ZENITH®

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
13M	Day and Night

HOW TO USE THE DIAL-O-MAP

To determine the present time of day in some other city in the world:

1. First check the map and note Time Zone in which you are located.

2. Outer circle of the dial indicates time of day—turn the inner dial of the Dial-O-Map so that your Zone Number lines up with the present time in your city.

3. Next, check the map for the Zone Number of the city from which you wish to receive a program, the time indicated on the outer dial opposite that Zone Number is the time in that c

EXAMPLE: At 10 A.M. in Chicago (Zone 6) what is the time in London (Zone 12)? Turn dial so that Zone 6 arrow points to 10 A.M. and note that Zone 12 indicates time in London to be 4 P.M.

If you are on Daylight Saving Time, be sure to subtract one hour.

NOTE: If Zone Number of city from which you wish to receive a program is larger than your Zone Number, the time indicated is ahead of your time; if smaller, it is behind your time. Keep in mind the International Date Line which separates Zone 24 and Zone 1. For example if you lived in Zone 24 and it was 9 A.M. Tuesday the time in Zone 1 will be 10 A.M. Monday.

PULL OUT

BRIEF OPERATING INSTRUCTIONS

For more detailed instructions, be certain to read the instruction book supplied with this receiver.

1. BATTERY INSTALLATION—Open the rear cover of the cabinet and place the nine 1½ volt type D cells in the battery compartment. When installing these batteries, be certain to install them as indicated by the battery outlines on the bottom of the battery compartment.

2. OPERATING THE RECEIVER—Turn the volume control knob clockwise. Advance the volume until sound is heard. Then rotate the band selector button at the right side of the cabinet to the band you desire and adjust the tuning control until you have tuned to the desired station. Since the wavemagnet is directional it may be necessary to rotate the receiver for best reception.

3. DIAL LIGHT—In the event you are operating this receiver in a dark room where it is very difficult to see the dial scale, press the dial light control located at the lower left control portion of the control panel to the left, this will illuminate the dial.

4. TONE CONTROL—This receiver has the tone control on the lower left portion of the control panel. This new type of control is continuously variable. When the control is turned clockwise the low notes are reduced, at the same time the high notes are given extra emphasis. As the control is turned counter-clockwise, the high notes are reduced and the lower tones are given added emphasis. When in the center position, both high and low tones are reproduced in normal relations.

5. PHONO CONNECTION—A phono input jack is provided at the back of this chassis. Any phonograph using a crystal type cartridge can be connected to this receiver. Connect the phonograph to this receiver by plugging the available cable into the phono jack. Then set the radio-phono switch to phono position. The volume can then be controlled by the volume control in the radio.

6. STANDARD BROADCAST WAVEMAGNET—When operating the receiver on the broadcast band, the Standard Broadcast Wavemagnet mounted in the top of the cabinet would normally be sufficient. However, if you are operating the receiver in a train, plane, hotel or in an automobile, remove the detachable wavemagnet mounted to the back of the chassis; release the wavemagnet extension cable; remove the standard broadcast wavemagnet plug and install the plug on the end of the extension cable, into this socket. Then place this wavemagnet on the center of an outside window.

7. SHORT WAVE RECEPTION—To release the waverod, press on the outside base of the left handle support and lift the handle to a vertical position. Concealed within the handle is the waverod. Extend it to its full height. In average conditions this will be sufficient, however, if you are in a low signal area and wish additional signal pickup, we suggest that a good external antenna and ground be connected to the "A" and "G" terminals at the back of the chassis.

WEATHER BROADCAST SCHEDULES

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

This weather broadcast schedule has been compiled from information obtained through the cooperation of the United States Department of Commerce, Weather Bureau, and the Canadian Department of Transport. 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. or Canadian Weather Broadcasting Schedules in a book this size, consequently we have only listed broadcast of A3 variety (voice transmission). If additional forecasts are desired they can be obtained from the United States Department of Commerce, Weather Bureau or the Dominion Public Weather Office, Toronto, Canada.

WEATHER INFORMATION 150 TO 400 KILOCYCLE BAND (ROYAL 1000D ONLY)

The Civil Aeronautics Authority operates a network of weather navigation stations on the 200-400 kc band throughout the U.S.A. and its territories. At 15 and 45 minutes after every hour, these stations broadcast complete summaries of local weather conditions at the stations broadcasting and at as many as eight or ten other CAA stations from 100 to 300 miles or more away in all directions. While these broadcasts are designed primarily for airmen, they include weather information of great value to boatmen, shippers, farmers, picnickers, tourists, hunters, and fishermen. Along with specialized aviation information, the stations report on temperature, visibility, and wind direction and velocity observed shortly before the hour at each station reported.

In addition, the CAA stations broadcast special storm warnings and radar reports giving the location and intensity of thunderstorms, line squalls, etc., and their direction and rate of movement. There could be, for example, a line of thunderstorms existing from Milwaukee to Rockford moving to the southeast at 15 miles per hour, which would be invaluable information, not only for pilots, but also for people planning to sail or simply to go out on a picnic.

You can secure a catalog of charts showing the CAA stations and most marine beacons, together with their frequencies and call letters, from the Director of U.S. Coast and Geodetic Survey, Washington 25, D.C.

Information regarding the location, frequency and signal identification of marine radiobeacons on the Great Lakes and the coastal waters is included in the Light Lists which are available for purchase through marine suppliers throughout the United States.

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 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 4½ 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 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 at right. 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 at right. 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".

Table for "D" (Wind Direction)

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

Table for "W" (Weather)

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

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.

DECODED

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.

UNITED STATES
GREAT LAKES WEATHER FORECAST (LAFOT)

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 in kilocycles and weather forecasts included in each broadcast are indicated in the table which follows. All schedules are given in Eastern Standard Time. (75th Meridian Time.)

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

Band	2-4 Mc	4-9 Mc	4-9 Mc
Channels	30	60	10
E.S.T.	2514 Kcs	4420.7 Kcs	8797.3 Kcs
12:02 a.m.	WMI	WMI	
12:09 a.m.	WAY	WAY	
12:16 a.m.	WLC	WLC	
12:23 a.m.	WAD	WBL	
12:27 a.m.	WAS	WAS	
6:02 a.m.	WMI	WMI	WMI
6:09 a.m.	WAY	WAY	WAY
6:16 a.m.	WLC	WLC	
6:23 a.m.	WAD	WBL	
6:27 a.m.	WAS	WAS	

Band	2-4 Mc	4-9 Mc	4-9 Mc
Channels	30	60	10
E.S.T.	2514 Kcs	4420.7 Kcs	8797.3 Kcs
12:02 p.m.	WMI	WMI	WMI
12:09 p.m.	WAY	WAY	WAY
12:16 p.m.	WLC	WLC	WLC
12:23 p.m.	WAS, WBL	WBL	
12:27 p.m.	WAD	WAS	
6:02 p.m.	WMI	WMI	WMI
6:09 p.m.	WAY	WAY	WAY
6:16 p.m.	WLC	WLC	WLC
6:23 p.m.	WBL	WBL	
6:27 p.m.	WAS	WAS	

U.S. 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 5 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. NOTE: warning broadcasts are made only during daylight hours by U. S. Coast Guard Radiotelephone Stations except Stations NOG-17, Portage, Michigan, NMP-15, Plum Island, Wisconsin and NMD-24, East Tawas, Michigan. Scheduled warning broadcast times given are in minutes past the even and odd hours, Eastern Standard Time.

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 on frequencies in kilocycles as shown in the following table. All schedules are indicated in Eastern Standard Time.

Call Sign	Time of Broadcast	Frequencies
WMI	0230	Channels 39—Band 2-4 mc (2514 kc.), 60—Band 4-9 mc (4420.7 kc.)
WMI	0830	Channels 39—Band 2-4 mc (2514 kc.), 60—Band 4-9 mc (4420.7 kc.) and 10—Band 4-9 mc (8797.3 kc.)
WMI	1430	Same as at 0830.
WMI	2030	Same as at 0230 and channel 10—Band 4-9 mc (8797.3 kc.)

