



STATE OF NEW YORK
DIVISION OF MILITARY AND NAVAL AFFAIRS
PUBLIC SECURITY BUILDING
STATE CAMPUS
ALBANY, NEW YORK 12226

OPERATING THE SPECIAL EMERGENCY RADIO (TMC)



PREFACE

The following pages of this booklet describe the use, equipment operating instructions and Special Emergency Net procedures for the radio operator, and detailed transmitter tuning instructions for licensed technicians, for the Technical Material Company (TMC) SBT-1KV transmitter and receiving console. Tuning instructions and charts are also included covering the RACES bands from 75 to 10 meters for possible emergency operation on those frequencies.

Albany, New York
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C O N T E N T S

PAGES

- 1 - 2A - Operating the Special Emergency Radio
- 3 - Special Emergency Radio Net
- 4 - 9 - TMC Receiving Console Control Settings
- 10-12 - TMC VOX-5 Settings for Receiver Control
- 13-22 - Tuning of the TMC Equipment (For Licensed Technicians)

Operating the Special Emergency Radio (TMC)

1. Introduction

A. Permissible Communications

Except for transmissions which are necessary for drills and tests, stations licensed to disaster relief organizations may be used ONLY for the transmission of communications relating to the safety of life or property, the establishment and maintenance of temporary relief facilities and the alleviation of the emergency situation during periods of actual or impending emergency or disaster and until substantially normal conditions are restored.

B. Station Calls

KXD-247 - Headquarters, Albany, New York
KXD-248 - Western District Office, Batavia, New York
KXD-249 - Northern District Office, Glens Falls, New York
KXD-250 - Central District Office, Oneida, New York
KXD-251 - Eastern District Office, Oneonta, New York
KXD-252 - Southern District Office, Poughkeepsie, New York
KXE-530 - Lake District Office, Newark, New York

C. Logging

All transmissions will be recorded in the station log, IN INK ONLY!

2. Transmitter (Tall Rack) (Refer to Illustration P. 2A)

- A. Throw MAIN POWER switch on Auxiliary Power Panel (APP 4) UP, RED light will come on. (Upper main power switch should always be on with GREEN light.)
- B. After a 1-minute delay the transmitter may be keyed by pushing the microphone "push-to-talk" switch. Two red lights should light on the transmitter, LV Power Supply (PS-4A).
- C. You should talk in a normal voice and should not exceed 100% on the Exciter Unit Meter (SBE-6).
- D. If you talk too loudly circuit breakers may drop. The three small PA overload breakers may be reset and you can transmit again but if either main circuit breaker drops you must wait 1 minute after resetting. If breakers persist in dropping speak more softly. Rarely, the PA Overload may drop and can be reset by pushing the red "RESET" button on the Monitor Control Unit, labeled - "RESET". (Refer to Illustration P. 2A)

3. Receiver

- A. The receiver FFR-3 works in conjunction with the MSR Mode Selector for crystal controlled interference free reception. These units are pre-adjusted for normal reception but if conditions require they may be

adjusted as described on Pages 4-6.

- B. The GPR Receiver is used as a backup unit and is normally turned OFF. Pages 7-9 describe its use. (Illustrations P. 7)

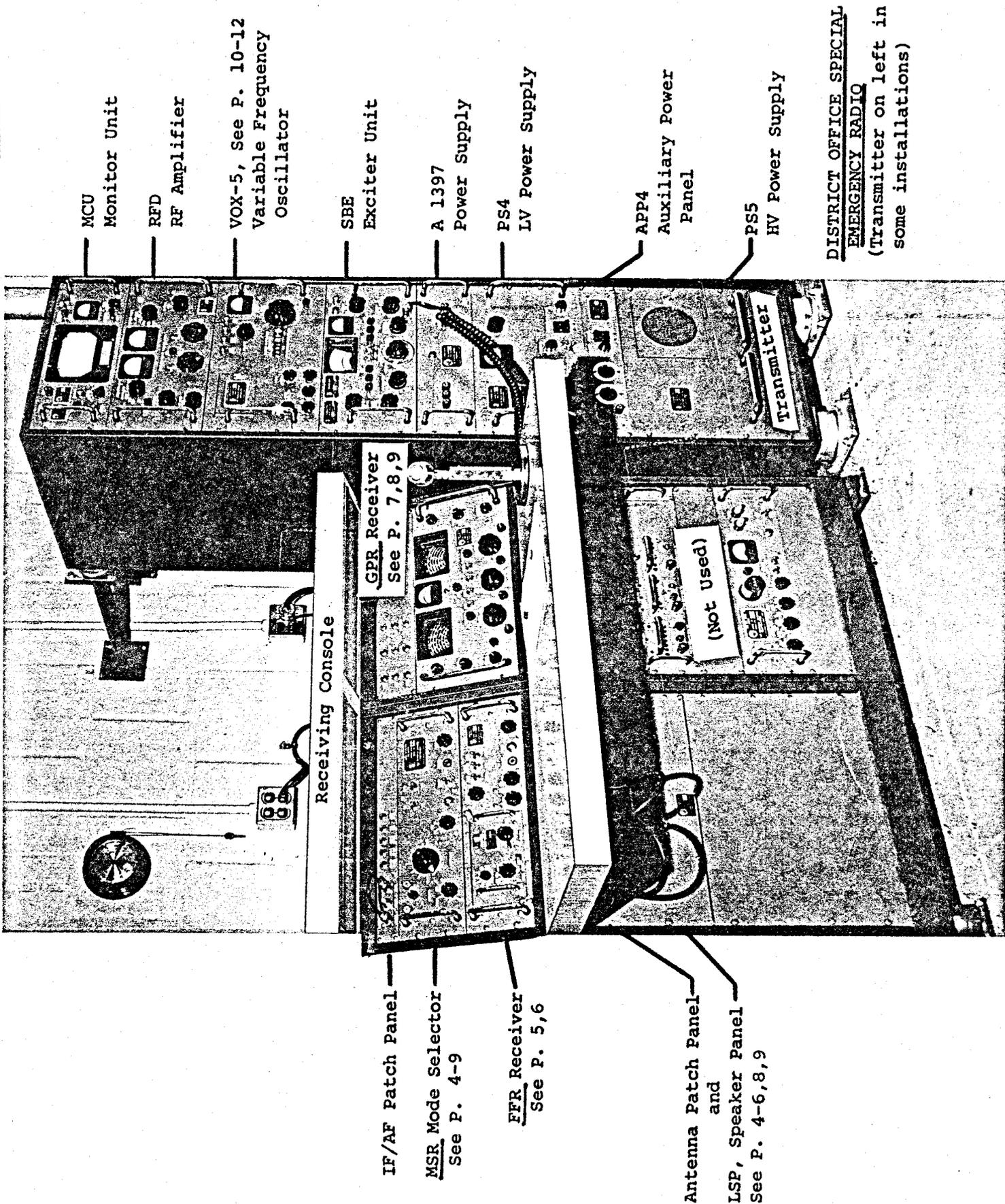
4. Transmitter Adjustments and Frequency Changes (By Authorized Personnel)

