Operating Guide

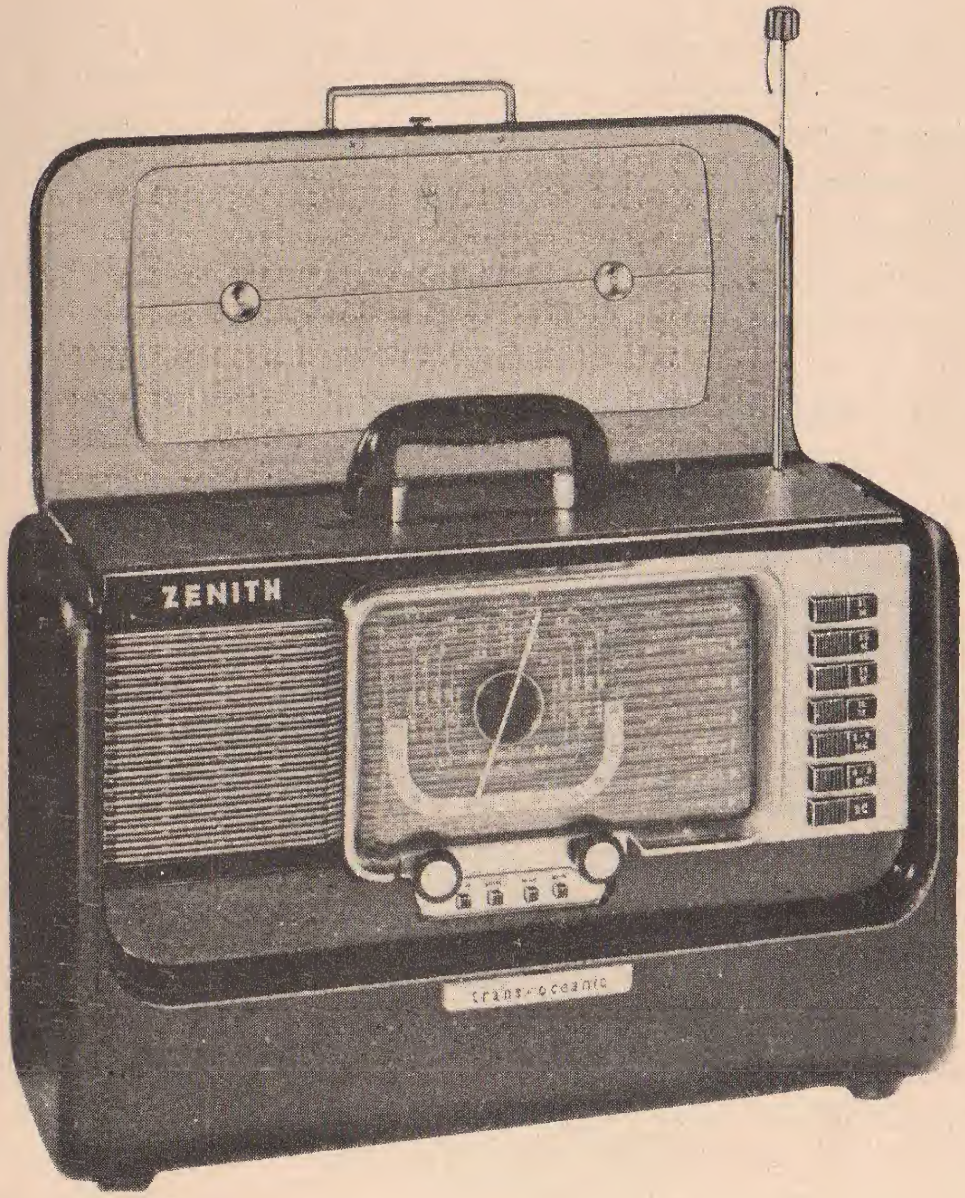
TO HELP YOU
ENJOY YOUR NEW

Zenith

Super
TRANS-OCEANIC
PORTABLE

MODEL H500
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

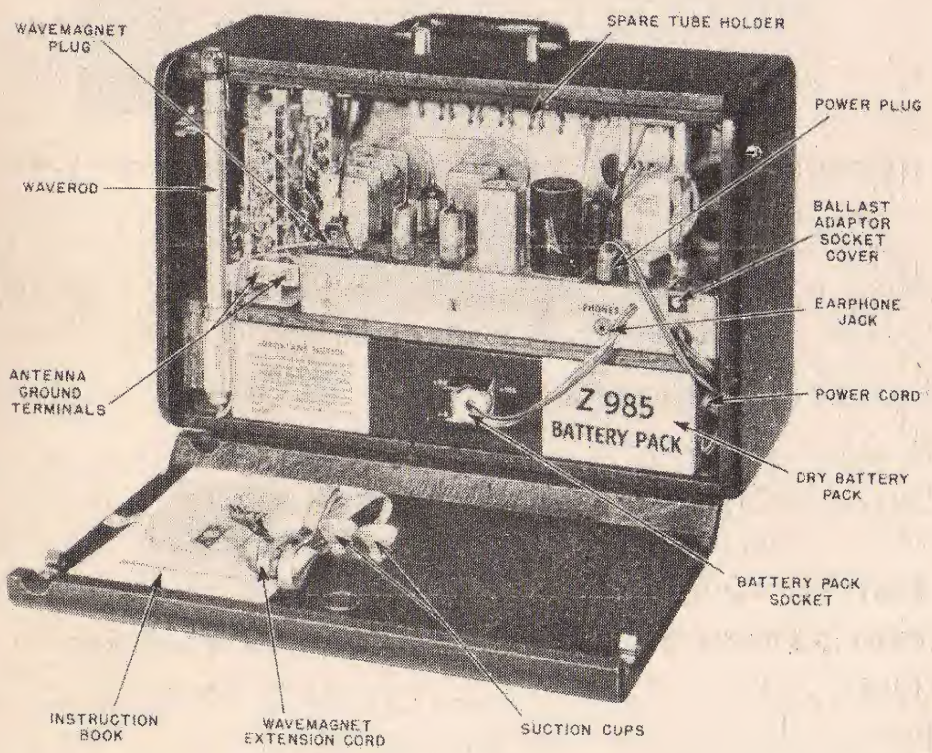


Figure I.—Rear View, Back Cover Open.