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)	# MackinawCity (NMP-20)	—	# Erie (NMD-11)	—
Odd HH + 55	Duluth (WAS)	Port Wash. (WAD)	East Towas (NMD-24)	Buffalo (WBL)	Buffalo (WBL)

Broadcasts made only during daylight hours

CANADIAN LAFOT BROADCAST SCHEDULES

Great Lakes weather forecasts (LAFOTS), issued by the Dominion Public Weather Office, Toronto, Canada, are broadcast by Canadian Radiotelephone Stations every six hours during the navigation season. LAFOTS covering Lakes Superior, Huron, including Georgian Bay, Erie and Ontario and reports respecting dangers to navigation are transmitted in accordance with the schedules indicated. All schedules are given in Eastern Standard Time. Inquiries relating to Canadian broadcasts should be addressed to the Dominion Public Weather Office, Toronto, Canada. All broadcasts are on 2514 kcs.

All Broadcasts Are on 2514 KCS.

Time	Station
3:40 and 9:40 a.m. and p.m.	VBG, Toronto
3:50 and 9:50 a.m. and p.m.	VBF, Port Burwell*†
4:00 and 10:00 a.m. and p.m.	VBC, Midland
4:10 and 10:10 a.m. and p.m.	VBE, Sarnia
4:20 and 10:20 a.m. and p.m.	VBB, Sault Ste. Marie
4:30 and 10:30 a.m. and p.m.	VBA, Port Arthur
4:40 and 10:40 a.m. and p.m.	VBH, Kingston

†Includes South East Shoal wind reports.
*Long Point Local Weather at 9:50

CANADIAN BROADCAST SCHEDULES OF LOCAL WEATHER REPORTS

All Broadcasts Are on 2514 KCS.

Time	Station	Reports
9:10 a.m. 2:00 p.m. 8:00 p.m.	VBH, Kingston	Main Duck Island
9:10 a.m. 1:40 p.m. 7:40 p.m.	VBA, Port Arthur	Caribou & Slate Islands
9:20 a.m. 1:50 p.m. 7:50 p.m.	VBB, Sault Ste. Marie	Caribou & Slate Islands
10:00 a.m. 4:00 p.m. 10:00 p.m.	VBC, Midland	Cove Island winds
10:30 a.m. 4:30 p.m. 9:30 p.m.	VBE, Sarnia	Cove Island

CANADIAN WARNING BROADCAST SCHEDULES

Storm warnings and especially urgent reports respecting dangers to navigation are transmitted immediately on receipt by each of the radio stations listed in the preceding tables. These reports are repeated on 2514 KCS during the time schedules as shown in the table which follows:

TABLE OF TIME SCHEDULES, E.S.T.

7:00 a.m. to 7:30 a.m.	3:00 p.m. to 3:30 p.m.
8:00 a.m. to 8:30 a.m.	4:00 p.m. to 4:30 p.m.
9:00 a.m. to 9:30 a.m.	5:30 p.m. to 6:00 p.m.
10:00 a.m. to 10:30 a.m.	7:00 p.m. to 8:00 p.m.
11:00 a.m. to 11:30 a.m.	8:30 p.m. to 9:00 p.m.
1:00 p.m. to 2:00 p.m.	10:00 p.m. to 11:00 p.m.

BROADCAST SCHEDULES (ATLANTIC COAST AREA) OF MARINE WEATHER FORECASTS AND WARNINGS BY MARINE RADIOTELEPHONE STATIONS

City	Station	Band 2-4 Mc Kcs	Broadcast Times—EST
Boston, Mass.	WOU	2506 - 2450	Daily 5:20 am and pm, 6:20 am, 11:20 am and pm. One hour later during Daylight Saving Time
New York, N. Y.	WOX	2522 - 2590 - 2482 day only	Daily 7:15 am* and pm*. *One hour earlier during Daylight Saving Time
Cape May, N. J.	NMK	2662	Daily 12:50 am and pm
Ocean Gate, N. J.	WAQ	2558	Daily 7:15 am and pm
Baltimore, Md.	NMX	2702	Daily 11:30 am
Wilmington, Del.	WEH	2558	Daily 7:30 am and pm
Norfolk, Va.	WGB	2538	12 and 6 am and pm daily
Fort Macon, N. C.	NMN37	2702	12 noon daily
Charleston, S. C.	WJO	2566	Daily 7:15 am and pm
Jacksonville, Fla.	NMV	2678	1:20 am and pm daily
Jacksonville, Fla.	WNJ	2566	7 am and pm daily
Miami, Fla.	WDR	2514 - 2490 day only	Daily 7:15 am and pm
Tampa, Fla.	WFA	2466 - 2550	Daily 7 am and pm

*after announcement on 2182 kc

SPECIAL BROADCASTS (ATLANTIC COAST AREA) OF STORM AND HURRICANE WARNINGS

City	Station	Band 2-4 Mc Kcs	Broadcast Times—EST
Boston, Mass.	NMF	2694	On receipt and at 11:20 am or pm
Boston, Mass.	WOU	2506 - 2450	On receipt and 20 minutes past each ODD hour while the warning is in effect
New York, N. Y.	NMY	2662	On receipt and at 11:50 am or pm
New York, N. Y.	WOX	2522 - 2590 - 2482 day only	On receipt and at 15 minutes past each ODD hour (winter) and EVEN hour (summer)
Cape May, N. J.	NMK	2662	On receipt
Ocean Gate, N. J.	WAQ	2558	On receipt and at 15 minutes past ODD hours while in effect
Baltimore, Md.	NMX	2702	On receipt
Norfolk, Va.	NMN	2702	On receipt and at 12:30 am or pm
Norfolk, Va.	WGB	2538	On receipt and at intervals thereafter while in effect.
Wilmington, Del.	WEH	2558	On receipt and 30 minutes past each ODD hour while in effect
Fort Macon, N. C.	NMN37	2702	On receipt
Charleston, S. C.	WJO	2566	On receipt and on EVEN hours thereafter
Charleston, S. C.	NMB	2678	On receipt and at 11:20 am or pm
Jacksonville, Fla.	WNJ	2566	On receipt and on EVEN hours thereafter
Jacksonville, Fla.	NMV	2678*	On receipt
Miami, Fla.	NMA	2678*	On receipt and at 11:50 am or pm
Miami, Fla.	WDR	2514 - 2490 day only	On receipt and on each ODD hour while in effect
St. Petersburg, Fla.	NOF	2678*	On receipt and at 11:20 am or pm
Tampa, Fla.	WFA	2466 - 2550*	On receipt and on each EVEN hour thereafter

*after announcement on 2182 kc

BROADCAST SCHEDULES (GULF OF MEXICO AND CARIBBEAN SEA AREA) OF MARINE WEATHER FORECASTS AND WARNINGS BY MARINE RADIOTELEPHONE STATIONS

City	Station	Band 2-4 Mc Kcs	Broadcast Times—CST
Mobile, Ala.	WLO	2572	Daily on odd hours from 5 am to 11 pm.
New Orleans, La.	NMG	2686	Daily 11:50 am and pm.
New Orleans, La.	WAK	2598 2482-2558 day only	Daily 8 am and 11 pm.
Tampa, Fla.	WFA	2550	Daily 6 am and pm.
Galveston, Tex.	KQP	2530	Daily 12:30 and 7 am.
Galveston, Tex.	NOY	2686	Daily 11:20 am and pm.
Swan Island	WSG	2738	Daily 11:05 am

*after announcement on 2182 kc

SPECIAL BROADCASTS (GULF OF MEXICO AND CARIBBEAN SEA AREA) OF STORM AND HURRICANE WARNINGS

City	Station	Band 2-4 Mc Kcs	Broadcast Times—CST
Mobile, Ala.	WLO	2572*	On receipt.
St. Petersburg, Fla.	NOF	2678*	On receipt and at 10:20 am or pm.
Tampa, Fla.	WFA	2550 2466	On receipt and on each odd hour while in effect.
Galveston, Tex.	KQP	2530	On receipt and 15 minutes past odd hours while in effect.
Galveston, Tex.	NOY	2686*	On receipt.
New Orleans, La.	NMG	2686*	On receipt.
New Orleans, La.	WAK	2598 2482-2558 day only	On receipt and at odd hours while in effect.