- A. The transmitter may not be adjusted by anyone unless he possesses a 1st or 2nd Class Radiotelephone License issued by the Federal Communications Commission. Permission from ODP Headquarters in Albany must also be obtained.
- B. The following information pertains to the Special Emergency Frequency Equipment tuning:

The transmitter is tuned up on 3.201 MHZ, crystal position 6. The mode is upper sideband, with audio level peaks not to exceed 100%. The power output must not exceed 250 watts and the ALDC is normally at a position of approximately 11 o'clock. Please refer to the TMC Tuning Section, P. 13-22, for detailed tuning instructions. When the transmitter is tuned up on 3.201 MHZ, an entry must be made in the Special Emergency Radio Log.

5. Antenna

- A. A Dipole or Doublet antenna is normally used with this transmitter. In case of failure of this antenna, the whip can be used as a backup. See P. 22 for the correct settings.



MCU
Monitor Unit

RFD
RF Amplifier

VOX-5, See P. 10-12
Variable Frequency
Oscillator

SBE
Exciter Unit

A 1397
Power Supply

PS4
LV Power Supply

APP4
Auxiliary Power
Panel

PS5
HV Power Supply

Receiving Console

GPR Receiver
See P. 7, 8, 9

IF/AF Patch Panel

MSR Mode Selector
See P. 4-9

EFR Receiver
See P. 5, 6

Antenna Patch Panel
and
LSP, Speaker Panel
See P. 4-6, 8, 9

Transmitter

(Not Used)

DISTRICT OFFICE SPECIAL
EMERGENCY RADIO
(Transmitter on left in
some installations)

OUT

Strike out if inapplicable

STATE OF NEW YORK
CIVIL DEFENSE COMMISSION

MESSAGE

IN

Strike out if inapplicable

4
OFFICE OR AGENCY
COPY

TO:	Jurisdiction - Office or Agency STATE	Message/File DTG CDW031015AFEB81			
FROM:	Jurisdiction - Office or Agency NORTHERN	Priority R	COM	Sent DTG	Rec'd DTG
SUBJECT:	Classification SITREP	Authority (name) Touchette	CTR	Via	Via

Groups (Group Count) 11
BREAK

Drill All points responded to Bi-Weekly
NAWAS Test except Hamilton Warning

BREAK

Signed Matern

FOR USE IN TRAINING ONLY

INSTRUCTIONS

1. Applicability. This message form is designed for general use by all civil defense elements in New York State for either incoming, outgoing, interagency, office, or field messages. Special purpose forms of a tabular nature or of technical purpose, e.g., Radiological Intelligence Section Messages, will continue in use.

2. Jurisdiction Abbreviation. One message may be sent to multiple addresses. County abbreviations consist of the first four letters of the county. City abbreviations consist of the first two letters of the city with the suffix CI; or, for cities of two parts, the first letter of each part and the suffix CI. For example: State Civil Defense of New York - NYRK; District Office, Northern - DON; Albany County - ALBA; Jamestown - JACI; New York - NYCI.

3. Office or Agency Abbreviations.

Administration	- ADM	Operations	- OPS
Civil Defense Warning	- CDW	Public Information	- PIO
Civil Air Patrol	- CAP	Police	- POL
Chaplain	- CHA	Engineering & Public Works	- EPW
Communications	- COM	Rescue	- RSQ
Fire	- FIR	Resources & Production	- RES
Manpower	- MAN	Radiological	- RAD
Medical	- MED	Schools	- SCH
Military	- MIL	Welfare	- WEL

4. Subject (Classification). Classification of text content as pertaining to either ATTACK, SITREP (Situation Report), ORDER (Directive), REQUEST, or INFO (Intelligence).

