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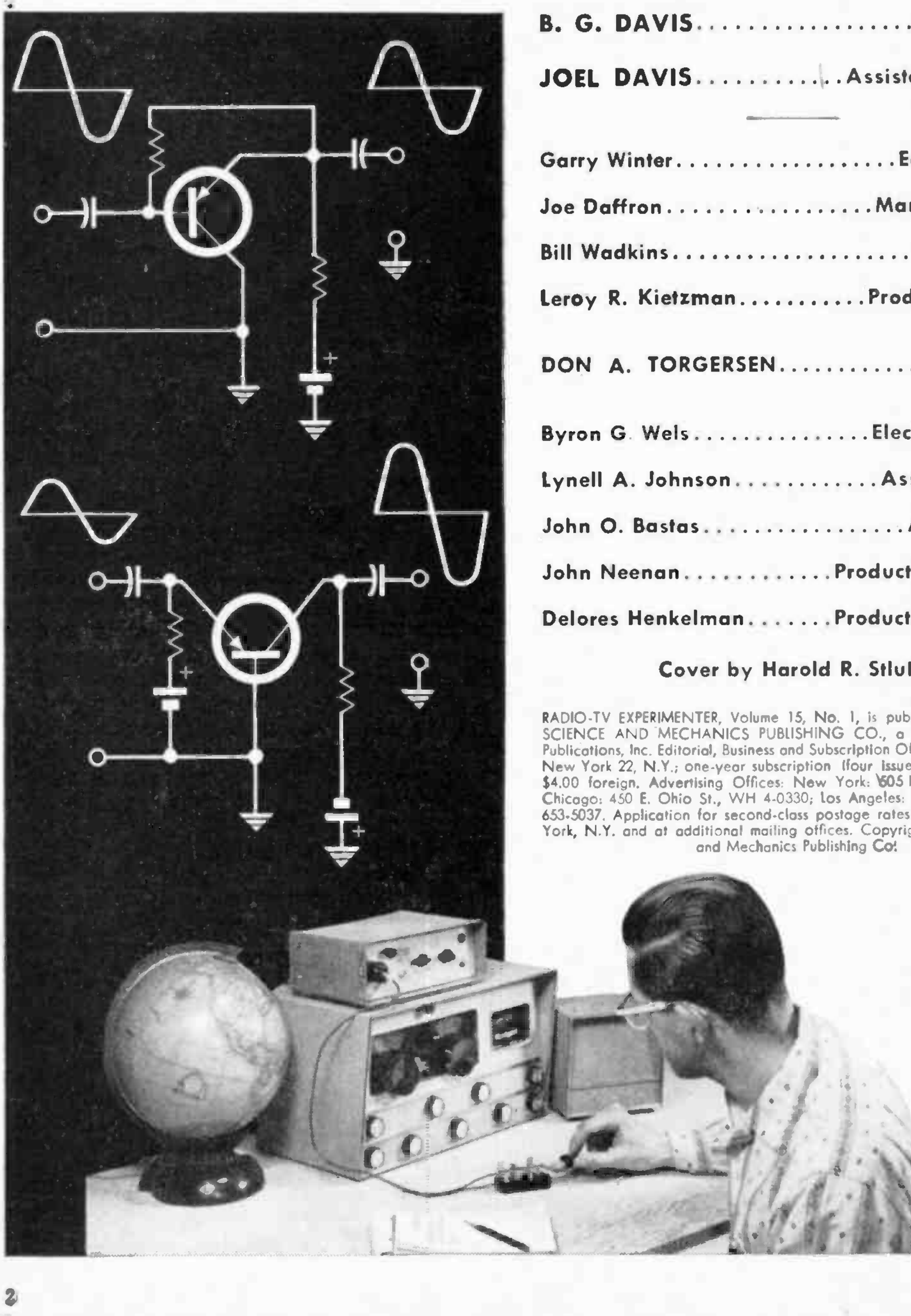

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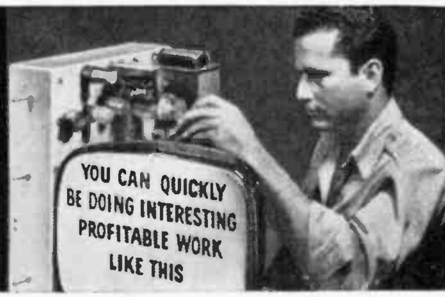

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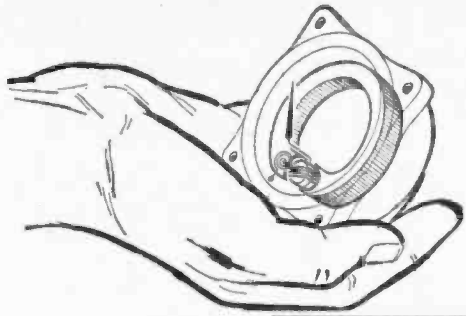

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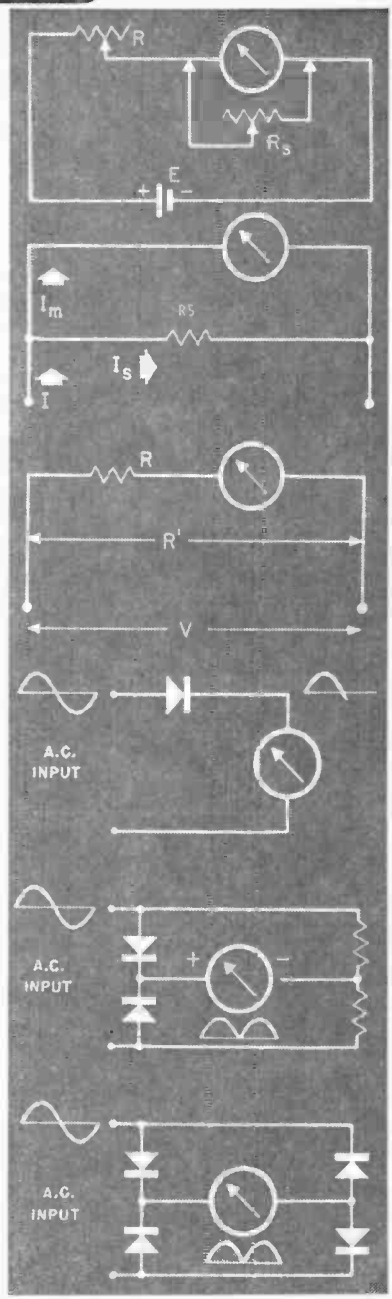

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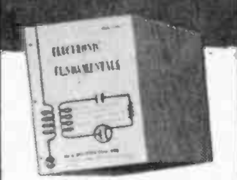

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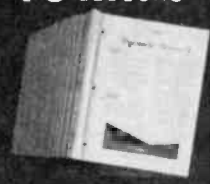

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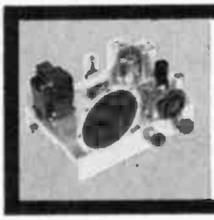

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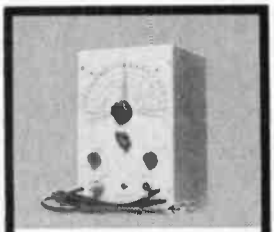

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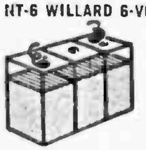

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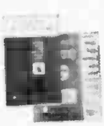

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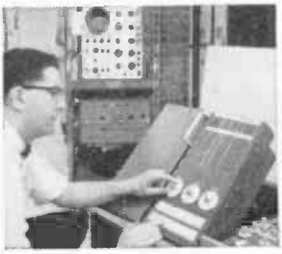

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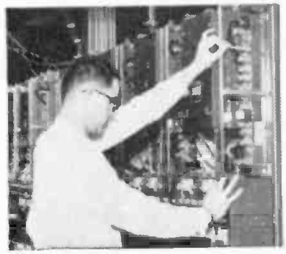

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Some schools and individuals offer a "coaching service" in FCC license preparation. The weakness of the "coaching service" method is that it presumes the student already has a knowledge of technical radio. On the other hand, the Grantham course "begins at the beginning" and progresses in logical order from one point to another. Every subject is covered simply and in detail. The emphasis is on making the subject easy to understand. With each lesson, you receive an FCC type test so you can discover daily just which points you do not understand and clear them up as you go along.

Is the school accredited?

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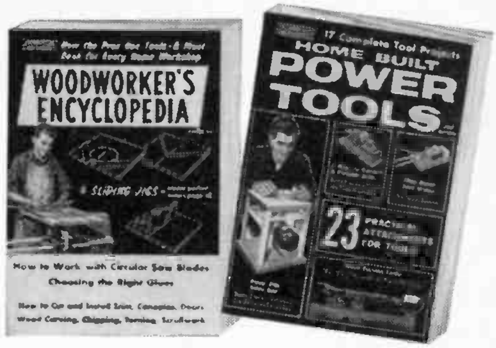

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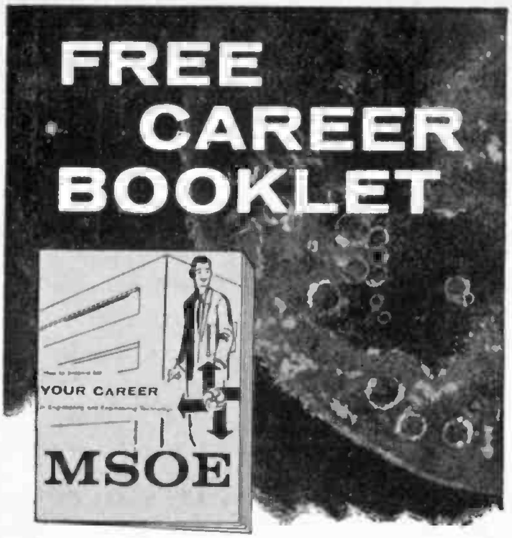

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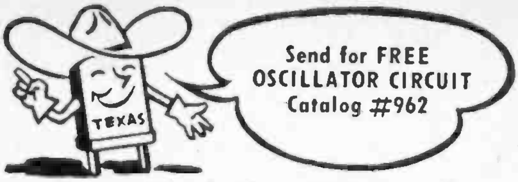

