

# Operating Guide

TO HELP YOU

ENJOY YOUR NEW

# Zenith

## Super

**TRANS-OCEANIC**

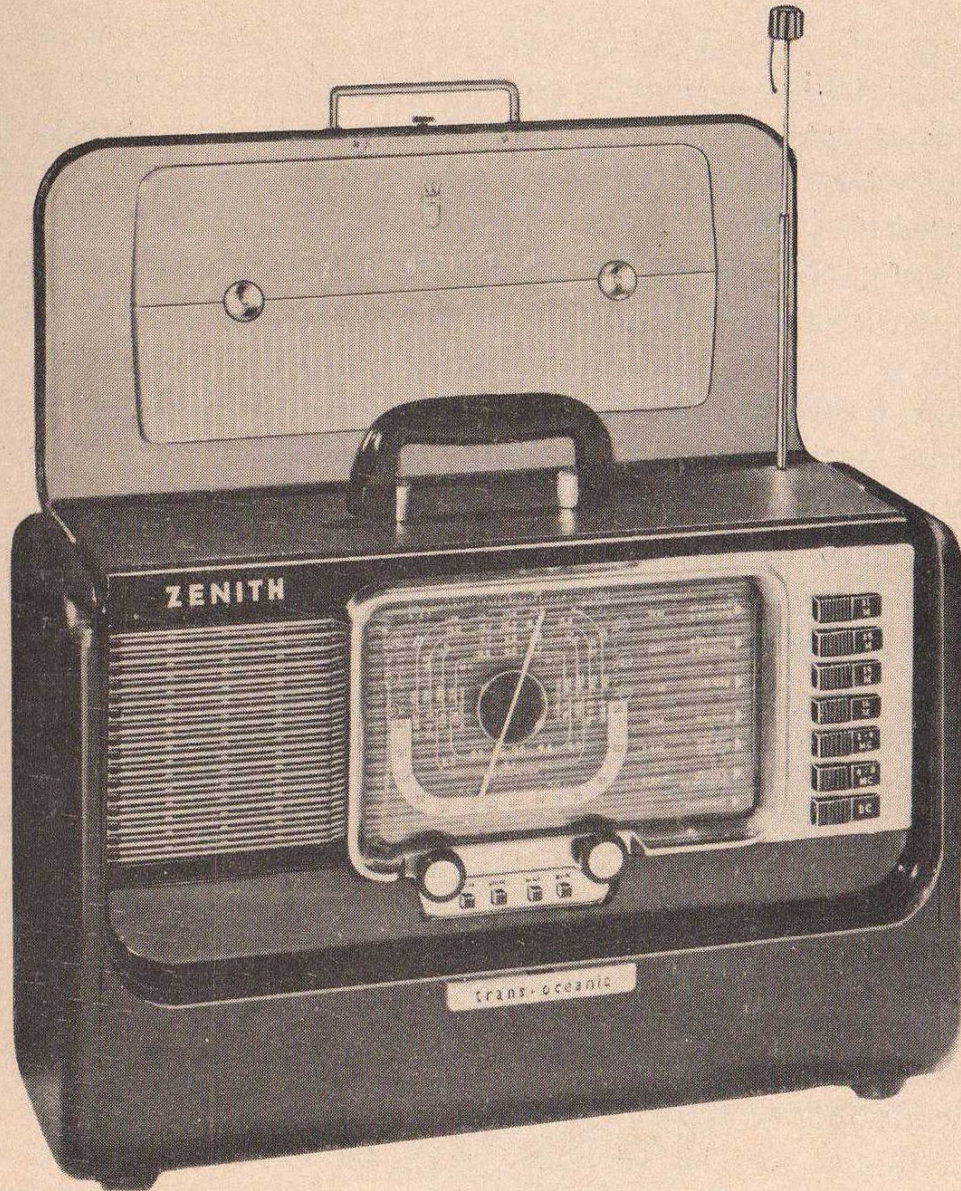
**PORTABLE**



**MODEL M500**

**CHASSIS 5H40**

# Zenith



*Super*

**TRANS-OCEANIC**

**PORTABLE**

*There Is a World of Entertainment and Pleasure  
In Your New Zenith Portable*

*General Features*

Your Zenith Super Trans-Oceanic portable will operate on battery or 110 Volt AC-DC current. It uses a selenium rectifier and is a 5 tube superheterodyne radio, covering the standard broadcast, foreign domestic shortwave bands, and has continuous short-wave coverage from 2 to 8 megacycles (38 to 150 meters). It has seven tuned circuits, and a 3 section tuning condenser with a tuned radio frequency stage insuring maximum sensitivity and selectivity. Freedom from blasting on powerful stations is assured by a new automatic volume control circuit which controls 3 tubes on the broadcast band. A Deluxe Alnico 5, rubber mounted, permanent magnet, speaker in conjunction with an improved audio system provides finer tone than ever before.

The four button "RADIORGAN" tone control permits selection of 16 different tone combinations. The built in removable WAVE-MAGNET provides reception in trains, planes, automobiles, boats, and steel constructed buildings. This standard Wavemagnet is located on the inside of the front cover and a special extension cable is provided for its use on windows of automobiles, planes, trains, etc. To bring in shortwave stations with greatly added volume turning the knob on the top right hand corner of the cabinet allows a WAVEROD Antenna to snap up, which, when fully extended, provides increased pick up for shortwave reception.

Two terminals have been provided at the left rear of the chassis marked "A" and "G" for external antenna and ground connections. These are for use in areas of extremely low signal strength. By merely connecting an external antenna and ground to these terminals, signals previously impossible to obtain are in many cases received with the volume and clarity of local broadcasts. This external antenna and ground is automatically connected to the proper standard or shortwave circuit when the operator presses the band selector buttons.

The band selector buttons on the front panel provide an easy means of selecting the standard broadcast (BC) or the shortwave band most suitable to the time of day. Each shortwave band is electrically SPREAD, which means that stations are separated from each other to a

degree permitting great ease of tuning. A calibrated second scale has been incorporated in the top edge of the dial face. It permits short-wave stations to be accurately logged and easily relocated.

All parts are fully treated against moisture, temperature, and other climatic conditions. Variations in the performance of the receiver because of seasonal or geographic changes are held to a minimum, and the receiver will operate at its maximum efficiency throughout the world. Power consumption on the electric light line is 10 watts.

When the receiver is to be used in areas outside of continental U. S. A. where 110 volts AC/DC is usually not available, ballast adaptor No. S-15715 must be used. This ballast adaptor reduces 220 volts AC or 220 volts DC to 110 volts AC or 110 volts DC necessary for proper operation of the receiver.

## *Operating Instructions*

**READ CAREFULLY — KNOW YOUR ZENITH**

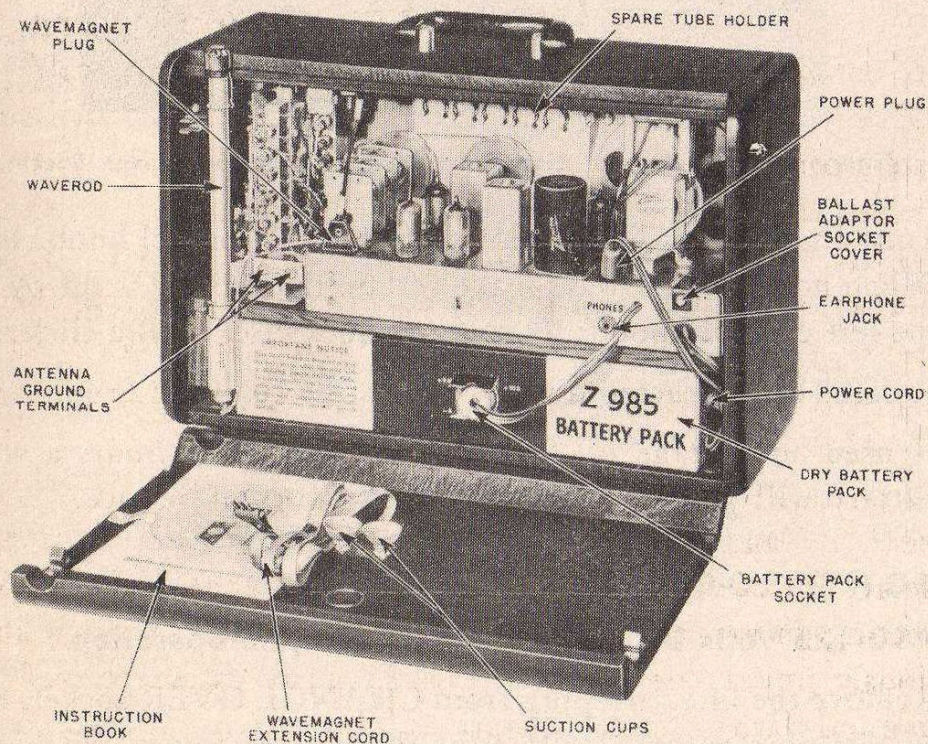


Figure 1.—Rear View, Back Cover Open.

### **1. PREPARING THE RECEIVER FOR OPERATION**

- A. OPEN REAR DOOR OF CASE by simply pulling on finger grip provided.
- B. Place the battery pack into the compartment provided below the

receiver chassis and insert battery cable plug into receptacle provided for on battery. When making replacement of the battery pack be positive to use only Zenith built Z985 battery pack.

## 2. BATTERY OPERATION

- A. INSERT LINE CORD PLUG into the Battery Saver Switch socket on top rear of chassis. (See Figure 2.)