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.)

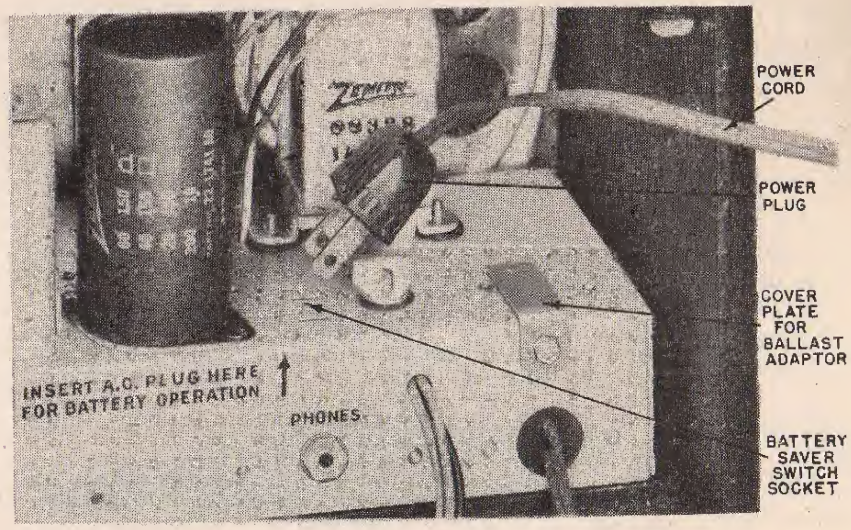


Figure 2.—Insertion of Line Cord Plug Into Battery Saver Socket.

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.

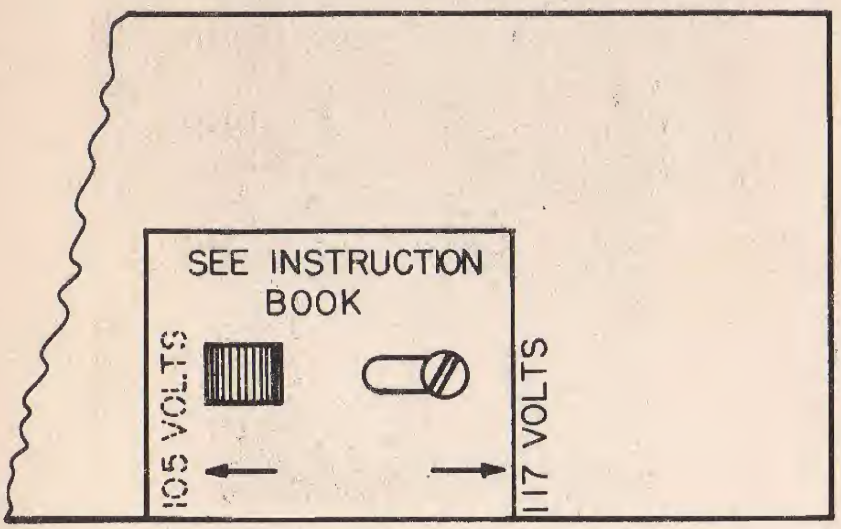


Figure 3.