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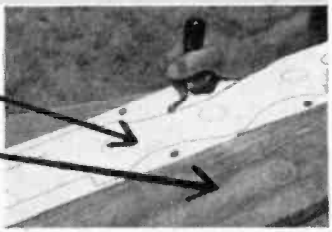

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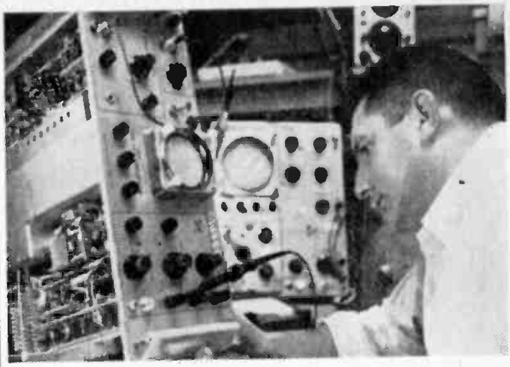

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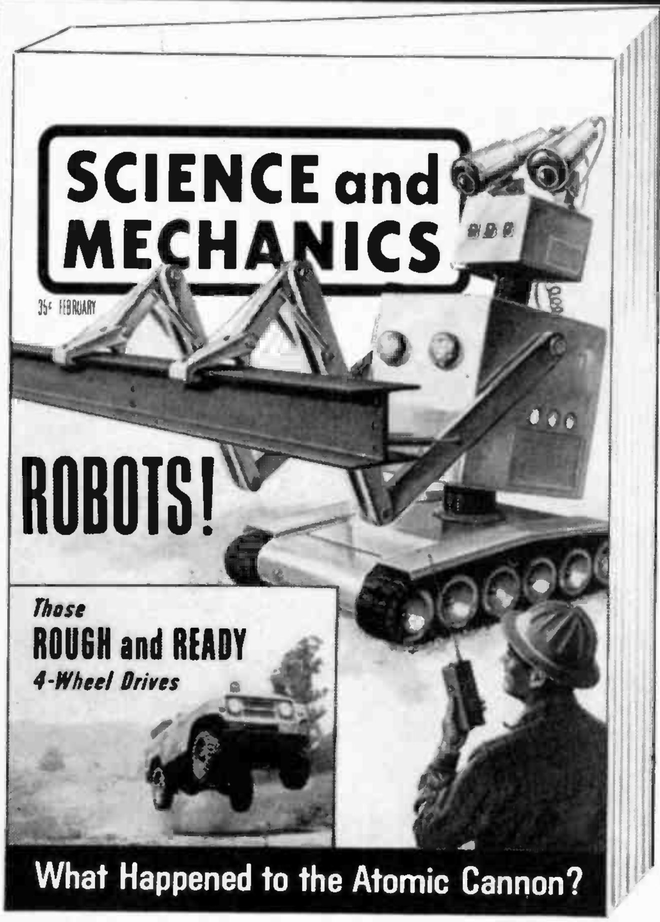

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1

Cameraman shoots color portrait using studio booster. A combination of 50, 100 and 150 watt house lamps gives him well balanced main light, side lights and background lights.

Low Cost PHOTO LIGHTS

Voltage booster operates common lamps as photofloods for color

By BRICE WARD

THE common household light bulb is designed to run on 120 volts, but feed it higher voltage and you've got a lamp that burns like an expensive photolamp at a fraction of the cost.

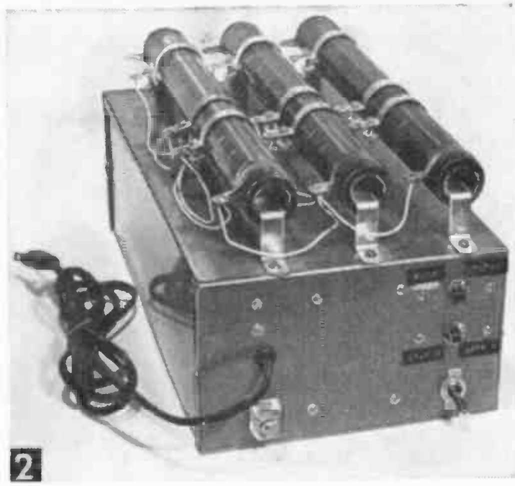
If you live where the power company supplies free exchange bulbs, you can save enough to pay for a booster in a few months, and best of all, you'll never be unable to shoot just because you burnt out your last photoflood. You can always get common houselamps at the corner drugstore, but you may not be able to get floods.

Of course, lamp life is reduced. A household bulb is designed to last several thousand hours at ordinary voltage. At the higher voltages used in this booster, the same lamp will last as long as a photoflood, three or four hours. By using the warmup circuit every time, and being careful not to jar the lamps while they are burning, you can extend lamp life considerably. Also, the booster enables you to use a variety of lamp sizes, shapes, and colors not available in photofloods to create special effects for color portraits, or special illustrative shots.

Two circuits are shown (Figs. 7 and 8). The portable booster will drive a 100 watt lamp (or two 50 watt lamps) to provide the equivalent of 300 watts of photoflood power. It has a 50% duty cycle and can be run up to half an hour, provided that you allow equal time for cooling, or add vents and a fan. Cost of parts as shown is less than $15.00. The studio unit will handle a load of 500 watts, to produce lighting equal to four #2 photofloods. Parts should cost no more than $29.00.

The Portable Booster fits into a 3 x 4 x 5-in. aluminum minibox. Use a sharp scriber

The studio unit, shown without metal grill cover has a main switch, and two slide switches. To use the unit, you warm the lamps a few moments, switch to OPERATE, and then to the 3200 or 3250 K settings. Outlets are on the rear.



2

to lay out the panel. Drill inside your layout lines making a line of holes as close together as possible. Break out the center and file the edges of the holes smooth. Then use the outlets and switches as templates to drill the mounting holes. A Keystone #139 battery holder acts as a heat sink for the rectifiers, and makes them easy to hook up. Enlarge the battery holder mounting holes to 3/16-in. Then mount the rectifiers. Make sure the battery clip fits snugly around the rectifier body, and that the rectifier shoulders are tight against the edge of the clip.

One rectifier, the MR-326 has a cathode-to-case connection, while the MR-326R has anode connected to case. These connections are made at the clip and through the clip to the battery box frame. Since this clip is electrically hot, the battery box must be insulated from the case by mounting on spacers and washers.

The rest of the wiring is easy—just make sure that the capacitor

MATERIALS LIST—PORTABLE BOOSTER

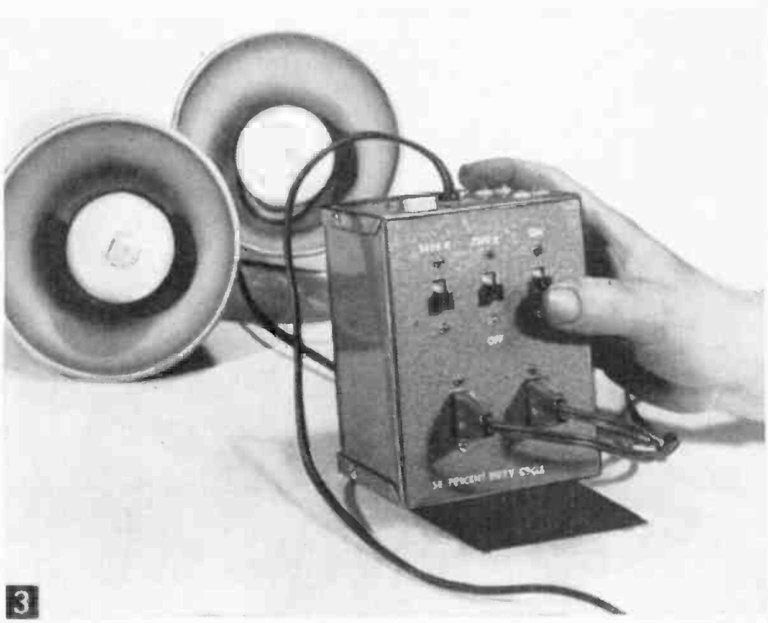
Amt.	Size and Description
2	20 mfd, 500 volt capacitors, Mallory type 83, Allied #17L246
4	10 mfd, 500 volt capacitors, Mallory type 81, Allied #17L245
1	rectifier, Motorola MR-326, 18 amp.
1	rectifier, Motorola MR-326R, 18 amp.
3	DPST switches, type SW325, Allied #35B920
1	heat sink (battery box) Keystone #139, Allied #54J042
8	#6 fiber washers, Allied #42N771
1	line cord, Belden 17126S, Allied #49T211
2	chassis mounting sockets, Cinch-Jones #2R2, Allied #40H830
1	aluminum minibox, Bud CU-2105-A, Allied #80P397

Allied No.'s refer to catalog of Allied Radio Corporation, 100 N. Western Avenue, Chicago 80, Ill.

MATERIALS LIST—STUDIO BOOSTER

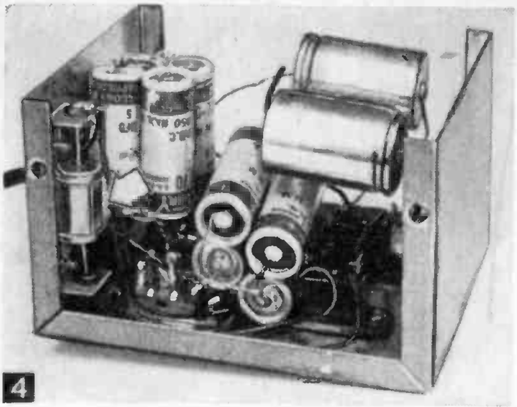
Amt.	Size and Description
4	200 mfd. 150 volt capacitors, Mallory type 496, Allied #17L519
2	rectifiers, Motorola MR326
3	250 ohm, 200 watt resistor, Ohmite Dividohm, Allied #1MM830
6	extra sliders for above, Allied #75M882
2	3 PDT switches, Continental-Wirt SW369, Allied #35B922
1	SPST toggle switch, Arrow-Hart and Hegeman 82601, 15 amp, Allied #33B837
3	chassis mounting ac sockets, Cinch-Jones, 282, Allied #40H830
1	double fuse clip, Littelfuse 357002, Allied #52B297
1	Drake Postlite neon indicator, Allied #78E062
2	8 amp 3AG fuses, Allied #52B248
1	12 x 7 x 4" Bud Minibox case, #CU-2111-A, Allied #80P353
1	line cord, 6 foot, Belden 17126S, Allied #49T211

Allied numbers refer to stock numbers in Allied Catalog #210A



The portable booster drives two 50 watt lamps. The circuit works well on movie light bars. Because the capacitors carry a heavy load, duty cycle is 50 percent.