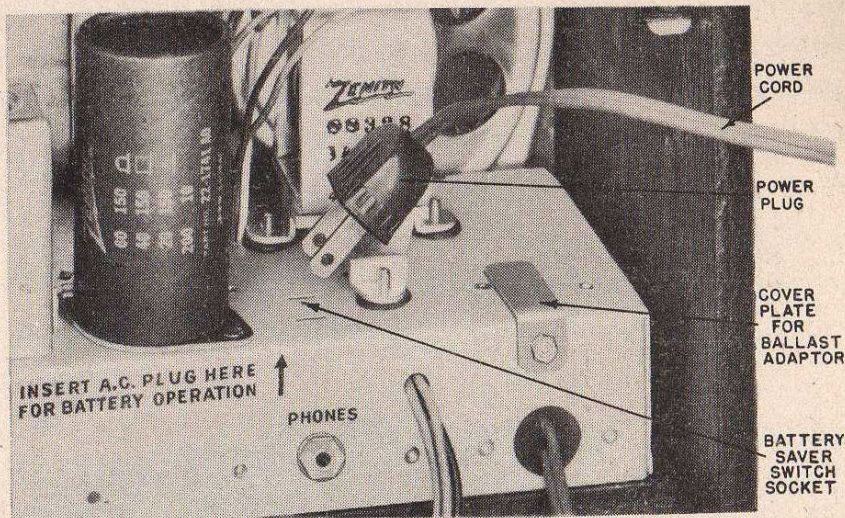


Figure 2.—Insertion of Line Cord Plug Into Battery Saver Socket.

- B. Turn the receiver ON by rotating the left control knob clockwise. When not in use, always make certain that power is off by turning the left control knob fully counter clockwise, until a click is heard.
- C. Proceed as instructed under paragraphs 10, 11, 12, and 13.
- D. If used an average of 3 to 4 hours a day—30 hours a week, the battery will give approximately 150 hours of service.

## 3. LIGHT SOCKET OPERATION

(110-125 Volts DC or AC — 25 to 60 cycle operation.)

- A. Remove the line cord plug from CHANGE OVER socket. Removal of this plug automatically trips the Battery Saver Switch and prevents battery drain while operating off light socket operation.
- B. Plug the line cord into any convenient light socket. After the receiver is in operation try reversing the plug for minimum hum or noise when operating on alternating current.
- C. On direct current reverse the plug if the set does not operate

after having been turned ON. On DIRECT CURRENT the set will operate ONLY with the plug in one position.

### Supply Voltage Switch

- D. This receiver is equipped with a supply voltage switch, which is at the right rear corner of the chassis.

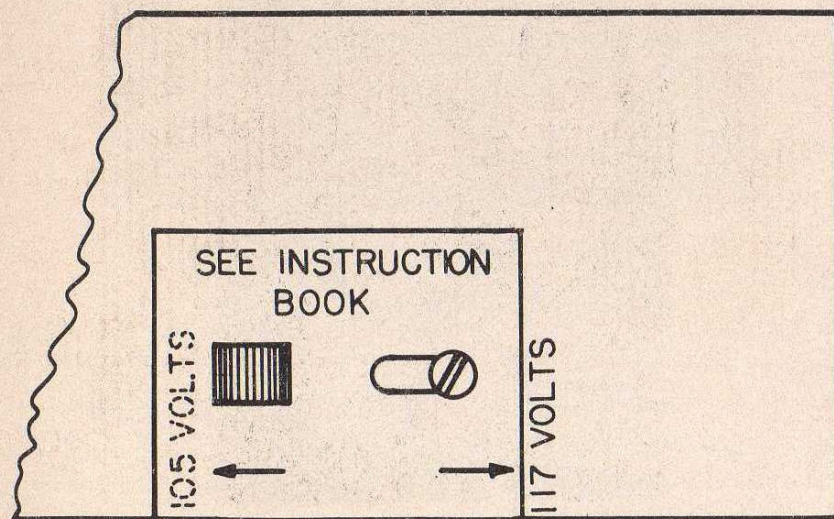


Figure 3.

This supply voltage switch is preset by the factory at 117 volts. If you are in an area where the supply voltage is lower than 110 volts, loosen the holding screw and slide the switch to expose the 105 volt stamping, refasten holding screw.

**WARNING** — Do not move line voltage switch from 117 volt position unless you are certain the supply voltage is below 110 volts. Operating the receiver under high supply voltage conditions with the switch in 105 volt position can burn out the tubes or materially shorten their life.

It is possible that the supply voltage can change throughout the day since more electricity is usually being used during the early evening hours when the demand is greatest. If the supply voltage switch has been set in 105 volt position for the evening hours of low voltage, the supply voltage may exceed 110 volts during the hours of small demand. If this situation occurs, the supply voltage switch must then be moved to 117 volt position.

**220-240 Volts DC or AC — 25 to 60 cycle operation.**

- E. If the receiver is to be used in locations where a current supply of 220-240 Volts AC or DC is available, ballast adaptor S 15715 should be used. This ballast adaptor assembly can be obtained from your local Zenith distributor and need only be plugged into the ballast tube socket. (See Figure 4.)



Figure 4.—Ballast Adaptor Inserted in Socket.

1. Loosen the screw holding the switch positioning plate.
2. Move the switch on the ballast tube to either 110 volts AC-DC, 220 volts DC or 220 volts AC position to conform to the type current on which the set is to be operated. (See Figure 5.)

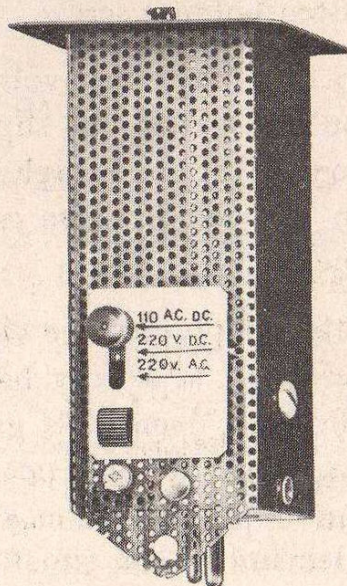


Figure 5.—Ballast Tube Switch Positions.

## 4. TUNING DIAL

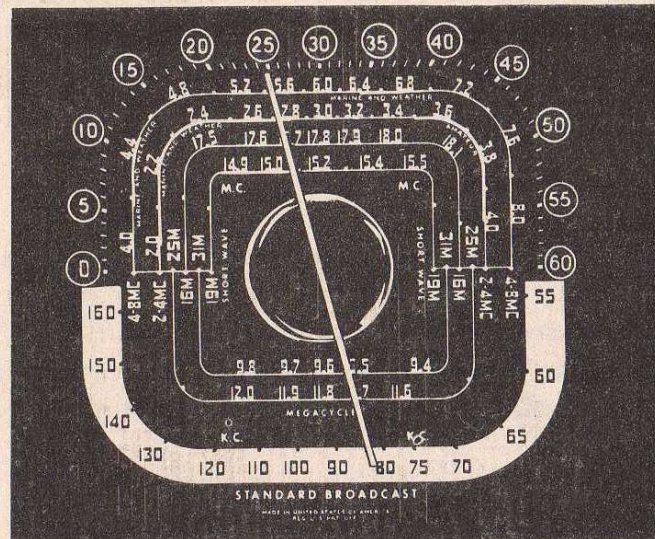


Figure 6.—Dial Scale.

(See Figure 6.) Study the dial carefully. The broadcast band is calibrated in kilocycles with the zeros deleted for convenience. This is the white bottom scale indicated by the lower half of the pointer. The shortwave bands are spread and calibrated in megacycles, four are located on the upper half of the dial scale and two in the lower half. Read with the upper half or lower half of the pointer whichever the case may be.

### THE SEVEN BAND RANGES ARE:

|   |                    |                  |
|---|--------------------|------------------|
| 555M to 188M  | STANDARD BROADCAST | 540Kc to 1600Kc  |
| 75M to 38M  | WEATHER BAND       | 4Mc to 8Mc       |
| 150M to 75M   | WEATHER BAND       | 2Mc to 4Mc       |
| 16M   | SHORT WAVE         | 17.5Mc to 18.1Mc |
| 19M   | SHORT WAVE         | 14.9Mc to 15.5Mc |
| 25M   | SHORT WAVE         | 11.6Mc to 12.0Mc |
| 31M   | SHORT WAVE         | 9.4Mc to 9.8Mc   |
| (M indicates Meters; Kc indicates Kilocycles; Mc indicates Megacycles.) |                    |                  |

## 5. CONTINUOUS COVERAGE BANDS

This portable has continuous coverage from 2 to 4 megacycles (150 to 75 meters) and 4 to 8 megacycles (75 to 38 meters).

The continuous coverage band can be used by sportsmen, yachtsmen and others operating boats in the Great Lakes, Pacific Coast, Atlantic Coast, Gulf of Mexico and Caribbean Sea areas. By tuning to the proper frequency at the scheduled time as listed in the Weather Broadcast Schedule (Weather Broadcast Schedules are in the back portion of this book) they will be able to obtain exact up-to-the-minute as well as predicted weather reports for the areas in which they are operating. These weather reports are vitally important in continuing or plan-



ning a cruise in either the inland or off-shore waters of continental U.S.A.

The 4 to 8 megacycle continuous coverage band also includes the 49 meter, 6.0 Mc to 6.2 Mc International Short Wave Band.

## 6. SPLIT-SECOND SCALE

This feature is provided in the upper outer edge of the dial face to assure ease and accuracy in logging and relocating the foreign stations. Example: A station heard at 9.55 megacycles would be logged at 9.5 on the tuning band plus the number of seconds occurring on the split-second scale, which in this case would be 24 seconds (i. e.: 9.5 + 24).

## 7. RADIORGAN

The tonal characteristics of the receiver may be regulated to the listeners preference by means of the four tone buttons below the dial. The combination of these four buttons in either of their two positions offers 16 possible tonal combinations. The portion of the tonal range is shown above each button.

## 8. HEADPHONES

In trains, dormitories, hospitals or schools, etc., it may be necessary to operate the receiver without disturbing nearby persons. The use of headphones is especially helpful for airplane travel. Special low impedance Zenith Headphone Kit, part number S-18631, available through your Zenith dealer, is easily adaptable to the chassis of the receiver. To connect these headphones place the earphone plug into the socket provided. (See Figure 7.) Plugging the headphones into the earphone jack automatically disconnects the speaker.