5. Message/File DTG. The Date Time Group which also serves as the message number and file number. For example, segments of a M/F DTG reading RAP021500AJul65 indicates:

RES - Address is Resources and Production.

02 - Message written on the 2nd day of the month.

1500A - Message written at 03:00 P.M. local time. The A (Alpha) symbol always denotes current local time; whereas, Z (Zulu) denotes Greenwich (0° meridian) time.

Jul65 - Month and year. Months abbreviated with first three letters.

6. Priority. For transmission purposes, each message is given a precedence rating in relation to other messages. In descending order: the QQQ symbol indicates the top priority flash message used in EXTREME emergency situations, the O symbol indicates an urgent operational situation, the P symbol indicates a greater than normal urgency; and, the R symbol is used on messages of routine nature.

7. Authority (Name). Person responsible for the jurisdiction, e.g., messages emanating from State level would usually be written for the State Director as GRUSHKY.

8. COMCTR. For the use of communications center personnel to show the time sent or time received, and means of transmission.

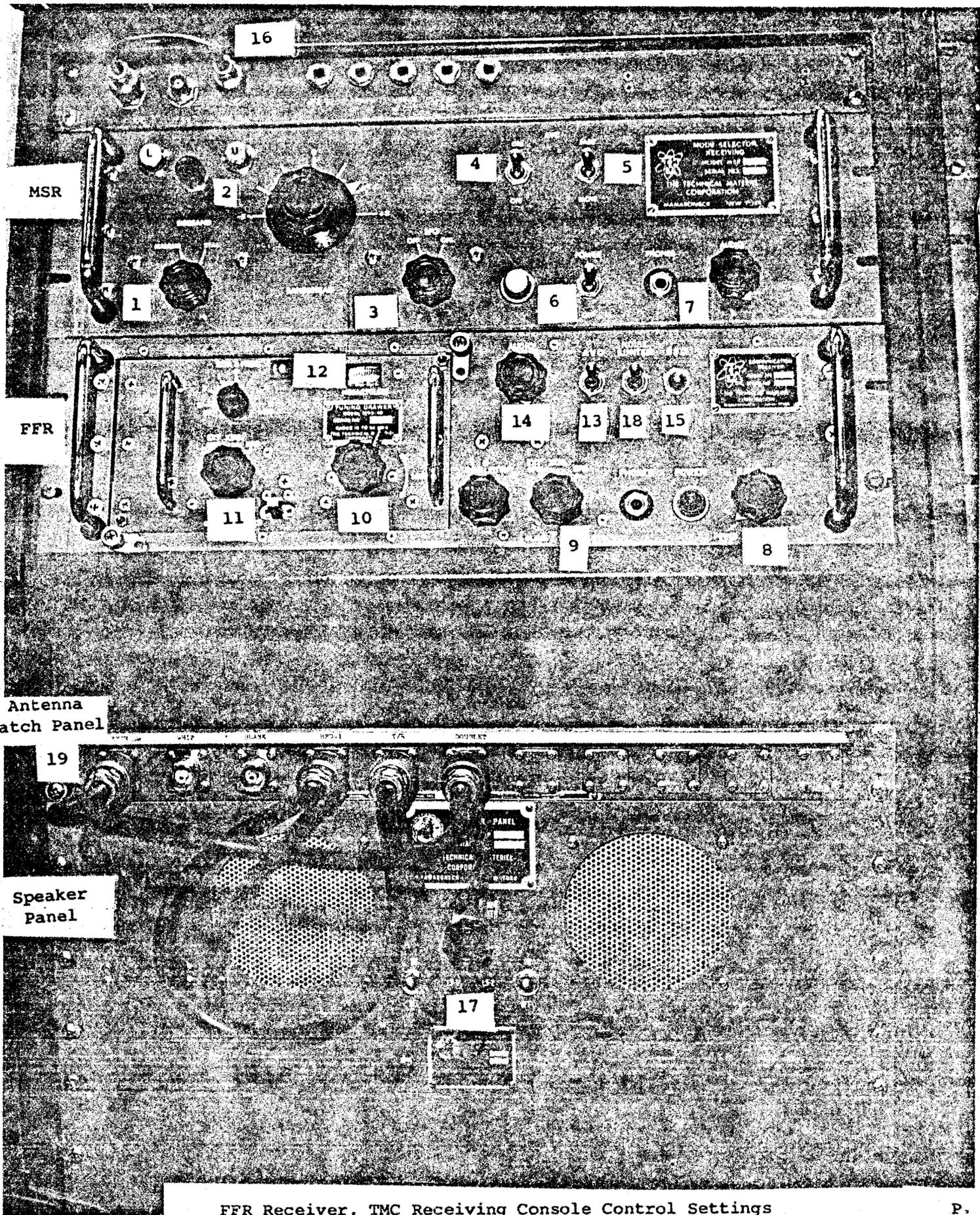
SPECIAL EMERGENCY RADIO NET

Adverse Conditions or Radio Blackout
District Operating Procedure

If during a scheduled net or actual operations, radio calls are not heard after a duration of ten (10) minutes due to adverse propagation conditions or Radio Blackout, the following procedure should be followed:

- (1) Call STATE, if no response:
- (2) Call adjacent District towards STATE - Example: LAKE calls CENTRAL, if no response:
- (3) Same as Step #2, except by Local Government Radio

Stations in contact with STATE should relay all calls not heard by STATE (SERN and LG) to STATE. If necessary during a complete 3.201 MHZ Blackout, calls may have to be relayed across the State to inform STATE of such conditions. Example: DOW-DOL, DOL-DOC, DOC-DOE, DOE-STATE.