3



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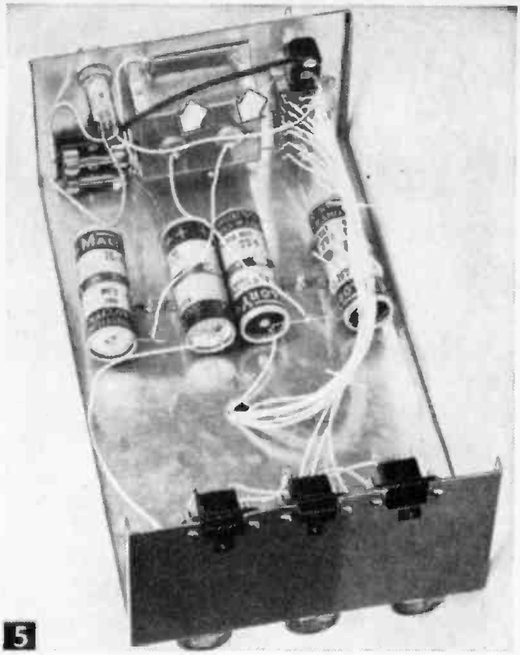
Inside the portable case, arrow shows power rectifiers mounted in battery clip used as heat sink. Capacitors are taped in place after assembly.



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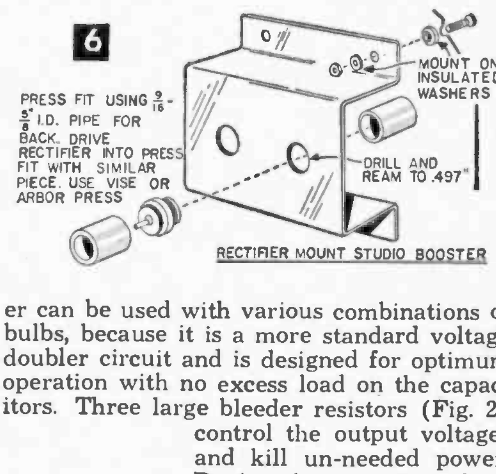
Studio unit is easy to wire. Arrow shows rectifiers mounted on aluminum heat sink bracket. Capacitor polarity is important and must be correct. For heavy duty use, add a small fan and ventilating holes.

plus leads connect to the MR-326R center lead.

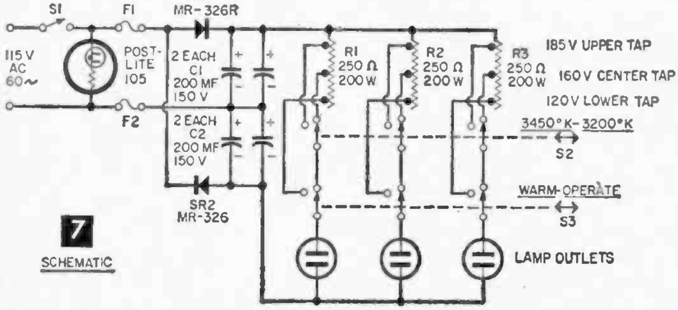
Operation. On low setting, run your lamps only a few minutes. The lowest-light output settings put the greatest load on the capacitors. The best way to get maximum lamp life, and to prevent blowing a capacitor is to use 5 to 10 second pauses at the low positions, just enough time to warm the lamps before applying the full voltage. The portable unit uses an unusual circuit principle, that of overloading a voltage doubler to obtain voltage control. Since doubler circuits usually have very poor regulation characteristics, voltage control can be obtained by reducing the capacitance below a certain critical value.

Capacitance of 20 mfd. in each leg with the 100 watt load effectively holds voltage down to about 120 volts. Throwing in the additional 10 mfd. per leg raises the voltage to 165 volts. Add another 10 mfd. capacitor per leg, and you have 185 volts for the 3450°K light output. Because these capacitors are just right for the rated load of 100 watts, no attempt should be made to change lamp size. This would affect the output voltages.

The Studio Unit, unlike the portable booster can be used with various combinations of bulbs, because it is a more standard voltage doubler circuit and is designed for optimum operation with no excess load on the capacitors. Three large bleeder resistors (Fig. 2) control the output voltages and kill un-needed power. During the operation, these bleeders will get hot enough to burn the hands. They should be covered at all times with screening on a metal frame. The entire unit should be cooled with a fan (see Materials List) if you plan to use the booster for long shooting sessions. Construction is similar to the small unit. Mount the parts on a 12 x 7 x 4-in. Minibox. Instead of the battery clip



RECTIFIER MOUNT STUDIO BOOSTER



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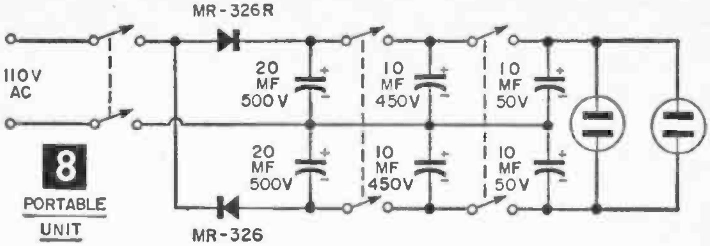
SCHEMATIC

mounting, press fit the rectifiers into an aluminum plate (Fig. 6) to get better heat dissipation. In this circuit, the rectifiers carry almost half the full-rated current, and thus must have more adequate cooling unless the booster is always used on very short duty cycles.



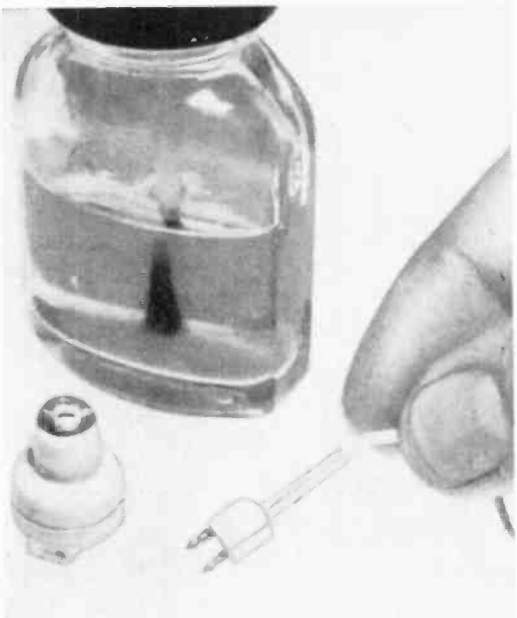
With all wiring complete and checked, set the taps on the resistors in the approximate positions as shown in Fig. 2. Connect your lamps, the same total wattage that will normally be used, and measure the voltage at each tap with a voltmeter.

Tap #1 on each resistor should read 120 volts with the switch in the *warm-up* position. Tap #2 on each resistor should read 160 volts with the first switch in the *operate* position and the second switch set on *3200K*. Tap #3 on each resistor should read 185 volts in the *operate* and *3450* position. These voltage settings are approximate. Advanced professional photographers will want to check light output with an accurate color temperature meter.

Whenever you adjust these taps, be sure that all power is off including the wall plug, and that the capacitors are discharged. Use a pair of test leads and a resistor to discharge the capacitors. Then loosen the screw on the resistor's tap ring until it is completely free and move in the desired direction. Retighten and check voltage, repeating this procedure until the voltages are correct.

Usually, satin finished aluminum produces the best light for color. The reflecting surface should be smooth, and neutral in color.

Paint Phone Plug Prongs



• When an ear-plug type transistor radio earphone operates intermittently, check the plug contacts that fit into the earphone. The tiny prongs may not be making contact inside the phone. A small amount of printed circuit silver paint daubed on them tightens and improves electrical contact. Solder tinning the prongs is almost impossible without melting the plastic plug insulator.—John A. Comstock.

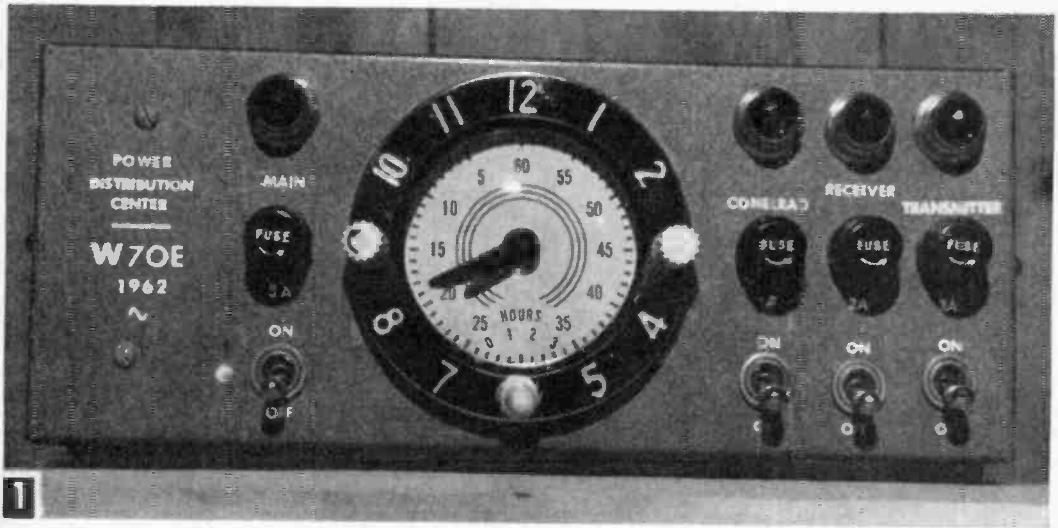
Flexible Prod Finger Guards

• There's no radio-electronics technician who hasn't at one time or another let his fingers get too close to test-prod tips. You can forget the dangers of such shocking experiences by punching holes in small rubber suction cups and slipping them over your test-prod tips as shown. Because these guards are flexible, you will have no trouble putting the prods down in cramped wiring and touching test points.—John A. Comstock.