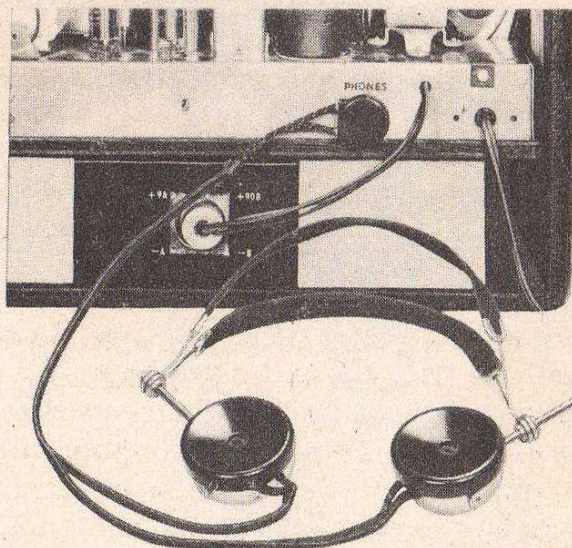


Figure 7.—Headphones Connected to Receiver.

## 9. TUBE COMPLEMENT

| TUBE TYPE                 | USE  |
|---------------------------|--|
| 1 1U4                     | RF Amplifier                                 |
| 1 1L6                     | Converter                                    |
| 1 1U4                     | IF Amplifier                                 |
| 1 1U5                     | AVC, 2nd Detector and<br>1st Audio Amplifier |
| 1 3V4                     | Power Amplifier                              |
| <b>SELENIUM RECTIFIER</b> |  |
| 1 212-5                   | Rectifier                                    |

See Figure 8 for location of tubes on chassis.

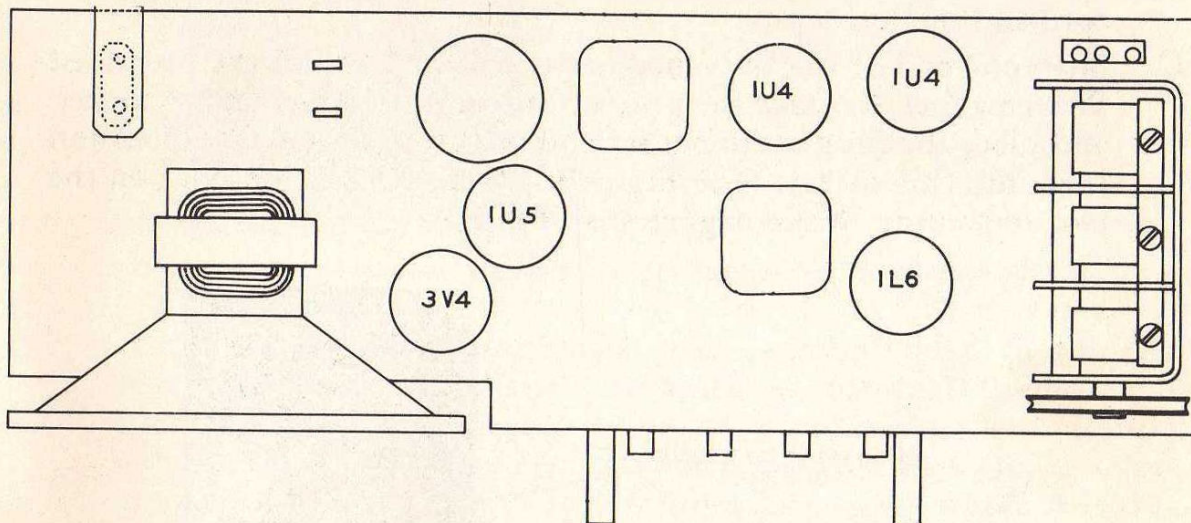


Figure 8.—Top View of Chassis Showing Tube Location.

## 10. STANDARD BROADCAST (Normal Conditions)

- Use the receiver with the antenna in position as shipped from the factory. It is not necessary to remove the Wavemagnet under normal conditions. A loop antenna is, naturally, directional. If reception of a station is not satisfactory, rotate the entire receiver for the position of greater signal and least interference. The directional property is also helpful in eliminating noises caused by local electrical devices.
- Press The Band Selector Button Marked Broadcast.
- Turn the set "On" with the left knob. Turn this control to a well advanced position and reset to the desired volume, after a station has been tuned in.
- Tune with the right hand knob and read the standard broadcast scale on the dial.
- Adjust RADIORGAN for desired tone.

- F. When hunting for distant broadcast or shortwave stations set the volume control knob to an advanced position. Turn it back to the desired level after a station has been tuned in.

## 11. STANDARD BROADCAST RECEPTION (Steel Structures)

- A. In steel structures and vehicles, remove the Broadcast Wavemagnet by turning off the thumb screws which hold the Wavemagnet in position on the inside of the front cover. Replace thumb screws to prevent their loss.
- B. Open back of the case, and remove the Wavemagnet extension cord and suction cups.
- C. Snap one end of the Wavemagnet extension cord on the broadcast Wavemagnet. Remove the plug already in the Wavemagnet socket, and place the plug on the other end of the Wavemagnet extension cord into this socket. (See Figure 9.) Snap the suction cups on the two remaining Wavemagnet snap buttons.

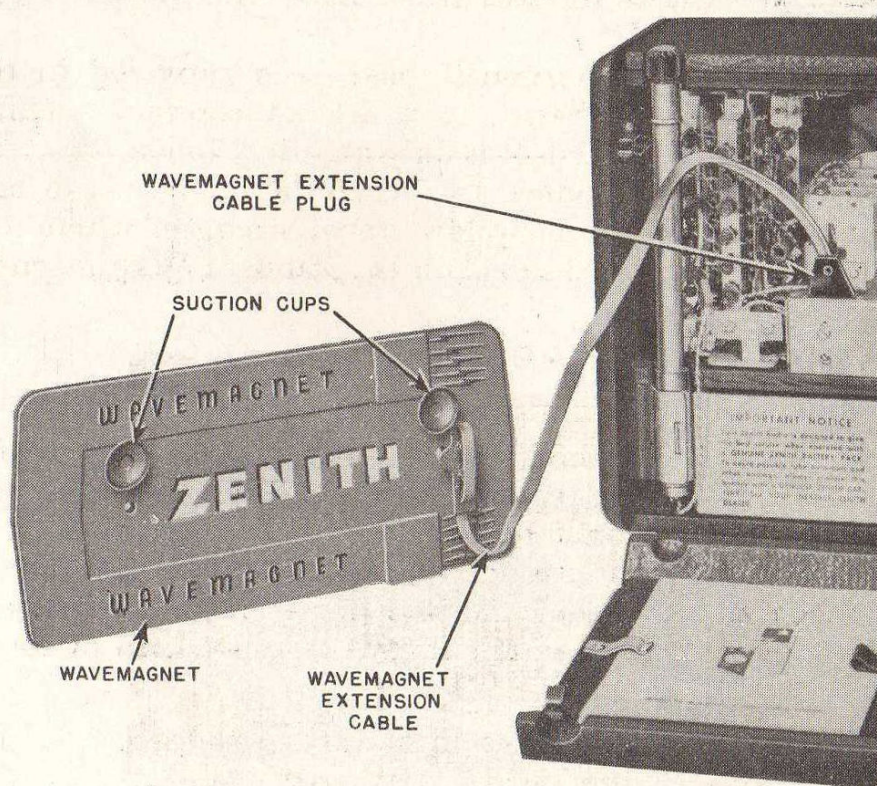


Figure 9.—Rear View of Receiver with the Wavemagnet Extension Cable Connected.

- D. Moisten the suction cups and apply the Broadcast Wavemagnet to a corner of a window. (See Figure 10.)
- E. Experiment with various positions on the window for best reception and minimum noise.

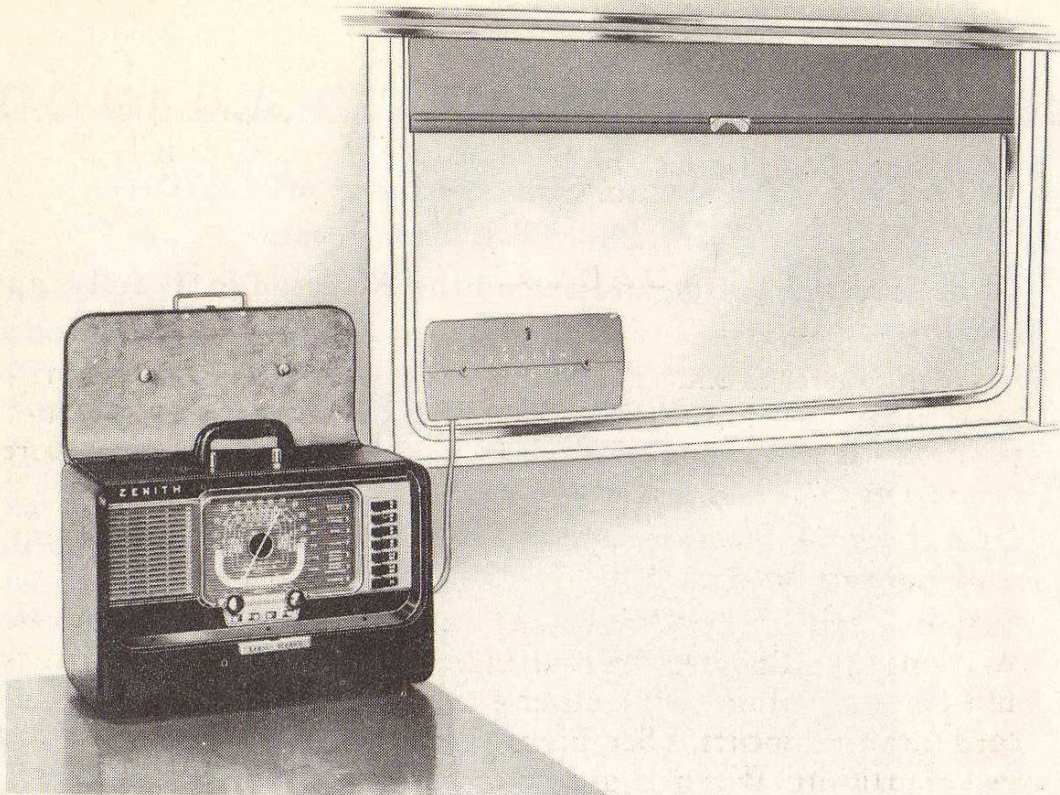
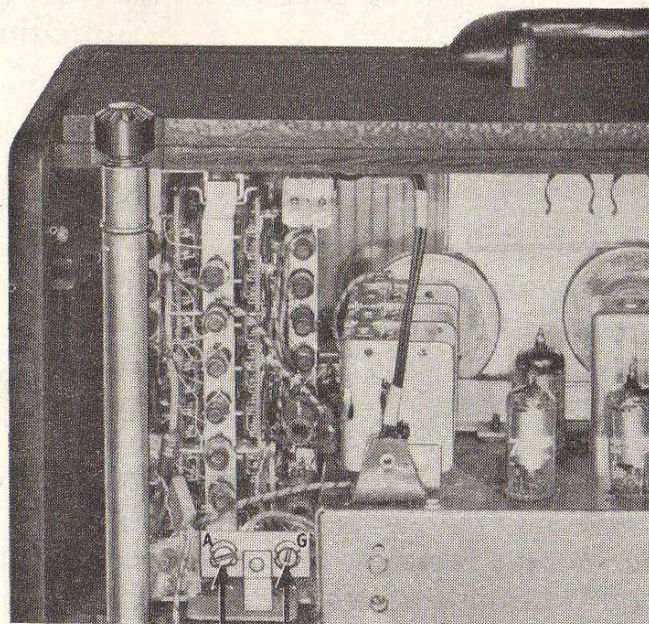


Figure 10.—Detachable Wavemagnet in Position on a Window Glass.

