Basement, and put "OFF" Switch "DIP"
"Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it UP.

(h) "Basement": While in the Basement, put "OFF" switch "Dl.1P"

"Main Power Disconnect Panel", open Metal Door and feel Fuses "Fl.1P" - "Fl.2P"

"Fl.3P" - "F2.1P" - "F2.2P" - "F2.3P" - "F20.1P" - "F20.2P" - "F20.3P"

for OVERHEATING.

Technician should be able to lay Hand on These parts, they should be Warm, not Hot.

If Blades or contacts are too hot, tighten up Compression nuts, clean off

Continued to Next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (164)

5TH TUESDAY

ITEM 35.

contacts with Crocus Cloth, wipe with Rag dampened with Carbon-tet and lightly coat with "3-in-1" Oil.

After Checking Fuses and Switches, put Switch "Dl.1P" - "ON".

(i) "Basement": While in the Basement, put "DFF" Switch "D15P" -"Motor Distribution Panel", open Metal Door and feel Fuses "F4.1P" - "F4.2P" - "F4.3P" "F5.1P" - "F5.2P" - "F5.3P" - "F7.1P" - "F7.2P" and "F7.3P" for OVERHEATING. Procedure same as Item #35 (b).

Feel Blades and contacts of Switch "D15P" for OVERHEATING.

Procedure same as Item #35 (h).

(j) "17 KV Rectifier Switching Unit" #11 (B): Proceed to the front of this Unit and test Switch for binding.

If the Switch does bind, or does not move freely when placed in the "10 KV" or "17 KV" positions, coat lightly with "3-in-1 Oil".

If the Switch still binds following this, loosen Compression Nuts and remove Bolts and compression Washers, from the "Swingers", pulling the "Swingers" free of rest of the Switch.

Clean the "Swinger" Contact surfaces with Crocus Cloth, wipe off with Rag dampened with Carbon-tet.

Wrap a piece of Crocus-Cloth around Narrow Flat File and clean inside of Switch Contacts, then wrap Rag dampened in Carbon-tet about the file and wipe Residue from Switch Contacts.

Put Switch back together again, replace the Bolts, Compression Washers and Nuts, tightening them JUST ENOUGH TO SEE THE COMPRESSION WASHERS BEGIN TO FLATTEN.

Lightly coat "Swingers" and Switch Contacts with "3-in-1 Oil" and again test for Binding.

Technician should be able to move Switch from one position to the other freely

Continued to Next Page

World Radio History

| W O R OPERATING MANUAL | BOOK I | No, | (7 |) |
|--|--------|--------|------|-------|
| | SEC. I | Mo. | (c |) |
| "50 KW Trans. & Ant. Equip. Maint." | PAGE I | lio. | (165 |) |
| TIES SE. | 5TH T | UESDA' | Y | |
| and smoothly. | | | | |
| Tipe up all copper dust and other Residue from floor and s | ection | wher | e Sw | ritch |
| was cleaned. | | | | |
| Book No. () () () () () (| | | | |
| Sec. No. (A) (D) (C) (M) (B) (A | FIA | | | |
| Page No. () () () () (| | | | |
| | | | | |

BOOK No. (7)

End Item 35.

#50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7) SEC. No. (C)

PAGE No. (166)

5TH TUESDAY

ITEM 36.

(a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it up.

(b) "Basement": While in the Basement, put "OFF" Switch "DlP"
"Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Woof "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.O.B. and lift it up.

(c) "Control Unit" #1 (A): Proceed to the Rear of this Unit and feel

Field Coils of Relays "S2A" - "S3A" - "S4A" and "S14A" for OVERHEATING.

These Relays are located in top rear of this Unit, mounted on a Metal Sub-Panel.

These Relay Field Coil will normally run Warm, but Not Hot.

Technician should be able to keep Hand on them.

Log any that are excessively warm or Hot, on the "\$0 KW M.O.L."

While at the rear of this Unit, open Door of Metal Box housing Relay "SlA" and feel Field Coil for OVERHEATING.

Procedure same as Item #36 (c).

Close Door of Metal Box Housing Relay "SlA".

While at the Rear of this Unit, put "OFF" the Series Switch on "1650 Volt Magnetic Switch Contactor" Metal Box, Open Box and feel this Relay Contactor "S7A" Field coil for OVERHEATING.

Procedure Same as Item #36 (c).

Close Door of Metal Box, and put Series Switch "ON".

(d) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C7.1F" - "C7.2F" - "C8.1F" - "C8.2F" - "C9.2F" - "C9.2F" - "C10.2F" then feel Field Coils of Relays "S1F" - "S2F" - "S3F" and "S4F" for OVERHEATING.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (167)

5TH TUESDAY

ITEM 36.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

To discharge Condensers, merely place Metal part of "Shorting Stick" across the two End Plates of these Condensers.

As each Condenser is discharged, a moderate ARC will be observed when "Shorting Stick" first touches the End Plates.

Log any Relay Field Coils that are excessively Warm or Hot, on the "50 KW M.O.L."

- (e) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, use "Shorting Stick" discharge Condensers "C6.1H" "C6.2H" "C7.1H" "C7.2H" "C8.1H" "C8.2H" "C9.1H" "C9.2H" " then feel Field Coils of Relays "S3H" "S4H" "S5H" "S6H" "S7H" "S8H" "S9H" "S10H" "S12H" "S12H" "S13H" and "S14H" for OVERHEATING.

 Same Procedure as Item #36 (d).
- (f) "17 KV Rectifier Tube Unit #10 (C): Proceed to this Unit and feel Field Coils of Relays "SlC" "S2C" "S3C" "S4C" "S5C" "S6C" "S7C" "S8C" "S9C" "S1O" "S1C" and "S12C" for OVERHEATING.

Temperature of these Relay Field Coils should be BARELY WARM, in no event higher than Room Temperature.

While at this Unit, open door of Metal Box housing "17 KV Rectifier Air Blast Heater Relay" - "S17C" and feel Field Coil for OVERHEATING.

This Field Coil will run mornally Warm not Hot.

Technician should be able to keep Hand on it.

If excessively Warm or Hot, Log on the "50 KW M.O.L."

(g) "17 KV Rectifier Switching Unit" #11 (B): Proceed to this Unit and feel Solenoids of Magnetic Contactors "S4B" and "S5B" for OVERHEATING.

Solenoids of these Contactors run normally very WARM, with Temperature distributed

| | V. A. C. C. | SEC. | No. | (c |) |
|---|---|-----------------------|--------|---------------|------------|
| | "50 KW Trans. & Ant. Equip. Maint." | PAGE | | | |
| | ITEM 36. | 5 T H T | UESDA | ΔY | |
| | evenly around outside of Casings. | | | | |
| | Inspections should be made for OVERHEATING, UNEVENLY distri | ibuted | l Temp | erati | re |
| | (HOT SPOTS), loose Connections, and condition of Insulation | n cove | ring | arou | nd |
| | Outside of Solenoids. | | | | |
| | When Insulating Covering around Solenoids of "S4B" and "S5 | B [#] beg | gins t | to get | bare, |
| • | apply a coat of "BLACK INSULATING VARNISH". | | | | |
| | On the Bottom of this Unit, feel Field Coils of Relays "S2 | B" and | 1 "S3I | 3" for | • |
| | OVERHEATING. | | | | |
| | Log any abnormal Condition and work performed on the "50 K | W M.O. | .L." | | |
| | (h) "17 KV Filter Condenser Charging Contactor and Res | istor | Unit' | " #12 | (L): |
| | Proceed to this Unit and feel Solenoid of Magnetic Contact | or "Sl | LL" fo | or 0 V | ERHEATING. |
| | Procedure same as Item #36 (g). | | | | |
| | Book No. () () () (/) (| 1)(| (1 |) | |
| | Sec. No. (A) (F) (H) (C) (B) (A | (<u>)</u> | (3 |) | |
| | Page No. () () () () (| | (| | |
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BOOK No. (7)

End Item 36.

"50 KW Trans. & Ant. Equip. Maint,"

| воок | No. | (| 7 |) |
|--------|-----|-----|---|---|
| SEC. | No. | (| С |) |
| PAGE : | No. | (16 | 9 |) |

5TH TUESDAY

ITEM 37.

(a) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it up.

(b) "Basement": While in the Basement, put "OFF" Switch "DlP" "Master 480 Volt Gil Circuit breaker" for SAFLTY REASONS.

Remove the Wood "Preventer" from Between Operating Handle and Overload Tripping Lever, then grasp Hendle of O.C.B. and lift it up.

(c) "3rd Power Amplifior Tuning Unit" #7 & 8 (I): Proceed to rear of this Unit, enter Enclosure, clean End-seals of Double Concentric Transmission Lines
No. 1 and No. 2, check Stand-off Insulators for Cracks and Breaks, tighten Bolted Connections on Insulators.

These End-Seals are located within this Unit, just to the left of Transmission Line Condensers "Cl2I".

Clean End-Seals with a Rag lightly dampened in Carbon-tet.

If Carbon-tet is insufficient to Clean them, clean them with Crocus-Cloth, then wipe off Residue with a Rag dipped in Carbon-tet.

If required, test End-Seals for Leaks with Diluted Soap Solution.

Procedure same as Item #1 (d).

Check all Stand-off Insulators for cracks and breaks.

Replace any insulator not properly supporting a piece of Apparatus.

Check all bolted Connections where Buses are connected together at Stand-off Insulators.

Tighten these bolted connections a TRIFLE if required.

Exercise Care not to break or chip threads on end of Insulator in tightening Bolts.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C)

PAGE No. (170)

5TH TUESDAY

ITEM 37.

(d) "Antenna Coupling Room" #9 (J): Proceed to this Room, clean End-Seals of Double Concentric Transmission Lines No. 1 and No. 2, check Stand-off Insulators for cracks and breaks, tighten Bolted Connections on Insulators.

Procedure same as Item #57 (c).

(e) "Control Unit" #1 (a): Proceed to the rear of this Unit, check all Insulators for cracks and breaks, tighten all bolted connections on Insulators. Inspect ends of Stand-off Insulators where Busses are terminated with bolts, or where 2 or more busses are connected together by a single bolt in threaded hole on end of Insulator.

Tighten these connections a TRIFLE IF REQUIRED.

AVOID TOO MUCH TIGHTENING SINCE IT IS VERY EASY TO BREAK OR CHIP ENDS OF INSULATORS.

Replace Stand-off Insulators where Connections cannot be tightened due to damaged insulators.

(f) "Oscillator-Modulator Unit" #2 (D): Proceed to the rear of this Unit, open up compartments of "Radio Frequency Amplifier" and Modulating Amplifier", check all insulators for cracks and breaks, tighten all bolted connections on Insulators.

Procedure same as Item #37 (e).

(g) "lst Power Amplifier Unit" #5 (E): Proceed to the rear of this Unit, open Compartment, check all Insulators for cracks and breaks, tighten all bolted connections on Insulators.

Procedure same as Item #37 (e).

(h) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the Rear of this Unit, check all Insulators for cracks and breaks, tighten all bolted connections on Insulators.

Procedure same as Item #37 (e).

| WOR BOOK No. (7) |
|--|
| OPERATING MANUAL SEC. No. (C) |
| . "50 KW Trans. & Ant. Equip. Maint." PAGE No. (171) |
| 5TH TUESDAY |
| <u>ITE 1 57.</u> |
| (i) "End Power Amplifier Tuning Unit" #5 (G): Go to the rear of this Unit, |
| open Compartment, check all Insulators for cracks and breaks, tighten all bolted |
| connections on Insulators. |
| Procedure same as Item #37 (e). |
| (j) "3rd Power Amplifier Tube Unit" /6 (H): Proceed to the rear of this |
| Unit, check all insulators for cracks and breaks, tighten all bolted connections |
| on Insulators. |
| Procedure same as Item No. 37 (e). |
| (k) "Transformer Vault": Proceed to this room in the Basement, check |
| all Insulators for cracks and breaks, tighten all bolted connections on Insulators. |
| Procedure same as Item #37 (e) except that Technician must also observe if Sealing |
| Compound has broken or fallen from center holes of these Insulators. |
| If part of Sealing Compound has broken away, dust, dirt and Noxon Metal Polish |
| will fall into the opening, causing High Voltage Arc, which will over-heat Insulator |
| perhaps breaking or damaging it. |
| Remedy is to remove the Buss from the Insulator, then clean inside of Insulator, |
| removing all Sealing Compound residue. |
| Wipe out inside of Insulator with Rag dipped in Carbon-tet. |
| Clean and polish Buss at point where it passed through the Insulator hole. |
| Cut 2 circular pieces of Lucite with holes through centers same size as the Buss. |
| Pass Buss through Insulator, put one piece of Lucite on top of Insulator and the |
| other on bottom of Insulator and cement to Insulator with Carron Cement. |
| Solder or bolt Buss back into proper place in the circuit. |
| Enter data on "50 KW M.J.L." and write separate report to Supervisor. |
| Book No. () () () () () |
| Sec. No. () () () () () . |
| Page No. () () (World Radio History) () () |

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7 ·)

SEC. No. (C)

PAGE No. (172)

5TH TUESDAY

ITEM 38.

- (a) "Switch Room": Proceed to this Room in the Basement, and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (b) "Basement": While in the Basement, put "OFF" Switch "DlP"
 "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp the Handle of O.C.B. and lift it up.

- (c) "Basement": While in the Basement, put "OFF" Switch "Dl.lP"
 "Main Power Disconnect Panel" for SAFETY REASONS.
- (d) "Besement": While in the Basement, put "OFF" Switch "D15P"
 "Motor Distribution Panel" for SAFETY REASONS.
- (e) "Control Unit" #1 (A): Proceed to the Rear of this Unit, clean wall above Unit, then vacuum clean inside of Unit.

Use A.C. Extension Light to locate all places to be cleaned.

Use Vacuum Cleaner with Special Narrow Nozzle to clean channel irons, behind wires. cables. etc.

Clean and dust all parts of this Unit.