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.)

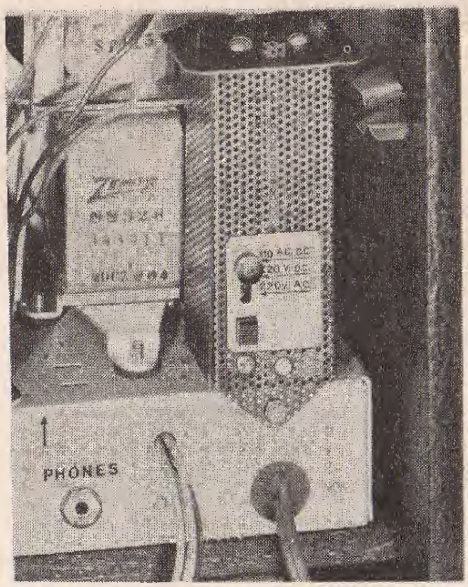


Figure 4.—Ballast Adaptor Inserted in Socket.

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.)

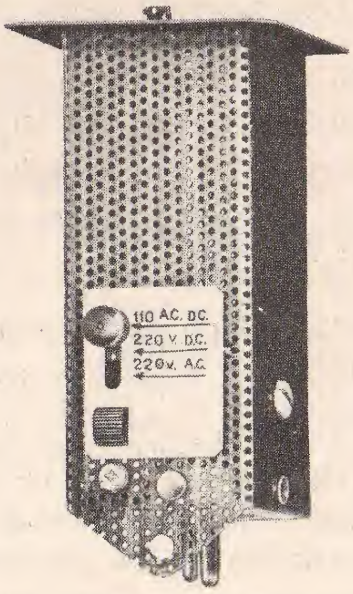


Figure 5.—Ballast Tube Switch Positions.

4. TUNING DIAL

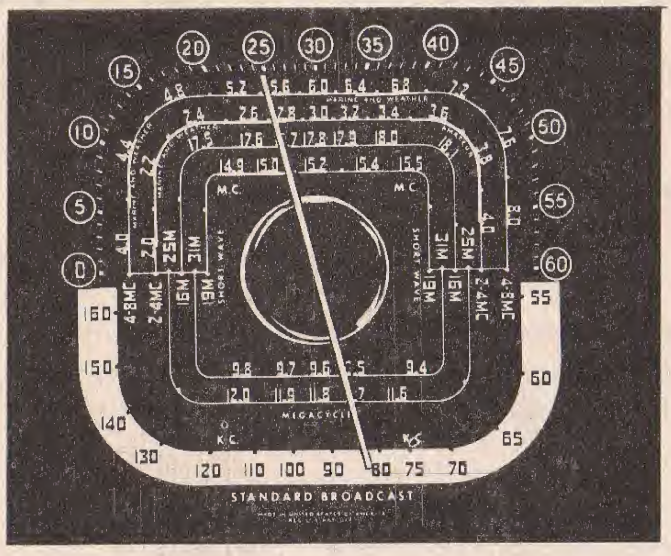


Figure 6.—Dial Scale.

(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.

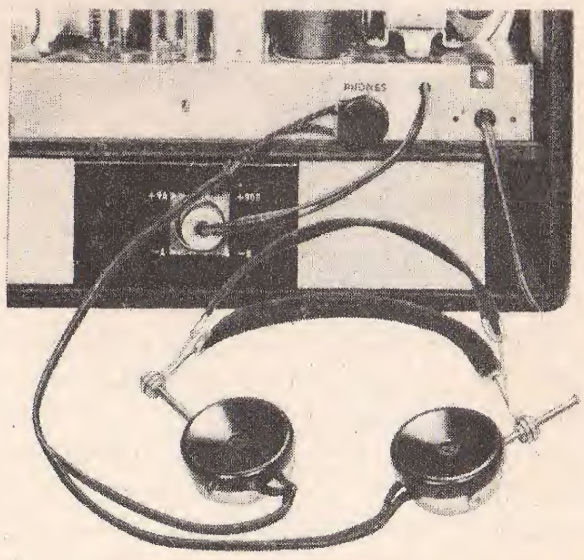


Figure 7.—Headphones Connected to Receiver.

9. TUBE COMPLEMENT

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

See Figure 8 for location of tubes on chassis.