*after announcement on 2182 kc

(PACIFIC COAST AREA)
BROADCAST SCHEDULES OF MARINE WEATHER FORECASTS AND WARNINGS BY MARINE RADIOTELEPHONE STATIONS

City	Station	Band 2-4 Mc Kcs	Broadcast Times—PST
Astoria, Ore.	KFX	2598	Daily at 9:15 am and pm
Coos Bay, Ore.	KTJ	2566*	On receipt and ODD hours thereafter
Eureka, Calif.	KOE	2506 - 2450	Daily at 9 am and pm
Portland, Ore.	KQX	2598	Daily at 9:30 am and pm
San Francisco, Calif.	KLH	2506 - 2450	Daily at 8:30 am and pm
Seattle, Wash.	KOW	2522* - 2482	Daily at 9 am and pm
Seattle, Wash.	NMW	2702	Daily at 9:30 am and pm
Long Beach, Calif.	NMQ	2694	Daily 9 am and pm
Portland, Ore.	KQX	2598	Daily 9:30 am and pm
San Francisco, Calif.	KLH	2506 - 2450	Daily 8:30 am and pm
San Pedro, Calif.	KOU	2566 - 2522† - 2598†	Daily 8 am and pm
Long Beach, Calif.	NMQ	2694 - 2522†	Daily 9 am and pm
San Pedro, Calif.	KOU	2566 - 2598†	Daily 8 am and pm

*after announcement on 2182 kc

†7 am to 7 pm

SPECIAL BROADCASTS (PACIFIC COAST AREA) OF STORM AND HURRICANE WARNINGS

City	Station	Band 2-4 Mc Kcs	Broadcast Times—PST
Astoria, Ore.	KFX	2598	On receipt and on ODD hours while in effect
Coos Bay, Ore.	KTJ	2566	On receipt and on ODD hours while in effect
Eureka, Calif.	KOE	2506 - 2450	On receipt and on ODD hours while in effect
Portland, Ore.	KQX	2598	On receipt and on ODD hours while in effect
San Francisco, Calif.	KLH	2506 - 2450	On receipt and on ODD hours while in effect
San Francisco, Calif.	NMC	2662	On receipt and at 8:30 am or pm
Seattle, Wash.	KOW	2522 - 2482*	On receipt and on ODD hours while in effect
Seattle, Wash.	NMW	2702	On receipt
Long Beach, Calif.	NMQ	2694*	On receipt
San Pedro, Calif.	KOU	2566 - 2522† - 2598†	On receipt and on ODD hours while in effect
Long Beach, Calif.	NMQ	2694* - 2522†	On receipt
San Pedro, Calif.	KOU	2566 - 2598†	On receipt and at ODD hour for 6 hours

*after announcement on 2182 kc

†7 am to 7 pm

STANDARD FREQUENCIES AND TIME SIGNALS FROM STATIONS WWV, BELTSVILLE, MARYLAND AND WWVH, MAUI, HAWAII

Station WWV located near Washington, D. C., broadcasts continuously day and night and can be received on frequencies 2.5, 5, 10 and 15 megacycles. Two audio standard 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 three minutes, interrupted for two minutes of information and immediately followed by a 440 cycle per second tone for three minutes and again interrupted for two minutes. Both tones have a five cycle pulse at one second intervals superimposed on them. Each following ten minute period is identical.

The two minute information period for Station WWV on frequencies 2.5, 5, 10, and 15 mc. is composed of the following:

1. 0 to approximately 100 seconds—Silence. (No tone only a 5 cycle pulse at one second intervals.)
2. The interval of 100 seconds to 118 seconds consists of station identification and time in voice—"This is radio station WWV. When the tone returns it will be 2:15 P.M. Eastern Standard Time."
3. At 19.5 and 49.5 minutes past each hour, the interval of 89 seconds to approximately 99 seconds—consists of radio propagation forecast (announced in code).

Note: On WWH there is a 4 minute silent period starting at 45 minutes after the hour and ending at 49 minutes after the hour.

The two minute information period for station WWVH on frequencies 5, 10 and 15 mc. is composed of the following:

1. 0 to approximately 65 seconds—Silence. (No tone only a 5 cycle pulse at one second intervals.)
2. 65 to approximately 82 seconds—consists of universal time (Greenwich Mean Time) and station identification announced in code.
3. At 9.5 and 39.4 minutes past each hour, the interval of 83 seconds to approximately 96 seconds—consist of radio propagation forecast (announced in code).

Note: On WWVH there are two silent periods, the first a four minute period starting on the hour and ending four minutes after the hour. The second four minute silent period starts at 30 minutes after the hour and ends at 34 minutes after the hour.

For further information on Stations WWV and WWVH contact

U.S. Department of Commerce
National Bureau of Standards
Boulder Laboratories
Boulder, Colorado

requesting letter circular LC1023.

SHORT-WAVE STATION CHART

The time schedule below is designed to help you select any Short Wave Station operating at the time you wish to tune in your receiver. FIRST—select the time zone that affects your area. If you are not living in any of the time zones listed, space has been provided for you to write in your time. SECOND —select the time column that corresponds with the time you are starting to tune in. THIRD—run your finger down that time column and you will find various stations in operation or beginning to operate. Keep in mind the coding affecting A.M. and P.M. Open time in the Broadcast schedules is indicated below with open circles. Fill in the circles if you detect changes in the broadcast time. NOTE: ADJUST FOR DAYLIGHT SAVING TIME!

CODE:
●—Both A.M. & P.M.
◓—A.M.
◒—P.M.
○—Open Time

	EASTERN STANDARD TIME →	12	1	2	3	4	5	6	7	8	9	10	11
	GREENWICH MEAN TIME →	5	6	7	8	9	10	11	12	1	2	3	4
	YOUR TIME →												

Log	Country	City	Call	Fracy. Mc.	Band Meters	
	Aden	Aden	ABS	7.170	41	◓◒◒◒◒◒◒◒◓◓◓◓
	Afghanistan	Kabul	RT	4.710	63	◓◒○○○○○○○○◓◓
	Albania	Tirana	ZAO	7.850	38	○◒◒◒◒◒◒○○○○
	Algeria	Algiers	RL	11.835	25	●●●●◒◒○○○○◓
	Andorra	Andorra la Vieje	RE	5.979	50	○◓●●◒◒◒○○○○
	Andorra	Andorra la Vieje	AN	6.305	47	○◒◒◒◒◒○○○○○
	Angola	Benguela	CR6RF	9.502	31	○◓●◒◒◒○○○○○

CODE:
●—Both A.M. & P.M.
◓—A.M.
◒—P.M.
○—Open Time

	EASTERN STANDARD TIME →	12	1	2	3	4	5	6	7	8	9	10	11
	GREENWICH MEAN TIME →	5	6	7	8	9	10	11	12	1	2	3	4
	YOUR TIME →												

Log	Country	City	Call	Fracy. Mc.	Band Meters	
	Angola	Luanda	CR6RL	9.632	31	○○◒◒◒◒○○○○○○○
	Angola	Luanda	CR6RZ	17.795	16	○○○○◒◒◒○○○○○○
	Argentina	Buenos Aires	LRA32	9.690	30	◒◓○○○○○○○○◒◒◒
	Argentina	Buenos Aires	LRY	9.760	30	○○○○○◒◒◒◒○○○○
	Argentina	Buenos Aires	LRA33	15.347	19	○○○○○◒◒◒◒○○○○
	Australia	Brisbane	VLM4	4.920	60	○○○●●●◒◒◒○○○○
	Australia	Melbourne	VLB11	11.810	25	○○○◒◒◒◒◒◒◒◒○
	Australia	Melbourne	VLA15	15.160	19	○○○◒●●●◒◒◒◒○
	Australia	Melbourne	VLD21	21.540	13	◒◓◒◒◒●◒◒◒◒◒◒
	Australia	Perth	VLW9	9.610	31	○○○○○◒◒◒○○○○○
	Australia	Sydney	VLI6	6.090	49	○○○○○◒◒◒○○○○○
	Austria	Vienna	OEI30	5.985	50	◒○◒◒◒○○○◒◒◒◒
	Azores	Ponta Delgada	CSA93	4.864	61	○○○◒◒◒◒○○○○○
	Bechuanaland	Mafeking	ZNB	5.899	59	○◒◒◒○○○○○○○○
	Belgian Congo	Bukavu	RB	4.808	62	◓◒◒○○○○○○○○○
	Belgian Congo	Elisabethville	RE	5.932	50	○◒◒○○○○○○○○○

CODE:
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◓—A.M.
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○—Open Time