MSR

FFR

Antenna
Patch Panel

Speaker
Panel

FFR Receiver, TMC Receiving Console Control Settings

FFR Receiver
TMC Receiving Console Control Settings
(See Illustration, P. 4)

1. MSR MANUAL/XTAL sideband switch should be in the XTAL position that lights the "U" light. Some units have a single MANUAL/XTAL switch plus a push button for switching sidebands. Push the button to select "U".
2. MSR sideband indicator light, "U" should be ON for upper.
3. MSR BFO should be ON.
4. MSR AVC switch should be ON.
5. MSR AVC switch should be on SLOW.
6. MSR Power Switch should be UP with red light ON.
7. MSR AUDIOGAIN should be turned clockwise halfway to full depending on volume desired.
8. FFR RF GAIN is usually set midway to full counterclockwise for average conditions and full clockwise for weak signal conditions. If garbled, distorted or muffled audio results, reduce this gain by turning counterclockwise until normal speech is received. This control also turns receiver power ON and OFF.
9. FFR SLAVE MASTER should be set on XTAL.
10. FFR TUNING should be set on 3.2 Megacycles and locked.
11. FFR SLAVE MASTER on "Tuning Drawer" should be set on XTAL.
12. FFR XTAL FREQ control should be adjusted for normal sounding speech reception. This setting should be marked for future reference.
13. FFR AVC - MANUAL switch should be up for AVC ON.
14. FFR AUDIOGAIN should be turned full counterclockwise unless FFR is used without MSR and then should be set at a comfortable listening level.
15. FFR BFO should be down for OFF, unless FFR is used without MSR and should then be up for ON.
16. I.F. Patch Cable should be from FFR-3 i.F. OUT to MSR-4 I.F. IN.
17. Speaker panel (under console countertop) rotary switch should be set at FFR/MSR. Speaker toggle switches should both be up for ON.
18. FFR NOISE LIMITER is used only when FFR is used without MSR and then should be up for ON during static conditions.
19. Antenna Patch Panel (under console countertop) should not normally be touched. The correct patch (as shown) is XMTR to Doublet (or Dipole) and HFD-1 to T/R.

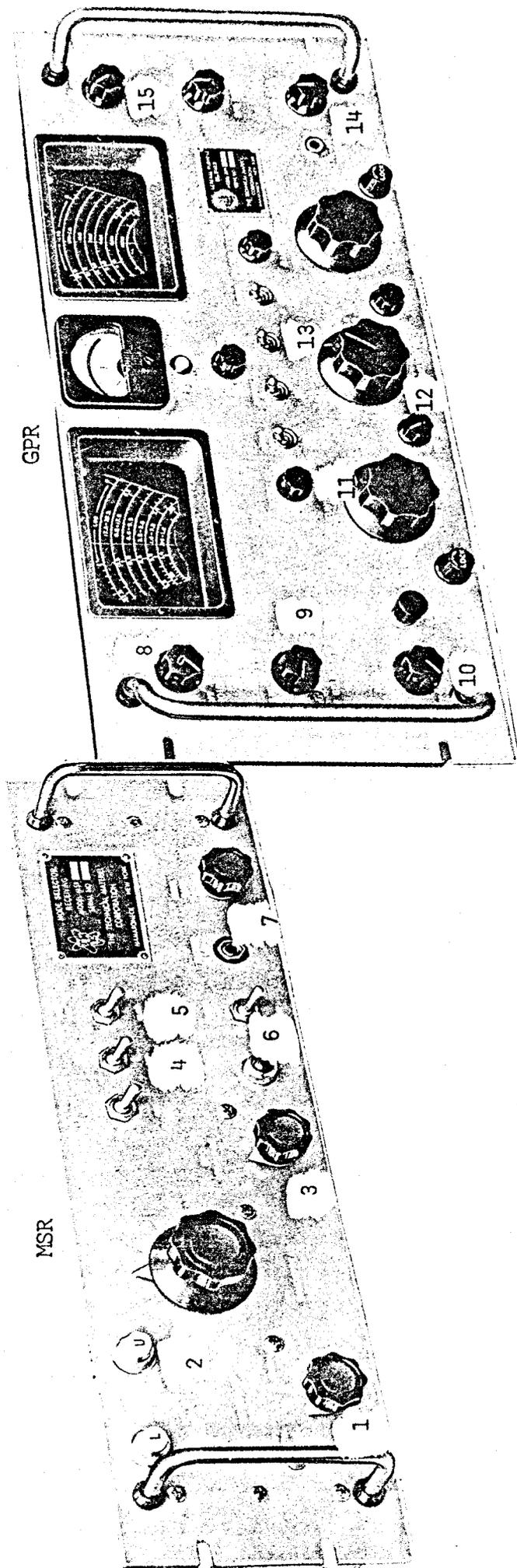
19. (Cont'd) - The connectors must be pushed on fully forward while holding back on the spring loaded sleeve. This should never be done while transmitting or without authorization.