- F. Antenna and ground terminals have been provided in the left rear of the receiver chassis, to which an external antenna and ground may be connected. It is only necessary to use these external antenna and ground connections when the receiver is to be operated in areas with extremely low signal strengths where it is difficult to receive a desired signal on the standard Wavemagnet. (See Figure 11.)



ANTENNA AND GROUND TERMINALS

Figure 11.—Antenna and Ground Terminals.

## 12. SHORTWAVE RECEPTION

### (Average Conditions)

- A. Raise cover to upright position.
- B. Turn Waverod button and extend the Waverod to its full length.  
(See Figure 12.)

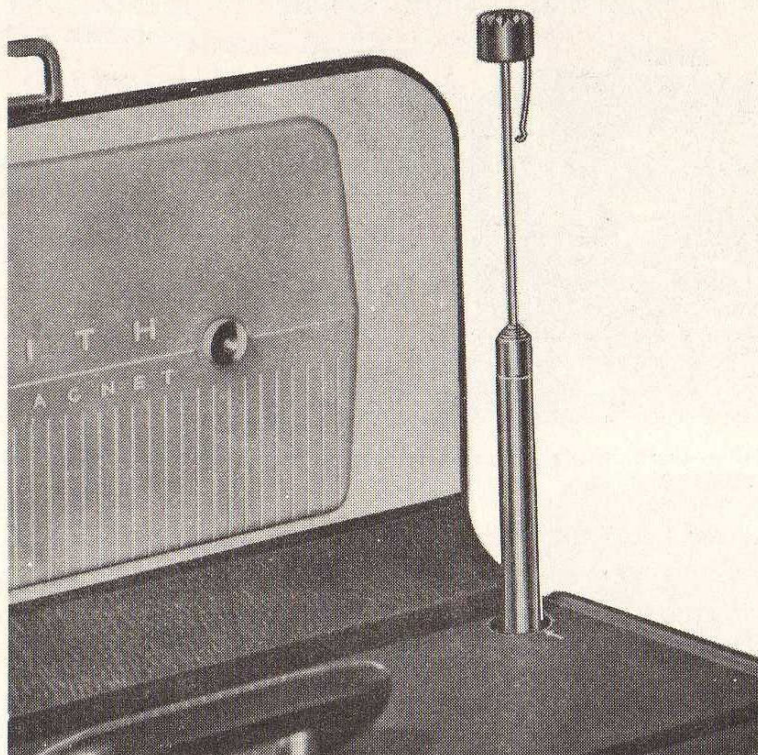


Figure 12.—Waverod Must Be Extended for Shortwave Reception.

- C. Press desired shortwave band selector button.
- D. Turn set "On" by rotating the left knob clockwise.
- E. Tune the set with the right knob, tune very slowly, and read dial scale according to band button.

## 13. SHORTWAVE RECEPTION

### (On 2 to 8 megacycles continuous coverage marine bands, in areas with extremely low signal strength)

- A. An antenna and ground terminal have been provided in the left rear of the receiver chassis, (See Figure 11), to which an external antenna and ground may be connected. It is only necessary to use these external antenna and ground connections when the receiver is to be operated in areas with extremely low signal strength where it is difficult to receive a desired signal on the standard Waverod.

# LOG OF U.S. CLEAR CHANNEL STATIONS

(NOTE: For local and regional broadcast stations refer to local newspaper listings.)

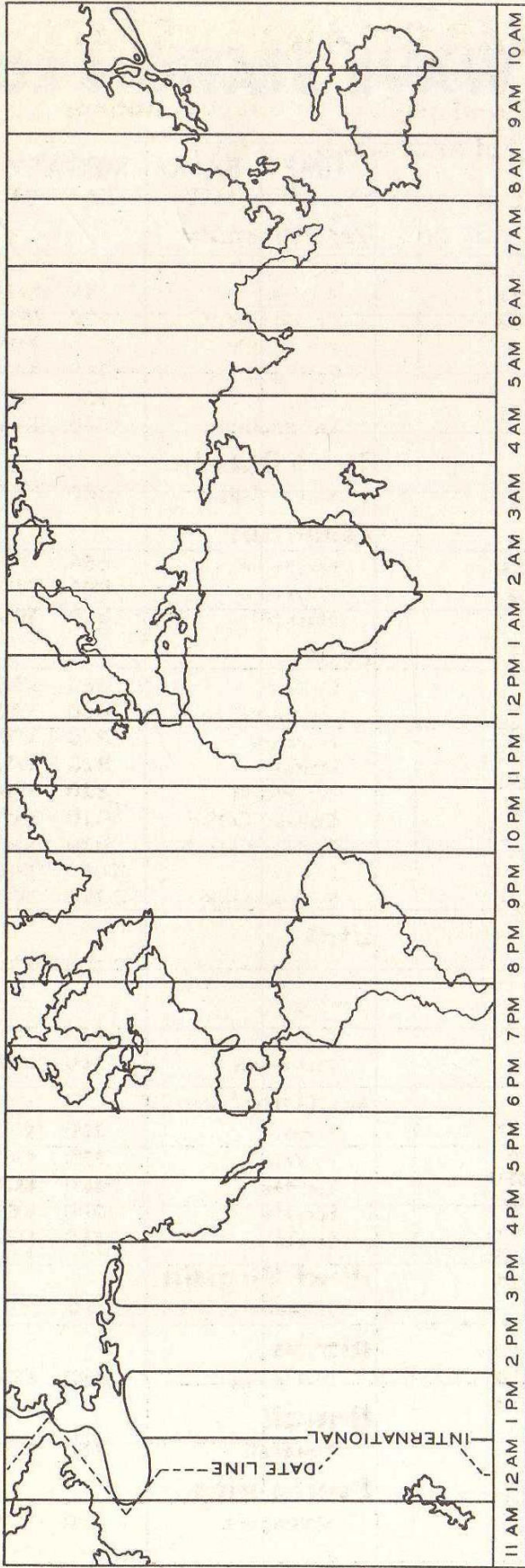
| CITY AND STATE              | KC   | CALL | CITY AND STATE       | KC   | CALL |
|-----------------------------|------|------|----------------------|------|------|
| <b>Alabama</b>              |      |      | Chicago              | 1160 | WJJD |
| Birmingham                  | 1070 | WAPI | Jacksonville         | 1180 | WLDS |
| <b>Arkansas</b>             |      |      | <b>Indiana</b>       |      |      |
| Blytheville                 | 900  | KLCN | Indianapolis         | 1070 | WIBC |
| Little Rock                 | 1010 | KLRA | Fort Wayne           | 1190 | WOWO |
| Hot Springs                 | 1090 | KTHS | <b>Iowa</b>          |      |      |
| <b>California</b>           |      |      | Ames                 | 640  | WOI  |
| Los Angeles                 | 640  | KFI  | Des Moines           | 1040 | WHO  |
| Los Angeles                 | 710  | KMPC | Waterloo             | 1540 | KXEL |
| San Jose                    | 740  | KQW  | <b>Kansas</b>        |      |      |
| San Francisco               | 810  | KGO  | Coffeyville          | 690  | KGGF |
| Modesto                     | 860  | KTRB | Pittsburg            | 810  | KOAM |
| Glendale                    | 870  | KIEV | Wichita              | 1070 | KFBI |
| Visalia                     | 940  | KTKC | <b>Kentucky</b>      |      |      |
| Los Angeles                 | 1020 | KFYD | Henderson            | 860  | WSON |
| Los Angeles                 | 1070 | KNX  | Louisville           | 840  | WHAS |
| San Francisco               | 1100 | KJBS | <b>Louisiana</b>     |      |      |
| Pasadena                    | 1110 | KPAS | New Orleans          | 870  | WWL  |
| Stockton                    | 1140 | KGDM | Shreveport           | 1130 | KWKH |
| Sacramento                  | 1530 | KFBK | <b>Maryland</b>      |      |      |
| Bakersfield                 | 1560 | KPMC | Baltimore            | 1090 | WBAL |
| San Francisco               | 680  | KPO  | <b>Massachusetts</b> |      |      |
| <b>Colorado</b>             |      |      | Lawrence             | 680  | WLAW |
| Denver                      | 850  | KOA  | Boston               | 850  | WHDH |
| <b>Connecticut</b>          |      |      | Boston               | 1030 | WBZ  |
| Hartford                    | 1080 | WTIC | Springfield          | 1030 | WBZA |
| <b>District of Columbia</b> |      |      | Boston               | 1510 | WMEX |
| Washington                  | 1500 | WTOP | <b>Michigan</b>      |      |      |
| <b>Florida</b>              |      |      | Detroit              | 760  | WJR  |
| Gainesville                 | 850  | WRUF | East Lansing         | 870  | WKAR |
| <b>Georgia</b>              |      |      | Ann Arbor            | 1050 | WPAG |
| Atlanta                     | 750  | WSB  | Pontiac              | 1130 | WCAR |
| Macon                       | 940  | WMAZ | <b>Minnesota</b>     |      |      |
| <b>Illinois</b>             |      |      | Minneapolis          | 770  | WLB  |
| Chicago                     | 670  | WMAQ | Northfield           | 770  | WCAL |
| Chicago                     | 720  | WGN  | Minneapolis          | 830  | WCCO |
| Chicago                     | 780  | WBBM | Minneapolis          | 1130 | WDGJ |
| Chicago                     | 820  | WAIT | St. Paul             | 1500 | KSTP |
| Chicago                     | 890  | WENR | <b>Missouri</b>      |      |      |
| Chicago                     | 890  | WLS  | St. Joseph           | 680  | KFEQ |
| Chicago                     | 1000 | WCFL | St. Louis            | 770  | WEW  |
| Tuscola                     | 1050 | WDZ  | Clayton              | 850  | KFUO |
| Carthage                    | 1080 | WCAZ | Kansas City          | 880  | WHB  |
| Chicago                     | 1110 | WMBI | St. Louis            | 1120 | KMOX |