	EASTERN STANDARD TIME →	12	1	2	3	4	5	6	7	8	9	10	11
	GREENWICH MEAN TIME →	5	6	7	8	9	10	11	12	1	2	3	4
	YOUR TIME →												

Log	Country	City	Call	Fracy. Mc.	Band Meters	
	Belgian Congo	Leopoldville	OTC	9.655	31	○○○○○◒◒◒○○○○○
	Belgium	Brussels	ORU4	11.850	25	○○○○◒◒◒◒○○○○
	Belgium	Brussels	ORU4	21.510	13	○○○○○◓◓◓◓○○○
	Bolivia	La Paz	CP38	9.440	31	○○○○○◒◒◒◒◒◒○
	Brazil	Recife	ZYK33	15.145	19	○○○○○●●●◒◒◒◒
	Brazil	Rio de Janeiro	PRL8	17.850	16	○○○○○◒◒◒◒◒◒◒
	Brazil	Sao Paulo	ZYB8	11.765	25	○○○○○○○◒◒◒◒○
	Brt. Guiana	Georgetown	ZFY	5.981	50	○○○◓◓◓○○○○○○
	Brt. Honduras	Belize	BHBS	3.300	90	○○○○○○○◒◒◒◒◒
	Brt. New Guinea	Port Moresby	VLT6	6.130	48	○○○◓◓◓◓◓◓○○○
	Brt. North Borneo	Jesselton	NBBS	7.180	41	○○○○◓◓◓◓◓○○○○
	Bulgaria	Sofia	RS	9.700	30	◒○○○○○○○◒◒◒◒◒
	Burma	Rangoon	XZK3	6.035	49	○○○○○○○◓◓◓◓◓○
	Burma	Rangoon	XZK5	9.641	31	○○○○○○○◓◓◓◓○○
	Cambodia	Phnom-Penh	RC	6.090	49	○○○○○◓◓◓◓○○○○
	Camerouns (Fr.)	Douala	RD	6.115	49	◓●●●◒◒◒◒◒◒○○

CODE:
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◒—P.M.
○—Open Time

	EASTERN STANDARD TIME →	12	1	2	3	4	5	6	7	8	9	10	11
	GREENWICH MEAN TIME →	5	6	7	8	9	10	11	12	1	2	3	4
	YOUR TIME →												

Log	Country	City	Call	Fracy. Mc.	Band Meters	
	Camerouns (Fr.)	Yaounde	RY	4.975	60	●●●●◒◒○○○◒◒◒
	Canada	Halifax (N. S.)	CHNX	6.130	48	◓◒◒◒◒●●●●●●●●
	Canada	Montreal	CKLO	9.630	31	○○○◓◓○○○○○○○
	Canada	Montreal	CKNC	17.820	16	◓◒◒◒◒○◓◓◓◓◓◓
	Canada	St. John's (Nfld.)	CBNX	5.970	50	◓◒◒◒◒●●●●●◒◒●
	Canada	Toronto (Ont.)	CFRX	6.070	49	◓◒◒◒◒●●●●●◒◒●
	Canary Islands	Tenerife	EAJ8AB	7.295	41	○○○○○◒◒◒○○○○○
	Cape Verde Islands	Praia	CR4AA	3.960	75	○○○○◒◒◒○○○○○○
	Central African Rep.	Banqui	RB	5.026	59	◓◒◒○○○○○○○○○○
	Ceylon	Colombo	RC	11.770	25	◓○○○○○◓◓◓◓◓◓
	Ceylon	Colombo	VOA	11.875	25	○○○○○○○◓◓◓○○
	Ceylon	Colombo	VOA	15.265	19	○○○○○○○○◒◒◒◒
	Chad Republic	Fort Lamy	RC	9.545	31	○○○○○◓◓◓◓◒◒◒
	Chile	Santiago	CE1180	12.000	25	○○○○○○○○◒◒◒◒◒
	Chile	Santiago	CE1515	15.148	19	○○○○○○○○◒◒◒◒◒
	China	Peking	RP	9.457	31	○◒◒◒◒◒○○○○○○

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◒—P.M.

EASTERN STANDARD TIME→ 12 1 2 3 4 5 6 7 8 9 10 11
GREENWICH MEAN TIME→ 5 6 7 8 9 10 11 12 1 2 3 4
YOUR TIME→

Log	Country	City	Call	Frqcy. Mc.	Band Meters	12	1	2	3	4	5	6	7	8	9	10	11
	China	Peking	RP	15.060	19	●	◓	◓	◓	◓	○	○	○	○	◓	◓	
	China	Peking	RP	15.097	19	○	○	○	○	◒	●	●	●	●	○		
	China	Peking	RP	17.720	16	○	○	○	○	◒	●	●	●	●	○		
	Colombia	Bogota	HJGC	5.075	59	○	○	○	○	○	●	◒	◒	◒	○		
	Colombia	Cali	HJEX	6.054	49	◓	◒	◒	◒	◒	●	●	●	●	●		
	Colombia	Ibaque	HJLB	6.040	49	○	○	○	○	●	●	◒	◒	◒	◒		
	Congo (Rep. of)	Brazzaville	AEF	9.545	31	◓	◒	◒	○	○	○	○	○	○	○		
	Congo (Rep. of)	Brazzaville	RIE	9.625	31	◓	◒	◒	○	○	○	○	○	○	○		
	Congo (Rep. of)	Brazzaville	RB	11.972	25	○	◒	◒	◒	◒	◒	◒	◒	◒	◒		
	Congo (Rep. of)	Brazzaville	RB	17.720	16	○	○	○	○	○	○	○	○	◓	◓		
	Cook Islands	Rarotonga	ZKIZA	4.965	60	◒	◓	○	○	○	○	○	○	○	○		
	Costa Rica	Puerto Limon	TIGG	6.075	49	○	○	○	○	○	○	◒	◒	◒	◒		
	Costa Rica	San Jose	TIFC3	9.647	31	◒	○	○	○	○	○	◒	●	●	●		
	Cyprus	Limassol	BBC	6.120	49	◓	●	●	●	○	○	◓	◓	◓	◒		
	Czechoslovakia	Prague	OLR3A	9.550	31	○	○	○	○	○	○	◒	◒	◒	◒		
	Czechoslovakia	Prague	OLR4E	11.725	25	○	○	○	◓	◓	◓	○	●	●	◒		

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◒—P.M.

EASTERN STANDARD TIME→ 12 1 2 3 4 5 6 7 8 9 10 11
GREENWICH MEAN TIME→ 5 6 7 8 9 10 11 12 1 2 3 4
YOUR TIME→

Log	Country	City	Call	Frqcy. Mc.	Band Meters	12	1	2	3	4	5	6	7	8	9	10	11
	Dahomey (Rep. of)	Cotonou	RC	4.870	61	○	○	○	◒	◒	◒	○	○	○	○	○	
	Denmark	Copenhagen	OZF5	9.520	31	○	○	○	○	○	○	◒	◒	◒	◒	◒	
	Denmark	Copenhagen	OZF7	15.165	19	◓	◒	◒	◒	●	◓	◒	○	○	◒	◒	
	Dominican Republic	Ciudad Trujillo	HI1Z	6.113	49	◒	◓	○	○	○	○	●	●	◒	◒	●	
	Dominican Republic	Ciudad Trujillo	HI2T	9.735	30	◓	◒	◒	◒	◒	◒	◒	◒	◒	◒	●	
	Dutch New Guinea	Biak	RONG	5.045	59	○	○	○	○	○	◓	◓	◒	○	○	○	
	Ecuador	Quito	HCJB	15.115	19	◓	◓	◓	◓	◓	◓	◓	◓	◓	◓	○	
	Ecuador	Quito	HCJB	17.890	16	○	○	◒	◒	◒	◒	◒	◒	◒	◒	○	
	Egypt	Cairo	RC	9.795	30	○	○	○	○	○	○	○	○	◒	◒	○	
	Egypt	Cairo	RC	11.990	25	○	○	◒	◒	◒	◒	○	○	○	○	○	
	Egypt	Cairo	RC	17.915	16	◓	◒	◒	○	○	◒	◓	◓	◓	◓	◓	
	El Salvador	San Salvador	YSS	9.552	31	○	○	○	○	○	○	◒	◒	◒	◒	○	
	England	London	GVU	11.780	25	○	○	○	○	○	○	◒	◒	◒	◒	○	
	England	London	GSP	15.310	19	○	○	○	◒	◒	◒	◒	◒	◒	○	○	
	England	London	GSV	17.810	16	◓	◒	○	○	◒	◒	◒	◒	◒	●	○	
	England	London	GST	21.550	13	○	○	○	◒	◒	◒	◒	◒	○	○	○	