Make general use of the Vacuum Cleaner for all Dust and dirt difficult to clean by hand.

(f) "Oscillator⊕Modulator Unit" #2 (D): Proceed to the rear of this Unit, Clean Wall above Unit.

Open up compartments of "Radio Freq. Amplifier" and Modulating Amplifier" then Vacuum Clean inside of Unit.

Procedure same as Item #38 (e).

(g) "lst Power Amplifier Unit" #3 (E): Proceed to the rear of this Unit

| BOOK | No. | (| 7 |) |
|------|-----|---|---|---|
| | | | | |

"50 KW Trans. & Ant. Equip. Maint.".

| SEC. | MO. | - (| C |) |
|------|-----|-----|---|---|
| | • | | | |

(173)

5TH TUESDAY

PAGE No.

ITEM 38.

clean Wall above Unit, open up Compartment, then vacuum clean inside of Unit.

Procedure same as Item #38 (e).

- (h) "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the rear of this Unit, clean Wall above Unit, then Vacuum Clean inside of Unit.

 Procedure same as Item #58 (e).
- (i) "2nd Power Amplifier Tuning Unit" #5 (G): Proceed to the rear of this Unit, clean Wall above Unit, open up Compartment, then vacuum clean inside of Unit. Procedure same as Item #38 (e).
- (j) "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the rear of this Unit, clean Wall above Unit, then vacuum clean inside of Unit.

 Procedure same as Item #38 (e).
- (k) "3rd Power Amplifier Unit" #7 & 8 (I): Proceed to the rear of this Unit, clean Wall above Unit, open enclosure, then vacuum clean inside of Unit. Procedure same as Item #38 (e).
- (1) "Antenna Coupling Room" #9 (J): Proceed to this Room, enter enclosure then Vacuum Clean entire Unit.

Procedure same as Item #38 (e).

| Book | No. | (/ |) | (| 1 |) | (| / |) | (| 1 |) | (| / |) | (| 1 |) | (| 1 | $\overline{)}$ | (, | |
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End Item 38.

47

"50 KW Trans. & Ant. Equip. Maint."

SEC. No. (C)

(

BOOK No.

PAGE No. (174)

5TH TUESDAY

ITEM 39.

- (a) "Transmitter Room": Proceed to the "High Voltage Grounding Switch and Door Interlock Mechanism" "Dl3P", remove one Key from any one of Lock Positions No. 2 to No. 5 inclusive and keep on person until Item #39 is completed.
- (b) "Switch Room": Proceed to this room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lit it up.
- (c) "Basement" While in the Basement, put "OFF" Switch "DIP"
 Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

- (d) "Basement": While in the Basement, put "OFF" Switch "Dl.lP"

 "Main Power Disconnect Panel" for SAFETY REASONS.
- (e) "Basement": While in the Basement, put "OFF" Switch "D15P"

 "Motor Distribution Panel" for SAFETY REASONS.
- (f) "17 KV Filter Choke L4P Unit" #12: Proceed to this Unit, check Spicing of Ball Gap "G3F".

Reset Ball Gap to correct Spacing if required.

Clean and Polish Ball Gap.

Ball Gap "G3P" is mounted on top of the 17 KV Main Filter Choke.

Ball Gap measuring Tool is kept in Leather Kit in "Portable Fuse and Test Unit".

Ball Gap"G3P" is connected in Shunt to "L4P", "Main Filter Reactor Choke".

Ball Gap "G3P" correct spacing is .089 Inch.

GENTLY place Measuring Tool between both Balls of the Gap.

Separation of Gap must be such that both Balls touch the Tool at the same time with a Tight Fit.

If Spacing of Gap should be found different than indicated hereon, it must be Continued to Next Page World Radio History

"50 KW Trans. & Ant. Equip. Maint."

(7)

BOOK No.

SEC. No. (C)

PAGE No. (175)

5TH TUESDAY

ITEM 59.

corrected.

Merely loosen both Locking Nuts on One Ball supporting Shaft and twist the Shaft to widen or narrow the Spacing.

When Separation is correct, tighten Locking Nuts.

Remove the Measuring Tool.

When Spacing has to be corrected, a separate note to Supervisor must be made. Clean and polish Ball Gap with Crocus Cloth.

Wipe off Residue with Rag dampened in Carbon-tet.

Polish Ball Gap with Noxon.

BE SURE TO HAVE A CLEAN ROUND SURFACE AND IT MUST BE SMOOTH.

REPORT CRACKED, CARBONIZED AND "OUT OF ROUND" GAPS IMMEDIATELY TO SUPERVISOR.

If required, use "00" Sandpaper first, then Crocus Cloth, and finally finsi finishing off with Metal Polish.

(g) "Antenna Coupling Room" #10 (J): Proceed to this Room, enter Enclosure, check Spacing of Ball Gaps "GlJ" - "G2J" and "G3J".

Reset Ball Gaps to correct spacings if required.

Clean and polish all Ball Gaps.

Ball Gap "GlJ" is connected in Shunt "to KlJ" Primary "Oscillation Transformer".

Ball Gap "G2T" correct Spacing is 1/2 Inch. Changed & 3/4" 4/20/43

Ball Gap "G2J" correct Spacing is 1/2 Inch.

Ball Gap "G2J" is connected in shunt to Transmission Line No. 2, Condensers "C2J".

Ball Gap "G3J" was removed from position in Shunt to Transmission Line No. 1, Condensers "C3J" -2/27/40.

Ball Gap "G3J" correct Spacing is 1/2 Inch.

Procedure, same as Item #39 (f).

BOOK No. (7)

#50 KW Trans. & Ant. Equip. Maint."

PAGE No. (176)

(c)

ITEM 39.

5TH TUESDAY

SEC. No.

(h) "Transformer Vault": Proceed to this Room, check Spacing of Ball Gap "G4P".

Reset Ball Gap to correct Spacing if required.

Clean and polish Ball Gap.

Ball Gap "G4P" is connected in Shunt to Secondary of High Voltage Transformer No. 1 "T1P".

Ball Gap "G4P" correct Spacing is 5/8 Inch.

Procedure same as Item #39 (f) except that Set Scres to loosen or tighten Supporting Shaft for Gap are moved by means of "Hexagon Shaped Tool".

Note that Balls are merely wedged on ends of Shafts, they are not screwed on.

Tighten Balls on ends of supporting Shafts by twisting motion exerting Pressure at the same time.

(i) "Transformer Vault": While in this Room, check Spacing of Ball Gap "G5P".

Reset Ball Gap to correct Spacing if required.

Clean and polish Ball Gap.

Ball Gap "G5P" is connected in Shunt to Secondary of High Voltage Transformer No. 2 "T2P".

Ball Gap "G5P" correct Spacing is _5/8 Inch.

Procedure same as Item #39 (f) and (h).

(j) "Transformer Vault": While in this Room check Spacing of Ball Gap "G6P".

Reset Ball Gap to correct Spacing if required.

Clean and polish Ball Gap.

Ball Gap "G6P" is connected in Shunt to Secondary of High Voltage Transformer No. 5 "T3P".

Ball Gap "G6P" correct Spacing is 5/8 Inch.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7

SEC. No. (C

PAGE No. (177)

5TH TUESDAY

ITEM 39.

Procedure same as Item #39 (f) and (h).

5 KW Auxiliary Transmitter.

- (k) "A.C. Power Panel" Unit #1 (A): Proceed to the Front of this Unit, hold finger on "STOP" Button of "Master Control" Switch "D3A" and next put "OFF" "Power Supply" Switch "D4A".
- (1) Enter Transmitter Enclosure (Leave Door Open) and Open "High Voltage Transformer Disconnect Switch" "D5A" (Unit #1 (A) on bottom rear of the Unit.)
- (m) "10 KV Power Supply Unit" #7 (G): Proceed to this Unit and check the Spacing of Ball Gaps "GlG" "G2G" and "G3G".

Reset Ball Gaps to Correct Spacing if Required.

Clean and polish Ball Gaps.

Ball Gap "GlG" Horn Gap, 10 KV Transformer "TlB" Secondary to "Ground" - - 1 Inch
Ball Gap "G2G" Horn Gap, 10 KV Transformer "T2B" Secondary to "Ground" - - 1 Inch
Ball Gap "G3G" Horn Gap, 10 KV Transformer "T3B" Secondary to "Ground" - - 1 Inch
These Ball Gaps are mounted on the Iron Framework directly above the 10 KV
Transformer.

Measure separation between both inside edges of Horn Gap with 6 inch Rule.

If Spacing of Gap should be found different than indicated hereon, it must be corrected.

Merely loosen bolts on Compression fitting and Slide one or both sections of Horn Gap in or out to correct spacing.

When separation is correct, tighten Locking Compression Bolts.

Remove the Rule.

When Spacing has to be corrected, a Separate Note to Supervisor must be made.

Clean and polish Horn Gaps, rubbing sharp insides of the Gap with Crocus Cloth.

Wipe off Residue with Rag dipped in Carbon-tet.

Continued to Next Page.

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|--|-------------------------|
| | 5TH TUESDAY |
| ITEM 39. | |
| (n) "10 KV Power Supply Unit" #7 (G): While at thi | s Unit, check the |
| spacing of Ball Gaps "G4G" and "G5G". | |
| Reset Ball Gaps to correct Spacing if required. | |
| Clean and polish Ball Gaps. | |
| Ball Gap "G4G" Shunt to 10 KV Filter Condenser ("C2G") | <u>.295 Inch</u> |
| Ball Gap "G5G" Shunt to 10 KV Filter Choke (Reactor "L6G") | <u>.18 Inch</u> |
| Ball Gap "G4G" is mounted on Iron Framework directly above | Filter Choke "L6G". |
| Ball Gap "G5G" is mounted on top of Filter Choke "L6G". | |
| Procedure same as Item #39 (f). | |
| (o) "Tuning Unit" #6 (F): Proceed to the Rear of t | his Unit and check the |
| spacing of Ball Gap "GlF". | |
| Reset Ball Gap to correct Spacing if required. | |
| Clean and Polish Ball Gap. | |
| Ball Gap "GlF" Shunt to Concentric Transmission Line (Mair | a) <u>-018 Incl</u> |
| Ball Gap "GlF" is mounted on the iron framework of this Ur | it, just to the left of |
| the "Final Amplifier Tuning Capacitors". | |
| Procedure same as Item #39 (f). | · |
| Book No. (/) () () () (| ·) |
| Sec. No. (8/4) () () () (| |
| Page No. () () () () (| |
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"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

End Item 39.

"50 KW Trans. & Ant. Equip. Maint."

"Ball Gap Spacing Measurement Tool"

ITEM 39

BOOK No. (7)

SEC. No. (C)

PAGE No. (178.1)

5TH TUESDAY

Fig. No. 1:

- (a) Ball Gap Spacing Tool .089 .6250 1/2 inch 5/8 inch.
- (b) Set of Type R-1951 Thickness Gauges.

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 | , |
|------|-----|---|---|---|
| | | | | |

SEC. No. (C)

PAGE No. (179)

5TH TUESDAY

ITEM 40.

- (a) "Basement": Proceed to the Basement and observe that the 480

 Volt A.C. "Ground Detector" Neon Lamps on phases "A" "B" "C" are ILLUMINATED.

 These "Ground Detector" Neon Lamps are mounted on front of small metal box

 located on top of Cabinat marked "D1.1P" "Maint Power Disconnect Panel".

 When illuminated these Lamps will indicate to the Technician THAT INPUT AND OUTPUT CONTACTS OF "D1P" "Master 480 Volt Oil Circuit Breaker" ARE ALIVE (Power On.)
- (b) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (c) "Basement": Proceed to "Dl.1P" "Main Power Disconnect Panel" and observe that "Ground Detector" Neon Lamps on Phases "A" "B" "C" are EXTINGUISHED. This will indicate to the Technician that INPUT AND OUTPUT CONTACTS OF "DlP"

 "Master 480 Volt Oil Circuit Breaker" ARE DEAD (No Power On.)
- (d) "Basement": Put "OFF" Switch "DlP" "Master 480 Volt Oil Circuit
 Breaker, remove the Oil Filled Cover, clean and service Contacts for OVERHEATING
 and OXIDATION.

Check Temperature of Oil Filled Container on "Tel-Temp".

Minimum Temperature is 15 Degrees Centigrade, Maximum Temperature is 42 Degrees Centigrade.

Procedure in removing Oil Filled Metal Cover is quite easy for one Technician if performed in sequence:

Loosen then remove 2 Large Wing Nuts diagonally opposite to each other from top of Metal Cover.

Assume a "Squatting Position" placing both knees directly underneath Metal Cover.

Object of this is to carry weight of Oil filled cover while loosening remaining

two Wing Nuts.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (180)
5TH TUESDAY

ITEM 40.

When balanced and able to bear weight of cover, loosen then remove remaining two large wing nuts.

Note that the Cover is full of SPECIAL INSULATING OIL, be careful when removing this cover, not to shake up the Oil, so that the Contents may be inspected for Cloudiness and sediment.

Grasp Oil Filled Metal Cover in both hands and carefully lower it to floor directly beneath.

If unable to lower Metal Cover by yourself, call another Technician to assist.

BEFORE TOUCHING CONTACTS OF THIS CIRCUIT BREAKER, take 480 Volt Test Lamp,

hanging up on Wood Display Board adjacent to this Breaker, push the prods into
any 115 Volt A.C. Outlet.

If the Lamp lights dimly, it WILL INDICATE TO TECHNICIAN THAT THE LAMP IS GOOD.

Remove Test Prods from 115 Volt Outlet, and touch Input and Output Contacts

of "DlP" - "Master 480 Volt Oil Circuit Breaker" with Test Prods.

If the lamp remains EXTINGUISHED, IT WILL INDICATE TO THE TECHNICIAN THAT BOTH INPUT AND OUTPUT CONTACTS OF "DIP" ARE DEAD (Power is OFF.)

Allow oil to drip off contacts into cover directly beneath, until it stops.

Lay a clean cloth over top of cover to prevent dropping dirt and residue into the oil.