Build a Power Distribution Center

and put your entire ham shack to bed with one flip of a switch

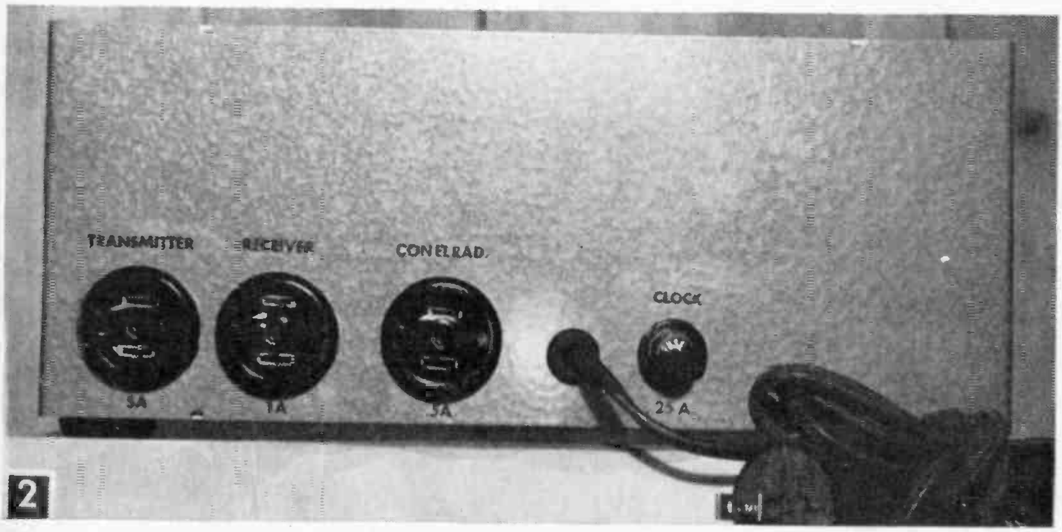
By HOWARD S. PYLE, W7OE



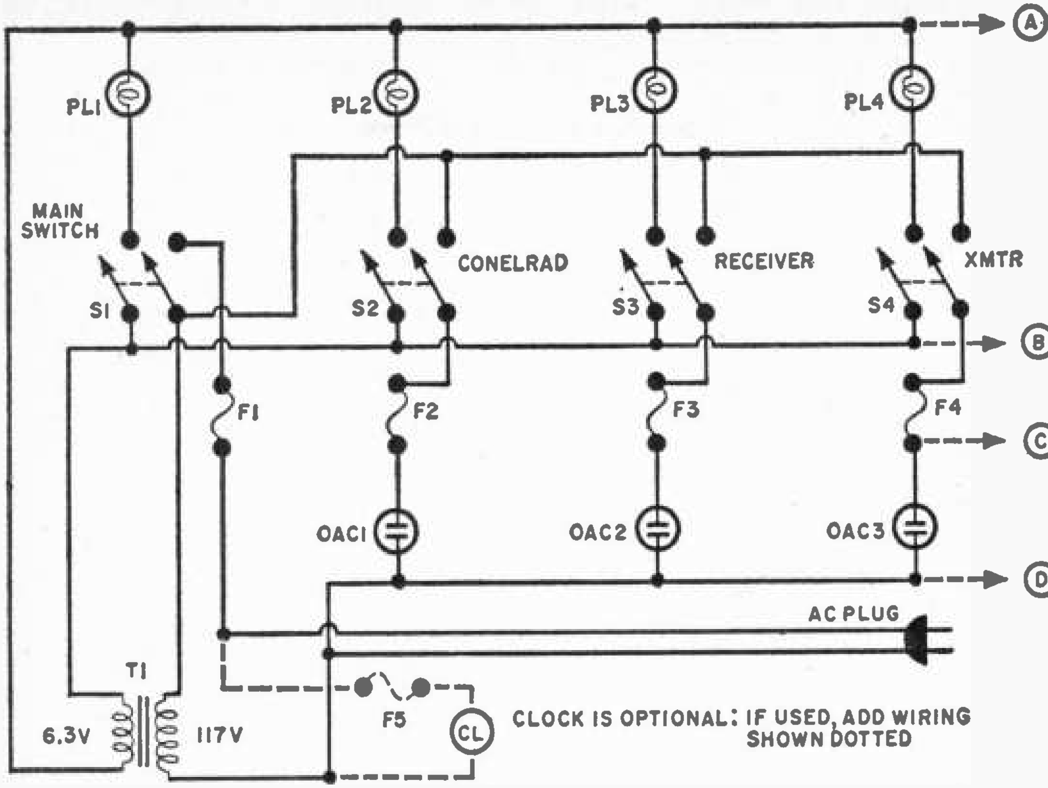
HOW many times have you groped for this and that switch at the end of a long evening of ham activity, dragged your weary bones to your pallet and, the next day, found that you had turned off the transmitter the night before, but left your Conelrad unit and receiver merrily drawing juice to heat your shack? Too many times, we'll bet!

Why don't you spend a couple of hours to fix yourself up with a power distribution center, which will assure you at bedtime that the mere flick of one switch puts you in the clear for an undisturbed night's sleep?

This is not a major project, but it does provide you with a convenience which you'll wonder how you did without. At the same time, it gives you a central unit into which you can plug all of your ham gear, knowing



Rear view of power distribution center. If additional outlets are desired, slight relocation of the clock fuse and ac cord entrance will provide space for them.



Ⓐ Ⓑ Ⓒ AND Ⓓ REPRESENT WIRING EXTENSIONS FOR ADDITIONAL CONTROL CIRCUITS

3 SCHEMATIC

that at the end of a session, the mere flip of a switch takes you "off the air" completely. It also eliminates the monkey-business of a number of straggling ac cords running to the most convenient outlet plus maybe a few 'cube-taps' to provide the additional ac combinations which you need.

You can accomplish all of this easily and simply by providing a central point to which your ac can run from every single piece of equipment in your shack. Just one main switch will kill every individual circuit in connection with your ham activities except, perhaps, your electric clock.

Simplicity of Construction. If you have been able to pass an examination for a ham license, you should be able to figure this project out by examining the schematic diagram. Actually, all that you have to keep in mind is that you want individual switching and fusing of each piece of equipment which you propose to use, plus the ability to switch them all off by means of one switch. If you use an electric clock, as the author did, you will naturally want to eliminate the clock from main switch control so that it will continue running all day. Aside from that, you are faced with a most simple and conventional design problem followed by a bit of mechanical work and some elementary wiring.

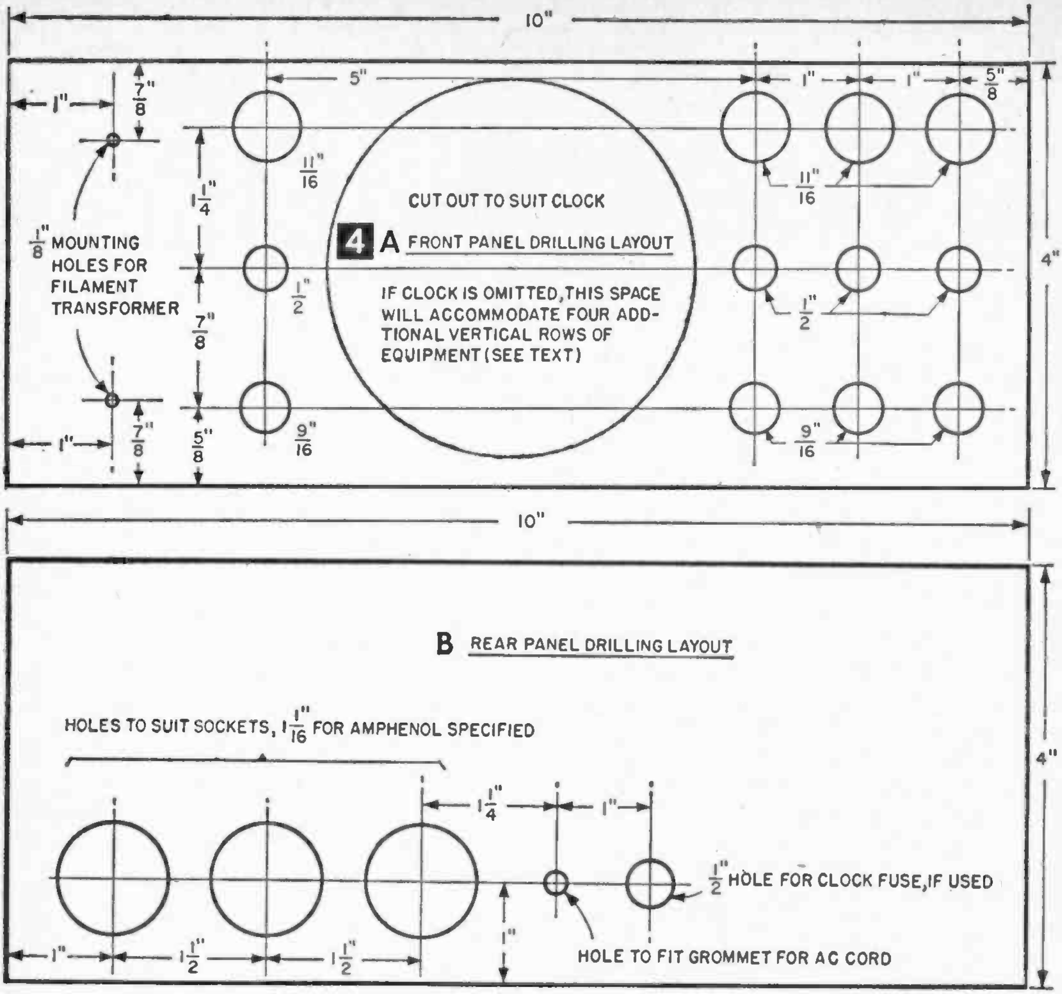
The unit illustrated here represents that which the author felt was adequate for his requirements. They were simple, involving only control of the ac supply to a receiver, transmitter, and a Conelrad monitor.