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EASTERN STANDARD TIME→ 12 1 2 3 4 5 6 7 8 9 10 11
GREENWICH MEAN TIME→ 5 6 7 8 9 10 11 12 1 2 3 4
YOUR TIME→

Log	Country	City	Call	Frqcy. Mc.	Band Meters	12	1	2	3	4	5	6	7	8	9	10	11
	Ethiopia	Addis Ababa	RAA	15.347	19	○	◒	◒	◒	○	○	○	○	○	○	○	
	Fiji Islands	Suva	VRH4	3.980	75	○	○	◓	◓	◓	◓	○	○	○	○	○	
	Finland	Helsinki	OIX4	15.190	19	◓	◒	◒	○	○	○	◓	◓	◓	○	◓	
	France	Paris	RTF	6.200	48	●	●	●	●	●	●	◓	◓	◓	○	◓	
	France	Paris	RTF	11.920	25	◓	●	◓	○	○	○	◒	◒	○	○	○	
	France	Paris	RTF	15.295	19	○	○	◓	◓	○	○	◒	◒	○	○	○	
	Fr. Guiana	Cayenne	RC	6.110	49	○	○	○	○	○	◓	●	◒	○	○	○	
	Germany (West)	Berlin	RIAS	6.005	49	●	●	●	●	◒	●	●	●	●	●	●	
	Germany (West)	Cologne	DMQ11	11.795	25	◒	○	◓	◓	◓	●	◒	◒	◒	◒	◒	
	Germany (West)	Cologne	DMQ21	21.725	13	◓	◒	○	○	○	○	○	○	◓	◓	●	
	Germany (West)	Hamburg	NDR	6.075	49	●	●	●	●	●	●	●	●	●	●	●	
	Germany (East)	Leipzig	DDR	9.730	30	●	●	●	●	●	●	●	○	○	○	●	
	Germany (West)	Munich-(Lisbon)	RFE	11.855	25	●	●	◒	◒	◒	◒	◒	○	○	◓	◓	
	Germany (West)	Munich	VOA	15.205	19	◓	◒	◒	◒	◒	◒	◒	○	○	◓	◓	
	Ghana	Accra	ZOY	3.366	89	◓	●	●	●	◒	◒	○	◓	◓	◓	◓	
	Gilbert & Ellice Is.	Tarawa	VSZ10	6.050	49	○	○	◓	◓	◓	○	○	○	○	○	○	

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EASTERN STANDARD TIME→ 12 1 2 3 4 5 6 7 8 9 10 11
GREENWICH MEAN TIME→ 5 6 7 8 9 10 11 12 1 2 3 4
YOUR TIME→

Log	Country	City	Call	Frqcy. Mc.	Band Meters	12	1	2	3	4	5	6	7	8	9	10	11
	Greece	Athens	RA	11.718	25	○	○	◒	◒	◒	◒	○	○	○	○	○	
	Greece	Athens	RA	15.345	19	◓	◒	○	○	○	○	○	○	○	○	○	
	Greece	Larissa	FBS	6.752	44	◒	●	●	◒	◒	○	○	○	○	○	○	
	Greece	Salonika	VOA	9.530	31	◒	◓	◓	○	◒	◒	○	○	○	○	◒	
	Greenland	Angmagasalik	OZL	7.570	39	○	○	○	○	○	○	○	○	○	◓	◓	
	Guatemala	Guatemala City	TGWB	6.181	48	◒	◓	○	○	○	○	○	○	●	◒	◒	
	Guatemala	Guatemala City	TGNB	9.668	31	○	○	○	○	○	○	○	○	◒	◒	◒	
	Guinea (Rep.)	Conakry	RG	4.910	61	○	○	◓	●	◒	◒	◒	○	○	○	○	
	Haiti	Cap Haitien	4VEH	9.770	30	○	○	○	○	○	●	●	●	◒	◒	◒	
	Haiti	Port-au-Prince	4VB	5.982	50	○	○	○	○	○	○	◒	◒	◒	○	○	
	Hawaii	Honolulu	VOA	9.650	31	○	○	○	○	○	○	◒	◒	◒	○	○	
	Holland	Hilversum	RN	11.730	25	○	○	○	○	○	◒	●	◒	◒	◒	◒	
	Holland	Hilversum	RN	17.775	16	◓	◒	◒	◒	◒	●	◒	◒	◒	◒	◒	
	Holland	Hilversum	RN	21.480	13	○	◒	◒	◒	○	◒	◒	◒	◒	◒	○	
	Honduras	Tegucigalpa	HRTL	6.035	49	◒	◓	○	○	○	○	○	●	◒	◒	◒	
	Honduras	San Pedro Sula	HRQ	6.124	48	◒	○	○	○	○	○	○	●	◒	◒	◒	

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◒—P.M.

EASTERN STANDARD TIME→
GREENWICH MEAN TIME→
YOUR TIME→

Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Hong Kong	Hong Kong	ZBW3	3.945	76	○	○	○	○	○	○	○	○	◓	◓	◓	◓
	Hungary	Budapest	RB	9.833	30	○	○	○	◒	◒	○	○	◒	◒	◒	◒	◒
	Iceland	Reykjavik	TFJ	12.175	24	○	○	○	◒	◒	◒	◒	◒	◒	◒	◒	◒
	India	Bombay	VUB	9.550	31	○	○	○	○	◒	◒	○	○	○	○	○	○
	India	Calcutta	VUC	9.530	31	○	○	○	○	○	○	◓	◓	◓	◓	○	○
	India	Delhi	VUD	11.710	25	○	○	◒	◒	◒	◒	○	○	○	○	○	○
	India	Delhi	VUD	15.105	19	○	◒	◒	◒	○	○	◓	○	○	○	○	○
	India	Delhi	VUD	21.605	13	○	○	○	○	○	○	○	◓	◓	◓	◓	○
	India	Delhi	VUD	21.620	13	○	○	○	○	○	◓	◓	○	○	○	○	○
	India	Madras	VUM	4.920	60	◓	○	○	○	○	○	○	◓	◓	◓	◓	◓
	India	Madras	VUM	21.570	13	○	○	○	○	○	○	◓	◓	◓	○	○	○
	Indonesia	Djakarta	YDF6	9.591	31	○	○	○	○	○	○	◓	◓	●	●	◓	◓
	Indonesia	Djakarta	YDF8	9.868	30	○	○	◒	◒	○	○	○	○	○	○	○	○
	Indonesia	Djakarta	YDF3	11.797	25	○	○	○	○	○	○	◓	◓	◓	◓	◓	◓
	Indonesia	Djakarta	YEX29	11.943	25	○	○	○	○	◓	◓	◓	◓	◓	◓	○	○
	Indonesia	Medan	YDP	5.030	59	○	○	○	○	○	○	◓	◓	◓	◓	◓	◓

CODE:
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◒—P.M.

EASTERN STANDARD TIME→
GREENWICH MEAN TIME→
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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Inner Mongolia	Huhehot	UMARNH	9.090	33	○	○	○	○	○	○	◓	◓	◓	◓	○	○
	Iran	Teheran	EPB	15.122	19	○	○	◒	◒	◒	○	○	○	○	○	○	○
	Iraq	Baghdad	YIH66	6.030	49	◒	◒	○	◒	◒	○	○	○	○	○	○	◒
	Italy	Caltanissetta	RAI	9.515	31	◒	○	○	○	○	○	○	◒	◒	◒	◒	◒
	Italy	Rome	RAI	15.405	19	○	○	○	○	○	◒	◒	◒	◒	◒	○	○
	Italy	Rome	RAI	21.560	13	○	○	○	○	◓	◓	◓	○	○	○	○	○
	Ivory Coast Rep.	Abidjan	RA	4.940	60	○	●	●	◓	◓	◓	○	○	○	○	○	○
	Japan	Tokyo	JKH	7.257	41	○	○	○	●	●	○	○	○	○	○	○	○
	Japan	Tokyo	JKJ	7.285	41	◒	◒	◒	◒	●	◒	◒	◒	◒	◒	◒	◒
	Japan	Tokyo	JOZ3	9.595	31	○	○	○	○	○	◓	◓	○	○	○	○	○
	Japan	Tokyo	FEN	11.750	25	○	○	○	○	◓	●	●	●	○	○	○	○
	Japan	Tokyo	JOB5	15.325	19	●	●	◒	○	○	○	◓	◓	◓	◓	◓	◓
	Japan	Tokyo	JOA24	17.855	16	◒	◒	◒	◒	◒	○	◓	●	●	◒	◒	○
	Japan	Tokyo	JOB24	21.620	13	○	◒	◒	◒	◒	○	○	◒	◒	◒	○	◓
	Jordan	Amman-Jerusalem	HJBS	6.045	49	●	●	●	●	◒	◒	◒	◒	◒	○	◓	●
	Kashmir	Srinagar	RK	4.860	61	◒	○	○	○	○	◒	◒	◒	◒	◒	◓	◓