Use A.C. Extension Light to inspect Contacts for OXIDATION.

Oxidation will be identified as the Brownish Coating over the Copper Contacts.

Clean all 6 Movable Contacts with #00 Sandpaper, then Crocus Cloth, finally wiping off the Residue with a rag dipped in Carbon-tet.

Procedure in cleaning the Stationary Contact Fingers is slightly different.

Wrap a piece of "00" Sand paper around a flat file about 6 inches long, by 1 inch wide and 1/8 to 1/4 inch thick.

Continued to Next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (181)

5TH TUESDAY

ITEM 40.

Rub Sandpaper covered File between all Stationary Contacts several times, remove and wrap Crocus Cloth about the same File.

Rub Crocus Cloth covered File through Contacts several times.

Remove the Crocus Cloth and dip a clean cloth in Carbon-tet, wrap about the File and clean Residue from all Stationary Contacts.

Inspect all Movable and stationary Contacts with aid of A.C. Extension Light.

They should be clean and bright.

If they are not, clean them a 2nd time.

Inspect Stationary Contact Finger Springs.

They should hold the Stationary Contacts vertical.

Renew any heavy duty contact Finger Spring observed to be bent.

Grasp Handle of the Breaker and put "ON".

Inspect all Contacts while in the "Operating Position".

If found incorrect, adjust same by screwing in or out of the Nipple on the End of the Operating Rod.

This adjustment will raise or lower the Movable Contacts so as to place same correctly.

Correct placement of all contacts is pictured in Westinghouse Bulletin on Types F-11 and F-22 Oil Circuit Breakers, Page 3.

This Bulletin is a part of Operating Manual Book No. 15.

Note that Cover is full of Special Insulating Oil to "Oil Level Mark" which is inches below top edge of this Cover.

If Oil Level is not correct, add Oil to Cover until it is.

Inspect Oil for Cloudiness, dirt and sludge.

If in doubt, remove small sample of Oil for Supervisor to analyze.

| 5TH TUESDAY |
|---|
| ITEM 40. |
| ighten all Assembly nuts and bolts of Switch parts to be covered when Metal |
| over is replaced. |
| ne Technician can replace this Cover by following procedure. |
| ssume a "Squatting Position" on left side of "DlP" Breaker. |
| rasp cover in both hands, lift up and put in place with 4 holding bolts |
| hrough holes in top metal supporting plate. |
| crew 2 Wing Nuts on bolts diagonally placed on top of Metal Cover. |
| ighten these Wing Nuts in place. |
| ut 2 remaining Wing Nuts on Bolts and tighten them. |
| f unable to replace Metal Cover by yourself, call another Technician to assist. |
| heck all Connections, making sure that same are tight. |
| then needed, revernish with Insulating Black Varnish all Wires and tape coverings |
| eighten all Mechanical Support Nuts and Bolts. |
| Book No. (15) () () () () |
| Sec. No. (B) () () () () |
| Page No. (1)()()() |
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"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (182)

End Item 40.

"50 KW Trans. & Ant. Equip. Maint."

| BOOK No. | (| 7 |) |
|----------|----|-----|---|
| SEC. No. | (| С |) |
| PAGE No. | (1 | .83 |) |

5TH TUESDAY

ITEM 41.

(a) "Transmitter Room": Proceed to the "High Voltage Grounding Switch and Door Interlock Mechanism" - "Dl3P", remove One Key from any one of Lock positions No. 2 to No. 5 inclusive and keep on person until Item #41 is completed.

While in the Basement, put "OFF" Switch "DlP"

- (b) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

 Remove the Wood "Preventer" from between Operating Handle and Overload Tripping
- (d) "Basement": While in the Basement, Put "OFF" Switch "D14P" .
 "300 Volt Bias Motor-Generator Slector Switch", open compartment, clean Switch, tighten connections.

This Switch is "OFF" when Handle is in the Horizontal position.

Clean Blades of Switch "Dl4P" with rag dipped in Carbon-tet.

Compartment cannot be opened until the Switch is "OFF".

Lever, then grasp Handle of O.C.B. and lift it up.

Polish contacting surfaces of Switch Blades with Crocus Cloth.

Wipe Residue off Switch Blades with rag dipped in Carbon-tet.

Dip a small piece of rag in Carbon-tet, wrap around a flat file about 1/8 inch thick and wipe off insides of all Switch stationary Contact surfaces. Remove and wrap a piece of Crocus Cloth around the file, then rub between Switch stationary contacts.

Remove Crocus Cloth, wrap clean piece of cloth dipped in Carbon-tet around the file and clean residue from between Switch Stationary Contacts.

Continued to Next Page

(c)

"Basement":

World Radio History

| | | | | | | W O | | | - | | | | | ROOK | No. | (| 7 | , |
|------------|-----|-------|-----|--------|-------|--------|------------|------------------|----------|------------|-------|--------|------|-------|-------|-----|----|------|
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| | | | | | | ITEM | 41 | • | | | | | | | | | | |
| Inspect S | wit | tch ! | Bla | des o | f Sta | ationa | ry (| Cont | tact | s wi | ith a | aid of | ` A. | C. E | xtens | ion | Li | ght. |
| They shoul | Ld | be | cle | an an | d Bri | ight. | | | | | | | | | | | | |
| If they a | re | not | , c | lean | them | a Sec | ond | Ti | ae∙ | | | | | | | | | |
| After clea | an | ing, | ар | ply 1 | ight | coat | of | [#] 3-: | Ln-1 | 0 i | l" to | o Cont | act | sur | faces | or | 1 | |
| Switch Bl | ade | es, | and | insi | de s | urface | S 0 | f S | tati | onai | ry C | ontact | ts. | | | | | |
| Tighten a | 11 | con | nec | tions | to i | Switch | wi | th (| Scre | w d: | rive | r and | Gas | pli | ers. | | | |
| Book No. | | | | | | | | | | | | | |) | | | | |
| Sec. No. | (| MG |) | (|) | (|) | (| |) | (|) | (|) | | | | |
| Page No. | (| 1 |) | (|) | (|) | (| |) | (|) | (|) | | | | |
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Vorld Padio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)

SEC. No. (C)

PAGE No. (185)

5TH TUESDAY

ITEM 42.

- (a) "Transmitter Room": Proceed to the "High Voltage Grounding Switch and Door Interlock Mechanism" "Dl3P", remove one Key from any One of Lock Positions No. 2 to No. 5 inclusive and keep on Person until Item #42 is completed.
- (b) "Switch Room": Proceed to this Room in the Basement and put "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (c) "Basement": While in the Basement, put "OFF" Switch "DlP"
 "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

Remove the Wood "Preventer" from between Operating Handle and Overload Tripping Lever, then grasp Handle of O.C.B. and lift it up.

(d) "Control Unit" #1 (A): Proceed to the Rear of this Unit, check all connections, inspect condition of Hook up Wire and inspect all Insulator

Bushings for OVERHEATING and DANAGE.

Use A.C. Extension Light and inspect all Soldered and bolted connections on all equipment within this Unit.

All connections, whether Soldered, Bolted, Screwed to terminals, must be inspected and tightened if necessary.

If Soldered connections appear loose, broken, or oxidized, apply a Hot Iron and resolder.

Never pull on Wires, where Lugs are used or not.

Feel and inspect Lugs for OVERHEATING.

In tightening connections, exercise care not to damage Threads, Screw Heads, Bolt Heads and Nuts.

Twist or pull on Tools with STEADY PRESSURE - NEVER JERK.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (186)

5TH TUESDAY

ITEM 42.

In checking for OVERHEATING, remember that the Connection should not be warmer than its associated piece of Equipment.

Communicated heat from a Condenser or Resistor will raise Temperature of connections.

If a Connection is warmer than the Condenser or Resistor to which it is secured,

OVERHEATING is the cause, and DAMAGE WILL RESULT IN A LOOSE CONNECTION or even
an OPEN CIRCUIT.

In soldering Connections on Resistors, exercise care not to break Tab Connections which might be more fragile than the Stiff Wire used to connect same.

Check condition of Hook up Wire used to make connections, noting if Insulation is in good order, frayed, broken, chipped, etc.

If wires have to be taped, apply a coat of Black Insulating Varnish over the Tape which will keep same in place and prevent drying out of Tape.

Exercise care not to move any connections from whatever postions same are found in.

Note that Some Leads are ORIENTED to minimize Radio Frequency Fields.

Inspect all Bakelite or other type Bushings, raised Insulator Connections for OVERHEATING of other causes likely to result in Carrier Failure.

Replace any doubtful Insulators or bushings.

Carefully wipe off all Resistors with Clean Dry Cloth.

See that they are done so with UTMOST CARE TO PREVENT BREAKING TABS.

(e) "Oscillator-Modulator Unit" #2 (D): Proceed to the Rear of this Unit,
Open Compartments of "R.F. Amplifier" and "Modulating Amplifier".

Check all Connections, inspect condition of Hook up wire, and inspect all insulator bushings for OVERHEATING or DAMAGE.

Procedure same as Item #42 (d) except that 50 KW Crystal Heater Circuits remain on 24 Hours a Day and that they must be shut off when doing this maintenance work in this Unit.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (187)

5TH TUESDAY

ITEM 42.

Put "OFF" Switch "D2D", 115 Volt A.C. Supply to Crystal Heater Circuits.

This Switch is located on the "Crystal Heater Power Panel" directly behind

Meters on the Main Panel, being mounted on a metal Sub-panel.

After finishing Maintenance Work on this "Crystal Heater Power Panel" procedure is as follows:

Put "OFF" Switch "Dl3D" - "Power Supply to Crystal No. 1 Heater".

(Plate Current from Rectifier Tube "V6D".)

Put "OFF" Switch "D14D" - "Power Supply to Crystal No. 2 Heater".

(Plate Current from Rectifier Tube "V7D".)

Put "ON" Switch "D2D" - "115 Volt A.C. Power Supply to Crystal Heater Circuits".

Put "ON" Switch "Dl3D" - "Power Supply to Crystal No. 1 Heater".

Put "ON" Switch "D14D" - "Power Supply to Crystal No. 2 Heater".

Filament of Type 287-A Thyratron Tubes "V6D" and "V7D" will be illuminated, with a purple Glow about the Anode.

Indicator Lights, "Osc. No.1" and "Osc. No.2" located on the front of the "Oscillator-Modulator Unit" #2 (D) will be illuminated, indicating that Crystals No. 1 and No. 2 are being heated.

If these 3 Switches are left off for any great period of time, Temperature of Crystals No. 1 and No. 2 will drop and frequency of Carrier when put on the air, will be in error more than the allowable 20 cycles.

(f) "lst Power Amplifier Unit" #3 (E): Proceed to the rear of this Unit, check all Connections, inspect condition of Hook up wire, and inspect all Insulator bushings for OVERHEATING and DAMAGE.

Procedure same as Item #42 (d).

"50 KW Trans. & Ant. Equip. Maint."

| BOOK | No. | (| 7 |) |
|------|-----|---|---|---|
| SEC. | No. | (| C |) |

(188)

5TH TUESDAY

PAGE No.

ITEM 42.

- "2nd Power Amplifier Tube Unit" #4 (F): Proceed to the rear of this (g) Unit, check all Connections, inspect condition of Hook up wire, and inspect all Insulator Bushings for OVERHEATING or DAMAGE. Procedure same as Item #42 (d).
- Proceed to the rear of this "2nd Power Amplifier Tuning Unit" #5 (g): (h) Unit, open compartment, check all connections, inspect condition of Hook up wire, and inspect all Insulator Bushings for OVERHEATING or DAMAGE. Procedure same as Item #42 (d).
- "3rd Power Amplifier Tube Unit" #6 (H): Proceed to the Rear of this Unit, check all connections, inspect condition of Hook up wire and inspect all Insulators Bushings for OVERHEATING or DAMAGE.
- Procedure same as Item #42 (d).
- "3rd Power Amplifier Tuning Unit" #7 & 8 (I): Proceed to the rear of (j)this Unit, open enclosure, check all connections, inspect condition of Hook up wire, and inspect all Insulator Bushings for OVERHEATING or DAMAGE. Procedure same as Item #42 (d).
- Proceed to this Room, open Enclosure "Antenna Coupling Room" #9 (J): (k) door, check all connections, inspect condition of Hook up wire, and inspect all Insulator Bushings for OVERHEATING or DAMAGE. Procedure same as Item #42 (d).
- "17 KV Rectifier Unit" #10 (C): Proceed to this Unit within the 50 (1)KW Transmitter Enclosure, check all connections, inspect condition of Hook up wire, check and inspect all insulator Bushings for OVERHEATING or DAMAGE. Procedure same as Item #42 (d) and Item #4 (a).
- Proceed to this Unit, check "17 KV Rectifier Switching Unit" #11 (B): (m) all connections, inspect condition of Hook up wire, and inspect all insulator **World Radio History** Continued to Next Page

| ••• | O R | ВС | OK No. | 7 |) |
|---------------------------------|-----------------------|----------------|----------|-------|-------|
| v | TING MANUAL | | C. No. | (c |) |
| "50 KW Trans. & | k Ant. Equip. Maint." | | GE No. | (189 |) |
| | | 51 | H TUESDA | ĮΣ | |
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| Bushings for OVERHEATING or DAM | IAGE. | | | | |
| Procedure same as Item #42 (d). | • | | | | |
| (n) "L4P Main Filter Reacto | or Choke" #12 (P): | Proceed | to this | Unit, | chec |
| all connections. | | | | | |
| Merely Tighten any loose connec | tions of bolts and r | nuts. | | | |
| Inspect Lugs, resoldering if ne | ecessary. | | | | |
| (o) "Cll Filter Condenser A | issembly Unit" #13 (I | <u>():</u> Pro | ceed to | this | Unit, |
| check all Connections, inspect | condition of Hook up | wire and | inspect | all | |
| Insulator Bushings for OVERHEAT | MING or DAMAGE. | | | | |
| Procedure same as Item #42 (d) | and Item #4 (a). | | | | |
| Book No. (1) (1) (|) () (|) (|) | | |
| Sec. No. (A) (R) (|) () (|) (|) | | |
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End Item 42.