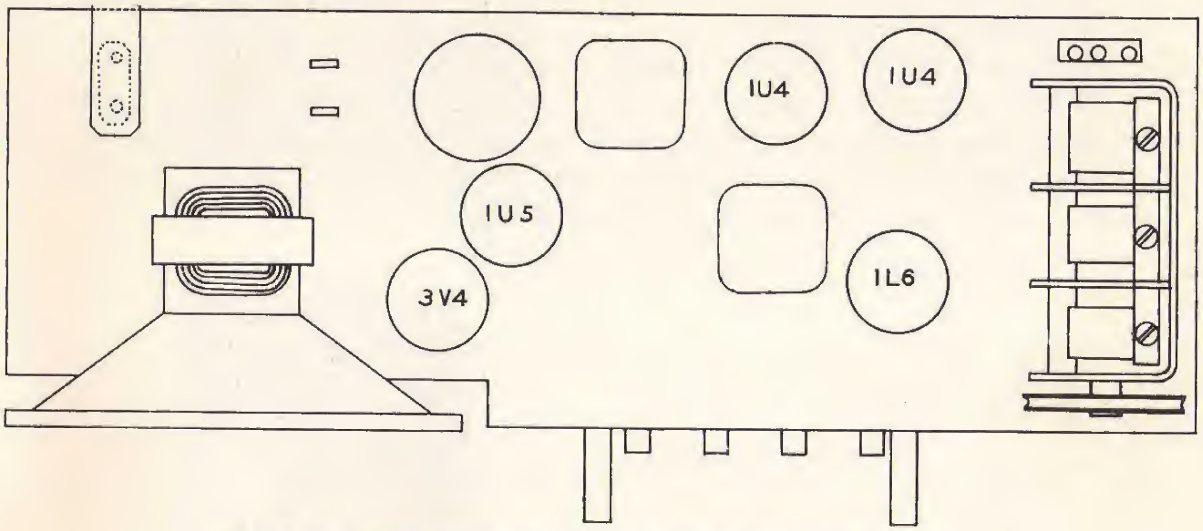


Figure 8.—Top View of Chassis Showing Tube Location.

10. STANDARD BROADCAST
(Normal Conditions)

A. 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.

B. Press The Band Selector Button Marked Broadcast.

C. 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.

D. Tune with the right hand knob and read the standard broadcast scale on the dial.

E. 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.

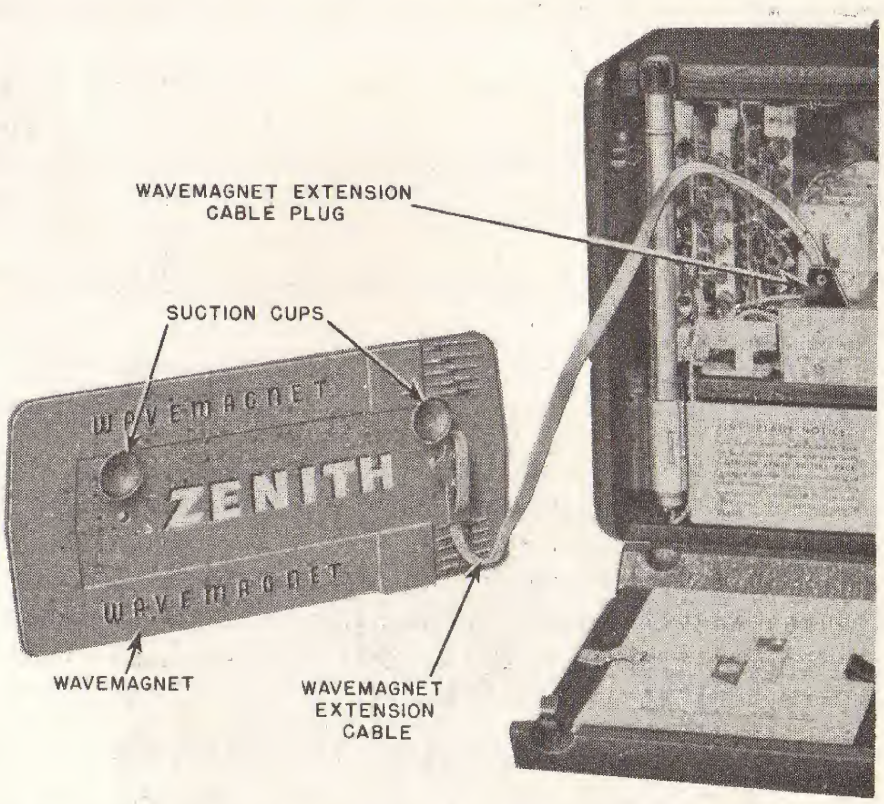


Figure 9.—Rear View of Receiver with the Wavemagnet Extension Cable Connected.