Some readers may even question the necessity for switching the Conelrad unit, using the argument that such an item is a necessity only when the ham station is in a position to transmit signals on the air. This, then, would

MATERIALS LIST—POWER DISTRIBUTION CENTER

Desig.	Description
PL1, PL2, PL3, PL4	pilot light holder (Allied 52E545)
S1, S2, S3, S4	bat handled toggle switch (Allied 34B647)
F1, F2, F3, F4, F5	insert fuse holder, Buss HKP (Allied 53B475)
T1	transformer, Triad F-14X (Allied 64G954)
OAC1, OAC2, OAC3	2-pole female outlet, Amphenol 61F (Allied 40H677)
ACP 6 ft.	ac cord and plug (Allied 49T230)
CL	clock
Misc.	rubber feet, rubber grommet for ac cord, decals for lettering, LBM chassis box #144 or equivalent

The above materials can be purchased from Allied Radio Corp., 100 N. Western, Chicago 80, Ill.



lead to the natural assumption that the Conelrad monitor could well be wired in parallel with the transmitter ac supply source, thereby eliminating one switch, the ac outlet, and the pilot light combination from the circuit.

To be sure, this is perfectly acceptable. But in the author's case it was desirable to have the Conelrad monitor merely as a broadcast receiver with which to listen to news and entertainment while working around the shack or on the adjacent work bench, without the transmitter, receiver, or other accessories being activated. The choice is yours. Determine what your own individual requirements are, and then design around them. For example, you may already have an adequate clock (remember, FCC insists that you keep an accurately timed log). If so, you need not consider such as part of your distribution center. Instead, use the space intended for a clock for extra switches, fuses, and pilot lights for additional equipment.

We are attempting to supply here, both from the standpoint of mechanical drilling dimensions and schematic wiring, what the author chose for his own modest ham station. You may need several additional circuits, both 117-volt and 6.3-volt ac, with their related pilot lights, switches and fuses, if your station equipment embraces other apparatus such as an external modulator, a self-powered VFO, maybe a coaxial relay or two. That is where the design problem rests entirely with you. What you do with it in the way of expansion, and what have you, is "your baby."

We might mention, too, that you are by no means limited to the parts specified in the materials list. They happen to be those chosen by the author, and proved to be entirely adequate and satisfactory. Maybe your own "junk-box" or some other available source of supply can produce equivalent items which you can well use. If so, use them. The real measure of a good ham is the extent to which he can bring his imagination, ingenuity, and resourcefulness into play.

Add parts until you've built

Space Station

—Super Workbench for Your Shop

By JAMES JOSEPH

Here's a version of the Space Station as assembled by an electronic hobbyist. Note wire box at left, swivel parts bins, spools for solder and wire.

SPACE engineers have come down to Earth to hand the home craftsman an out-of-this-world workbench.

Dubbed *Space Station* by its designers, space-minded (and space-saving) engineers at Hughes Aircraft Co., this compact, first-of-its-kind workbench begins with a basic work table, adds more than 30 bolt-on bins, shelves, jigs, and fixtures that put hundreds of parts and scores of tools within finger's reach, and converts in a jiffy to such specialized home-crafts as electronics, model-making, gemmology, or wookworking.

Electronics. Fitted for the hobbyist or professional repairman, Space Station racks an array of miniature parts-bins and swivel cups (small, removable plastic "pigeon-holes") that hold upwards of 350 different parts. There's also a 110-volt outlet for your soldering iron, plus special reel fixtures that hold spooled wire or solder. Built into the bench are a compartmented "wire" box that holds various sizes of most-used wire and a vise-like jig designed to support at convenient work level a single electronic circuit board or an entire chassis.

Model-Making. To quick-switch from electronics to modeling, simply substitute a slip-in formica work surface for the electronic holding-jig and clip a bottle rack to the basic bench's angle-iron superstructure. Result: Neatly stacked and ready to use are your liquid essentials—lacquer, solvents, plastic cement, and dope.

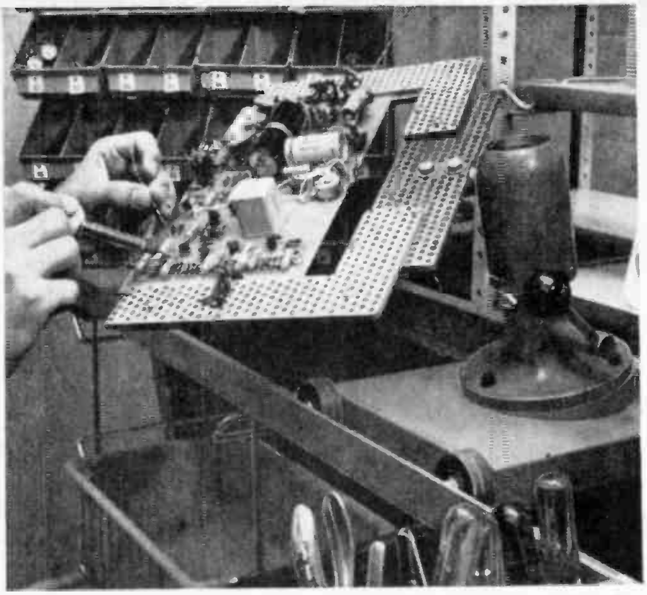
Gemmology. Gem-craftsmen need light, and you get it from a quickly attached, non-glare, overhead fluorescent fixture that bathes the bench's work surface with 160 foot-candles of illumination.

General Fix-It Bench. For the household handyman "specialized" to handle all home fix-it chores, Space Station's slide-out plastic drawers, tool holders, and revolving bins segregate upwards of 350 different repair parts—from electric motors to tiny washers—yet hold them within quick reach.

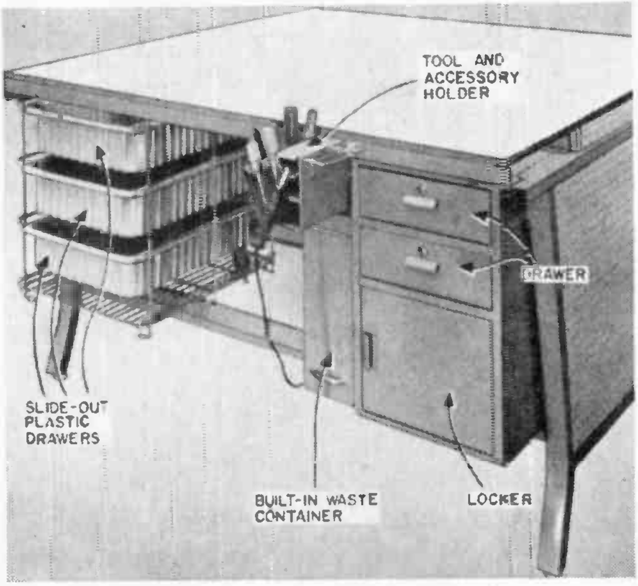
A 10-Year Job. Hughes spent 10 years and some half a million dollars developing Space Station. It was designed for the kind of day-to-day bench versatility required of Hughes's own missile-component and electronic production. More than a thousand of the benches—some specialized for complex electronic assembly, some for mechanics, some for routine maintenance—are currently in use at Hughes' far-flung plants.

Says Harold W. Emmons, of Hughes's Ground System Group, Fullerton, Calif., which is marketing Space Station:

"We designed the workbenches strictly for our own needs. But so many other industries



Power arm mounted on a dolly conveyor lets you angle and position work for convenience. You cover track with a formica top when not in use. "Swiss cheese" fixture that holds circuit board here costs about $19.



This is the basic bench, costing about $100.

wanted them that we decided to make them available—to individuals, as well as to industry."

Fitted with every available rack, bin, accessory, and add-on, a Space Station carries a $350-$400 price tag. It's doubtful, however, that any home craftsman would need every accessory. Actually, $100 buys you the basic bench shown above (fitted with a 4x5-ft. formica top, three 22x7x5-in. slide-out plastic drawers, built-in waste container, tool and accessory holder, and a two drawer-and-locker storage section). Once you've set up the basic unit—which comes ready to bolt-assemble—you can add accessories as you need them.

Rundown on Add-On's. Bench lights (a 5-ft. fluorescent fixture with two tubes) bolt on and cost $32. You can add an ash tray and coffee-cup holder for just 90¢. For electronics, you'd want a revolving small-parts holder (swivel-mounted metal frame with space for 40 clip-on plastic cups, 20 on each side of the revolving bench-top unit). The swivel frame runs $5; plastic cups cost 25 or 50¢ each, depending on whether they're 4 or 8 in. wide. Invest another 8¢—for a divider to separate each cup into two parts—and you can double their utility. Special cup-fitting name clips (on which you can write a part's name or number) cost just 8¢ each.

"Everything on this bench," said one Hughes shopman, "has its special place. And everything fits —clips-on, bolts-on, or slips-in. Together, they make super-bench about the most versatile work station ever."

Take "Power Arm," one of the optional fixtures. Substituting for the usual bench vise, it resembles the pan-head atop your camera tripod. "Power-arm swivels and turns whatever you're working on.

Fix an electronic chassis to power arm's "Swiss cheese" jig clamp, and you can tilt and turn it in any direction, through a full circle (360°) horizontally, or 180° vertically. The smallest of the four available power arms can hold and swivel projects weighing up to 15 lbs. and is priced at $9.50. The strongest can swing 70 lbs. and costs $30.

For the experimenter or model-maker who wants to sit down, there are four special bench chairs, 21-27 in. high. There's also a unique four-wheel "dolly" ($9.90)—a kind of in-the-bench conveyor (upper photo).