"50 KW Trans. & Ant. Equip. Maint".

BOOK No. (32)

SEC. No. (C)

PAGE No. (190)

5TH TUESDAY

ITEM 43.

"2nd Power Amplifier Tube Unit" #4 (F): Proceed to this Unit and (a) clean Rear and Front Tubes "VIF" and "V2F" respectivelt. Wipe off the Metal parts with a Rag dampened in Carbon-tet. Wipe off Glass Envelope of Tubes, using Clean Cloth Dampened with Water, then wipe off with clean dry Cloth. If this is insufficient to clean the Glass envelope of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle. Wipe off with Clean Dry Cloth, polishing Glass to High Lustre. When Transmitter is started, observe the condition of the Glass and if Lint is present, clean off with Clean Dry Cloth. If this is not the remedy, use Skin of Hand, which will attract Lint, since it discharges the Static Electricity on Glass, originally accumulated from Dry Cloth. The small amount of remaining Lint may be blown off the Glass. In cleaning Glass envelope of Tubes, exercise Caution, not to scratch. Do Not Wear a Ring while cleaning or polishing the Power Amplifier Tubes. Always be sure to take a Clean New Cloth when Cleaning or polishing Power Amplifier Tubes:

- (b) 3RD Power Amplifier Tube Unit" #6 (H): Proceed to this Unit and clean Rear Tubes "V1H" "V3H" "V5H" and Front Tubes "V2H" "V4H" "V6H".

 Procedure same as Item 8 (a).
- (c) "Control Unit" #1 (A): Proceed to this Unit and clean 1650 Volt

 Rectifier Tubes and Sockets positions #1 to #6 inclusive.

 Wipe off Tube Glass envelopes with a Rag Dampened in Water, then dry off with Clean Dry Cloth.

"50 KW Trans. & Ant. Equip. Maint.

BOOK No. (7)

SEC. No. (C)

PAGE No. (191)

5TH TUESDAY

ITEM 43.

If this is insufficient to clean the glass Envelope of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle. Wipe off with Clean Dry Rag, polishing Elass to High Lustre. Wipe off the Bakelite Socket with Clean Dry Cloth.

(d) "Oscillator-Modulator Unit #2 (D): Proceed to this Unit,
Clean Tubes and Sockets Positions "Vly" "V2Y" "V1D" "V2D" "V#D" "V4D"
"V5D".

Procedure for "VIY" and "V2Y": Proceed to Front of this Unit, and Clean 2 Type 271-A Tubes in Crystal Oscillator, Type 700-A Boxes #1 and #2.

Wipe off Tube Glass envelopes with Rag dampened in Water, then dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelopes of Tubes, apply a small amount of "Windex" using the Spray Nozzle on the Bottle. Wipe off with Clean Dry Cloth, polishing Glass to High Lust e. Procedure for "VlD" "V2D" "V3D" "V4D" "V5D": Ascertain if each of these Tubes is in its socket properly.

BOOK No. (7)

"50 KW Trans. & Ant. Equip. Maint.

SEC. No. (C)

PAGE No. (192)

5TH TUESDAY

ITEM 43.

Gently push down on Tube to "FEEL IF FILAMENT AND GRID tube Prongs are resting against socket Prongs Properly".

Check Tension of Socket Prongs, which should be sufficient to hold Socket Prong Tightly against Tube Prong, thus providing GOOD ELECTRICAL CONNECTION. If Tension is insufficient, (as evidenced WHEN 1650 VOLTS IS APPLIED BEFORE OR AFTER SHUT DOWN, Overheating of prongs, or variations in Tube Currents when Tube is pushed down in Socket), increase same by Lifting Socket Prong upward Slightly.

"50 KW Trans. & Ant. Equip. Maint.

BOOK NO. (7)

SEC. No. (C)

PAGE No. (193)

5TH TUESDAY

ITEM 43.

CAUTION. Do not adjust tension of Socket Spring Contacts with Transmitter Rotating Equipment "ON", use "Tube Change Switch" "D5A", pushing same "OFF" To stop all Rotating Machinery while this adjustment is made, or during period when Transmitter is completely shut down. exercise care in bending Socket Prongs, so as not to break same. Wipe off Tube Glass Envelopes with Rag Dampened in Water, then Dry off with Clean Dry Cloth.

If this is insufficient to clean the Glass Envelope of Tubes, apply a small quantity of "Windex" using Spray Nozzle on the Bottle.

Wipe off with Clean Dry Cloth Polishing Glass to High Lustre.

- (e) "lst. Power Amplifier Unit" #3 (E): Proceed to this
 Unit Clean Tubes and Socket Positions "VIE" and "V2E".

 Procedure same as Item #8 (d) except Tubes are not removed from sockets and prongs are not inspected for overheating.
- (f) #5rd. Power Amplifier Tube Unit" #6 (H): Proceed to this Unit, Clean Tubes and Sockets Position "V7H".

Procedure is same as Item #8 (d) except tube is not removed from Socket and Prongs are not inspected for overheating.

WOR

OPERATING MANUAL

BOOK No.

SEC. No.

(7)

(C)

End Item 43.

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

(195)

5TH TUESDAY

PAGE No.

ITEM 44.

- (a) "Switch Room": Proceed to this Room in the Basement and put
 "OFF" Switch #2, "50 KW Distribution Oil CKT Breaker" for SAFETY REASONS.

 Merely grasp the Handle of the Oil Circuit Breaker and lift it up.
- (b) "Basement": While in the Basement, put "OFF" "DIP"

 "Master 480 Volt Oil Circuit Breaker" for SAFETY REASONS.

 Remove the Wood "Preventer" from between Operating Handle and Overloading

 Tripping Lever, then grasp Handle of O.C.B. and lift it up.
- (c) "Oscillator-Modulator Unit" #2 (D): Proceed to the Rear of this
 Unit, remove Tubes "VID" "V2D" "V3D" "V4D" and "V5D" from Sockets; take
 Expanded Metal Cover off top of Unit then check and clean all equipment.

 In removing the Tubes, write down on piece of paper numbers and types, and
 positions they are to be returned to.

Carefully place tubes vertically in "Spare Tube Room" rack.

Remove all the screws around the outer edge of the top "Expanded Metal" Cover, then GENTLY lift up rear edge of Cover slip over top edges of tube sockets and carefully remove it.

Place on floor inside Transmitter Enclosure (Out of way.)

Carefully feel all condensers for OVERHEATING per Item #34.

Carefully feel all resistors for OVERHEATING per Item #36.

Carefully feel all equipment for OVERHEATING per Item #36.

Use A.C. Extension Light and Vacuum Cleaner with Special "High Velocity" Nozzle and thoroughly clean out the recessed space.

Wipe off tops and sides of all condensers, resistors, switches, equipment, with clean dry cloth.

Use Maintenance Brush to clean and dust connections and inaccessible places. Carefully check all connections.

Continued to Next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)

PAGE No. (196)

5TH TUESDAY

ITEM 44.

Tighten any loose bolted Connections.

Resolder any loose or broken solder connections.

Leave the "Expanded Metal" Cover off top of Unit, but replace all Tubes "V2D" to "V5D" inclusive.

Proceed to front of this Unit, loosen the 4 Wing Nuts on top of Metal Cover over the "Buffer Amplifier Tube Unit", then remove the cover and pace on floor (Out of way.)

Proceed to clean and check equipment within this space in same manner as was done in main recessed space beneath the "Expanded Metal Cover" of Main Unit.

Leave the Metal Cover off this Unit, but replace Tube "VID".

(d) "Oscillator-Modulator Unit #2 (D): Proceed to rear of this Unit, remove the "Expanded Metal Front Cover" of the "Feed Back Rectifier Tube Unit", remove Tube "V-1" then check and clean all equipment.

Loosen 2 Wing Nuts and remove cover.

Procedure same as Item #44 (c) except that it is not necessary to use the Vacuum Cleaner for this.

Leave Metal Cover off this Unit, but replace Tube "V-1".

(e) "lst Power Amplifier Unit" #3 (E): Proceed to rear of this Unit, remove Tubes "VIE" and "V2E".

Remove the "Expanded Metal" Front Cover of the Unit, open the door of Compartment then check and clean all equipment.

Procedure same as Item #44 (c).

(f) "Transmitter:" Inform all Technicians that Oil Circuit Breakers are about to be put "ON", that Transmitter will be Started to make measurements of tube Voltages.

"50 KW Trans. & Ant. Equip. Maint."

| | BOOK No. | (| 7 |) |
|---|----------|---|-----|---|
| | SEC. No. | (| С |) |
| • | PAGE No. | (| 197 |) |

5TH TUESDAY

ITEM 44.

Technicians performing work requiring that the Transmitter be COMPLETELY SHUT DOWN will stop such work at once.

They may proceed to other Items not requiring performance of Item #44 (a) to (b) inclusive.

- (g) "Switch Room": As soon as all Technicians are clear, proceed to this Room in the Basement and put "ON" Switch #2, "50 KW Distribution Oil CKT Breaker".

 Merely grasp the Handle of the Oil Circuit Breaker and push down until latched in place.
- (h) "Basement": (All Technicians in the Clear.) While in the Basement, put "ON" "DlP" "Master 480 Volt Oil Circuit Breaker".

Merely grasp the Handle of the Oil Circuit Breaker and push down until latched in place.

Insert the Wood "Preventer" between the Operating Handle and Tripping Lever.

(i) "Control Unit" #1 (A): Proceed to this Unit and Adjust Transmitter

Filament Rheostat "R16A** to Minimum per Book No. (3) Sec. No. (A)

Page No. (35).

Push "ON" - "D2A" - "Master Control" Start Button per Book No. (3)
Sec. No. (A) Pages No. (25) to No. (25).

After 5 minutes turn "Filament Generator Rheostat" - "R16A" counter-clockwise to read exactly 20 volts on "Amplifier Filament Voltage" Voltmeter "M1A".

On the Front of this Unit, place Voltmeter Selector Switch "D4A" to position marked "Rectifier Filament".

Adjust "Rectifier Filament Rheostat" - "R17A" to read exactly 408 volts on "Line and Rectifier Filament Voltage" Meter "M3A".

Throughout the balance of this Item while measuring Filament Voltages be sure to maintain these two voltages as outlined.

Continued to next Page

World Radio History

"50 KW Trans. & Ant. Equip. Maint."

| BOOK No. | (| 7 |) |
|----------|---|-----|---|
| SEC. No. | (| C |) |
| PAGE No. | (| 198 |) |

5TH TUESDAY

ITEH 44.

(j) "Control Unit" #1 (A): Proceed to the rear of this Unit, and measure the A.C. Filament Voltage at the Filament Prongs of 258-B Rectifier Tubes "VIA" to "VGA" inclusive.

Use Model No. 433 Weston A.C. Voltmeter.

Tubes remain in the Sockets.

Merely place Voltmeter Prods on the Filament prongs of the Sockets.

Minimum 2.4 Volts: Maximum 2.5 Volts.

Enter on Form Book No. (7) Sec. No. (0) Page No. (203).

"Oscillator Modulator Unit" (D): Proceed to the Rear of this (k) Unit and measure the D.C. Filament Voltage at the Filament Prongs of Tubes "V2D" to "V5D" inclusive.

Use Model No. 45 Weston D.C. Voltmeter.

Tubes remain in their sockets.

TIAN WARAT WAS AKK WARRAN

Herely place Voltmeter Prods on the Filament Prongs of the Socket.

Hold Voltmeter leads up and away from the D.C. Field.

"V2D" - "Radio Freg. Amplifier" Tube type 276-A Minimum 9.7 Volts; Maximum 10.0 Volts.

"V3D" - "Modulating Amplifier" Tube Type 276-A Minimum 9.7 Volts; Maximum 10.0 Volts.

"V4D" - "Audio Input Amplifier" Tube Type 276-A Minimum 9.7 Volts; Maximum 10.0 Volts.

"V5D" - "Audio Power Amplifier" Tube Type 212-E Minimum 13.7 Volts; Maximum 14.0 Volts.

Enter on Form Book No. (7) Sec. No. (C) Page No. (205).

"Oscillator-Modulator Unit" #2 (D): Proceed to the Front of this (1)Unit and measure the A.C. Filament Voltage at the Filament Prongs of Tube "VID". Contid next Page

"50 KW Trans. & Ant. Equip. Maint."

BOOK No. (7)
SEC. No. (C)
PAGE No. (199)

5TH TUESDAY

ITEM 44

Tube remains in Socket.

Merely place Voltmeter Prods on the Filament Prongs of the Socket.

"VlD" -"Buffer Amplifier" Tube Type 271-A Minimum; 4.8 Volts Maximum 5.0 Volts.

Enter on Form, Book No. (7) Sec. No. (C) Page No. (203).

(m) "Oscillator-Modulator Unit" #2 (D): While at the front of this Unit, measure the A.C. Filament Voltage at the Terminal Strip beneath Type 700-A "Oscillator No. 1" and "Oscillator No. 2".

Use Model No. 433 Weston A.C. Voltmeter.

Tubes remain in sockets.

Terminal Strips are located directly underneath each Crystal Oscillator Box.

Terminals are numbered 1 to 7 inclusive, from left to right.

Terminals No. 1 and No. 4 on each Crystal Oscillator Box are the A.C. Filament connections.

Both "VlY" and "V2Y" Type 271-A Tubes Minimum 4.8 Volts; Maximum 5.0 Volts. Enter on Form, Book No. (7) Sec. No. (C) Page No. (205).

(n) "Oscillator-Modulator Unit" #2 (D): Proceed to the Rear of this Unit and measure the D.C. Filament Voltage at Terminal No. 5 and output connection from Resistors "R8.1" - "R8.2" and "R8.5".