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EASTERN STANDARD TIME→
GREENWICH MEAN TIME→
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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Kenya	Nairobi	VQ7LO	4.885	61	◓	◒	◒	◒	○	◓	◓	◓	○	○	◓	◓
	Korea (North)	Pyongyang	RP	6.256	48	○	○	○	○	◒	◒	◒	○	○	○	○	○
	Korea (South)	Inchong	HLKX	3.195	94	◓	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓
	Korea (South)	Seoul	HLK27	15.255	19	○	○	◓	◓	◓	○	○	○	○	○	○	○
	Korea (South)	Seoul	HLK28	15.410	19	◒	◓	◓	○	○	○	○	○	○	○	○	○
	Korea (South)	Seoul	HLK29	17.745	16	◒	◓	◓	○	○	○	○	○	○	○	○	○
	Kuwait	Kuwait	RK	5.000	60	◓	◒	◒	○	○	○	○	○	○	○	○	◓
	Laos	Laos	RL	7.145	41	○	○	○	○	○	○	◓	◓	◓	◓	◓	◓
	Lebanon	Beirut	RL	8.000	37	●	●	◒	◒	◒	◒	○	○	○	○	◓	●
	Liberia	Monrovia	ELWA	11.744	25	◓	◒	◒	◒	○	○	○	○	○	○	○	○
	Liberia	Monrovia	ELWA	15.200	19	○	○	○	○	○	○	◒	◒	◒	○	○	○
	Libya	Benghazi	LBS	3.305	90	◒	◓	○	○	○	○	○	○	○	○	○	○
	Luxembourg	Luxembourg	RL	6.090	49	○	◓	◓	◓	◓	◓	◓	◓	◓	○	○	○
	Luxembourg	Luxembourg	RL	15.350	19	●	●	●	●	●	●	●	●	◓	◓	◓	◓
	Malgache Rep.	Tananarive	FIQA	9.515	31	●	●	●	◓	◓	◓	○	○	○	○	●	●
	Malaya	Kuala Lumpur	VS2K6	6.025	49	○	○	○	○	○	◓	◓	◓	◓	◓	◓	◓

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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Mauretania (Isl. Rep.)	St. Louis	RM	9.585	31	○	○	○	◓	◓	○	○	○	○	○	○	○
	Mauritius	Forest Side	V3USE	14.940	20	○	○	○	○	○	○	○	○	○	○	◒	◒
	Mexico	Hermosillo	XEBR	11.820	25	◓	◒	◒	◒	◒	◒	◒	◒	◒	◒	●	●
	Mexico	Mexico City	XEWW	9.500	31	◒	◓	◓	○	○	○	○	◒	◒	◒	●	●
	Mexico	Mexico City	XEHH	11.880	25	●	◓	○	◒	◒	◒	◒	●	●	●	●	●
	Monaco	Monte Carlo	3MA4	7.135	42	◓	●	●	●	●	●	◓	◓	◓	◓	◓	◓
	Morocco	Rabat	RNM	5.968	50	◓	◒	●	◒	●	◒	◓	◓	◓	◓	◓	○
	Morocco	Rabat	RNM	7.336	40	○	○	●	●	●	●	◒	◓	◓	◓	○	○
	Morocco	Tangier	WTAN	9.418	31	○	○	○	○	◓	◓	○	○	○	○	○	○
	Morocco	Tangier	VOT	9.438	31	○	○	○	◒	◒	◒	○	○	○	○	○	○
	Morocco	Tangier	RNM	15.245	19	◓	◒	◒	○	○	○	○	○	○	○	○	○
	Morocco	Tangier	VOA	15.295	19	●	●	●	●	◒	◒	◒	○	○	●	●	●
	Morocco	Tetuan	RD	6.067	49	○	○	○	○	◒	◒	◒	○	○	◓	◓	○
	Mozambique	Lourenco Marques	CR7BF	11.760	25	◒	◓	◓	◓	◓	◓	◓	◓	◓	◓	◒	◒
	Mozambique	Lourenco Marques	CR7BG	15.152	19	◓	◒	◒	◒	○	○	○	○	○	○	○	○
	Nepal	Kathmandu	RN	7.100	42	○	○	○	○	○	○	◓	◓	◓	○	○	○

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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	New Caledonia	Noumea	FK8AA	6.035	49	○	○	◓	◓	◓	○	○	○	○	○	○	○
	New Zealand	Wellington	ZL2	9.540	31	○	◓	◓	◓	◓	◓	○	○	○	○	○	○
	New Zealand	Wellington	ZL3	11.780	25	○	○	○	○	◓	◓	◓	○	○	○	○	○
	Nicaragua	Leon	YNMS	7.650	39	◒	○	○	○	○	○	○	◒	◒	◒	◒	◒
	Niger Republic	Niamey	RN	5.020	59	●	●	●	◒	◒	○	○	○	○	○	○	○
	Nigeria	Egunu	NBC	3.965	75	●	●	●	●	◒	◒	○	○	○	○	○	○
	Nigeria	Ibadan	NBC	3.204	93	◒	◓	◓	◓	○	○	○	○	○	○	○	○
	Nigeria	Kaduna	NBC	3.326	90	●	●	●	◒	◒	◒	○	○	○	○	○	◓
	Nigeria	Lagos	NBC	4.990	60	●	●	●	●	◒	◒	○	○	○	○	○	◓
	Norway	Oslo	LKQ	11.735	25	◒	◓	◓	◓	○	○	●	●	◒	◒	○	◒
	Norway	Oslo	LLM	15.175	19	●	●	●	●	●	●	●	●	●	●	○	●
	Okinawa	Naha	VOA	15.380	19	◓	◒	◒	◒	●	●	◓	◓	◓	◓	◓	◓
	Outer Mongolia	Ulan Bator	RBR	6.345	47	○	○	○	◓	◓	◓	●	●	●	●	◓	○
	Pakistan	Dacca	RD	7.140	42	○	○	○	○	○	○	◓	◓	◓	◓	◓	◓
	Pakistan	Karachi	RP	11.674	25	○	○	◒	◒	○	○	○	○	○	○	○	○
	Pakistan	Karachi	RP	11.885	25	○	○	○	○	○	○	◒	◒	◒	◒	○	○

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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Pakistan	Karachi	RP	21.590	13	○	○	○	◓	◓	◓	○	○	○	○	○	○
	Panama	Colon	HOLA	9.505	31	◓	◒	◒	◒	◒	◒	◒	◒	○	◓	◓	◒
	Panama	Panama City	HOH7	9.685	30	○	○	○	○	○	○	◓	●	●	●	●	●
	Paraguay	Asuncion	ZPA1	11.945	25	◓	◒	◒	◒	◒	●	●	●	●	●	●	●
	Peru	Lima	OAX4T	15.152	19	●	◒	◒	◒	◒	◒	◒	●	●	●	●	●
	Peru	Tumbes	OAX1Z	9.549	31	◓	◒	◒	◒	◒	●	●	●	●	●	●	●
	Philippines	Manila	DZF2	11.920	25	◓	○	○	○	○	○	○	◓	◓	◓	◓	◓
	Philippines	Manila	VOA	15.185	19	◓	○	○	○	○	○	◓	◓	◓	◓	◓	◓
	Philippines	Manila	DZF3	15.385	19	○	○	○	○	○	○	◒	◒	◒	○	○	○
	Philippines	Manila	VOA	17.780	16	○	○	○	○	○	○	○	◒	◒	◒	○	○
	Philippines	Manila	DZI8	21.515	13	○	○	○	○	◓	◓	◓	○	○	○	○	○
	Poland	Warsaw	RP	15.275	19	○	○	○	○	○	○	●	●	◒	●	◒	◒
	Poland	Warsaw	RP	17.800	16	○	○	○	○	○	○	◒	◒	◒	◒	◒	○
	Portugal	Lisbon	CSA31	11.840	25	○	○	○	○	○	○	○	◒	◒	◒	◒	◒
	Portugal	Lisbon	CSA39	15.100	19	○	○	○	◒	◒	◒	◒	◒	◒	◒	○	○
	Portugal	Lisbon	CSA49	21.700	13	○	○	○	○	○	◓	◓	◓	◓	◓	◓	○