Hughes engineers call the Space Station "a new tool." Home craftsmen who've bought the basic unit and are building toward a shopman's dream call it an out-of-this-world workbench. And that description should do until something better comes along, which is improbable.

An intercom system can be used to identify visitors at the front or back doors. The master station (A) activates the substation (C) through the central unit (B).

Centralized Home Intercom

Single amplifier permits all-master system

By W. F. GEPHART

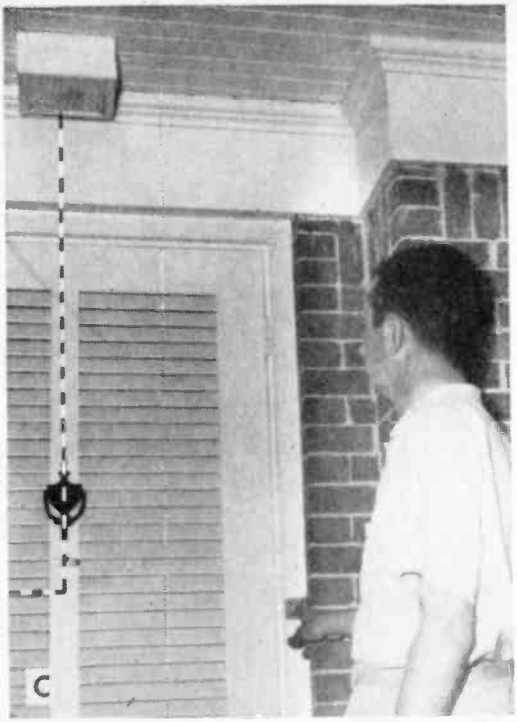
THE requirements for home intercoms are somewhat different than those designed for businesses. If you have ever thought of installing an intercom system in your own home, you should have considered the following points.

1. *The majority of the stations should be masters.* Due to movement in the house, calls may have to be originated from any station.
2. *It should be instant-operating.* Due to limited usage, it should require no warm-up time, so it can normally be turned off, minimizing operating and maintenance costs.
3. *Called stations should be able to talk without using a switch.* Since householders don't sit at desks, they should be able to answer without going to the unit and operating a switch.
4. *Individual stations should not require ac power.* This gives greater station location flexibility and simplifies wiring.
5. *Cost should be reasonable.* Home needs should not require excessive expense.
6. *System should be ac powered.* This reduces operating costs and avoids having to remember battery replacement.

The unit described in this article meets all of the above requirements, and was designed specifically for home use. Since it is a "single channel" system, it is not entirely adaptable for businesses, and can handle only one call at a time. This unit has four masters and one substation, but the basic plan can handle anywhere from two to 23 stations in any combination of masters and substations.

The total cost of the unit shown, using surplus relays, was about $80. To duplicate it as nearly as possible in commercial units would run from $125 up, depending on the manufacturer and features desired. The savings in the centralized system can be realized in the cost of the amplifier and power supply parts—about $40. If a separate amplifier were provided for each master station, (which would eliminate the need for relay switching), each master station would cost about $50.

The centrally-located amplifier power sup-



Since stations do not require ac power, they can be mounted almost anywhere. This one was mounted above the phone.

ply control unit (Fig. 1B) can be placed in an attic, basement, or closet. The location should be selected for minimum length cable runs to each master station. The amplifier is turned off and on, and switched to various stations by relays, which are controlled at the master stations.

Operation. Since the system can be adapted to accommodate a number of stations, let's review the operation and switching system by referring to the schematic, Fig. 2. Notice that the power transformer (T1) primary is connected to the ac line at all times, so that positive dc voltage (24 volts) is connected to pin 8 of Ry1 and pin 6 of Ry2 thru Ry6 at all times.

Now, assume that station 1 wants to call station 3. First, the amplifier is turned on by closing S2 on station 1. Cable lead 3 is ground (or minus 24 volts), and closing S2 grounds the arm of S3. Since we have set this to station 3, cable lead 8, which goes to pin 5 of Ry4, is grounded, and Ry4 closes. Positive voltage, on contact 1 of the relay, goes through contact 2 and R2, applying voltage to the amplifier.

One side of the speaker in station 1 (LS1) is grounded to cable lead 3, and the other side has two paths. One goes through cable lead 1 to contact 7 of Ry2, but since this relay is open, this path is useless. The other path goes through the lower half of S2 to cable lead 6, and to contacts 8, 13 and 4 of Ry2. Since Ry2 is open, the path continues through contact 14 to contacts 2 and 4 of Ry1, and then to the output transformer, so station 1 is on LISTEN.

Now let's see how the sound gets from station 3 to station 1. The station 3 speaker (LS3) has one side grounded, and two paths for the other side. One path goes to S8, which is open, and the other goes to cable lead 1 at station 3, and then to contact 7 of Ry4, which is now closed. This connects to contacts 8, 13 and 4. Contact 8 goes back through the cable to S8, which is open. Contact 13 is floating, since the relay is closed, but contact 4 connects with contact 3 which goes to contacts 7 and 5 on Ry1, and from there to the amplifier input transformer. Therefore, any sound in the room where station 3 is located will get to the amplifier input through this path, and from the amplifier output to the speaker at station 1 as outlined above.

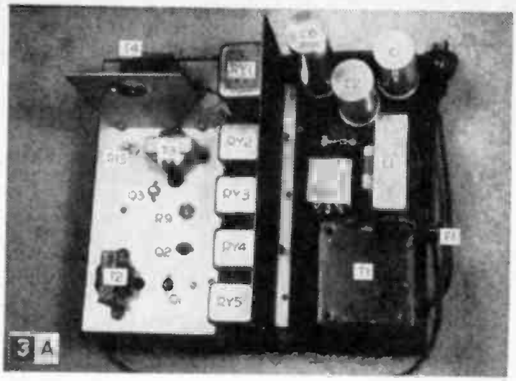
For station 1 to talk to station 3, the PRESS TO TALK switch (S1) is pressed. This places ground on pin 1 of Ry1, closing it, which reverses the speaker connections to the amplifier, so LS1 is then connected to the input, and LS3 to the output. Releasing the switch opens Ryl, restoring the original condition, so station 1 can listen. No switch manipulation is required at the called station, so the person being called does not have to be near the station. The system is sensitive enough that a normal speaking voice can be picked up anywhere in the average room.

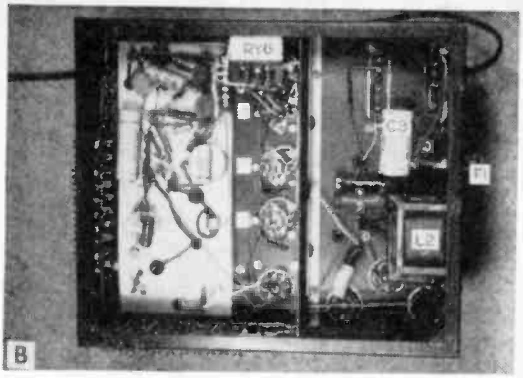
A Pilot Light Circuit, consisting of R1, L2 and C3, is included, although it is not vital. It helps prevent leaving a station on inadvertently, which would immobilize the system for others. Since pilot light current flows in the cable with voice circuits, well-filtered dc must be used, and a separate filter system (L2 and C3) is used to avoid exceeding the current capacity of the main choke (L1). The pilot light in the master station making the call goes on when one side is grounded by closing the ON-OFF switch (S2, S5, S8, etc.).

Substations, such as station 5, work on a simpler procedure. Setting the selector switch (S3, S6, S9, etc.) closes Ry6 when set on station 5 and master is turned on. The upper contacts of this relay supply amplifier voltage, and the lower contacts connect the substation speaker (LS5) directly to contact 7 of Ry1, and from there to the input or output of the amplifier, depending on the position of Ry1.

Stations within the house should usually be master stations, and those at outside doors should always be substations. In some cases, it may be desirable to put substations in nurseries or children's rooms, so that calls cannot be initiated or adult conversations in other rooms overheard.

Privacy Switches. Station 4 includes a PRIVACY switch (S13). Normally, as soon





(A) Top view of surplus power transformer and plug in capacitors. Note the shield between the power supply and the amplifier and relays. (B) Bottom view showing shielding between power supply and amplifier and relays.

as you turn the unit on, you are in LISTEN condition to the station selected. To permit privacy in bedrooms, this switch (in the position shown) cuts the speaker in the station out of the circuit, and connects a buzzer (Z) into the circuit. One side of the buzzer is connected to the positive pilot light voltage through the top contacts of S13, and the other side is connected to one side of the coil of Ry5 through cable lead 4.

When this station is called, the Ry5 closes by having one side of its coil grounded. This ground also appears on one side of the buzzer, and it goes on. When the person in the room wants to answer, he throws S13 to the other position, which stops the buzzer and connects the speaker in the circuit. Operation is then normal. Upon completion of the conversation, S13 can be returned to the position shown, putting the buzzer back in the circuit for a future call, and cutting the speaker out.

The output transistor (Q4) will draw a high current without a speaker across the output transformer. If a PRIVACY switch is to be used often, or included in many units, it might be well to connect a load resistor (R18) as shown by dotted lines, to reduce this current.

With this understanding of the system, it can be seen that one multi-contact relay (Ry2 through Ry5) and one 10-contact terminal board (TB1 through TB4) are required for each master station, and one DPST relay (Ry6) and one 2-contact terminal board (TB5) are required for each substation. The limit of 23 stations is imposed by the maximum size selector switch (S3, S6, etc.) available.

DC Relays should be utilized, since ac actuating voltage in the cable would create excessive hum. Low power relays should be used to minimize the energizing current required, and should be sealed, since attics and basements are usually dusty. If sealed relays are not used, they should be placed under the chassis or homemade dust covers should be made for them.

The master station relays must have two A contacts (single pole, normally open), and one C contact (single pole, double throw). The substation relay must have two A contacts, and the talk relay must have two C contacts.