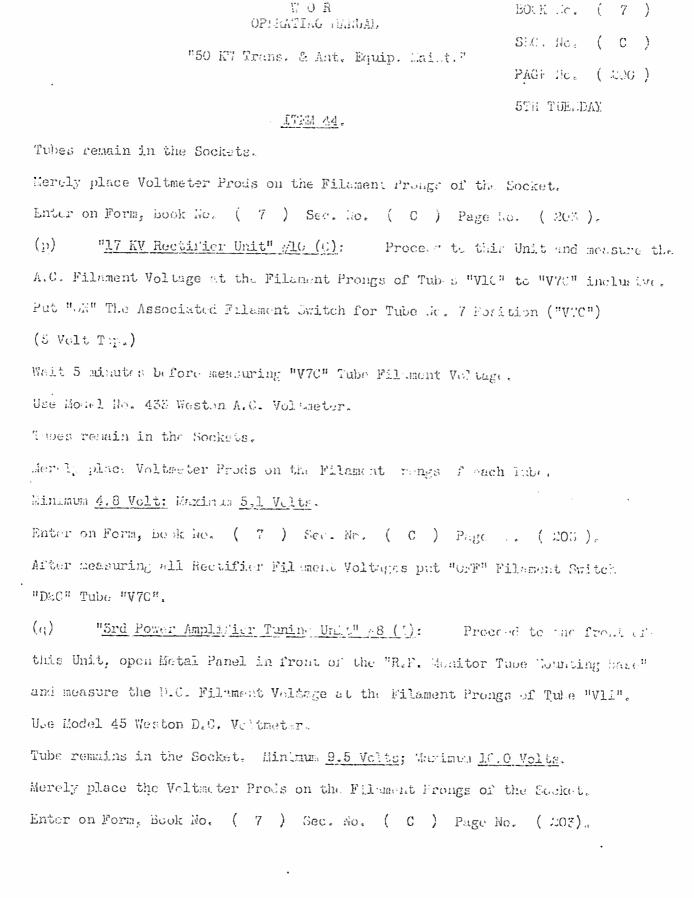
Use Model 45 Weston D.C. Voltmeter.

eas Armin

"Vl" - "Feedback Rectifier" Tube Type 274-A (Type 80 or Type 575 can be used as replacement) Minimum 4.0 Volts; Macinum 5.0 Volts.

Enter on Form, Book Mo. (7) Soc. No. (C) Page No. (203).

(c) "Les Pourr Angliffer Mall 25 (3): Errored to the Rear of this Unit and neasure for 2.6 and a second for 2.6 and 2.6 a



"50 KT Trans. & Art. Equip. Maint."

EOOK No. (7)

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5TH TUESDAY

ITEL 44:

After the Filament Voltages, on the specified Tubes, have been measured, proceed to measure the "Bias Voltage" on the following Tubes:

"VID" - "VED" - "VED" - "VAD" - "VED" - "VEE",

- (r) "17 NV Rectifier Unit" #10 (C): Proceed to this Unit to the High Voltage Grounding Switch and Door Interlock mechanism and put "ON" Switch "D179", which is located on the end of this Grounding Switch assess by.
- (s) In measuring the Bias Voltage on the above Tubes, use the Weston Model #77% Voltable r, kept in top compartment of "Portable Fuse and Test Unit" Transmitter Room.

Togale Switch at lower left side of Meter should be set at "DC Volts" Position.

The Center Selector Switch should be set on "250 Volt" Scale.

Take the two Rubber Test leads and insert the "Red" lead in the Pin Jack marked "+" and the "Black" lead in the Pin Jack marked "-".

This pair of Pin Jacks are located at the Upper Right corner of Meter.

This Voltchmeter is a 20,000 Ohm per Volt D.C. Heter.

(t) "Oscillator - Modulator Unit" #2 (D): Ist. Technician to proceed to the Frent of "Control Unit" and adjust "Bias Generator Rheostat" "PLSA" to read exactly 300 Volte, as read on "Bias Voltmeter" "FEA",
2nd. Technician to proceed to the Front of "Oscillator - Modulator Unit" and prepare to read Bias Voltage on "VLD" - 271-A Buffer Amplifier.

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World Radio History

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"50 KK Trans. & Ant. Equip. Maint."

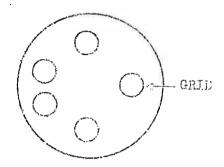
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5TH TUBLEAX

ETELL 44.

(u) "Oscillator - Modulator Unit" #2 (D): "VID" is located between the Xtal Units #1 & #2.

The Grid Terminel on this socket is the "Odd" Pin in spacing. Below is "Top" view of socket.



Take the "Red" lead of "+" of Voltmeter and securely fasten to good Ground point on frame.

The "Black" lead of "-" of the Meter is touched to the Grid Pin of Socket.

For this particular Voltage, the Selector Switch, on the Meter may be turned to the "50" Volt Scale for a more accurate reading.

Upon completing this reading, turn it back to the "250" Volt Scale.

When 1st. Technician has 300 Volts on Meter "MRA" take a reading on Meter and enter same in proper space on form, Book No. (7) Sec. No. (C)

Page No. (304).

(v) "Oscillator - Modulator Unit" #2 (D): Technician #2 will proceed to rear of Unit and measure Voltage on Tube "V2D" 276-A Radio Frequency Amplifier.

Take the Small Step Ladder to facilitate reaching the Tube Prongs.

"Filament Voltages at Tube Terminals"

BOOK No. (7)
SEC. No. (C)
PAGE No. (203)

ITEM 44

| _ | TEM 44 | | | 5TH TUESDA | |
|--|--|------------------|--|------------------|---------------------|
| DATE & SIGN | | | 7/31/56 | | 1 pa/46 \$ 9 |
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| VlA - 258-B 1650 VOLT Rect. Position #1 | 2.5 | 2.40 | 2.30 | 2.5 | 2.45 |
| V2A - 258-B 1650 VOLT Rect. Position #2 | 2.5 | 2.40 | 2.30 | 2.5 | 2.45 |
| Rect. Position #3 | 2.5 | 2.40 | 2.30 | 2.50 | 2.45 |
| | 2.5 | 2.40 | 2.30 | 2.50 | 2.45 |
| V5A - 258-B 1650 VOLT Rect. Position #5 | 2.5 | 2.40 | 2.30 | 2.50 | 2.45 |
| V6A - 258-B 1650 VOLT Rect. Position #6 | 2.5 | 2.40 | 2.30 | 2.50 | 2.45 |
| VlD - 271-A Buffer Amplifier | 5.0 | 4.70 | 4.71 | 4,75 | 4.75 |
| V2D - 276-A Radio Freq. Amplifier | 10.0 | 10.0 | 10.20 | 10.1 | 10.2 |
| Modulating Amplifier | 10.0 | 10.0 | 10.50 | 10.3 | 10.2 |
| Audio Input Amplifier | 10.0 | 9.85 | 10.00 | 9.90 | 10.0 |
| V5D - 212-E Audio Power Amplifier | 14.0 | 13.80 | 13.80 | 14.0 | 14.0 |
| VlY - 271-A Oscillator #1 | 5.0 | 4.72 | 4.72 | 4.71 | 4.72 |
| V2Y - 271-A Oscillator #2 | 5.0 | 4.75 | 4.72 | 4.72 | 4.72 |
| Vl - 274-A Feed Back Rectifier | 5.0 | 4.60 | 4.50 | 4.80 | 4.6 |
| V1E - 212-E 1st Power Amplifier Position #1 | 14.0 | 13.60 | 13.20 | 13.70 | 14.4 |
| V2E - 212-E 1st Power Amplifier Position #2 | 14.0 | 13.60 | 13.25 | 13.78 | 14.9-> |
| V1C - 266-B 17 K.V. Rect. Position #1 | 5.0 | 5.05 | 5.08 | 5.09 | 5.08 |
| V2C - 266-B 17 K.V. Rect. Position #2 | 5.0 | 5.05 | 5.08 | 5.09 | 5.08 |
| V3C - 266-B 17 K.V. Rect. Position #3 | 5.0 | 5.05 | 5.08 | 5.08 | 5.08 |
| V4C - 266-B 17 K.V. Rect. Position #4 | 5.0 | 5.05 | 5.08 | 5.08 | 5.08 |
| V5C - 266-B 17 K.V. Rect. Position #5 | 5.0 | 5.05 | 5.08 | 5.08 | 5.08 |
| V6C - 266-B 17 K.V. Rect. Position #6 | 5.0 | 5.05 | 5.08 | 5.08 | 3.08 |
| V7C - 266-B 17 K.V. Rect. Position #7 | 5.0 | 4.90 | 4.99 | 4.92 | 4.94 |
| VlI - 276-A Radio Freq. Monitor | 10.0 | 9.55 | 9.30 | 9.40 | 9.40 |
| | DATE & SIGN VOLTAGES VIA - 258-B 1650 VOLT Rect. Position #1 V2A - 258-B 1650 VOLT Rect. Position #2 V3A - 258-B 1650 VOLT Rect. Position #3 V4A - 258-B 1650 VOLT Rect. Position #4 V5A - 258-B 1650 VOLT Rect. Position #5 V6A - 258-B 1650 VOLT Rect. Position #5 V6A - 258-B 1650 VOLT Rect. Position #6 V1D - 271-A Buffer Amplifier V2D - 276-A Radio Freq. Amplifier V3D - 276-A Modulating Amplifier V4D - 261-A Audio Input Amplifier V5D - 212-E Audio Power Amplifier V1Y - 271-A Oscillator #1 V2Y - 271-A Oscillator #2 V1 - 274-A Feed Back Rectifier V1E - 212-E 1st Power Amplifier Position #1 V2C - 266-B 17 K.V. Rect. Position #2 V3C - 266-B 17 K.V. Rect. Position #3 V4C - 266-B 17 K.V. Rect. Position #4 V5C - 266-B 17 K.V. Rect. Position #5 V6C - 266-B 17 K.V. Rect. Position #6 V7C - 266-B 17 K.V. Rect. Position #6 V7C - 266-B 17 K.V. Rect. Position #6 V7C - 266-B 17 K.V. Rect. Position #6 | DATE & SIGN | DATE & SIGN NATED WEASURED VOLTAGES VOLTAGE VOLT Rect. Position #2 2.5 2.40 VOA - 258-B 1650 VOLT Rect. Position #3 2.5 2.40 VOA - 258-B 1650 VOLT Rect. Position #4 VOA - 258-B 1650 VOLT Rect. Position #5 2.5 2.40 VOA - 258-B 1650 VOLT Rect. Position #5 VOA - 258-B 1650 VOLT Rect. Position #6 VOLTAGE VOA - 258-B 1650 VOLT VOA - 258-B 1650 VOLT Rect. Position #6 VOA - 258-B 1650 VOLT VOA - 258-B 1650 VOLT VOA - 258-B 1650 VOLT VOA - 276-A Radio Freq. Amplifier 10.0 10.0 10.0 VOA - 276-A Modulating Amplifier 10.0 10.0 10.0 VOA - 261-A Audio Input Amplifier 10.0 10.0 10.0 VOA - 261-A Audio Power Amplifier 14.0 13.80 VOA - 271-A Oscillator #2 5.0 4.79 VOA - 271-A Oscillator #2 5.0 4.79 VOA - 271-A VOA - 271-A Oscillator #2 5.0 4.75 VOA - 271-A VOA - 271- | DATE & SIGN | DATE & SIGN |

EIAS VOLTAGES AT TUBE TERMINALS

BOOK No. (7)

SEC. No. (C)

PAGE No. (204)

YEAR 1945-46

| ITEM | 44 |
|------|----|
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| DATE & SIGN | | 1/30/45 RQ | 1 | | 1/24/15 50 |
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| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| VlD - 271-A BUFFER AMPLIFIER | 37 * | 42 | 43 | 36 | 36 |
| V2D - 276-A RADIO FREQ. AMPLIFIER | 70 | 70 | 70 | 70 | 70 |
| V3D - 276-A MODULATING AMPLIFIER | 70 | 70 | 70 | 70 | 70 |
| V4D - 261-A AUDIO INPUT AMPLIFIER | 68 | 70 | 70 | 70 | 70 |
| V5D - 212-E AUDIO POWER AMPLIFIER | 68 | 70 | 70 | 70 | 70 |
| VIE - 212-E 1st PWR. AMPLIFIER POS'N # 1 | 72 | 72 | 72 | 72 | 72 |
| V2E - 212-E 1st PWR. AMPLIFIER POS'N #2 | 72 | 72 | 72 | 72 | 72 |
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World Radio History

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PAGE No. (204

YEAR

5TH TUESDAY

| DATE & SIGN | 1. 1. 2. | 12/11/11 | | 9/30/47 | |
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| vid = 271-4 Suffer Amplicies | 3 | 348 | \$ P | 38.0 | |
| ved - 276-a Rafid Freq. Amplifier | 70 | 70 | | 68.0 | |
| V3D - 276-A MODULATING AMPLIFILE | 70 | 70 | | 68.0 | |
| VAD - 261-A AUDIO INPUT AMPLIFIE | 1 | 70 | | 68.0 | |
| V5D - 212 E AUDIO POVOS AMPLIFICA | | 75 | | 68.0 | |
| VIE - Flas Let Pie. | L : "Trous. | 72 | | 69.0 | |
| AMPLIELER POS'N # 1 V2E - 212-E let PGR. | | 77 | | 69.0 | |
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"Filament Voltages at Tube Terminals"

SEC. No.