Use of the FFR Receiver Without the MSR

In case of MSR failure, the FFR receiver may be used alone as follows:

1. Switch Item #15 (BFO Switch) up for BFO ON.
2. Turn up #14 Audio Gain.
3. Turn OFF MSR power #6.
4. On the Speaker Panel switch rotary switch to FFR/GPR.
5. You should be able to receive but with less ability to reject interference.

TMC Receiving Console Control Settings



(Figure I)

TMC Receiving Console Control Settings
GPR Receiver (Backup Option)
(Refer to Figure I & P. 4)

1. MSR MANUAL/XTAL sideband switch should be in the XTAL position that lights the "U" light. Some units have a single MANUAL/XTAL switch plus a push button for switching sidebands. Push the button to select "U".
2. MSR sideband indicator light, "U" should be on for upper.
3. MSR BFO should be ON.
4. MSR AVC switch should be ON.
5. MSR AVC switch should be on SLOW.
6. MSR Power Switch should be UP with red light ON.
7. MSR AUDIOGAIN should be turned clockwise halfway to full depending on volume desired.
8. GPR Noise Limiter should be OFF unless static is excessive.
9. GPR IF selectivity should be in 15 or 7.5 KC unless it is necessary to limit interference by turning clockwise (reduces receiver volume also).
10. GPR RF GAIN should be turned clockwise $\frac{1}{4}$ -full depending on signal strength of station received. This control also turns receiver power ON and OFF.
11. GPR SQUELCH should be full counterclockwise.
12. GPR RANGE SELECTOR should be in 1.4-3.3.
13. GPR INT/EXT switch must be in EXT.
14. GPR AUDIOGAIN is not used and should be turned full counterclockwise.
15. GPR MODE switch should be in AM.
16. I.F. jumper cable should be from MSR I.F. IN to GPR I.F. OUT.
17. Speaker Panel Rotary Switch (under console countertop) should be set to GPR/MSR. Both speaker toggle switches should be UP (ON).

All other settings should be either in OFF or not touched as they are preset.

The receiver SHALL NOT be used to monitor broadcast stations at any time, it is set up for the Special Emergency Radio frequency at 3.201 MHZ ONLY!

*NOTE - The FFR must also be switched on with its #8 RF Gain/Power ON-OFF switch unless totally disabled, as it contains crystal oscillators to control the GPR.

Use of the GPR Receiver Without the MSR

In case of MSR failure, the GPR receiver may be used alone as follows:

1. Switch Item #15 (Mode Switch) to SSB.
2. Turn up #14 Audio Gain.
3. Turn OFF MSR power #6.
4. On the Speaker Panel switch rotary switch to GPR/FFR.
5. You should be able to receive but with less ability to reject interference.

TMC VOX-5 Settings for Receiver Control
(Backup Option)

(Refer to Figure 3-1)

This unit controls the receive frequency of the GPR Receiver on 3.201 MHZ. The numbers corresponding to Figure 3-1 should be set as follows:

1. Beat switch should be OFF (Down).
2. Meter switch should be on HFO.
3. Not used.
4. Power switch should be ON at all times.
5. HFO switch should be ON at all times.
6. IFO switch should be OFF.
7. BFO switch should be OFF unless MSR is not being used due to MSR failure in which case it should be ON. (See page "Use of GPR Receiver Without the MSR".)
8. Main power light should be lit.
9. Disregard.
10. Disregard.
11. Disregard.
12. Meter should read approximately 0.1 and not more than 0.2.
13. Not used.
14. Not used.
15. Not used.
16. OUTPUT control adjusts level for #12.
17. XTAL switch should be in position 3.
18. XTAL FREQUENCY adjustment varies receive frequency slightly. Once adjusted for proper voice reception it should not be changed.
19. BAND-MCS switch should be set for 2-4.
20. TUNING should be set at approximately 3.5 and adjusted slightly for maximum meter reading (#12) not to exceed 0.2.