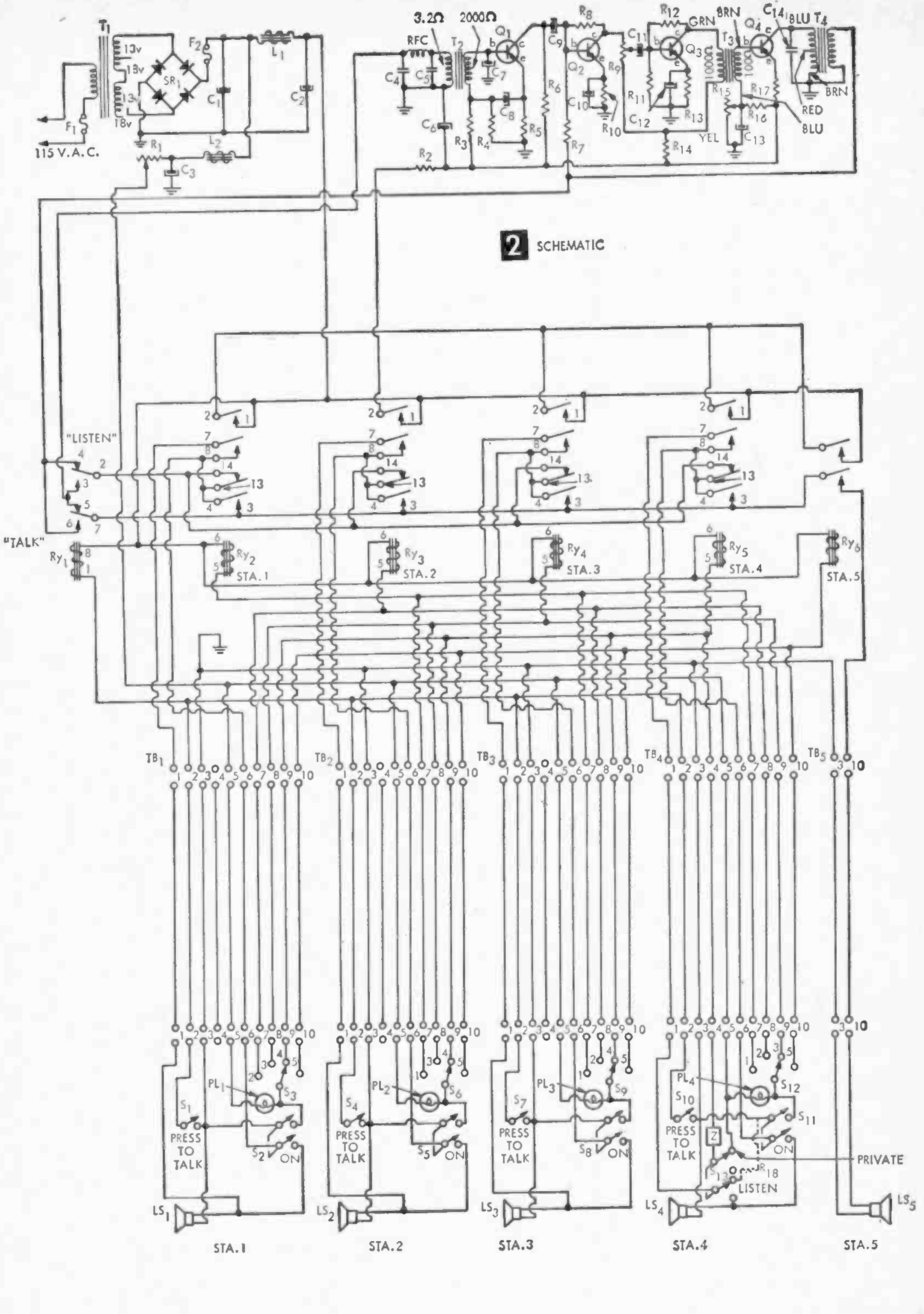
The relays used in the unit shown are surplus 24-28-volt dc relays, with a 300-ohm coil, and draw about 80 *ma*. The master relays have three A and one B (single pole, normally closed) contacts, but one A and the B contact were wired together to make a C contact. The contact numbers are shown solely for explanatory purposes. Since this coil voltage is an aircraft standard, many suitable relays are available on the surplus market.

Installation Suggestions. No specific dimensions or layouts are shown, since the exact extent of the unit will depend on the number of stations to be used. Provide adequate ventilation for the power transformer (T1) and rectifier (SR1), since they have voltage on them at all times. When the system is on standby (all masters OFF), it draws about 6 watts.

Use two fuses in the power supply. One (F1) is for the ac line and will blow if the transformer or rectifier shorts out; and the other (F2) protects the transformer and rectifier if a capacitor or other component shorts out.

Place the amplifier section away from the power supply to minimize hum induction. Keep the AF transformers well apart, and mounted at right angles to each other, to minimize AF feedback. Mount the power transistor (Q4) on a heat sink made of a 3x4-in. piece of aluminum, insulated from the chassis.

The exact size of capacitor C7 will depend on the length and routing of the cables, as to hum pick-up. In the unit shown, the value of C7 is 10 mfd, which greatly reduces hum pick-up from the line yet doesn't seem to affect appreciably gain or tone.


115 V.A.C.
"LISTEN"
"TALK"
STA. 1
STA. 2
STA. 3
STA. 4
STA. 5
PRESS TO TALK
ON
PRIVATE
LISTEN
RED
BLU
BRN
GRN
YEL
3.2Ω
2000Ω
RFC

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MATERIALS LIST—HOME INTERCOM

All resistors are ½-w, 10%, catalog number 13F050, except where noted. Catalog numbers are for Newark Electronics Corp., 223 W. Madison St., Chicago 6, Ill.

Desig.	Description
R1	500-ohm, 10-w adjustable resistor (Newark 13F518)
R2	100-ohm, 5-w resistor (Newark 13F150)
R3	.33-meg. resistor
R4	15,000-ohm resistor
R5	3600-ohm resistor
R6	.1-meg. resistor
R7	.39-meg. resistor
R8	.68-meg. resistor
R9	10,000-ohm potentiometer, Mallory U-20 (Newark 9F104)
R10	3300-ohm resistor
R11	4700-ohm resistor
R12	10,000-ohm resistor
R13	270-ohm resistor
R14	330-ohm resistor
R15	1500-ohm 2-w w.w. pot., Clarostat 43-1500 (Newark 9F776)
R16	39-ohm resistor
R17	1-ohm, 2-w resistor (Newark 13F060)
R18	3.3-ohm, 2-w resistor (Newark 13F060)
C1, C2, C3, C13	500-mf, 50-v capacitor Sprague TVA-1315 (Newark 18F975)
C4, C5	100-mmf, capacitor Cornell-Dublier 15F5T1 (Newark 15F1226)
C6	2000-mf, 15-v, capacitor Cornell-Dublier BR-20001 (Newark 15F166)
C7	See text
C8, C9, C11	10-mf, 25-v, capacitor Sprague TVA-1204 (Newark 18F154)
C10, C12	50-mf, 25-v, capacitor Sprague TVA-1206 (Newark 18F156)
T1	18-13-0-13-18-v, 9A transistor power transformer, Stancor TP-1 (Newark 1F441)
T2	2K to VC output transformer, Stancor A-3332 (Newark 1F276)
T3	100-ohm to 1K interstage transformer, Stancor TA-3 (Newark 1F429)
T4	48-ohm to VC output transformer, Thordarson TR-61 (Newark 2F524)
L1	2.8-hy, 300-ma. choke, Stancor C-2334 (Newark 1F177)
L2	13-hy, 65-ma. choke, Stancor C-1708 (Newark 1F158)
F1	¼-amp 3AG fuse (Newark 27F652)
F2	¾-amp 3AG fuse (Newark 27F655)
RFC	2.4-mh. choke, Miller 4666 (Newark 59F304)
Q1, Q2	2N169 (Newark 21F348)
Q3	2N214 (Newark 21F4506)
Q4	2N307 (Newark 21FX6159)
SR1	36 VAC, 1.5A rectifier, Int. Rect. J29B1 (Newark 21F810)
RY1	DPDT Contacts, 24 volt dc coil (See Text)
*Ry2, Ry3, Ry4, Ry5	2A & 1C contacts, 24-v dc coil (See Text)
@Ry6	DPST contacts, 24v dc coil (See Text)
*S1, S4, S7, S10	SPST push button switch, C-H 8411K4 (Newark 23F260) or SPST spring-return toggle, H&H 81045-FB (Newark 23F002)
*S2, S5, S8, S11	DPST toggle switch, H&H 20902-CX (Newark 23F012)
*S3, S6, S9, S12	1-pole, 5-pos. rotary switch, Mallory 3215J (Newark 22F052)
#S13	DPDT toggle switch, H&H 20905-FR (Newark 23F015)
*PL1, PL2, P13, P14	#48 pilot light (Newark 25F107)
#Z	High frequency buzzer (Newark 46FX002)
LS1, LS2, LS3, LS4	4" 3.2-ohm speaker (Newark 56F252)
*TB1, TB2, TB3, TB4	10-contact term. strip, Cinch 17-10 (Newark 29FX560)
@TB5	2-contact terminal strip, Cinch 17-2 (Newark 29FX552)
Misc.	* Jeweled pilot light holders (Newark 25F-350)
	Fuse Holders, Surface Type (Newark 27F-754), chassis type (Newark 27F752)

Notes

* one required for each master station
@ one required for each substation
# one required for each master station with PRIVACY switch
In addition to the above, a chassis and cover, such as an amplifier foundation kit, will be required for the main unit, and suitable cabinets required for stations.
Relays may be secured from Universal Relay Corp., 42 White St., N. Y. 13, N. Y. An unsealed relay for Ry2 through Ry5 (2A, 1C contact, 24-v coil) is their ARC type 55342, Cat. #R171 @ $1.50 each. Many others are available.

Three adjustments are required when the unit is wired. After the amplifier is wired and checked, connect speakers to the input and output, and insert a milliammeter in the power lead (going to R2). Place the speakers in separate rooms so there can be no acoustic feedback between them. Connect one relay coil to the power supply so it will draw current, and connect the amplifier power lead. Adjust R15 so the amplifier draws about 170 *ma*, being sure that you are not also measuring the relay coil current. This will give an output of better than 1 watt, and will mean that about 250 *ma* flow through choke L1 on LISTEN and about 330 *ma* on TALK. The latter is in excess of the choke rating, but will not hurt for short periods.