PAGE No. (205)
5TH TUESDAY 1948/49

| DATE & SIGN | | 3/30/48 FB | 8 31/12 5 | 11/30/48 JL | 3/29/49 5L |
|--|-------|------------------|-----------|-------------|------------|
| VOLTAGES | RATED | VEASURED VOLTAGE | VOLTAGE | WOLTAGE | VOLTAGE |
| VIA - 258-B 1650 VOLT Rect. Position #1 | 2.5 | 2.45 | 2.6 | 2.5 | 2.5 |
| V2A - 258-B 1650 VOLT Rect. Position #2 | 2.5 | 2.45 | X' E | 2.5 | 2.5 |
| VBA - 258-B 1650 VOLT Rect. Position #3 | 2.5 | 2.45 | X | 2.5 | 2.5 |
| V4A - 258-B 1650 VOLT Rect. Position #4 | 2.5 | 2.45 | 2.0 | 10.0 | 2.5 |
| V5A - 258-B 1650 VOLT Rect. Position #5 | 2.5 | 2.45 | X | 7 | 2.5 |
| VBA - 258 B 1650 VOLT Rect. Position #6 | 2.5 | 2.45 | 4-0 | | 2.5 |
| VlD - 271-A Buffer Amplifier | 5.0 | 4.80 | 4.80 | 4.7. | 4.7 |
| V2D - 276-A Radio Freq. Amplifier | 10.0 | 10.0 | 1000 | 10.0 | 10.0 |
| V5D - 276-A Modulating Amplifier | 10.0 | 10.0 | | 10.0 | 10.0 |
| V4D - 261-A Audio Imput Amplifier | 10.0 | 10.0 | | 10.0 | 9.9 |
| V5D - 212-E Audio Power Amplifier | 24.0 | 14.0 | 11-50 | 13.7 | 13.6 |
| VIY - 271-A Oscillator #1 | 5.0 | 4.80 | 4 | .4.7 | 4.9 |
| V2Y - 271-A Oscillator #2 | 5.0 | 4.80 | 1-13 | | 4.9 |
| V1 - 274-A Feed Back Rectifier | 5.0 | 4.6 | 4-6 | 4.4 | 4.8 |
| VIE - 212-E 1st Power Amplifier Position #1 | 14.0 | 14.0 | 11- | 13.7 | 13.8 |
| V2E - 212-E 1st Power Amplifier Position #2 | 14.0 | 14.0 | 14.0 | 13.7 | 13.8 |
| V1C - 268-B 17 K.V. Rect. Position 1 | 5.0 | 5.1 | 3.8 | 5.00 | 5.2 |
| V2C - 266-B 17 K.V. Rect. Position #2 | 5.0 | 5.1 | | 5.00 | 5.2 |
| V3C - 266-B 17 K.V. Rect. Position #3 | 5.0 | 51 | | 5.05 | 5.2 |
| V4C - 266-B 17 K.V. Rect. Position #4 | 5.0 | 5.1 | 3 - 1- | 5.00 | 15.2 |
| V5C - 266-B 17 K.V. Rect. Position 5 | 5.0 | 5./ | 6 - 2 | 6.00 | 5.2 |
| V6C - 266-B 17 I.V. Rect. Position #6 | | 4.1 | J . 2 | F.00 | K.V. |
| V7C - 266-B 17 K V | | 18 | 5.0 | 8 | |
| | | 9.6 | 2 | | F 1 1 2 7 |

BIAS VOLTAGES AT TUBE TERMINALS

BOOK No.

SEC. No. (C

PAGE No. (204

YEAR

| | | ITE | 44 | | 5TH TUE | SDAY |
|---|--|---|--|---------------------|---------------------------------------|---------------------|
| | DATE & SIGN | | | 8/2/19 30 | 11/30/43 AL | 3/29/49 |
| | VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURET VOLTAGE |
| | VID - 271-A BUFFER AMPLIFIER | | 37 | 37 | 36 | 36.1 |
| | V2D - 276-A RADIO FREQ. AMPLIFIER | | 70 | | 65 | 65 |
| | V3D - 276-A MODULATING AMPLIFIER | 4.4 | 70 | 1 4 Dr | 65 | 65 |
| | V4D - 261-A AUDIO INPUT AMPLIFIER | | 70 | 1 | 65 | 65 |
| | V5D - 212-E AUDIO POWER AMPLIFIED | | 70 | | 65 | 65 |
| | VIE - 212-E 1st PWR. AMPLIFIER POS'N # 1 | | 71 | 1-1 | 65 | 65 |
| | V2E - 212-E 1st PWR. | | 71 | $i \in$ | 65 | 65 |
| | REMARKS: DC Fil | Volt m | earned | with W | ston 45 | VM. |
| | all other rea | dingo u | eing West | m 772 | VM. | F6. |
| - | 1000 | 1.10 | ورارد المناصر ومرد ومرد ومرد ومرد ومرد ومرد ومرد ومر | | 11 100 | To IM |
| | | | r de la companya de l | | | |
| | D.C. F.L. Volt | ייני איני איני איני איני איני איני איני | Constitution (c) | Market Market | 20 1010 | |
| | all other ries | | | | | |
| | | , e | | | | |
| | DC FIL I me | asured h | | NU TILL | u - 4 | L |
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"Filament Voltages at Tube Terminals"

SEC. No. a C

PAGE No. (203)

5TH TUESDAY

BOOK No.

ITEM 44

| | | | _ | | |
|--|--|---------------------|------------------|---------------------|-----------|
| DATE & SIGN | | 5/3//49/2 | "/29/49 | 8/29/50 | 1-30-51 |
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEAS TO S |
| VlA - 258-B 1650 VOLT Rect. Position #1 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Rect. Position #2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Rect. Position #3 | 2.5 | 2.5 | ٧.5 | 2.5 | 2.5 |
| Rect. Position #4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Rect. Position #5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Rect. Position #6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| VlD - 271-A Buffer Amplifier | 5.0 | 4.8 | 4.8 | 4.8 | 4.8 |
| Freq. Amplifier | 10.0 | 10.0 | 10.0 | (0.0 | 10.0 |
| Modulating Amplifier | 10.0 | 10.0 | 10.0 | 100 | 10.0 |
| Audio Input Amplifier | 10.0 | 10.0 | 10.0 | 10-0 | 10.0 |
| Audio Power Amplifier | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| Oscillator #1 | 5.0 | 4. 7 | 4.8 | 4.8 | 4.8 |
| Oscillator #2 | 5.0 | 4.7 | 4.8 | 4.8 | 4.8 |
| V1 - 274-A Feed Back Rectifier | 5.0 | 4.7 | 4.8 | 4.8 | 4.8 |
| VIE - 212-E 1st Power Amplifier Position #1 | 14.0 | 13.8 | 13.8 | 14.0 | 14.0 |
| V2E - 212-E 1st Power Amplifier Position #2 | 14.0 | 13.8 | 13.8 | | |
| VIC - 266-B 17 K.V. Rect. Position #1 | 5.0 | 5.15 | 5.1 | T I | 5.15 |
| Rect. Position #2 | 5.0 | 5.1 | 5.1 | | 5.1 |
| Rect. Position #3 | 5.0 | 5.1 | 5.1 | | 5.1 |
| Rect. Position #4 | 5.0 | 5.1 | 5.1 | 5.1 | 5.15 |
| Rect. Position #5 | 5.0 | 5.1 | 5.1 | 5.) | 5.15 |
| V6C - 266-B 17 K.V. Rect. Position #6 | 5.0 | 5.1 | 5.1 | | 5.1 |
| V7C - 266-B 17 K.V. Rect. Position #7 | | 2.0 | 5.0 | 4.89 | 5.0 |
| VII - 276-1 Radio Francisco | | 9.7 | 97 | 9-7 | 9.75 |
| | VOLTAGES VIA - 258-B 1650 VOLT Rect. Position #1 V2A - 258-B 1650 VOLT Rect. Position #2 V3A - 258-B 1650 VOLT Rect. Position #3 V4A - 258-B 1650 VOLT Rect. Position #4 V5A - 258-B 1650 VOLT Rect. Position #5 V6A - 258-B 1650 VOLT Rect. Position #5 V6A - 258-B 1650 VOLT Rect. Position #6 V1D - 271-A Buffer Amplifier V2D - 276-A Radio Freq. Amplifier V3D - 276-A Modulating Amplifier V5D - 212-E Audio Input Amplifier V1Y - 271-A Oscillator #1 V2Y - 271-A Oscillator #2 V1 - 274-A Feed Back Rectifier V1E - 212-E 1st Power Amplifier Position #1 V2E - 212-E 1st Power Amplifier Position #2 V1C - 266-B 17 K.V. Rect. Position #2 V1C - 266-B 17 K.V. Rect. Position #5 V4C - 266-B 17 K.V. Rect. Position #6 V7C - 266-B 17 K.V. Rect. Position #6 V7C - 266-B 17 K.V. Rect. Position #6 V7C - 266-B 17 K.V. Rect. Position #6 | VOLTAGES | VOLTAGES | VOLTAGES | VOLTAGES |

End & Srd Power Amplifier Filament Voltages & Currents, Form:

BIAS VOLTAGES AT TUBE TERMINALS

BOOK No. SEC. No.

PAGE No. (204)

YEAR

| DATE & SIGN | 5/31/49 | 11/21/49 | 8/29/50 | 1-30-51 | |
|---|------------------|---------------------|---------------------|---------------------|--------------------|
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURE VOLTAGE |
| VID - 271-A | 36.5 | 21 | 3. | 36.5 | |
| BUFFER AMPLIFIER V2D - 276-A RADIO | 06.7 | 36.5 | 36.5 | <i>y</i> 6. | |
| FREQ. AMPLIFIER | 65 | 625 | 45 | 65 | |
| V3D - 276-A MODULATING AMPLIFIER | 65 | 65 | 45 | 65 | |
| V4D - 261-A AUDIO INPUT AMPLIFIER | 65 | 65 | 45 | 65 | |
| V5D - 212-E AUDIO POWER AMPLIFIER | 65 | 65 | 65 | 65 | |
| VIE - 212-E 1st PWR. AMPLIFIER POS'N # 1 | 65 | 65 | 65 | 65 | |
| V2E - 212-E 1st PWR. AMPLIFIER POS'N #2 | 65 | 65 | 45 | 65 | |
| REMARKS: | | | | | |
| DC + AC Veston | Voltano | 2 meas | red UA | i | |
| Marta | 772 1 | M - AL | | | |
| O DE GIW | ,, <u> </u> | | | | 11 |
| Wholis Do. A | C 1/2 | 1- A. | asu 1 | 1.0. 1. |). T |
| 11/29/49 DC+A | 15 | age me | | and a | سعامير |
| 772 V/1 | - 70 | • | | | |
| . / / | | | | | |
| 8/29/50 D.C. | dac. | rullas | is me | asmed | using |
| Western # | 772 V | M - 6 | 18 | | 1 |
| | · · | 7 76 | | | |
| | <u></u> | | | | |

\$20. No. (C)

PAGE No. (203)

ITEM 44

Friames religion as Tues Territories

| | | | Shales | W-LL | | C6-512 |
|---|---|---------------|---------------------|---------------------|------------------|---------------------|
| , | DATE & SIGN | | 5/33/5/JK | 1/29/52 | 4/30/57 | 7/20/52 |
| | VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| | VlA - 258-B 1650 VOLT Rect. Position #1 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 2 | V2A - 258-B 1650 VOLT Rect. Position #2 | 2.5 | 2.5 | 2.5 | 2.5 | 25 |
| 1) | VSA - 258-B 1650 VOLT Rect. Position #3 | 2.5 | 2,5 | 2.5 | 2.5 | 2.5 |
| No. | V4A - 258-B 1650 VOLT Rect. Position #4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Page | V5A - 258-B 1650 VOLT Rect. Position #5 V6A - 258-B 1650 VOLT | 2.5 | 2.5 | 25 | 2.5 | 2.5 |
| . ~ " | Rect. Position # | 2.5 | 2,5 | 2.5 | 2.5 | 2.5 |
| Form C | VID - 271-A Buffer Amplifier | 5.0 | 4.8 | 9.8 | 4.8 | 4.8 |
| nts, | V2D - 276-A Radio Freq. Amplifier | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Currents, ec. No. | VSD - 276-A Modulating Amplifier | 10.0 | 10,0 | 10.0 | 10.0 | 10.0 |
| N W | V4D - 261-A Audio Imput Amplifier | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 4ges 7 | V5D - 212-E Audio Power Amplifier | 14.0 | 14.0: | 14.0 | 14.0 | 14.0 |
| Voltages (7) | VlY - 271-A Oscillator #1 | 5.0 | 4.7 | 4.7 | 4.7 | 4.7. |
| Filament Book No. | V2Y - 271-A Oscillator #2 | 5.0 | .4.7 | 4.7 | 4.7 | 4.7 |
| Fila Book | V1 - 274-A Feed Back Rectifier | 5.0 | 4,8 | 4.8 | 4.8. | 4.8 |
| | VIE - 212-E 1st Power Amplifier Position #1 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| plii rent | V2E - 212-E 1st Power Amplifier Position #2 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 3rd Power Amplifier Filament Currents" | V1C - 266-B 17 K.V. Rect. Position #1 | 5.0 | 5.1 | 5-1 | 5.1 | 5.1 |
| Рож атеп | V2C - 266-B 17 K.V. Rect. Position #2 | 5.0 | 5.0 | 5.0 | 5.0 | 5-0 |
| Fil | V3C - 266-B 17 K.V. Rect. Position #3 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 2nd & Tube | V4C - 266-B 17 K.V. Rect. Position #4 | 5.0 | 5.1 | 5.1 | 5.1 | 5,1 |
| c v ≖ | V5C - 266-B 17 K.V. Rect. Position #5 | 5.0 | 5,1 | 5./ | 5.1 | 5.1 |
| | V6C - 266-B 17 K.V. Rect. Position #6 | 5.0 | 5.1 | 5./ | 5./ | 5.1 |
| | V7C - 266-B 17 K.V. Rect. Position #7 | 5.0. | 4.9 | 14.9 | 4.9 | 5.0 |
| | VII - 276-A Radio Freq. Monitor | 10.0 | 9.8 | 9-8 | 9.8 | 9.8 |

BIAS VOLTAGES AT TUBE TERMINALS

ITEM 44

BOOK No. (7)

SEC. No. (C)

PAGE No. (204)