# LOG OF U.S. CLEAR CHANNEL STATIONS

(NOTE: For local and regional broadcast stations refer to local newspaper listings.)

| CITY AND STATE        | KC   | CALL | CITY AND STATE       | KC   | CALL |
|-----------------------|------|------|----------------------|------|------|
| <b>Nebraska</b>       |      |      | <b>Pennsylvania</b>  |      |      |
| Omaha                 | 660  | KOWH | Butler               | 680  | WISR |
| Grand Island          | 750  | KMMJ | Reading              | 850  | WEEU |
| Norfolk               | 780  | WJAG | Philadelphia         | 990  | WIBG |
| Lincoln               | 1110 | KFAB | Pittsburgh           | 1020 | KDKA |
| <b>New Hampshire</b>  |      |      | Philadelphia         | 1210 | WCAU |
| Portsmouth            | 750  | WHEB | York                 | 900  | WSBA |
| <b>New Mexico</b>     |      |      | Philadelphia         | 1060 | KYW  |
| Albuquerque           | 770  | KOB  | <b>South Dakota</b>  |      |      |
| Albuquerque           | 1030 | KOB  | Sioux Falls          | 1140 | KSOO |
| <b>New York</b>       |      |      | <b>Tennessee</b>     |      |      |
| New York              | 660  | WEAF | Nashville            | 650  | WSM  |
| New York              | 710  | WOR  | Knoxville            | 990  | WNOX |
| New York              | 770  | WJZ  | Nashville            | 1510 | WLAC |
| Schenectady           | 810  | WGY  | <b>Texas</b>         |      |      |
| New York              | 830  | WNYC | Dallas               | 660  | KSKY |
| Ithaca                | 870  | WHCU | San Antonio          | 680  | KABC |
| New York              | 880  | WABC | Houston              | 740  | KTRH |
| New York              | 1010 | WINS | Dallas               | 820  | WFAA |
| New York              | 1050 | WHN  | Ft. Worth            | 820  | WBAP |
| New York              | 1130 | WNEW | Corpus Christi       | 1010 | KWBU |
| Rochester             | 1180 | WHAM | Corpus Christi       | 1030 | KWBU |
| New York              | 1190 | WLIB | Dallas               | 1080 | KRLD |
| Newburgh              | 1220 | WGNY | San Antonio          | 1200 | WOAI |
| Buffalo               | 1520 | WKBW | <b>Utah</b>          |      |      |
| New York              | 1560 | WQXR | Salt Lake City       | 1160 | KSL  |
| <b>North Carolina</b> |      |      | <b>Virginia</b>      |      |      |
| Raleigh               | 680  | WPTF | Alexandria           | 730  | WPIK |
| Henderson             | 890  | WHNC | Richmond             | 1140 | WRVA |
| Charlotte             | 1110 | WBT  | <b>Washington</b>    |      |      |
| <b>Ohio</b>           |      |      | Seattle              | 710  | KIRO |
| Akron                 | 640  | WHKK | Seattle              | 770  | KXA  |
| Cincinnati            | 700  | WLW  | Seattle              | 1000 | KOMO |
| Columbus              | 820  | WOSU | Seattle              | 1090 | KEYR |
| Cleveland             | 850  | WJW  | Spokane              | 1510 | KGA  |
| Cleveland             | 1100 | WTAM | <b>West Virginia</b> |      |      |
| Cleveland             | 1220 | WGAR | Wheeling             | 1170 | WWVA |
| Cincinnati            | 1530 | WCKY | <b>Alaska</b>        |      |      |
| <b>Oklahoma</b>       |      |      | Fairbanks            | 660  | KFAR |
| Norman                | 640  | WNAD | <b>Hawaii</b>        |      |      |
| Tulsa                 | 1170 | KVOO | Honolulu             | 760  | KGU  |
| Oklahoma City         | 1520 | KOMA | <b>Puerto Rico</b>   |      |      |
| <b>Oregon</b>         |      |      | Mayaguez             | 990  | WPRA |
| Portland              | 750  | KXL  |                      |      |      |
| Portland              | 1080 | KWJJ |                      |      |      |
| Portland              | 1190 | KEX  |                      |      |      |

# WORLD WIDE TIME MAP



## BEST RECEPTION TABLE

| BAND | MOST FAVORABLE TIME                     |
|------|---|
| 49M  | Night — Winter                          |
| 31M  | Day — Late Afternoon and Night — Winter |
| 25M  | Evenings or Late Summer Afternoons      |
| 19M  | Early Mornings and Summer Evenings      |
| 16M  | Early Mornings and Summer Evenings      |







# WEATHER BROADCAST SCHEDULES

- *Great Lakes Area*
- *Pacific Coast Area*
- *Atlantic Coast Area*
- *Gulf of Mexico and  
Caribbean Sea Area*
- *River Navigation*

This weather broadcast schedule has been compiled from information obtained through the cooperation of the United States Department of Commerce, Weather Bureau.

The forecast and explanation of forecasts contained herein are supplied to be of help to sports enthusiasts and others using the Zenith Trans-Oceanic portable on the Great Lakes or in Coastal areas. It is not possible to reproduce complete U. S. Weather Broadcasting Schedules in a pamphlet this size, consequently we have only listed broadcasts of A3 variety (voice transmission). If additional forecasts are desired they can be obtained from the United States Department of Commerce, Weather Bureau.

**LAFOT BULLETINS—FOR USE ON GREAT LAKES**

(All references herein to time are in Eastern Standard Time.)  
 LAFOT BULLETINS issued by Weather Bureau Forecast Center, Chicago, Ill. are transmitted at 6-hourly intervals to supply mariners with wind and weather forecasts for the Great Lakes. To save time and other facilities, when radio or telegraph is used the forecasts are reduced to a system of code figures together with plain language. The forecasts cover individual lakes, always appearing in the same order—SUPERIOR, MICHIGAN, HURON, ERIE and ONTARIO.

Each 6-hour issue of LAFOT BULLETINS will cover a 24-hour extent of time, divided into two PERIODS of 12 hours each, stated only as "First" and "Second." The FIRST period starts at Midnight in Lafots transmitted about 11 p. m.; at 6 a. m. in Lafots transmitted about 5 a. m.; at Noon in Lafots transmitted about 11 a. m.; and at 6 p. m. in Lafots transmitted about 5 p. m. The SECOND period runs for 12 hours beginning at the end of the FIRST period. Periods of time will be divided into PARTS or HOURS and the areas of the lakes divided into HALVES, THIRDS OR OTHER FRACTIONS.

Lafot bulletin broadcasts will also contain a weather synopsis for the area within 600 miles of the Great Lakes Region. Each synopsis is based on weather observations taken 3½ hours prior to the time of broadcast. The synopsis will include the location and anticipated movement of pressure centers, troughs, ridges and frontal systems, including the barometric pressure, in inches, of HIGH and LOW centers. Transmission of the synopsis follows in Lafots.

Forecasts of wind velocity will show the average wind expected for the location and period stated. For winds below 16 mi/hr, variations from the stated value will usually run as high as 40% and occasionally 70%; for those above 15 mi/hr, variations will run as high as 20% and occasionally 30%. The weather element describes the average condition predicted.

**Explanation of LAFOT Code**

"DDffW" will be the elements encoded in the 5-figure groups, "DD" being the first two figures, "ff" being the next two figures, and "W" the last figure. Wind direction "DD" will be given in two figures, each code figure equivalent to a direction as shown in the code table printed below. For example, 0 is calm, 2 is east and 7 is northwest. Whenever the two "D" figures are the same, one of them should be disregarded and the other decoded from the table below. For example, "44" as "DD" would be decoded as "south"; whenever the two figures are different, each will be decoded and the word "to" will be placed between the two decoded directions; for example, "35" as "DD" would be decoded as "SE to SW." Wind velocity "ff" would be shown in mi/hr; for example, 03 will mean 3 mi/hr; 19 will mean 19 mi/hr, etc. Weather will be encoded in one figure using an appropriate figure from table "W" below.

**Table for "D" (Wind Direction)**

| Code | Direction |
|------|-----------|
| 0    | Calm      |
| 1    | Northeast |
| 2    | East      |
| 3    | Southeast |
| 4    | South     |
| 5    | Southwest |
| 6    | West      |
| 7    | Northwest |
| 8    | North     |
| 9    | Variable  |

**Table for "W" (Weather)**

| Code | Weather                                       |
|------|---|
| 0    | Fine (mostly clear)                           |
| 1    | Cloudy (or overcast)                          |
| 2    | Thundersqualls                                |
| 3    | Showers                                       |
| 4    | Rain  |
| 5    | Fog (visibility one-half mile or less)        |
| 6    | Lake steam (visibility one-half mile or less) |
| 7    | Light to moderate snow                        |
| 8    | Freezing rain                                 |
| 9    | Heavy snow (visibility one-half mile or less) |

Example of LAFOT Bulletin issued for broadcast at 11 p. m. E.S.T.