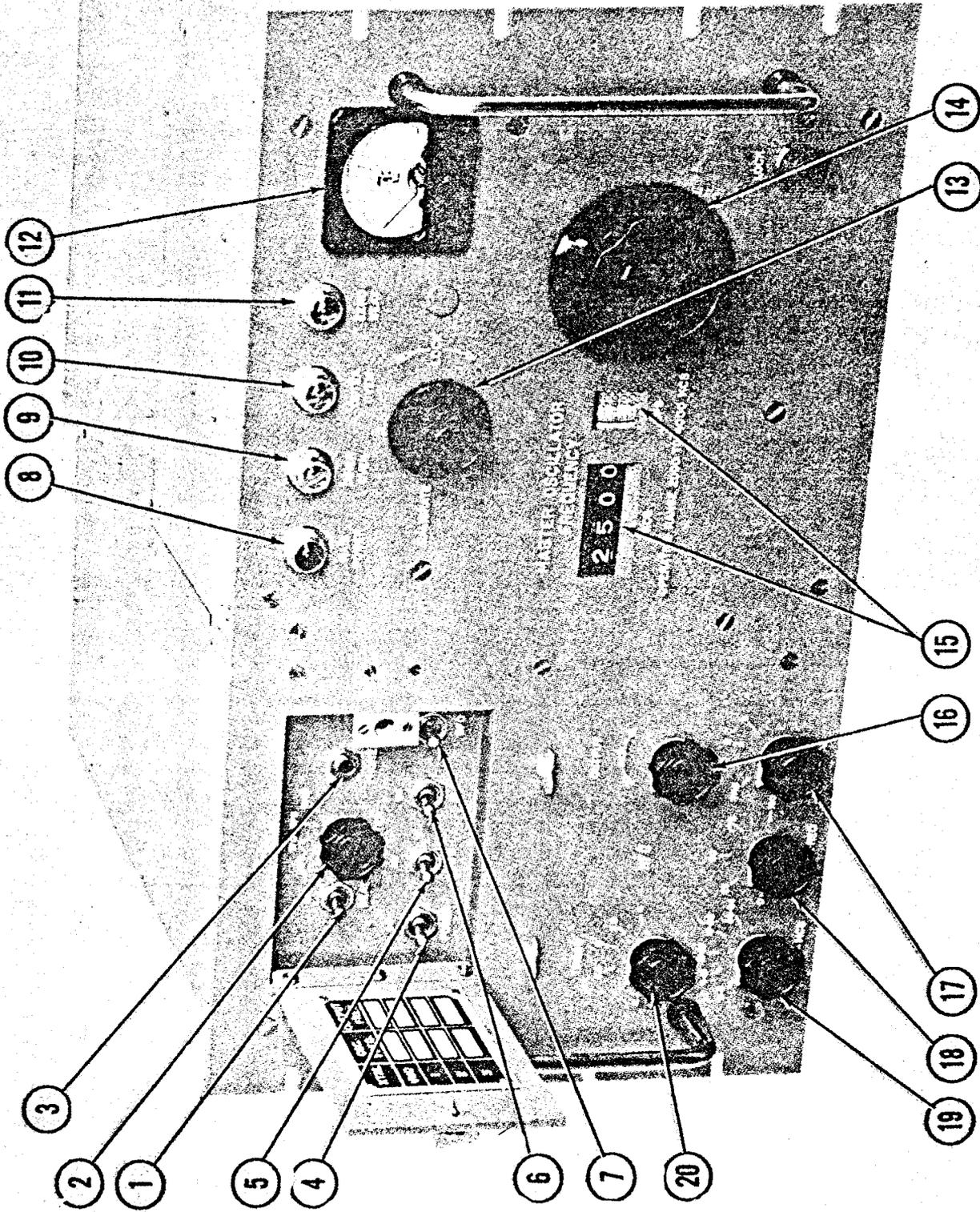


Figure 3-1. Operating Controls

Authorized Technicians refer to paragraph D of the TMC Tuning Instructions in the back of this folder (using the variable frequency oscillator unit VOX-5 for crystal control of the GPR92A receiver) for a detailed description of VOX-5/GPR usage.

Tuning of the TMC Equipment

The following is the tuning procedure for the TMC-1KW Transmitter (XMTR), for AM (Amplitude-Modulation), SSB (Single Sideband), or CW (Radio-Telegraph) operation using either crystal (XTAL) or variable frequency (VMO) control. Tuning charts for VMO vs. frequency and dial settings at various frequencies are included.

TMC Tune Contents

- A. Initial Set Up
 - 1. Throw Power Switches
 - 2. Tune the VMO (If Used)
 - 3. Set all Dials with Tuning Chart

- B. Tuning
 - 4. Tune the SBE-6
 - 5. Tune the Driver
 - 6. Tune the Final and Touch Up the SWR

- C. Final Checks
 - 7. Assure Proper Tuning
 - 8. Select Mode of Transmission
 - 9. Frequency Change Instructions
 - 10. Circuit Breaker Troubles
 - 11. Receiver Zeroing

- D. Use of VMO VOX-5 to control GPR92A with XTAL's

- E. Tuning Chart (Typical Transmitter Readings)

TMC Tuning

For AM/CW/SSB and VMO/XTAL Operation

INITIAL SET UP

1. Power Switches

- a. Throw main power to ON.
- b. Throw XMTR and Final Voltages to OFF.
- c. Make sure all circuit breakers are in ON (UP) position.

2. VMO Tune (If Used)

- a. Using frequency chart determine proper VMO setting and set band switches.
- b. Peak VMO at nearest 100 KC point by switching HFO switch ON, meter switch to HFO and adjust HFO tune at the correct frequency. Do not exceed .2 milliamps.
- c. Calibrate VMO with beat switch on by adjusting calibrate control to obtain the slowest flashing of zero beat light.
- d. Switch beat OFF, return to correct frequency and repeak (Step b).
- e. If using a crystal, be certain that HFO is OFF.

3. Dial Settings

- a. Set all band switches on the RFD and SBE to proper frequency bands.
- b. Set all dial settings using prepared tuning chart.
- c. Set ALDC full clockwise.
- d. If the whip is used to make antenna tuning changes, use the following procedure with the monitor unit:
 - (1) To change reactance, use the INCR/DECR switch on the monitor. (Do not exceed a reading of 20 on the meter, above 10 MHZ.)
 - (2) To change resistance, place meter select switch in Resistance and push the OPERATE button until the proper resistance is indicated.
 - (3) Push the RESET button.