YEAR 1951

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|---|------------------|---------------------|---------------------|---------------------|---------------------|
| DATE & SIGN | | JQ-JK 5-29-51 | 1/29/52 | 4/30/5× | 7/29/52 |
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| VID - 271-A BUFFER AMPLIFIER | | 36 | 36 | 36 | 36 |
| V2D - 276-A RADIO FREQ. AMPLIFIER | | 66 | 66 | 66 | 66 . |
| V3D - 276-A MODULATING AMPLIFIER | | 66 | 66 | 66 | 66. |
| V4D - 261-A AUDIO INPUT AMPLIFIER | | 66 | 66 | 66 | 66 |
| V5D - 212-E AUDIO POWER AMPLIFIER | | 66 | 66 | 66 | 66 |
| VIE - 212-E 1st PWR. AMPLIFIER POS'N # 1 | | 67 | 69 | 67 | 67 - |
| V2E - 212-E 1st PWR. AMPLIFIER POS'N #2 | | 67 | 67 | 67 | 67 |
| REMARKS: | | | | | |
| 5/29/51 - D. | C. gup | AC Volta | iges Mea | sured Usi | ng |
| 5/29/51 - D. | leston t | +772V/ | 1-9.0 | 9 | |
| | | 1 1 | | 1 | |
| 1/29/51 | 2-20 | 7 AC | · Voli | olies | FILERIE |
| | seing | pelesto | 4 # 7 | 12 V/ | 757 |
| 4/30/52:- | DC.6 A. | C. Voltas | co Measu | ied Using | Weston |
| | # 112 V | .m | F. | | |
| 7/26/22 1 | 20 1 n | 0 1/- Ota | | f line | · delaston |
| 7/29/sr:- A | EMMA V. | m lo | y. | er not | reg with |
| | 1/8 | | | | |
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PAGE No. (203)

ITEM 44

The Terminal section of the Terminal of

Section 1

| | | W | | | | |
|---|--|---------|---------------------|---------------------|------------------|---------------------|
| | DATE & SIGN | 78-1-52 | 10-1-52 | 12-30-52 | TD-94 6-30-53 | 17) - 5/ |
| | VOLTAGES | RATED | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| | VlA - 258-B 165G VOLT Rect. Position #1 | 2.5 | 2.5 | 2.6 | 2.5 | 2.5 |
| - . | V2A - 258-B 165G VOLT Rect. Position #2 | 2.5 | એ. 5 | 2.6 | 2.5 | 2.5 |
| - | VEA - 258-B 165G VOLT Rect. Position #3 | 2.5 | 2.5 | 2.6 | 2.5 | 2.5 |
| No. | V4A - 258-B 1650 VOLT Rect. Position #4 | 2.5 | 2.5 | 2.6 | 2.5 | 2.5 |
| Page | V5A - 258-B 1650 VOLT Rect. Position #5 | 2.5 | 2.5 | 2.6 | 2.5 | 2.5 |
| <u>н</u> | V6A - 258-B 1650 VOLT Rect. Position #6 | 2.5 | a.5 | 2.6 | 2.5 | 2.5 |
| Form: | VlD - 271-A Buffer Amplifier | 5.0 | 4.8 | 4.8 | 4.8 | 4. 32 |
| | V2D - 276-A Radio Freq. Amplifier | 10.0 | 10.0 | 10.0 | 10,0 | 10.0 |
| k Currents, Sec. No. | V3D - 276-A Modulating Amplifier | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| sec | V4D - 261-A Audio Input Amplifier | 10.0 | 10.0 | 10.0 | 10,0 | 10.0 |
| Voltages (7) | V5D - 212-E Audio Power Amplifier | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| Volta (' | VlY - 271-A Oscillator #1 | 5.0 | 4.7 | 4.8 | 4.7 | 4:7. |
| ent No. | V2Y - 271-A Oscillator #2 | 5.0 | 4.7 | 4.8 | 4.7 | 40 |
| Filament Book No. | V1 - 274-A Feed Back Rectifier | 5.0 | 4.8 | 4.8 | 4.8 | 4.5 |
| | VlE - 212-E 1st Power Amplifier Position #1 | 14.0 | 14.0 | 14.0 | 14.0 | 140 |
| plif rent | V2E - 212-E 1st Power Amplifier Position #2 | 14.0 | 14.0 | 14.0 | 14.0 | 140 |
| <pre>5rd Power Amplifier Filament Currents"</pre> | V1C - 266-B 17 K.V. Rect. Position #1 | 5.0 | 5.1 | 5.1 | 5.1 | 5.0 |
| Powe ment | V2C - 266-B 17 K.V. Rect. Position #2 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 3rd File | V3C - 266-B 17 K.V. Rect. Position #3 | 5.0 | 5.0 | 5.1 | 5.0 | 5:/ |
| Znd & "Tube | V4C - 266-B 17 K.V. Rect. Position #4 | 5.0 | 5.1 | 5.1 | .5. / | 5/- |
| Ν ≡ | V5C - 266-B 17 K.V. Rect. Position #5 | 5.0 | 5.1 | 5.1 | 5.1 | 5.7 |
| | V6C - 266-B 17 K.V. Rect. Position #5 | 5.0 | 5.1 | 5.1 | 51 | 5.1 |
| | V7C - 266-B 17 K.V. Rect. Position #7 | 5.0 | 5.0 | 5.0 | 50 | 5.0 |
| | VII - 276-A Radio Freq. Monitor | 10.0 | 9.8 | 9.8 | 9.8 | 9.9 |
| _ | | | | | | |

BIAS VOLTAGES AT TUBE TERMINALS

SEC. No.

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PAGE No. (204)

| | ITE | 44 | | 5TH TUE | SDAY | | |
|--|------------------|-----------------------|---------------------|---------------------|---------------------|--|--|
| DATE & SIGN | | 10-1-52 | 12-30-52 | 10-6M 6-30-53 | 171-5K | | |
| VOLTAGES | RATED VOLTAGE | - MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | | |
| VID - 271-A BUFFER AMPLIFIER | | 36 | 36.5 | 36.5 | 36.5 | | |
| V2D - 276-A RADIO FREQ. AMPLIFIER | | 66 | 66 | 66 | 66 | | |
| V3D - 276-A MODULATING AMPLIFIER | | 66 | 66 | 66 | 66 | | |
| V4D - 261-A AUDIO INPUT AMPLIFIER | | 66 | 66 | 66 | 66 | | |
| V5D - 212-E AUDIO POWER AMPLIFIER | | 66. | 66 | 66 | 66 | | |
| VIE - 212-E 1st PWR. AMPLIFIER POS'N # 1 | | 67 | 67 | 67 | 67 | | |
| V2E - 212-E 1st PWR. AMPLIFIER POS'N #2 | | 67 | 67 | 67 | 67 | | |
| REMARKS: | | | | | | | |
| 10-1-5 | 2 DC | AC V. | Stage n | easures | 6 | | |
| | mar | ng Wed | tin # 77 | 2 VM. | 22 | | |
| 12-30-52 1 | AC+ DC | Johtna ES | MERSURE | 2-45/109- | WESTAN | | |
| #772 Vol | THETER | OK-CH | | 0. | | | |
| | | | MEASUR | EP USI | vs. | | |
| 6-30-53 AC-DC VOLTAGES MEASURED USING WESTON #772 VOLTMETER - T.D. | | | | | | | |
| | | | | | | | |
| WESTON # 772 VOLTMETER- TD-JK | | | | | | | |
| 11-5101 11/2 POLINIFICA-1 D-5/ | | | | | | | |
| | no to the | | | | Maria 2.6 | | |
| | | | | | | | |

"Filament Voltages at Tube Terminals"

BOOK No. (7)

SEC. No. (C)

PAGE No. (203)

| DATE & SIGN | | 95-30 RH | 6-19-54 | | OK-RI |
|---|------------------|---------------------|------------------|---------------------------------------|--|
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | WEASUFED VOLTAGE | MEASURED VOLTAGE | WEASURE VOLTAGE |
| VIA - 258-B 1650 VOLT Rect. Position #1 | 2.5 | 2.5 | 2.5 | | 2.5 |
| V2A - 258-B 1650 VOLT Rect. Position #2 | 2.5 | 2.5 | 2.5 | 9. | 2.5 |
| VSA - 258-B 1650 VOLT Rect. Position #3 | 2.5 | 2.5 | 2.5 | | 2.5 |
| V4A - 258-B 1650 VOLT Rect. Position #4 | 2.5 | 2.5 | 2.5 | | 2.5 |
| V5A - 258-B 1650 VOLT Rect. Position #5 | 2.5 | 2.5 | 2.5 | | <i>A</i> |
| V6A - 258-B 1650 VOLT Rect. Position #8 | 2.5 | 25 | 2.5 | | |
| VID - 271-A Buffer Amplifier | 5.0 | 4.9 | 4.8 | | |
| V2D - 276-A Radio Freq. Amplifier | 10.0 | 10.0 | 100 | | |
| VSD - 278-A Modulating Amplifier | 10.0 | 10.0 | 10.0 | | |
| V4D - 261-A Audio Input Amplimer | 10.0 | 100 | 10.0 | | |
| V5D - 212-E Audio Power Amplifier | 14.0 | 14.0 | 14.0 | 885 885 | ÷ 14 |
| VIY - 271-A Oscillator #1 | 5.0 | 4.7 | 48 | | |
| V2Y - 271-A Oscillator #2 | 5.0 | 4.8 | 47 | | - dding |
| V1 - 274-A Feed Back Rectifier | 5.0 | 4.8 | 4.8 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | The state of the s |
| VIE - 212-E 1st Power Amplifier Position #1 V2E - 212-E 1st Power | 14.0 | 18.0 | 14.0 | | |
| Amplifier Position #2 | 14.0 | 14.0 | 14.0 | | |
| VIC - 266-B 17 K.V. Rect. Position 1 | 5.0 | 50 | 51 | Fig. 2.2 | |
| V2C - 266-B 17 K.V. Rect. Position 2 | 5,0 | 5.0 | 5.0 | | |
| V3C - 266-B 17 K.V. Rect. Position #5 | 5.0 | 5.1 | 50 | | |
| V4C = 266-B 17 K.V. Rect. Position #4 V5C - 266-B 17 K.V. | \$, 0 | 5 | 5/ | | |
| Rect. Position 5 V6C - 266-B 17 L.V. | 5.0 | 5.1 | 5.1 | | |
| Rect. Position #8 | 3.0 | 5. | 5/1 | 2002 | |
| 770 - 266-9 17 7 | | <i>5</i> .0 | 350 | | |
| (Fig. 1) | | 9.8 | 99 | | |

BIAS VOLTAGES AT TUBE TERMINALS

ITEM 44

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SEC. No.

PAGE No. (204

YEAR

| DATE & SIGN | | OK-RH 3-30-64 | 6-09-54 | ٠ | |
|---|---------------|---------------------|---------------------------------------|-------------------------------------|--|
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | | MEASURET VOLTAGE |
| VID - 271-A BUFFER AMPLIFIER | | 36.5 | 36.5 | | |
| V2D - 276-A RADIO FREQ. AMPLIFIER | · | 66 | 66 | | |
| V3D - 276-A MODULATING AMPLIFIER | | 66 | 66 | | |
| V4D - 261-A AUDIO INPUT AMPLIFIES | 3 | 66 | 66 | | |
| V5D - 212-E AUDIO POWER AMPLIFIES | - | . 66 | 66 | | |
| VIE - 212-E 1st PWR. AMPLIFIER POS'N # 1 | | . 67 | 67 | | |
| V2E - 212-E 1st PWR. AMPLIFIER POS'N #2 | | 67 | 67 | | A STATE OF THE STA |
| REMARKS: | | | • | \$ | |
| 6-29 AC+ 772 Vol | LTHETER | TAGES A | IEMSURE) TD |) USING | WESTO |
| | | | | | |
| . | _ | | · · · · · · · · · · · · · · · · · · · | | · · · · · · · · · · · · · · · · · · · |
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BOOK No. (7)
SEC. No. (C)

"Filament Voltages at Tube Terminals"

PAGE No. (203)

ITEM 44

| | TIEM 44 | | | | H TUESDAY | |
|----------------------|---|------------------|---------------------------------------|---------------------|------------------|---------------------|
| | | | RO - JL | | | |
| | DATE & SIGN | | 3-29-55 | | | |
| | VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| | VlA - 258-B 1650 VOLT | | 1 | | I I | VODIFGE |
| | Rect. Position #1 | 2.5 | 2.5 | | } | |
| | V2A - 258-B 1650 VOLT | | | | | |
| 17 | Rect. Position #2 | 2.5 | 2.5 | | | |
| | V3A - 258-B 1650 VOLT | | | | | |
| _ | Rect. Position #3 | 2.5 | 2.5 | | | |
| | V4A - 258-B 1650 VOLT | | | | | |
| Š | Rect. Position #4 | 2.5 | 2.5 | | | |
| ຄຸນ ຄ | V5A - 258-B 1650 VOLT | 0.5 | 2.5 | | | |
| Ра | Rect. Position #5 V6A - 258-B 1650 VOLT | 2.5 | 2.5 | <u> </u> | | |
| | Rect. Position #6 | 2.5 | 2.5 | | | |
| Ë | VIID 077 4 | 1 2 2 | | | 1 | |
| Form | Buffer Amplifier | 5.0 | 4.8 | l | | |
| \sim | V2D - 276-A Radio | 10.0 | 7.0 | | | |
| Currents, ec. No. | Freq. Amplifier | 16.0 | 10.0 | | | |
| en, No | V3D - 276-A | | | | 1 | |
| rr: | Modulating Amplifier | 10.0 | 10.0 | | | |
| . Cur Sec. | V4D - 261-A | | | | | |
| e(5 | WIGTO TUDGE WINDTITTEL | 10.0 | 10.0 | | | |
| es | V5D - 212-E | | | | | |
| 700 | Audio Power Amplifier | 14.0 | 14.0 | | | |
| Voltages (7) | VlY - 271-A Oscillator #1 | 5.0 | 4.8 | | | |
| > | V2Y - 271-A | 5.0 | 4.0 | | | |
| Filament Book No. | Oscillator #2 | 5.0 | 4.7 | | | |
| ลห | V1 - 274-A | | | | | |
| } <u>:</u> 11 300 | Feed Back Rectifier | 5.0 | 4.8 | · | |] |
| H | V1E - 212-E 1st Power | | () | | | |
| ier s" | Amplifier Position #1 | 14.0 | 14.0 | | | |
| Lif | V2E - 212-E 1st Power | | 14.0 |] | | |
| ap. | Amolifier Position #2 | 14.0 | 79. | | | |
| Ct. A | V2E - 212-E 1st Power Amolifier Position #2 V1C - 266-B 17 K.V. Rect. Position #1 | | 5.1 |]. | , | |
| rer it | VOC OCC R 17 V V | 5.0 | , , , , , , , , , , , , , , , , , , , | | | |
| Por | Rect. Position #1 V2C - 266-B 17 K.V. Rect. Position #2 V3C - 266-B 17 K.V. Rect. Position #3 | 5.0 | 5.0 | | | |
| d.] Lar | V3C - 266-B 17 K.V. | 3.0 | | | | |
| 3r Fi | Rect. Position #3 | 5.0 | 5.0 | | | |
| क Se | V4C - 266-B 17 K.V. | | | | | |
| nd Tul | V4C - 266-B 17 K.V. Rect. Position #4 V5C - 266-B 17 K.V. | 5.0 | 5.1 | | |] |
| ≈ 50 | | , | اريما | | | |
| | Rect. Position #5 | 5.0 | 5.1 | | | |
| | V6C - 266-B 17 K.V. Rect. Position #6 | 5.0 | 5.1 | | | |
| | | 0.0 | ٠.١ | | | |
| | V7C - 266-B 17 K.V. | 5.0 | 5.0 | · | | |
| | Rect. Position #7 VII - 276-A | <u> </u> | | | <u> </u> | |
| | | 10.0 | 9.9 | | | |
| 1 | | | <u></u> | <u> </u> | <u> </u> | |