Superior:

First 18347 west half and 11287 east half.

Second 87240 west half and 88277 east half. Much colder with temperature falling to 15 by late evening.

Michigan:

First 99113 becoming 11193 middle period and 18307 end period.

Second 87310.

Example of above bulletin as translated.

Lake forecasts for two 12-hour periods; the first commencing 12 Midnight and the second commencing at 12 Noon the next day.

Lake Superior:

First period, wind northeast to north 34 mph with light to moderate snow west half of lake and northeast 28 mph with light to moderate snow east half of lake.

Second period, wind north to northwest 24 mph fine weather west half and north 27 mph with light to moderate snow east half. Much colder with temperature falling to 15 by late evening.

Lake Michigan:

First period, wind variable 11 mph showers becoming northeast 19 mph showers middle of period and northeast to north 30 mph with light to moderate snow end of period.

Second period, wind north to northwest 31 mph fine weather.

Schedules of LAFOT Broadcasts on the Great Lakes are shown in circular entitled "Great Lakes Weather Forecast (LAFOT) and Weather Bulletin (LAWEB) Broadcasts, Marine Wavelengths", issued by this Office; copy of which may be obtained on application to U. S. Weather Bureau Office, Cleveland, Ohio or to any other Weather Bureau station located at a Great Lakes port.

March 15, 1952

**GREAT LAKES WEATHER FORECAST (LAFOT)  
AND WEATHER BULLETIN (LAWEB) BROADCAST SCHEDULES  
MARINE WAVELENGTHS**

**LAFOT BULLETIN BROADCASTS  
(Coded Lake Forecasts)**

Great Lakes Weather forecasts (LAFOTS), issued by the United States Weather Bureau Forecast Center, Chicago, Illinois are broadcast by radiotelephone every six hours during the navigation season. United States Radiotelephone Stations transmitting LAFOTS, their schedules, frequencies and weather forecasts included in each broadcast are indicated in the table which follows. All schedules are given in Eastern Standard Time.

| Channels<br>Kilocycles | 30<br>2550 | 39<br>2514 | 60<br>4282.5 | 20<br>6470 | 10<br>8585 |
|------------------------|------------|------------|--------------|------------|------------|
| 5:02 a.m.              | WMI        | WAY        | WAY          | WMI        | —          |
| 5:12 a.m.              | WLC        | WLC        | WLC          | —          | —          |
| 5:20 a.m.              | WBL        | WBL        | —            | —          | —          |
| 5:25 a.m.              | WAS        | WAS        | —            | —          | —          |
| 11:02 a.m.             | WMI        | WMI        | WMI          | WMI        | WMI        |
| 11:12 a.m.             | WLC        | WAD        | WAD          | WLC        | —          |
| 11:20 a.m.             | WBL, WAS   | WBL, WAS   | —            | —          | —          |
| 11:25 a.m.             | WAY        | WAY        | WAS          | —          | —          |
| 5:02 p.m.              | WMI        | WAY        | WMI          | WMI        | WMI        |
| 5:12 p.m.              | WLC        | WAS        | WLC          | —          | —          |
| 5:20 p.m.              | WBL        | WBL        | WAD          | —          | —          |
| 5:25 p.m.              | WAD        | WAD        | —            | —          | —          |
| 11:02 p.m.             | WMI        | WAY        | WMI          | WMI        | —          |
| 11:12 p.m.             | WLC        | WLC        | —            | —          | —          |
| 11:20 p.m.             | WBL        | WBL        | —            | —          | —          |
| 11:25 p.m.             | WAS        | WAS        | —            | —          | —          |

| Station | Location              | Lake Forecasts<br>Included in Broadcasts    |
|---------|-----------------------|---|
| WAD     | Port Washington, Wis. | Michigan                                    |
| WAS     | Duluth, Minn.         | Superior                                    |
| WAY     | Chicago, Ill.         | Superior, Michigan and Huron                |
| WBL     | Buffalo, N. Y.        | Erie and Ontario                            |
| WLC     | Rogers City, Mich.    | Superior, Michigan, Huron and Erie          |
| WMI     | Lorain, Ohio          | Superior, Michigan, Huron, Erie and Ontario |

## STORM AND WHOLE GALE WARNING BROADCAST SCHEDULES

These broadcasts are made immediately upon receipt of the warning at the radio station, on the first SCHEDULED WARNING BROADCAST TIME after receipt, and at 2-hour intervals thereafter until 7 hours after the EFFECTIVE HOIST TIME stated in the warning, unless superseded or cancelled. The cancellation of a warning will be broadcast once only, on the next SCHEDULED WARNING BROADCAST TIME after receipt. Scheduled warning broadcast times given below are in minutes past the even or odd hours, E.S.T.

### U. S. RADIOTELEPHONE STATIONS

All Broadcasts on Channel 51—2182 Kilocycles

| Time            | Lake Superior                  | Lake Michigan             | Lake Huron                | Lake Erie        | Lake Ontario     |
|-----------------|--------------------------------|---------------------------|---------------------------|------------------|------------------|
| Even<br>HH + 35 | Portage<br>(NOG-17)            | Plum Island<br>(NMP-15)   | Port Huron<br>(NMD-22)    | —                | —                |
| Odd<br>HH + 35  | Lorain<br>(WMI)                | Lorain<br>(WMI)           | Lorain<br>(WMI)           | Lorain<br>(WMI)  | Lorain<br>(WMI)  |
| Even<br>HH + 45 | Rogers City<br>(WLC)           | Rogers City<br>(WLC)      | Rogers City<br>(WLC)      | —                | —                |
| Odd<br>HH + 45  | Soo, Chicago<br>(NOG)<br>(WAY) | Chicago<br>(WAY)          | Soo<br>(NOG)              | —                | —                |
| Even<br>HH + 55 | Marquette<br>(NOG-5)           | Mackinaw City<br>(NMP-20) | Mackinaw City<br>(NMP-20) | Erie<br>(NMD-11) | —                |
| Odd<br>HH + 55  | Duluth<br>(WAS)                | Port Wash.<br>(WAD)       | East Tawas<br>(NMD-24)    | Buffalo<br>(WBL) | Buffalo<br>(WBL) |

### LAWEB BULLETIN BROADCASTS

Great Lakes Weather Bulletins (LAWEBs), issued by the U. S. Weather Bureau Office, Cleveland, Ohio, are broadcast by Radiotelephone Station WMI Lorain, Ohio four times daily during the navigation season. These bulletins are broadcast in accordance with schedules and frequencies shown in the following table. All schedules are indicated in Eastern Standard Time.

| Call Sign | Time of Broadcast | Frequencies  |
|-----------|-------------------|--|
| WMI       | 0230              | Channels 20 (6470 kc.) 30 (2550 kc.) 39 (2514 kc.) and 60 (4282.5 kc.) |
| WMI       | 0830              | Channels 20 (6470 kc.) 30 (2550 kc.) 39 (2514 kc.) and 60 (4282.5 kc.) |
| WMI       | 1430              | Same as at 0830  |
| WMI       | 2030              | Same as at 0230.   |

## SCHEDULED BROADCASTS (ATLANTIC COAST AREA):

| Time<br>(EST)                | Station, Call<br>Frequency, Emission    | Contents of Broadcast  |
|------------------------------|---|--|
| 0520<br>1120<br>1720<br>2320 | Boston, Mass.<br>WOU 2506 kc A3         | Forecasts: Coastal waters, Eastport to Block Island. Small craft and storm warnings. At 1120 EST only, a weather summary and forecast for waters west of 60° W. and north of 40° N. is included.             |
| 1120<br>2320                 | Boston, Mass.<br>NMF 2698 kc A3         | Forecasts: Coastal waters, Eastport to Block Island. Small craft and storm warnings.   |
| 1050<br>2250                 | New York, N. Y.<br>WOX 2522, 2590 kc A3 | Forecasts: New York Harbor and vicinity; coastal waters, Eastbrook to Block Island and Block Island to Cape Hatteras. Small craft and storm warnings.  |
| 1150<br>2350                 | New York, N. Y.<br>NMY 2698 kc A3       | Forecasts: New York Harbor and vicinity; coastal waters, Eastbrook to Block Island and Block Island to Cape Hatteras. Small craft and storm warnings.  |
| 0050<br>1250                 | Ocean Gate, N. J.<br>WAQ 2558 kc A3     | Forecasts: Coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings.  |
| 0050<br>1250                 | Cape May, N. J.<br>NMK 2698 kc A3       | Forecasts: Coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings.  |
| 0230<br>1430                 | Wilmington, Del.<br>WEH 2558 kc A3      | Forecasts: Coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings.  |
| 1130                         | Baltimore, Md.<br>NMN7 2698 kc A3       | Forecasts: Chesapeake and Delaware Bays; coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings. Local weather at Baltimore, Annapolis, Aberdeen, Chincoteague, Patuxent and Norfolk. |

| Time<br>(EST) | Station, Call<br>Frequency, Emission  | Contents of Broadcast   |
|---------------|---------------------------------------|---|
| 0005          |                                       | Forecasts: Norfolk, Portsmouth and Hampton Roads area; coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Small craft and storm warnings. |
| 0605          | Quantico, Va.                         |   |
| 1205          | WHF 2538 kc A3                        |   |
| 1805          |                                       |   |
| 0000          |                                       | Forecasts: Norfolk, Portsmouth and Hampton Roads area; coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Small craft and storm warnings. |
| 0600          | Norfolk, Va.                          |   |
| 1200          | WGB 2538 kc A3                        |   |
| 1800          |                                       |   |
| 0020          |                                       | Forecasts: Norfolk, Portsmouth and Hampton Roads area; coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Small craft and storm warnings. |
| 1220          | Norfolk, Va.<br>NMN 2698 kc A3        |   |
| 1200          | Fort Macon, N. C.<br>NMN37 2698 kc A3 | Forecasts: Coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Storm warnings.   |
| 1120          | Charleston, S. C.                     | Forecasts: Coastal waters, Cape Hatteras to Jacksonville. Small craft and storm warnings.   |
| 2320          | NMB 2698 kc A3                        |   |
| 1130          | Charleston, S. C.                     | Forecasts: Coastal waters, Cape Hatteras to Jacksonville. Small craft and storm warnings.   |
| 2330          | WJO 2566 kc A3                        |   |
| 0120          | Jacksonville, Fla.                    | Forecasts: Coastal waters, Cape Hatteras to Jacksonville and Jacksonville to Florida Straits. Small craft and storm warnings.   |
| 1320          | NMV 2698 kc A3                        |   |
| 1100          | Miami, Fla.                           | Forecasts: Coastal waters, Jacksonville to Florida Straits and East Gulf of Mexico. Small craft and storm warnings.   |
| 2300          | WDR 2514 kc A3                        |   |



| Time (EST)   | Station, Call Frequency, Emission      | Contents of Broadcast   |
|--------------|--|---|
| 1150<br>2350 | Miami, Fla.<br>NMA 2698 kc A3          | Forecasts: Coastal waters, Jacksonville to Florida Straits and East Gulf of Mexico. Small craft and storm warnings. |
| 1120<br>2320 | St. Petersburg, Fla.<br>NOF 2698 kc A3 | Forecasts: Coastal waters, Jacksonville to Florida Straits; East Gulf of Mexico. Small craft and storm warnings.    |
| 1100<br>2300 | Tampa, Fla.<br>WFA 2550 kc A3          | Forecasts: Coastal waters, Jacksonville to Florida Straits; East Gulf of Mexico. Small craft and storm warnings.    |