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.

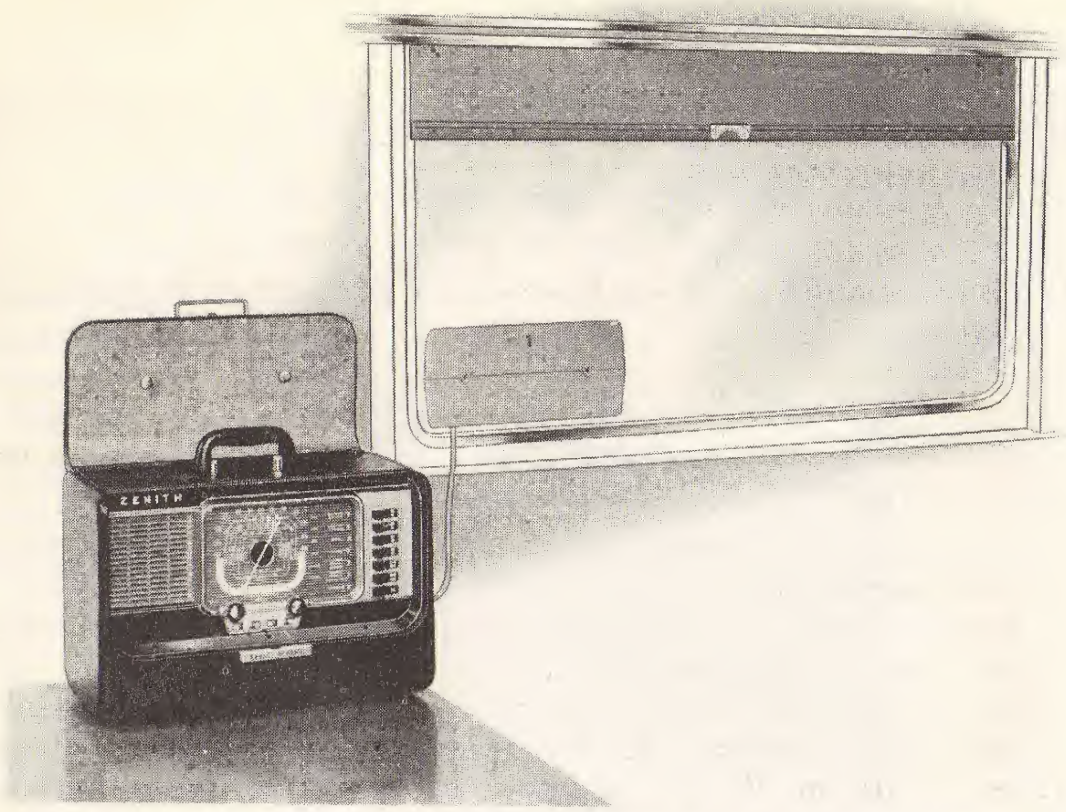


Figure 10.—Detachable Wavemagnet in Position on a Window Glass.

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.)

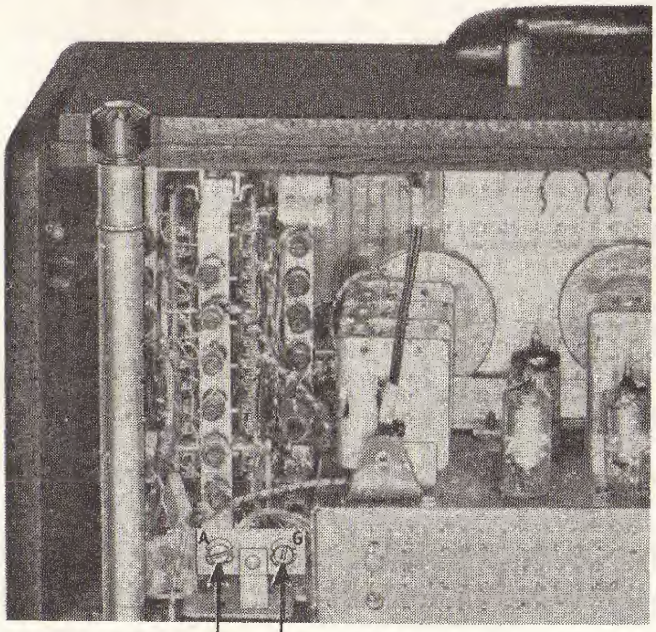


Figure 11.—Antenna and Ground Terminals.

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.)