BIAS VOLTAGES AT TUBE TERMINALS

BOUK No. (7),

SEC. No. (C)

Page No. (204)

YEAR 1955

ITEM 44

| <u> </u> | | | '5TH TUESDAY | | |
|--|------------------|---------------------|---------------------|---------------------|---------------------|
| DATE & SIGN | | 80-5L 3-29.55 | | | |
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE |
| VlD - 271-A BUFFER AMPLIFIER | | 34.5 | | | \ |
| V2D - 276-A RADIO FREQ. AMPLIFIER | | 66 | | | |
| V3D - 276-A MODULATING AMPLIFIER V4D - 261-A | e . | 66 | | | |
| AUDIO INPUT AMPLIFIFR V5D - 212-E | | 66 | A 40 | | |
| AUDIO POWER AMPLIFIER VIE - 212-E 1st PWR. | | 66 | | | |
| AMPLIFIER POS'N #1 V2E - 212-E 1st PWR. | | 67 | | | |
| AMPLIFIER POS'N #2 REMARKS: | | 67 | | <u> </u> | <u></u> |
| 3-29AC * #772 | Voltm | ety = RO | - 52 | | |

SEC. No.

7

"Filament Voltages at Tube Terminals"

PAGE No. (203)

ITEM 44

5TH TUESDAY

BOOK No.

1.3C 2-2456 APEC OF 11/50/5 10.24.58 DATE & SIGN ÎMILD MLASURED MEASURED MEASURED MEASURED VOLTAGES VOLTAGE VOLTAGE VOLTAGE VOLTAGE VOLTAGE V1A - 258-B 1650 VOLT Rect. Position #1 2.5 2.5 25 25 3.2 V2A - 258-B 1650 VOLT Rect. Position #2 2.5 2.5 2.5 2.5 V3A - 258-B 1650 VOLT 2.5 2.5 7. Rect. Position #3 2.5 2.5 V4A - 258-B 1650 VOLT Rect. Position #4 2.8 2.5 V5A - 258-B 1650 VOLT 1.... Rect. Position #5 5 2.5 2 3.8 2.5 V6A - 258-B 1650 VOLT 2.5 Rect. Position #6 2.5 1/2 2.5 2.5 V1D - 271-A Buffer Amplifier 4.5 5.0 48 48 V2D - 276-A Radio Freq. Amplifier 10.0 10.0 16.0 00 Current 0.0 V3D - 276-A Modulating Amplifier 16.0 10.0 10.6 100 0.0 V4D - 261-A Audio Input Amplifier c;5 10.0 10.0 10.0 100 100 Voltages V5D - 212-E 14. 14.0 Audio Power Amplifier 0 14.0 14.0 14.0 V1Y - 271-A Oscillator #1 5.0 4.7 4.7 V2Y - 271-A . હ Oscillator #2 4.7 4.7 4.7 5.0 V1 - 274-A 45 4.7 4.8 Feed Back Rectifier 5.0 V1E - 212-E 1st Power ري Amplifier Posttion #1 14. 14.0 14.0 14 3 140 V2E - 212-E 1st Power /Y . Amplifier Position #2 14.0 14.0 14.0 14.0 V1C - 266-B 17 K.V. 5.1 Rect. Position #1 5.0 ~ (2 5.0 V2C - 266-B 17 K.V. 5,0 Rect. Position #2 5.0 5.0 15.0 V3C - 266-B 17 K.V. Rect. Position #3 ン 54 5.0 5.0 V4C - 266-B 17 K.V. Rect. Position #4 5.0 5. 5.1 ت . تن V5C - 266-B 17 K.V. 5.1 Rect. Position #5 5.1 5.0 51 V6C - 266-B 17 K.V. Rect. Position #6 5.1 5.0 5.1 2.1 V7C - 266-B 17 K.V. 5.0 5. 0 5.6 Rect. Position #7 5.0 5.0 V1I - 276-A Ĵ. Radio Freg. Monitor 10.6 10.0 10.0 10.0

Filament

BIAS VOLTAGES AT TUBE TERMINALS

BOUX No. (7).

SEC. No. (C)

Page No. (204)

YEAR 1957-58

ITEM 44

| | 11 Page 44 | | | 5TH TUESDAY | | | |
|---|------------------|---------------------|---------------------|---------------------|---------------------|--|--|
| DATE & SIGN | | 2-24-56 | | BC-ADA | 10-24-23 | | |
| VOLTAGES | RATED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | MEASURED VOLTAGE | | |
| VlD - 271-A BUFFER AMPLIFIER | | 36.5 | 36.5 | 315 | 3/2/6 | | |
| V2D - 276-A RADIO FREQ. AMPLIFIER | | 66 | 66 | 1/2/2 | 106 | | |
| V3D - 276-A MODULATING AMPLIFIER | | 66 | 66 | 66 | 66 | | |
| V4D - 261-A AUDIO INPUT AMPLIFIER V5D - 212-E | | 66 | 66 | 66 | 66 | | |
| AUDIO POWER AMPLIFIER | | 66 | 66 | 66 | 66 | | |
| VIE - 212-E 1st PWR. AMPLIFIER POS'N #1 | _ | 67 | 66 | GT | 66 | | |
| V2E - 212-E 1st PWR. AMPLIFIER POS'N #2 | | 67 | 67 | 67. | 67 | | |
| REMARKS: | REMARKS: | | | | | | |
| 7 24-56 ALL VOLTAGES MEDICALES CORT | | | | | | | |
| H-30-56 All Valtages measured | | | | | | | |
| A mesta #772 l'Alantes DIC-SVA | | | | | | | |
| Valor HEAD and META Helitare GO MP | | | | | | | |
| ALL VOLTS HEASTORED ON LAESTON # 77? VHETEROR | | | | | | | |
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"So to The me. & Ant. Penip. Medent".

BOOK No. (7)

SEC. No. (0)

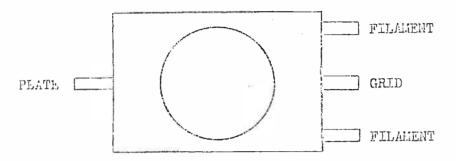
PLOE No. (205)

STH TURSDAY

1774 44.

On the 276-A Tube, the "Grid" Terminal is the lug that is between the tro Filement Terminals on one and of the Socket.

The lone Terminal on the appealte and of the Socket is the "Plate". help with "Too" view of Socket. This is a W.E. 112-A Socket.



Take the "Red" lead or "+" of the Meter and Faston to a good Ground point on the frame.

The "Black" lead or "-" of the Heter is touched to the "Grid" Terminal of Tube "VED".

When the Let. Technician has 500 Volts on Meter "MEA" take a reading on the Weston #772 Meter and enter same in proper space provided on form, Book No. (7) Sec. No. (C) Page No. (204).

- (w) "Oscillator Modulator Unit" #2 (D): Proceed to measure

 Bias Voltage of Tube "VSD" 276-A "Modulating Amplifier", in exact procedure

 as for Tube "V2D" and enter reading in proper space provided on form,

 Book No. (7) Sec. No. (6) Page No. (204).
- (m) "Oscillator Modulator Unit" (2 (D): Proceed to measure

 Bias Voltage of Tube "VAD" 261-A "Audio Input Amplifier" in exact procedure

 as for Tube "V2D" and "V5D" and enter reading in proper space provided on form,

 Book No. (7) Sec. No. (C) Page No. (204).

WOR Committee willed

"50 for Trans. & Aut. Paul. Dalmi".

DOOK Ho. (7)
FRO. Ro. (C)
PAGE Ho. (206).

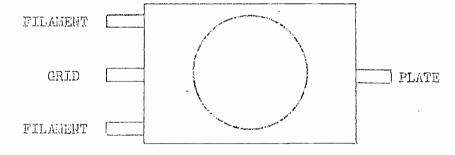
IT 11 44.

- (y) "Geeillator Model tor Unit" #2 (D): Proceed to resture nice Voltage of Tabe "VSD" 212-E "Audio Power Amplifier" in exact procedure as for Tabes "VAD" "VAD" "V4D" and enter reading in proper space provided on form, Book No. (7) Sec. No. (C) Page No. (204).
- (a) "IST Power Amplifier Unit" (3 (E): Technician (2 will proceed to Rear of Unit and measure Bias Voltage on "VLE" and "V2E".

 Use the small Step Ladder to facilitate reaching Tube Terminals.

 On the Tube "Elk-E", the "Grid" Terminal is the Center one on the side that contains 5 Terminals.

The lone terminal on the opposite end of the Socket is the "Plate". below is "Top" view of Socket. This is a V.E. 115-A Socket



Take the "Red" lead or "+" or the Weston #772 Meter and fasten to a good Ground point on the frame.

The "Black" lead or "+" of the Meter is touched to the "Grid" Terminal of Tube "VIE".

When the 1st. Technician has 500 Volts on Meter "M2A", take a reading on the Weston Meter and make a "Mental Mote" of same.

Take the "Black" lead from "Grid" Terminal of "VLE" and put it on the "Grid" Terminal of "V2E".

#50 &: Treens, & Int. Equip. Haint". #50 &: Treens, & Int. Equip. Haint". PAGE No. (207)

5TH TURRDAY

INH 44.

s fore toding a reading on this Tube, check with the 1st. Technician and see that he is maintaining 800 Volts on "EMA".

Then you get an "OK", proceed to take reading.

Enter these two readings in proper space on form, Book No. (7)
Sec. No. (C) Page No. (204).

(as) The measurement of Bias Voltages has now been completed.

Proceed to the High Voltage Grounding Switch and Door Interlock Mechanism and put Switch "ELTP" to "OFF" Position.

Remove leads from Weston Meter and place in Compartment designated for same.

Place Selector Switch to 1000 Volt Scale.

Put cover on Meter and place it in the proper Compartment of "Portable Fuse and Test Unit" Transmitter Room.

- (bi) "Control Unit" (1 (4): Proceed to the Front of this Unit, Reduce "Filament Generator Theostat" "F16A" to minimum (Turn Clockwise.)
- (cc) "Switch Room": Preced to this Room in the Basement and put "Off" Switch #2, "50 KW Distribution Oil CKT Breaker" For SAFETY REASONS.

Merely grasp the Handle of the Oil Circuit Breaker and lift it Up.

- (dd) "Busement": While in the Basement put "Off" Switch "DLP"
 "Master 480 Volt Oil Circuit Breeker" for SAFETY REASONS.
- (es) "Oscillator Modulator Unit" #2 (D): Proceed to the Rear of this Unit, remove Tubes "VED" to "V5D" inclusive from Sockets placing in "Spare Tube Room".

| | ì |
|---|------------------|
| W O R OPLRATING LIANUAL | BOOK No. (7 |
| "50 Ad Trans. & Ant. Equip. Haint." | PAGE No. (208 |
| | STR TOLGDAY |
| Place "Expanded Hetal cover" on top of Unit with rear edge si | lightly higher |
| than the Front, slip it over edges of Tube Sockets and into 1 | |
| heplace all Tubes "VED" to "VSD" inclusive in proper Sockets. | |
| Replace all Screws then tighten same. | |
| (ff) "Oscillator - Modelator Unit" #2 (D): While at i | the Rear of this |
| unit, Replace the "Expanded Metal Cover" on front of the "Fee | dback Rectifier |
| Tube Unit" and tighten the Wing Nuts. | |
| (gg) "Oscillator - Modulator Unit" #2 (D): Proceed to | the front of |

this Unit, remove Tube "VLD" from Socket, replace Metal Cover on top of

"Ist Power Amplifier Unit" #3 (E):

Replace Tubes "VLE" and "VRL" in proper Sockets.

Chose Door of Compartment and tighten Thuma Nuts,

)

1

Replace all Screws, then tighten same.

"Buffer Amplifier Unit", tighten Wing Nuts in place, then replace Tube "VID".

Unit, remove Tubes "VLE" and "VRE" from Sockets placing in "Spare Tube Room".

Place "Expanded Metal Cover" on top of Unit with rear edge slightly higher

than the Front, slip it over edges of Tube Sockets and into place.

Ĭ

E

Proceed to the front of

Proceed to the rear of this

(hh)

Sec. No. (A

Page No. (