TUNING

4. SBE-Tune

- a. Set the MF XTAL switch to the desired XTAL position or VMO.
- b. Set meter select switch to MF, CARRIER INSERT to 10.
- c. Using the MF tuning control, tune for a peak at the VMO setting or frequency on the chart used for XTAL operation. (XTAL frequency + 250 KC). Be sure the right peak is tuned as multiples can occur. For 75 meter tuning, see MF setting on frequency chart. Adjust carrier insert to zero and be sure that meter indication returns to zero. If it cannot be "wiped-out", the MF is adjusted wrong and must be retuned.
- d. Switch Exciter from STANDBY to ON. Reinsert full carrier. Set meter select to RF and increase OUTPUT slightly. Tune the Output frequency tuning for a peak at the on-the-air frequency. (Be careful not to pin meter.) Again be sure carrier can be "wiped-out". The SBE should now be tuned properly. Leave Exciter Switch ON.

5. Driver Tune

- a. Set carrier insert to 10, output to 0.
- b. Be sure switch on panel above RCVR is on Voice/RTT.
- c. Throw XMTR switch ON.
- d. On RFD set meter select to 1st Amp Plate RF, increase output to obtain a reading, tune 1st Amp Tune for a peak.
- e. Switch to PA grid and peak.
- f. If a circuit breaker drops during tuning, reduce output and reset breaker.
- g. Return output to 0.

6. Final Tune

- a. Throw Final voltages ON.
- b. Advance output on SBE to obtain some output.
- c. Dip the plate current using the PA tuning on the RFD.
- d. Note the SWR. (Intersection of Fwd and Reflected Power needles). If greater than 3:1, discontinue operation and tune the antenna in the following manner (if the whip is used):
 - (1) Reduce output.
 - (2) On the MONITOR place the OPERATE/TUNE switch to TUNE and meter select to X1.
 - (3) Advance the output to obtain 75 watts fwd power.
 - (4) Adjust the reactance to obtain a minimum SWR. (If 100 watts are exceeded the XMTR will trip. Lower output and push RESET.)
 - (5) Switch to OPERATE and X10.
 - (6) Advance output to obtain output of around 500 watts or greater.
 - (7) Note SWR to be sure it is less than 3:1.
- e. Observe plate current reading and turn ALDC CCW to a reduction of 30% peak reading.
- f. Adjust output and PA load for 500 watts at approximately 300 MA DC Plate Current (legal input current).

FINAL CHECKS

7. Assure Proper Tuning

- a. Upon completion of tuning, be sure that the carrier can be "wiped-out" and output dropped to 0 by returning the carrier insert to 0. If it can't the SBE is tuned wrong and must be re-tuned.

8. Mode Selection

- a. For SSB, set the proper sideband mike ON, be sure the unused sideband is OFF, and carrier insert is 0.
- b. For CW, the carrier insert is 10 and both LSB and USB are OFF. The switch above the RCVR must be on CW.
- c. For AM, insert full carrier and switch to both LSB and USB.

9. Frequency Changes with the VMO

- a. To zero beat a frequency, switch RCVR to CW, on XMTR places FINAL voltages OFF and XMTR on. Switch switch above RCVR to Voice/RTT. Using frequency

- chart for references, tune to the new frequency with VMO and zero beat.
- b. If the frequency change is not too great, XMTR can be retuned by watching power output and carefully adjusting the MF and output frequency controls on the SBE, the HFO tune on the VOX-5 and the 1st Amp Tuning on the RFD for a peak in power output.

10. Circuit Breakers

- a. If circuit breakers drop or the monitor unit trips, the output or mike gain is too high and must be readjusted. If the main power breaker drops, one minute must pass before you may transmit again. Incorrect ALDC adjustment and/or antenna loading may also cause breakers to drop.

11. Zero Beat Receiver

- a. Transmitter Final Voltages OFF, send-RCV switch on GPR-92 to RCV Carrier Insert 2, switch XMTR on and zero and lock receiver. Reset carrier insert to 0.

D. Using the Variable Frequency Oscillator Unit (VOX-5) for Crystal Control of the GPR92A Receiver

1. The Variable Frequency Oscillator, VOX-5, is used to crystal control the GPR92A receiver on the following frequencies: XTAL 1 = 3510.5, XTAL 2 = 3993.5, XTAL 3 = 3201.0 KHZ.
2. The receiver must be switched to EXT using the panel toggle switch, and tuned to the approximate frequency using the Range Selector and Tuning knobs.
3. The VOX-5 meter switch must be in the HFO position and the HFO and BFO switches ON. The meter must not read more than 0.2 MA.
4. The XTAL frequencies are 455 KC higher than the actual receive frequencies so that 3510.5 must be tuned to 3965.5; 3993.5 to 4448.5 and 3201 to 3656.0. Since the tuning range is from 2-4 MHZ, the 4448.5 must be halved by switching the Band-MC switch to 4-8 MHZ and tuning for 2224.25 MHZ. Adjust output for less than 0.2 MA.
5. The crystal frequency may be varied slightly by the XTAL FREQ control.
6. Since the BFO is also externally controlled by the VOX-5, the receiver BFO control is inoperable. For SSB reception the BFO XTAL switch mounted on the rear of the VOX-5 unit must be in the SSB position for 455 KHZ. For CW it is switched to the opposite crystal which is greater than 1.0 KC above or below 455 KHZ to produce a note.
7. If the MSR is used, its BFO can be used which can be tuned and the VOX-5 BFO can be switched OFF. You will now have crystal control on the receive frequency but manual BFO operation with the MSR. Be sure the MSR is switched to the appropriate sideband. (U for 3201, L for 3993.5 KHZ). The MSR provides a great deal of selectivity for tuning out interference but reduces receiver gain somewhat.