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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Pt. Guinea	Bissau	CMQ	7.948	37	○	○	○	○	◒	◒	◒	○	○	○	○	○
	Pt. India (Goa)	Goa	RG	4.790	62	◓	○	○	○	○	○	○	○	◓	◓	◓	
	Reunion	St. Denis	RR	3.385	88	◓	○	○	◓	◓	◓	○	○	○	○	◓	◓
	Rhodes	THE COURIER	VOA	9.530	31	◓	◓	◓	○	◒	◒	◒	○	○	○	○	◒
	Rhodesia (Northern)	Lusaka	FBCRN	4.826	62	●	●	◒	○	○	○	○	○	○	○	◓	●
	Rhodesia (Southern)	Salisbury	FBCRN	3.396	88	◓	◒	●	●	◓	◓	◓	◓	○	○	◓	◓
	Roumania	Bucharest	RB	9.570	31	◒	○	◒	◒	◒	◒	◒	◒	◒	◒	◒	◒
	Roumania	Bucharest	RB	11.937	25	◒	○	◒	◒	◒	◒	◒	◒	◒	◒	◒	◒
	Sao Tome	Sao Tome	CR5SC	4.807	62	○	○	○	◒	◒	◒	○	○	○	○	○	○
	Sarawak	Kuching	RS	5.038	59	○	○	○	○	◓	◓	◓	◓	◓	○	○	
	Saudi Arabia	Mecca-Dieddah	SAB	11.950	25	◒	○	○	○	○	○	○	○	○	○	○	○
	Senegal (Rep. of)	Dakar	RS	4.893	61	○	◒	◒	◒	◒	◒	○	○	○	○	○	○
	Senegal (Rep. of)	Dakar	RM	9.585	31	○	○	○	◓	◓	○	○	○	○	○	○	○
	Seychelles	Mahe	ZCQ3	4.990	60	○	○	○	○	○	○	○	○	○	○	◓	◓
	Sierra Leone	Freetown	SLBS	3.316	90	○	○	◓	●	◒	◒	○	○	○	○	○	○
	Singapore	Singapore	FBS	5.010	59	○	○	○	○	○	○	○	◓	◓	◓	○	○

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Log	Country	City	Call	Fracy. Mc.	Band Meters	12 5	1 6	2 7	3 8	4 9	5 10	6 11	7 12	8 1	9 2	10 3	11 4
	Singapore	Singapore	ZHP3	7.198	41	○	○	○	○	○	○	○	◓	◓	◓	◓	◓
	Singapore	Singapore	BBCFES	15.310	19	◓	○	○	○	○	○	○	○	○	○	◓	◓
	Singapore	Singapore	BBCFES	15.435	19	○	○	○	○	○	○	○	○	○	○	◓	◓
	Solomon Islands	Honiara	VQO2	5.960	50	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓	◓
	Somaliland (Fr.)	Djibouti	RD	4.780	62	●	◒	◒	●	◓	◓	○	○	○	○	●	●
	Somaliland (It.)	Mogadiscio	RM	7.070	42	◓	○	○	○	◓	◓	○	○	◓	◓	◓	◓
	Somaliland Prot.	Hargeisa	•RS	9.667	31	◓	○	○	○	○	○	○	○	○	◓	◓	◓
	Soudanese Republic	Bamako	RS	4.835	62	○	◓	●	●	◒	○	○	○	○	○	○	○
	Spain	Madrid	RNE	6.130	48	◓	◒	◒	◒	◒	◒	◓	◓	◓	◓	◓	◓
	Spain	Madrid	RNE	9.585	31	○	○	○	◒	◒	○	○	○	○	○	○	○
	Spain	Valencia	RM	6.994	42	○	◒	◒	◒	◒	◒	○	○	○	○	○	○
	Spain	Valladolid	EFE1	7.005	42	◓	◒	◒	◒	◒	◒	●	●	◓	◓	◓	◓
	Sp. Guinea	Bata	RE	7.792	38	○	○	○	◒	◒	◒	○	○	○	○	○	○
	Sudan	Omdurman	SBS	11.857	25	●	●	◒	◒	○	○	○	○	○	○	◓	●
	Sudan	Omdurman	SBS	11.895	25	●	●	◒	◒	○	○	○	○	○	○	◓	●
	Surinam	Paramaribo	PZC	15.227	19	○	○	○	○	○	◒	◒	◒	◒	◒	○	○

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Log	Country	City	Call	Fracy. Mc.	Band Meters	EST 12	1	2	3	4	5	6	7	8	9	10	11
						GMT 5	6	7	8	9	10	11	12	1	2	3	4
	Sweden	Stockholm	RS	11.810	25	◓	○	○	○	○	○	○	○	◓	◓	◓	◓
	Sweden	Stockholm	RS	15.240	19	◓	◓	◓	○	○	○	○	◓	◓	◓	◓	◓
	Sweden	Stockholm	RS	17.840	16	○	○	○	○	○	○	◓	◓	◓	◓	◓	◓
	Switzerland	Berne	HER4	9.535	31	◓	●	●	●	●	◓	◓	◓	◓	◓	◓	◓
	Switzerland	Berne	HER5	11.865	25	●	◓	◓	◓	●	◓	◓	◓	◓	◓	●	●
	Switzerland	Berne	HER8	21.520	13	◓	○	◓	◓	◓	◓	○	○	◓	◓	◓	◓
	Syria	Damascus	RD	15.165	19	○	○	○	◒	◒	◒	○	◒	◒	◒	○	○
	Syria	Damascus	RD	17.860	16	○	○	○	○	○	○	○	◒	◒	◒	○	○
	Tahiti	Papeete	RT	6.135	48	○	◓	◓	◓	○	○	○	○	○	○	○	○
	Taiwan (Formosa)	Taipei	BED7	7.230	41	○	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓
	Taiwan (Formosa)	Taipei	BED57	15.345	19	○	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓
	Tanganyika	Dar-es-Salaam	TBC	5.050	59	◒	◒	◒	◒	○	○	○	○	◓	●	●	
	Thailand	Bangkok	HSARD	4.838	61	◒	◓	◓	◓	○	○	◓	◓	◓	◓	○	
	Thailand	Banakok	HSK7	15.387	19	◒	○	○	○	◓	◓	◓	◓	◓	○	◒	
	Togo	Lome	RL	5.036	59	○	●	●	●	◒	◒	○	○	○	○	○	
	Tunisia	Tunis	RT	7.110	42	○	○	◓	◓	◓	○	○	○	○	○	○	

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Log	Country	City	Call	Fracy. Mc.	Band Meters	EST 12	1	2	3	4	5	6	7	8	9	10	11
						GMT 5	6	7	8	9	10	11	12	1	2	3	4
	Turkey	Ankara	TAT	9.515	31	○	○	○	○	○	○	◒	◒	○	○	○	○
	Turkey	Ankara	TAU	15.160	19	○	◒	◒	◒	◒	○	○	○	○	○	○	○
	Turkey	Izmir	TAZ	6.600	45	◓	◒	◒	◒	◒	○	○	○	○	○	◓	◓
	Uganda	Kampala	UBS	5.020	59	◓	◒	◒	○	○	○	○	○	○	○	◓	◓
	Union of So. Africa	Johannesburg	SABC	9.720	30	●	●	●	●	●	◓	◓	◓	◓	◓	◓	●
	Union of So. Africa	Johannesburg	SABC	11.900	25	◒	◓	◓	◓	◓	○	○	◓	◓	◓	◓	◓
	Uruguay	Montevideo	CXA19	11.835	25	○	○	○	○	○	○	◒	◒	◒	◒	○	○
	Uruguay	Montevideo	CXA60	15.389	19	○	○	○	○	○	◒	◒	◒	◒	○	○	○
	USA	Boston	WRUL	21.460	13	○	○	○	○	○	◒	◒	◒	◒	○	○	○
	USA	Boston	WRUL	21.500	13	○	○	○	○	○	◒	◒	◒	◒	○	○	○
	USA	San Francisco	KGEI	17.795	16	○	○	○	○	○	○	◒	◒	◒	◒	◒	◒
	USSR	Kiev	UR	9.593	31	◒	○	○	○	○	○	○	◒	◒	◒	○	○
	USSR	Moscow	RM	11.725	25	◒	◓	○	○	○	○	○	◒	◒	◒	◒	◒
	USSR	Moscow	RM	15.140	19	○	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓
	USSR	Moscow	RM	15.230	19	◒	◓	◓	◓	○	○	◒	◒	◒	◒	◒	◒
	USSR	Novosibirsk	NO	5.225	57	○	○	○	○	○	○	◒	◒	◒	○	○	○

CODE:
●—Both A.M. & P.M.
○—Open Time
◒—A.M.
◓—P.M.