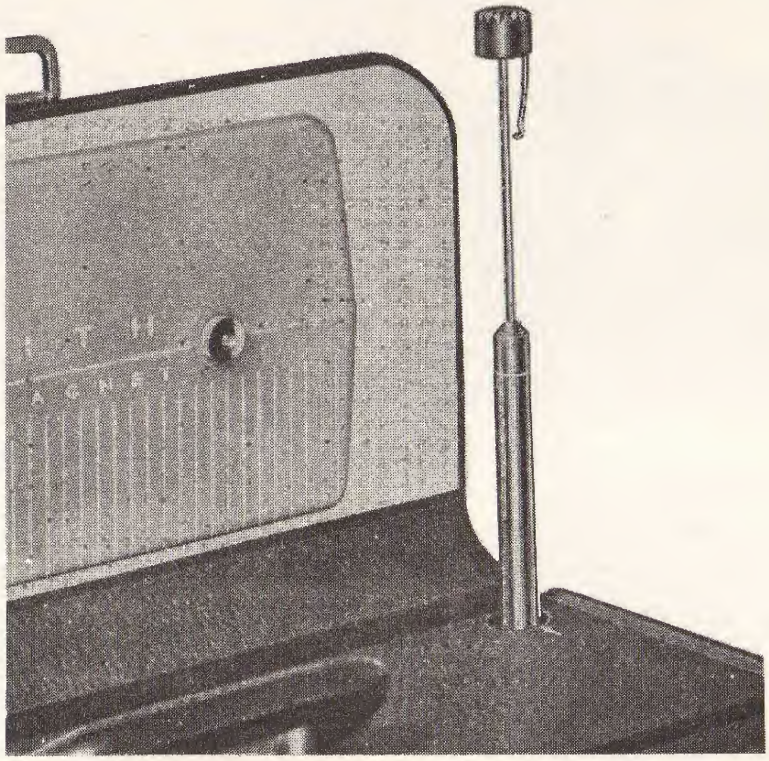


Figure 12.—Waverod Must Be Extended for Shortwave Reception.