Frequency Chart

75 - 80 Meters

<u>M H Z</u>	<u>VMO SETTING</u>	<u>MF TUNING</u>
3500	3750	3750
3520	3770	3770
3540	3790	3790
3560	3810	3810
3580	3830	3830
3600	3850	3850
3620	3870	3870
3640	3890	3890
3660	3910	3910
3680	3930	3930
3700	3950	3950
3740	3990	3990
3760	*2005	4010
3780	2015	4030
3800	2025	4050
3820	2035	4070
3840	2045	4090
3860	2055	4110
3880	2065	4130
3900	2075	4150
3920	2085	4170
3940	2095	4190
3960	2105	4210
3980	2115	4230
<u>3993.5</u>	<u>2121.75</u>	<u>4243.5</u>
4000	2125	4250

* VMO Band change to 4-8 MC. (Normally 2-4 MC)

<u>VMO</u> <u>SETTING</u>	<u>20 METERS</u> <u>MHZ</u>	<u>10 METERS</u> <u>MHZ</u> (Lower)
2250	14.000	-----
2230	14.020	-----
2210	14.040	-----
2190	14.060	-----
2170	14.080	-----
2150	14.100	-----
2130	14.120	-----
2125	14.130	28.000
2110	14.140	28.030
2090	14.160	28.070
2070	14.180	28.110
2050	14.200	28.150
2030	14.220	28.190
2010	14.240	28.230
2000	14.250	28.250
4000	*14.250	28.250
3990	14.260	28.260
3980	14.270	28.270
3970	14.280	28.280
3960	14.290	28.290
3950	14.300	28.300
3940	14.310	28.310
3930	14.320	28.320
3920	14.330	28.330
3910	14.340	28.340
3900	14.350	28.350
3860	-----	28.390
3820	-----	28.430
3780	-----	28.470
3740	-----	28.510
3700	-----	28.550
3660	-----	28.590
3650	-----	28.600
3450	-----	28.800
3400	-----	28.850

*Band Change - SBE - 6 Band-Mc. Switch

Frequency Formula: (Fin MHZ)

$$F_{VMO} = (2N + .250) - FAIR$$

N = Lower Number in Band-Mc. Window on SBE-6.

<u>VMO SETTING</u>	<u>40 METERS</u>	<u>15 METERS</u>	<u>(Upper)</u> <u>10 METERS</u>
3250	7.000	21.000	29.000
3230	7.020	21.020	29.020
3210	7.040	21.040	29.040
3190	7.060	21.060	29.060
3170	7.080	21.080	29.080
3150	7.100	21.100	29.100
3130	7.120	21.120	29.120
3110	7.140	21.140	29.140
3090	7.160	21.160	29.160
3070	7.180	21.180	29.180
3050	7.200	21.200	29.200
3030	7.220	21.220	29.220
3010	7.240	21.240	29.240
2990	7.260	21.260	29.260
2970	7.280	21.280	29.280
2950	7.300	21.300	29.300
2930	-----	21.320	29.320
2910	-----	21.340	29.340
2890	-----	21.360	29.360
2870	-----	21.380	29.380
2850	-----	21.400	29.400
2830	-----	21.420	29.420
2810	-----	21.440	29.440
2800	-----	21.450	29.450
2750	-----	-----	29.500
2650	-----	-----	29.600
2550	-----	-----	29.700
2450	-----	-----	-----
2350	-----	-----	-----

E. Tuning Chart (Typical Transmitter Readings)

FREQ. MHZ	PA TUNE	PA GRID	PA LOAD	1st AMP TUNE	PA LOAD SWITCH	ALDC	ANT. REACT.	ANT. RES.	VMO SET	RF OUT	SWR	ANT.
1.82	027	0	0	1.6	3	11:00	41	1	2070	10	1:1	Whip
3.635	78	8.0	003	1.3	3	"	100	2	3885	20	1.5:1	Whip
3.9935	084	8.0	95	2.5	3	"	80	2	----	20	1.75:1	Dipole
7.100	090	5.0	042	2.4	3	"	3	6	3150	18	1.6:1	Whip
7.260	092	6.0	37	2.7	3	"	03	6	2990	10	1.0:1	Whip
14.100	101	0	0	4.0	3	"	34	0	2150	8	1.75:1	Whip
14.25	102	0	14	4.1	3	"	40	3	4000	18	1.5:1	Whip
21.1	104	6.0	67	9.6	3	"	15	2	3150	20	1.5:1	Whip
21.35	112	6.5	27	10.0	3	"	15	2	2900	18	1.75:1	Whip
S E T T I N G S A T T H I S D I S T R I C T O F F I C E												
3.9935												Dipole
3.201	066	8.0	103	5.0	2	11:00	—	—	—	13	1.8:1	Dipole
3.201												Whip
3.9935												Whip

LOCATION: Lake District Office
Newark, New York