## SPECIAL STORM AND HURRICANE WARNING BROADCASTS (ATLANTIC COAST AREA):

The following stations broadcast storm and hurricane warnings on receipt of the message at the radio station and where indicated, at additional odd or even hour schedules, E.S.T., for six hours. For example, Ocean Gate—WAQ broadcasts warnings when received and at 50 minutes past each odd hour, E.S.T., during the six hours following the first special broadcast, unless the warning is cancelled or superseded. In the latter case a new warning would extend the broadcast period another six hours.

|                                     |                               |
|-------------------------------------|-------------------------------|
| Boston, Mass.—NMF 2698 kc A3        | On the even hours             |
| New York, N. Y.—NMY 2698 kc A3      | On the odd hours              |
| Ocean Gate, N. J.—WAQ 2558 kc A3    | At 50 minutes past odd hours  |
| Wilmington, Del.—WEH 2558 kc A3     | At 30 minutes past even hours |
| Baltimore, Md.—MNM7 2698 kc A3      | On the even hours             |
| Norfolk, Va.—WGB 2538 kc A3         | On the odd hours              |
| Norfolk, Va.—NMN 2698 kc A3         | On the even hours             |
| Quantico, Va.—WHF 2538 kc A3        | At 5 minutes past odd hours   |
| Fort Macon, N. C.—NMN37 2698 kc A3  | On the odd hours              |
| Charleston, S. C.—WJO 2566 kc A3    | On the even hours             |
| Charleston, S. C.—NMB 2698 kc A3    | On the odd hours              |
| Jacksonville, Fla.—NMV 2698 kc A3   | On the even hours             |
| Miami, Fla.—WDR 2514 kc A3          | On the odd hours              |
| Miami, Fla.—NMA 2698 kc A3          | On the even hours             |
| St. Petersburg, Fla.—NOF 2698 kc A3 | On the even hours             |
| Tampa, Fla.—WFA 2550 kc A3          | On the even hours             |

## SCHEDULED BROADCASTS (GULF OF MEXICO AND CARIBBEAN SEA AREA):

| Time<br>(CST) | Station, Call<br>Frequency, Emission   | Contents of Broadcast  |
|---------------|--|--|
| 1000<br>2200  | Miami, Fla.<br>WDR 2514 kc A3          | Forecasts: Coastal waters, Jacksonville to Florida Straits; Gulf of Mexico waters east of longitude 85°. Small craft and storm warnings.               |
| 1050<br>2250  | Miami, Fla.<br>NMA 2698 kc A3          | Forecasts: Coastal waters, Jacksonville to Florida Straits; Gulf of Mexico waters east of longitude 85°. Small craft and storm warnings.               |
| 0900<br>2100  | San Juan, P. R.<br>NMR 2698 kc A3      | Forecasts: Caribbean Sea. Weather summary. Small craft and storm warnings.   |
| 1020<br>2220  | St. Petersburg, Fla.<br>NOF 2698 kc A3 | Forecasts: Coastal waters, Jacksonville to Florida Straits; Gulf of Mexico waters east of longitude 85°. Small craft and storm warnings.               |
| 1000<br>2200  | Tampa, Fla.<br>WFA 2550 kc A3          | Forecasts: Coastal waters, Jacksonville to Florida Straits; Gulf of Mexico waters east of longitude 85°. Small craft and storm warnings.               |
| 1100<br>2300  | New Orleans, La.<br>WAK 2598 kc A3     | Forecasts for Gulf of Mexico and Western Caribbean Sea. Small craft and storm warnings.  |
| 1150<br>2350  | New Orleans, La.<br>NMG 2698 kc A3     | Forecasts: East, Middle and West Gulf of Mexico and Western Caribbean Sea. Small craft and storm warnings.   |
| 1120<br>2320  | Galveston, Texas<br>NOY 2698 kc A3     | Forecasts for Gulf of Mexico waters west of longitude 85°. Local weather at Galveston, Port Arthur and Corpus Christi. Small craft and storm warnings. |
| 1230<br>1900  | Galveston, Texas<br>KQP 2530 kc A3     | Forecasts for Gulf of Mexico waters west of longitude 85°. Local weather at Galveston, Port Arthur and Corpus Christi. Small craft and storm warnings. |

## SPECIAL STORM AND HURRICANE WARNING BROADCASTS (GULF AND CARIBBEAN AREA):

The following stations broadcast storm and hurricane warnings on receipt of the message at the radio station and, where indicated, at additional odd or even hour schedules, C.S.T., for six hours.

|                                     |                              |
|-------------------------------------|------------------------------|
| Miami, Fla.—WDR 2514 kc A3          | On the even hours            |
| Miami, Fla.—NMA 2698 kc A3          | On the odd hours             |
| San Juan, P. R.—NMR 2698 kc A3      | On the odd hours             |
| St. Petersburg, Fla.—NOF 2698 kc A3 | On the odd hours             |
| Tampa, Fla.—WFA 2550 kc A3          | On the odd hours             |
| New Orleans, La.—NMG 2698 kc A3     | On the even hours            |
| Galveston, Texas—NOY 2698 kc A3     | On the even hours            |
| Galveston, Texas—KQP 2530 kc A3     | At 15 minutes past odd hours |

## SCHEDULED BROADCASTS (PACIFIC COAST AREA):

| Time<br>(PST) | Station, Call<br>Frequency, Emission    | Contents of Broadcast  |
|---------------|---|--|
| 0900<br>2100  | Long Beach, Calif.<br>NMQ 2698 kc A3    | Forecasts: Coastal waters, Point Arguello to San Diego. Weather summary. Local weather at Point Arguello, Newport Beach, Ocean-side, San Diego Anacapa Light, Avalon Harbor, San Nicholas Island, San Pedro, Point Mugu, Redondo Beach and Santa Monica. Small craft and storm warnings.   |
| 0800<br>2000  | San Pedro, Calif.<br>KOU 2566 kc A3     | Forecasts: Coastal waters, Point Arguello to San Diego. Weather summary. Local weather at Point Arguello, Newport Beach, Ocean-side, San Diego Anacapa Light, Avalon Harbor, San Nicholas Island, San Pedro, Point Mugu, Redondo Beach and Santa Monica. Small craft and storm warnings.   |
| 0830<br>2030  | San Francisco, Calif.<br>NMC 2698 kc A3 | Forecasts: Coastal waters, Cape Blanco to Point Arguello. Weather summary. Local weather at Eureka, Point Piedras Blancas, Point Arena, Alcatraz Island, San Francisco Lightship, Crescent City, Blunt's Reef Lightship, Point Reyes, Farallon Island, Point Montara, Point San Luis and Point Arguello. Small craft and storm warnings. |

0830 San Francisco, Calif.  
2032 KLH 2506 kc A3

Forecasts: Coastal waters, Cape Blanco to Point Arguello. Weather summary. Local weather at Eureka, Point Piedras Blancas, Point Arena, Alcatraz Island, San Francisco Lightship, Crescent City, Blunt's Reef Lightship, Point Reyes, Farallon Island, Point Montara, Point San Luis and Point Arguello. Small craft and storm warnings.

0900 Eureka, Calif.  
2100 KOE 2506 kc A3

Forecasts: Coastal waters, Tatoosch Island to Cape Blanco and Cape Blanco to Point Arguello. Weather summary. Local weather at Eureka, Point Piedras Blancas, Point Arena, Alcatraz Island, San Francisco Lightship, Crescent City, Blunt's Reef Lightship, Point Reyes, Farallon Island, Point Montara, Point San Luis and Point Arguello. Small craft and storm warnings.

0930 Portland, Ore.  
2130 KQX 2508 kc A3

Forecasts: Coastal waters, Tatoosch Island to Cape Blanco, Straits of Juan de Fuca and inland waters of Western Washington. Weather summary. Local weather at Tatoosch Island, Swiftsure Lightship, Destruction Island, North Head, Columbia Lightship, Cape Blanco. Small craft and storm warnings.

0915 Astoria, Ore.  
2115 KFX 2598 kc A3

Forecasts: Coastal waters, Tatoosch Island to Cape Blanco, Straits of Juan de Fuca and inland waters of Western Washington. Weather summary. Local weather at Tatoosch Island, Swiftsure Lightship, Destruction Island, North Head, Columbia Lightship, Cape Blanco. Small craft and storm warnings.