Log	Country	City	Call	Fracy. Mc.	Band Meters	EST 12	1	2	3	4	5	6	7	8	9	10	11
						GMT 5	6	7	8	9	10	11	12	1	2	3	4
	USSR	Petropavlovsk	KO	6.070	49	○	○	○	◓	◓	◓	◓	◓	◓	○	○	
	USSR	Tashkent	RT	11.690	25	◓	○	○	○	○	○	○	◓	◓	◓	◓	◓
	USSR	Vladivostock	KRAI	5.015	59	○	○	○	○	○	○	◓	◓	◓	○	○	○
	Vatican	Vatican City	HVJ	9.646	31	◓	◒	◒	◒	○	○	◒	◒	◒	○	◓	◓
	Vatican	Vatican City	HVJ	15.120	19	◓	◒	◒	◒	○	○	○	○	○	○	◓	◓
	Venezuela	Barquisimeto	YVXJ	9.505	31	○	○	○	○	○	◒	◒	◒	◒	◒	◒	○
	Venezuela	Caracas	YVLK	4.970	60	◒	◓	◓	○	○	◓	◓	◒	◒	◒	◒	◒
	Venezuela	Coro	YVMM	4.950	60	◓	◒	◒	◒	◒	◒	●	●	●	●	●	●
	Venezuela	Maracaibo	YVME	4.800	62	○	○	○	○	○	◓	◓	◒	◒	◒	◒	○
	Vietnam (North)	Hanoi	VV	11.840	25	○	○	○	○	○	○	○	◓	◓	◓	◓	◓
	Vietnam (North)	Hanoi	VV	15.022	19	○	○	○	○	○	◓	●	●	●	●	●	◓
	Vietnam (South)	Saigon	VTVN	9.754	30	○	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓
	Windward Islands	St. George's, Gr.	WIBS	15.085	19	○	○	○	○	◒	◒	◒	◒	◒	◒	◒	○
	Yemen	Sanaa	RS	5.985	50	●	◒	○	○	○	○	○	○	○	○	○	◒
	Yugoslavia	Belgrade	RB	15.240	19	○	○	○	○	○	○	○	◓	◓	○	○	○
	Zanzibar	Zanzibar	VZ	6.005	49	◓	○	○	○	○	○	○	○	◓	◓	◓	◓

CODE:
●—Both A.M. & P.M.
○—Open Time
◒—A.M.
◓—P.M.

Log	Country	City	Call	Fracy. Mc.	Band Meters	EST 12	1	2	3	4	5	6	7	8	9	10	11
						GMT 5	6	7	8	9	10	11	12	1	2	3	4

VOICE OF AMERICA BROADCASTS

	USA	Cincinnati	WLWO	15.290	19	○	○	○	○	○	○	○	◒	◒	◒	○	○
	USA	Cincinnati	WLWO	17.740	16	◓	◒	◒	◒	◒	◒	◒	○	○	○	○	○
	USA	Delano	KCBR	9.600	31	○	○	○	○	◓	◓	◓	◓	◓	◓	◓	◓
	USA	Delano	KCBR	21.740	13	○	○	○	○	◒	◒	◒	◒	◒	◒	○	○
	USA	Dixon	KNBH	6.020	49	○	○	○	○	○	○	◓	◓	◓	◓	◓	○
	USA	Dixon	KNBH	11.870	25	○	○	○	○	○	◓	◓	◓	◓	◓	◓	◓
	USA	New York	WDSI	15.270	19	◒	◓	○	○	○	○	○	○	○	○	◒	◒
	USA	New York	WDSI	21.500	13	◓	◒	◒	◒	◒	◒	○	○	○	○	○	○
	USA	New York	WBOU	21.540	13	◓	◒	◒	◒	◒	◒	◒	○	○	○	○	◓
	USA	Schenectady	WGEO	21.590	13	◓	◒	◒	◒	◒	◒	○	○	○	○	○	◓

CODE:
● Both A.M. & P.M.
○ Open Time
◓ A.M.
◒ P.M.

EASTERN STANDARD TIME → 12 1 2 3 4 5 6 7 8 9 10 11
GREENWICH MEAN TIME → 5 6 7 8 9 10 11 12 1 2 3 4
YOUR TIME →

Log	Country	City	Call	Frqcy. Mc.	Band Meters	
UNITED NATIONS BROADCASTS						
	USA	Boston	WRUL	17.710	16	◓ ◒ ◒ ◒ ◒ ◒ ◒ ○ ○ ○ ○ ○
	USA	Delano	KCBR	9.700	30	○ ○ ◓ ◓ ◓ ◓ ◓ ◓ ◓ ◓ ◓ ○
	USA	Delano	KCBR	21.460	13	◒ ◓ ◓ ○ ○ ◒ ◒ ◒ ◒ ◒ ◒ ◒
	USA	New York	WBOU	17.780	16	◓ ◒ ◒ ◒ ◒ ◒ ◒ ○ ○ ○ ◓ ◒
	USA	New York	WDSI	21.650	13	◓ ◒ ◒ ◒ ◒ ◒ ◒ ○ ○ ○ ◓ ◒
ARMED FORCES RADIO AND TV SERVICE						
	USA	Cincinnati	WLWO	15.250	19	○ ○ ○ ○ ○ ○ ◒ ◒ ○ ○ ○ ○
	USA	Cincinnati	WLWO	17.710	16	○ ○ ○ ○ ○ ○ ◒ ◒ ○ ○ ○ ○
	USA	Dixon	KNBH	9.515	31	○ ○ ○ ○ ◓ ◓ ○ ○ ○ ○ ○ ○
	USA	Dixon	KNBH	11.900	25	○ ○ ○ ○ ◓ ◓ ○ ○ ○ ○ ○ ○
	USA	New York	WBOU	11.870	25	○ ○ ○ ○ ○ ○ ◒ ◒ ○ ○ ○ ○
	USA	New York	WDSI	21.690	13	○ ◒ ◒ ○ ○ ○ ○ ○ ○ ○ ○ ○

YOUR SHORT-WAVE STATION LOG

STATION	CITY	TIME	BAND	MC.
	Schweiz	21:30	25	11.7 (11.830)
	ENGLAND	21:30	25	11.8 (11.885)
	DEUTSCHER RUNDFUNK	22:30	31	9.6 (9.670)
	Schweiz	22:45	31	9.5 (9.54)
	D.D.R. BERLIN INTERNL	20:0	19	15.3 (15.385)
	— . —	20:30	25	11.95 (12.05)
	UKRAINO KIEW	19.35	25	11.76 (11.87)
	NACHRICHT. MOSKAU	21	25	11.75 (11.90)

26

YOUR SHORT-WAVE STATION LOG

STATION	CITY	TIME	BAND	MC.
	Melbourne, Australia	10:40	25M	11.71
	Voice of America	10.40	31M	9.66
	Bonn, Germany	7:00	31	9.65
	Peking	7:00 PM	19	15.51
[Radio Australia Melbourne, Victoria]		7:00	13	21.7

STATION	CITY	TIME	BAND	MC.

STATION	CITY	TIME	BAND	MC.

27

YOUR SHORT-WAVE STATION LOG

STATION	CITY	TIME	BAND	MC.

STATION	CITY	TIME	BAND	MC.

STATION	CITY	TIME	BAND	MC.

YOUR SHORT-WAVE STATION LOG

STATION	CITY	TIME	BAND	MC.

STATION	CITY	TIME	BAND	MC.

STATION	CITY	TIME	BAND	MC.

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