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

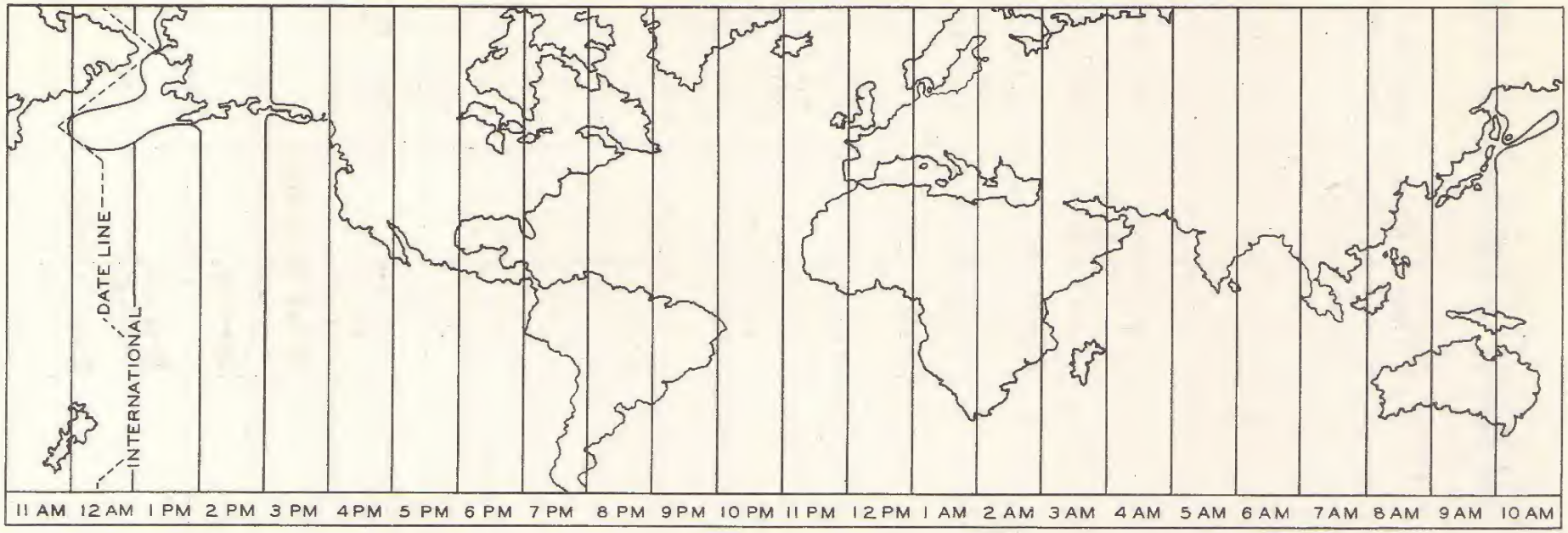
LOG OF U.S. CLEAR CHANNEL STATIONS

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

CITY AND STATE	KC	CALL
Nebraska		
Omaha	660	KOWH
Grand Island	750	KMMJ
Norfolk	780	WJAG
Lincoln	1110	KFAB
New Hampshire		
Portsmouth	750	WHEB
New Mexico		
Albuquerque	770	KOB
Albuquerque	1030	KOB
New York		
New York	660	WEAF
New York	710	WOR
New York	770	WJZ
Schenectady	810	WGY
New York	830	WNYC
Ithaca	870	WHCU
New York	880	WABC
New York	1010	WINS
New York	1050	WHN
New York	1130	WNEW
Rochester	1180	WHAM
New York	1190	WLIB
Newburgh	1220	WGNY
Buffalo	1520	WKBW
New York	1560	WQXR
North Carolina		
Raleigh	680	WPTF
Henderson	890	WHNC
Charlotte	1110	WBT
Ohio		
Akron	640	WHKK
Cincinnati	700	WLW
Columbus	820	WOSU
Cleveland	850	WJW
Cleveland	1100	WTAM
Cleveland	1220	WGAR
Cincinnati	1530	WCKY
Oklahoma		
Norman	640	WNAD
Tulsa	1170	KVOO
Oklahoma City	1520	KOMA
Oregon		
Portland	750	KXL
Portland	1080	KWJJ
Portland	1190	KEX

CITY AND STATE	KC	CALL
Pennsylvania		
Butler	680	WISR
Reading	850	WEEU
Philadelphia	990	WIBG
Pittsburgh	1020	KDKA
Philadelphia	1210	WCAU
York	900	WSBA
Philadelphia	1060	KYW
South Dakota		
Sioux Falls	1140	KSOO
Tennessee		
Nashville	650	WSM
Knoxville	990	WNOX
Nashville	1510	WLAC
Texas		
Dallas	660	KSKY
San Antonio	680	KABC
Houston	740	KTRH
Dallas	820	WFAA
Ft. Worth	820	WBAP
Corpus Christi	1010	KWBU
Corpus Christi	1030	KWBU
Dallas	1080	KRLD
San Antonio	1200	WOAI
Utah		
Salt Lake City	1160	KSL
Virginia		
Alexandria	730	WPIK
Richmond	1140	WRVA
Washington		
Seattle	710	KIRO
Seattle	770	KXA
Seattle	1000	KOMO
Seattle	1090	KEVR
Spokane	1510	KGA
West Virginia		
Wheeling	1170	WWVA
Alaska		
Fairbanks	660	KFAR
Hawaii		
Honolulu	760	KGU
Puerto Rico		
Mayaguez	990	WPRA

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

YOUR SHORT WAVE STATION LOG

STATION	CITY	TIME	BAND	MEGACYCLES
4/28 ?	RADIO MOSCOW	10:30	31	9.59 (29)

YOUR SHORT WAVE STATION LOG

STATION	CITY	TIME	BAND	MEGACYCLES

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.

UNITED STATES DEPARTMENT OF COMMERCE March 15, 1952
WEATHER BUREAU Washington, D. C.