0900 Seattle, Wash.  
2100 KOW 2522 kc A3

Forecasts: Coastal waters, Tatoosch Island to Cape Blanco, Straits of Juan de Fuca and inland waters of Western Washington. Weather summary. Local weather at Tatoosch Island, Swiftsure Lightship, Destruction Island, North Head, Columbia Lightship, Cape Blanco.

| Time<br>(PST) | Station, Call<br>Frequency, Emission | Contents of Broadcast  |
|---------------|--------------------------------------|--|
| 0930          | Seattle, Wash.                       | Forecasts: Coastal waters, Tatoosh Island to Cape Blanco, Straits of Juan de Fuca and inland waters of Western Washington. Weather summary. Local weather at Tatoosh Island, Swiftsure Lightship, Destruction Island, North Head, Columbia Lightship, Cape Blanco. |
| 2130          | NMW 2698 kc A3                       |  |

### SPECIAL STORM AND HURRICANE WARNING BROADCASTS (PACIFIC COAST AREA):

The following stations broadcast storm and hurricane warnings on receipt of the message at the radio station and where indicated, at additional odd or even hour schedules, P.S.T., for six hours.

|                                      |                   |
|--------------------------------------|-------------------|
| Long Beach, Calif.—NMQ 2698 kc A3    | On the even hours |
| San Pedro, Calif.—KOU 2566 kc A3     | On the odd hours  |
| San Francisco, Calif.—NMC 2698 kc A3 | On the odd hours  |
| San Francisco, Calif.—KLH 2506 kc A3 | On the odd hours  |
| Eureka, Calif.—KOE 2506 kc A3        | On the odd hours  |
| Portland, Oregon—KQX 2598 kc A3      | On the odd hours  |
| Astoria, Oregon—KFX 2598 kc A3       | On the odd hours  |
| Seattle, Wash.—NMW 2698 kc A3        | On the even hours |
| Seattle, Wash.—KOW 2522 kc A3        | On the odd hours  |

### SCHEDULED BROADCASTS (RIVER NAVIGATION)

| Time<br>(CST)   | Station, Call<br>Frequency, Emission  | Contents of Broadcast   |
|---|---------------------------------------|---|
| 1100<br>daily except<br>Sundays &<br>Holidays         | St. Louis, Missouri<br>WGK 6455 kc A3 | River Bulletin giving stages of rivers at various locations. Coast Guard Notices to Mariners. U. S. Engineers Bulletin. |
| 1700<br>1915<br>daily except<br>Sundays &<br>Holidays | Memphis, Tennessee<br>WJG 2782 kc A3  | River Bulletin giving stages of rivers at various locations. Coast Guard Notices to Mariners.                           |

**NOTE: A3 IS VOICE BROADCAST**

## WIND TERMINOLOGY USED IN BROADCAST

| Plain Language<br>Terms | Equivalent<br>Beaufort Scale | Miles Per Hour | Knots       |
|-------------------------|------------------------------|----------------|-------------|
| Light                   | 0-2                          | 0- 7           | 0- 6        |
| Gentle                  | 3                            | 8-12           | 7-10        |
| Moderate                | 4                            | 13-18          | 11-16       |
| Fresh                   | 5                            | 19-24          | 17-21       |
| Strong                  | 6, 7                         | 25-38          | 22-33       |
| Gale                    | 8, 9                         | 39-54          | 34-47       |
| Whole Gale              | 10, 11                       | 55-75          | 48-63       |
| Hurricane               | 12                           | Over 75        | 64 and over |

## STANDARD FREQUENCIES AND TIME SIGNALS FROM STATION WWV

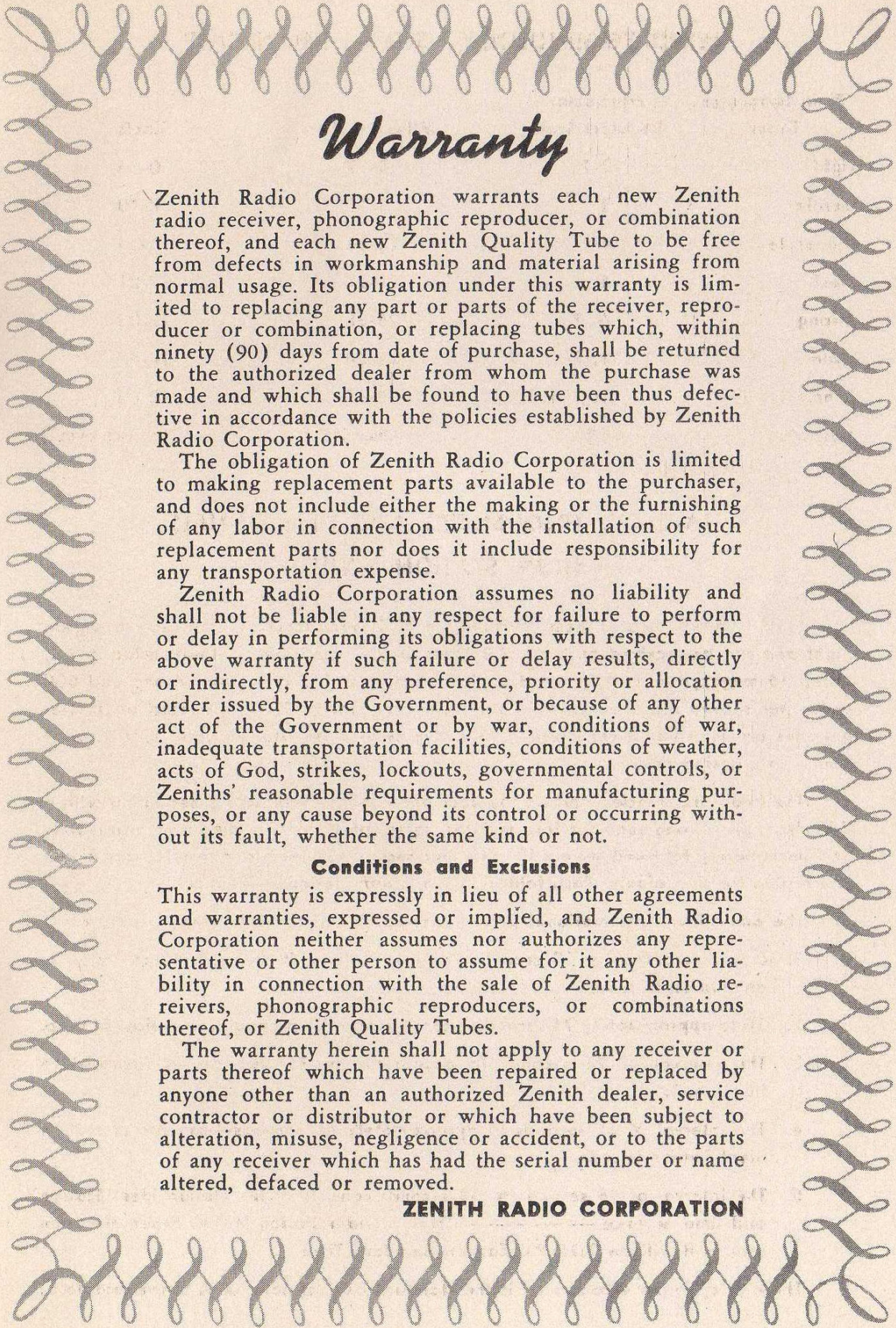
Station WWV located near Washington, D.C. broadcasts continuously day and night and can be received on the H500 Trans-Oceanic portable on frequencies of 2.5, 5 and 15 megacycles. Two standard audio frequencies, 440 cycles per second and 600 cycles per second are broadcast on all carrier frequencies. These standard audio frequencies are interrupted each second by a five cycle pulse. The resultant tone is quite similar to a ticking clock.

The audio frequencies start on the hour and continue alternately beginning with a 600 cycle per second tone for four minutes, interrupted for one minute of information and immediately followed by a 440 cycle per second tone for four minutes and again interrupted for one minute. Each following ten minute period is identical.

The one minute informational period is composed of the following:

1. 0 to approximately 10 seconds—Universal Time (Greenwich Mean Time) is announced in code.
2. 10 to approximately 24 seconds—consists of radio propagation notices in code.
3. The interval of 24 seconds to approximately 35 seconds—is identical to item No. 1.
4. The interval of 35 seconds to approximately 48 seconds—consists of station identification in code.
5. The interval of 48 seconds to 60 seconds consists of the station identification and time in voice — — — — "This is radio station WWV. When the tone returns it will be 2:15 PM Eastern Standard Time."

The 440 cycle per second note is the standard musical note for A above middle C.



## Warranty

Zenith Radio Corporation warrants each new Zenith radio receiver, phonographic reproducer, or combination thereof, and each new Zenith Quality Tube to be free from defects in workmanship and material arising from normal usage. Its obligation under this warranty is limited to replacing any part or parts of the receiver, reproducer or combination, or replacing tubes which, within ninety (90) days from date of purchase, shall be returned to the authorized dealer from whom the purchase was made and which shall be found to have been thus defective in accordance with the policies established by Zenith Radio Corporation.

The obligation of Zenith Radio Corporation is limited to making replacement parts available to the purchaser, and does not include either the making or the furnishing of any labor in connection with the installation of such replacement parts nor does it include responsibility for any transportation expense.

Zenith Radio Corporation assumes no liability and shall not be liable in any respect for failure to perform or delay in performing its obligations with respect to the above warranty if such failure or delay results, directly or indirectly, from any preference, priority or allocation order issued by the Government, or because of any other act of the Government or by war, conditions of war, inadequate transportation facilities, conditions of weather, acts of God, strikes, lockouts, governmental controls, or Zeniths' reasonable requirements for manufacturing purposes, or any cause beyond its control or occurring without its fault, whether the same kind or not.

### Conditions and Exclusions

This warranty is expressly in lieu of all other agreements and warranties, expressed or implied, and Zenith Radio Corporation neither assumes nor authorizes any representative or other person to assume for it any other liability in connection with the sale of Zenith Radio receivers, phonographic reproducers, or combinations thereof, or Zenith Quality Tubes.

The warranty herein shall not apply to any receiver or parts thereof which have been repaired or replaced by anyone other than an authorized Zenith dealer, service contractor or distributor or which have been subject to alteration, misuse, negligence or accident, or to the parts of any receiver which has had the serial number or name altered, defaced or removed.

**ZENITH RADIO CORPORATION**







**ZENITH RADIO CORPORATION**

6001 West Dickens Avenue  
CHICAGO 39, ILLINOIS