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	30	39	60	20	10
Kilocycles	2550	2514	4282.5	6470	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 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 HH + 35	Portage (NOG-17)	Plum Island (NMP-15)	Port Huron (NMD-22)	——	——
Odd HH + 35	Lorain (WMI)	Lorain (WMI)	Lorain (WMI)	Lorain (WMI)	Lorain (WMI)
Even HH + 45	Rogers City (WLC)	Rogers City (WLC)	Rogers City (WLC)	——	——
Odd HH + 45	Soo, Chicago (NOG) (WAY)	Chicago (WAY)	Soo (NOG)	——	——
Even HH + 55	Marquette (NOG-5)	Mackinaw City (NMP-20)	Mackinaw City (NMP-20)	Erie (NMD-11)	——
Odd HH + 55	Duluth (WAS)	Port Wash. (WAD)	East Tawas (NMD-24)	Buffalo (WBL)	Buffalo (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 (EST)	Station, Call Frequency, Emission	Contents of Broadcast
0520 1120 1720 2320	Boston, Mass. 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 2320	Boston, Mass. NMF 2698 kc A3	Forecasts: Coastal waters, Eastport to Block Island. Small craft and storm warnings.
1050 2250	New York, N. Y. 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 2350	New York, N. Y. 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 1250	Ocean Gate, N. J. WAQ 2558 kc A3	Forecasts: Coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings.
0050 1250	Cape May, N. J. NMK 2698 kc A3	Forecasts: Coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings.
0230 1430	Wilmington, Del. WEH 2558 kc A3	Forecasts: Coastal waters, Block Island to Cape Hatteras. Small craft and storm warnings.
1130	Baltimore, Md. 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 (EST)	Station, Call Frequency, Emission	Contents of Broadcast
0005 0605 1205 1805	Quantico, Va. WHF 2538 kc A3	Forecasts: Norfolk, Portsmouth and Hampton Roads area; coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Small craft and storm warnings.
0000 0600 1200 1800	Norfolk, Va. WGB 2538 kc A3	Forecasts: Norfolk, Portsmouth and Hampton Roads area; coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Small craft and storm warnings.
0020 1220	Norfolk, Va. NMN 2698 kc A3	Forecasts: Norfolk, Portsmouth and Hampton Roads area; coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Small craft and storm warnings.
1200	Fort Macon, N. C. NMN37 2698 kc A3	Forecasts: Coastal waters, Block Island to Cape Hatteras and Cape Hatteras to Jacksonville. Storm warnings.
1120 2320	Charleston, S. C. NMB 2698 kc A3	Forecasts: Coastal waters, Cape Hatteras to Jacksonville. Small craft and storm warnings.
1130 2330	Charleston, S. C. WJO 2566 kc A3	Forecasts: Coastal waters, Cape Hatteras to Jacksonville. Small craft and storm warnings.
0120 1320	Jacksonville, Fla. NMV 2698 kc A3	Forecasts: Coastal waters, Cape Hatteras to Jacksonville and Jacksonville to Florida Straits. Small craft and storm warnings.
1100 2300	Miami, Fla. WDR 2514 kc A3	Forecasts: Coastal waters, Jacksonville to Florida Straits and East Gulf of Mexico. Small craft and storm warnings.

Time (EST)	Station, Call Frequency, Emission	Contents of Broadcast
1150 2350	Miami, Fla. NMA 2698 kc A3	Forecasts: Coastal waters, Jacksonville to Florida Straits and East Gulf of Mexico. Small craft and storm warnings.
1120 2320	St. Petersburg, Fla. NOF 2698 kc A3	Forecasts: Coastal waters, Jacksonville to Florida Straits; East Gulf of Mexico. Small craft and storm warnings.
1100 2300	Tampa, Fla. 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 (CST)	Station, Call Frequency, Emission	Contents of Broadcast
1000 2200	Miami, Fla. 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 2250	Miami, Fla. 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 2100	San Juan, P. R. NMR 2698 kc A3	Forecasts: Caribbean Sea. Weather summary. Small craft and storm warnings.
1020 2220	St. Petersburg, Fla. 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 2200	Tampa, Fla. 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 2300	New Orleans, La. WAK 2598 kc A3	Forecasts for Gulf of Mexico and Western Caribbean Sea. Small craft and storm warnings.
1150 2350	New Orleans, La. NMG 2698 kc A3	Forecasts: East, Middle and West Gulf of Mexico and Western Caribbean Sea. Small craft and storm warnings.
1120 2320	Galveston, Texas 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 1900	Galveston, Texas 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 (PST)	Station, Call Frequency, Emission	Contents of Broadcast
0900 2100	Long Beach, Calif. NMQ 2698 kc A3	Forecasts: Coastal waters, Point Arguello to San Diego. Weather summary. Local weather at Point Arguello, Newport Beach, Oceanside, San Diego Anacapa Light, Avalon Harbor, San Nicholas Island, San Pedro, Point Mugu, Redondo Beach and Santa Monica. Small craft and storm warnings.
0800 2000	San Pedro, Calif. KOU 2566 kc A3	Forecasts: Coastal waters, Point Arguello to San Diego. Weather summary. Local weather at Point Arguello, Newport Beach, Oceanside, San Diego Anacapa Light, Avalon Harbor, San Nicholas Island, San Pedro, Point Mugu, Redondo Beach and Santa Monica. Small craft and storm warnings.
0830 2030	San Francisco, Calif. 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 2032	San Francisco, Calif. 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 2100	Eureka, Calif. 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 2130	Portland, Ore. 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 2115	Astoria, Ore. 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 2100	Seattle, Wash. 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 (PST)	Station, Call Frequency, Emission	Contents of Broadcast
0930 2130	Seattle, Wash. NMW 2698 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.

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

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