A second adjustment is the pilot light supply resistor R1. Set the tap on R1 at full resistance; and, with the set-up outlined above, connect a #48 pilot light between the R1 tap and ground. Using a high resistance voltmeter, adjust this tap until there is about 1.8 volts across the pilot light. This lower-than-rated value is suggested to minimize burnouts due to the surge when the unit is turned on.

The last adjustment is the volume control R9. With the connections outlined above, gradually turn R9 so the arm approaches the Q2 collector lead. If the speakers are properly separated, you should be able to turn it all the way up without getting a feedback howl. If you can't, there is feedback within the amplifier. To correct this, first try increasing the size of R7, then try additional shielding. If the howl persists, and wiring is correct, the feedback is probably due to parts placement.

Later, when the unit is placed at its centralized location and all cables are connected, R9 can be adjusted for desired volume.

Stations can either be built into small radio cabinets available from suppliers or, home-made cabinets can be used. Since ac power is not required at the stations, they may be either wall-mounted, or placed on tables, whichever is more convenient.

Since only low voltage is carried in the cables, regular multiple-conductor intercom cable can be used, such as Belden 8443 through 8449, 8456, and 8457. This is available in 3 through 10-conductor, and in 12-conductor.

For master stations without the PRIVACY switch, you will need cable with 5 conductors plus 1 for each station to be called. The PRIVACY switch requires one more conductor, and all substations require 2-conductor cables.

Shielding is not required unless it is expected that you will have runs in excess of 75 ft. between a station and the control unit. In such cases, it might be necessary to have conductors 1 and 6 shielded.

Puzzled By

Cryptic Citizens Band Messages?

Here's what they mean

IF YOU happen to eavesdrop on a citizens band radio some evening, you might hear cryptic messages that sound something like this:

"Advise 10-20."

"Cicero near Cermak."

"10-15 Raid at Polly's."

"10-4."

"10-16 three bombs."

"10-19 stake out, 10-12 heat's on."

"10-4."

What you're hearing isn't really a dramatic police episode, nor is it the audio portion of an old TV show. Deciphered by Jack Catterall, technical services manager for Raytheon Co.'s Distributor Products Division, the conversation reported above is translated as:

"Where are you now?"

"I'm on Cicero Avenue near Cermak."

"Will you please pick up a can of Raid at Polly's store?"

"OK."

"I went to the store as you requested and picked up three insecticide bombs."

"Hurry home, we're having a steak cookout. The guests are here and the fire is started."

"OK."

Businessmen, taxi drivers, wives with grocery lists, and people with car pool problems all seem to be talking like policemen, Catterall observes. With almost a half million citizens band users throughout the nation, many have adopted the police radiotelephone abbreviations to shorten their conversations.

The "hamsters," as citizens band operators sometimes call themselves, have generally agreed on the following more commonly used signals.

10-1	**Reception poor; can't understand you (pronounced ten one)**
10-2	**Reception good**
10-3	**Affirmative, will do**
10-4	**OK or yes**
10-5	**Need your assistance to relay a message, or I am relaying a message**
10-6	**Busy, can't talk now**
10-7	**Going off the air**
10-8	**Coming on the air, station is manned**
10-9	**Repeat your last message**
10-10	**Finished transmitting**
10-12	**Officials or visitors are present**
10-13	**Give me road and weather information**
10-15	**Make a pick up of........at........**
10-16	**I have picked up....................**
10-18	**Do you have a message for me**
10-19	**Return to station**
10-20	**Position report**
10-21	**Call me by telephone**
10-23	**Arrived at scene**
10-24	**Finished with last assignment**
10-33	**I have an emergency message**
10-37	**What is your call sign and name**
10-70	**Fire**

FIG. 1: This is the portable model Wurlitzer electronic piano. Amplifier and speakers are built-in. Foot pedal controls the sustain while keyboard knobs control volume and vibrato rheostats. Heart of electronic piano (left) is Swedish steel Sandvik reed . . . this one for a middle tone is about 2½ inches long. It bolts to the reed bar, hole at right for that purpose. Tip weight is ground or filed in reed pitch adjustment at factory.

Electronic Piano

Steel reeds and transistors replace strings. Piano never needs tuning

By BILL McHUGH

SIT down at the keyboard, play a few chords and you are pleasantly surprised. Usually a small piano implies a sacrifice in tone quality, but this one sounds very close to what you hear from a good spinet.

Let's try the action. It's not an expensive piano, so we can hardly hope for concert hall touch—but we're amazed! This piano is agile! Your fingers fly over keys that feel even and nimble. It certainly is not a sluggish keyboard.

Opening the top lid (Fig. 3) we find something unlike anything we've ever seen in a piano. Maybe this is the "piano of the future." It is one of the few breakthroughs in piano design in a long time.

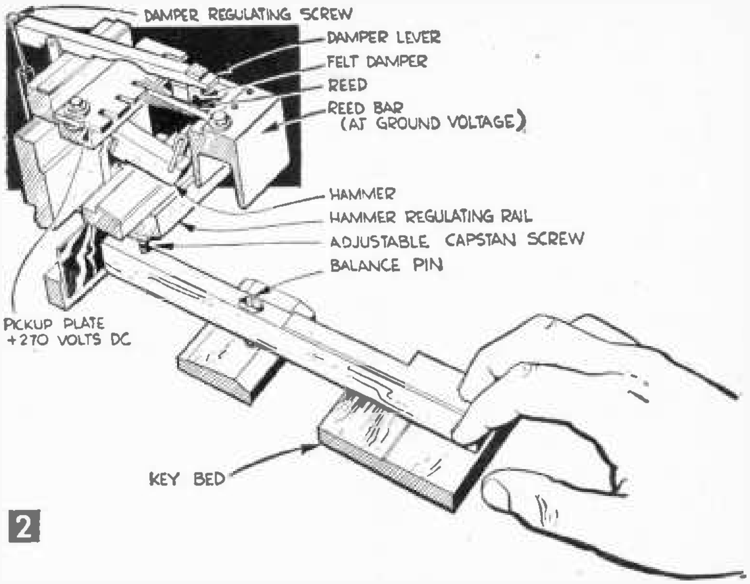
The piano has no strings! Sound comes from steel reeds and they never need tuning.

So what? Well, ask any concert pianist, or recording artist, and he'll tell you that when you want to play fine music, you have to tune a grand piano before every performance. Traditional pianos have one or more metal strings for every note. The strings are arranged like a harp, on a heavy massive iron casting with a tension that can run into tons of pull. Tune the piano, and it is only a matter of time until the tension on the strings, plus changes in temperature, pressure and humidity cause it to slip out of tune.

If you live where the temperature is even year around, tuning every 6 months may be enough. But a piano on the stage of a night club, a theatre, a music school, in the tropics, the arctic . . . any place where the instrument gets lots of use, is an engineering problem now solved by the new Wurlitzer reed principle.

A fringe benefit of interest to any entertainer is a spectacular reduction in weight. The average small home-size piano weighs 400 to 600 pounds. Only experienced movers can lug such a weight from place to place. The new electronic piano is not exactly a lightweight at 80 pounds, but a man and a boy can put it in a station wagon and move it. There is nothing fragile about the portable model . . . it is a tough piece of machinery, we saw proof of fact that it can take a lot of moving.

The real news is for parents, landlords, and neighbors. Since the piano is electronic, and its sound emits from a loudspeaker, all you have to do for quiet operation is plug in the earphone jack. Then junior can practice all night if he wants, while the rest of the world sleeps. Probably every composer, musician, and pianist has tried one time or another to muffle, baffle, soft pedal, or otherwise kill the sound of a practice piano. But nothing seems to work, because if you dampen the strings of the conventional piano, you also change the response (bounce-back) of the hammers and the keyboard feel can be so different that practice is a waste of time.



Another factor in practice is a psychological one. What music student likes to broadcast practice boners to the whole neighborhood? The ribbing that every young pianist takes from family and friends is enough to cause many potentially fine musicians to stop taking lessons and start watching TV as a life-long hobby. To develop skills as a pianist takes hundreds of hours of concentrated study and practice. The electronic circuits and earphone attachments now make this possible in crowded apartments, in college practice rooms, and in the ordinary home. Professional musicians report that they can rehearse new numbers anywhere—in hotels, and even on stage with curtain up. Flip the switch and the sound is completely private.

FIG. 3: Looking inside top of electronic piano you can see how the damper lever (lifted away) controls sound. Like a standard piano, as long as you press key, damper remains up. When key is released felt damper drops down to stop vibration of reed below.

The heart of the new invention is a Sandvik Swedish steel reed (Fig. 1). When the pianist strikes the key, the felt hammer hits the reed causing it to vibrate as in Fig. 4. The touch closely resembles that of a conventional grand piano because the "action", (hammer mechanism) is mechanically and functionally similar.

The reed vibrates at a pre-set pitch. One reed can produce only one pitch, for example middle C is a standard 261.626 cycles per second. The tip of the reed is weighted with

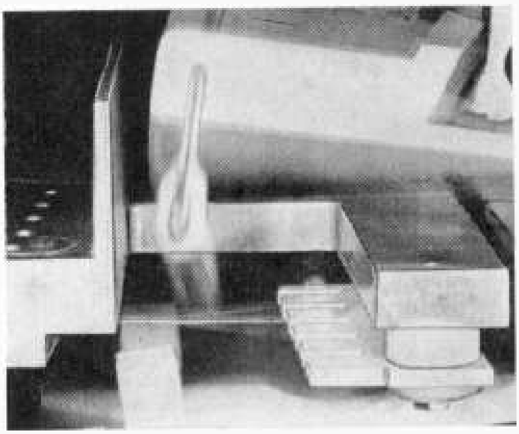


FIG. 4: Photo shot at 1/10th second shows the arc of the hammer striking steel reed and bouncing away. Engineers used high speed cameras to perfect this new piano action which duplicates grand piano response.

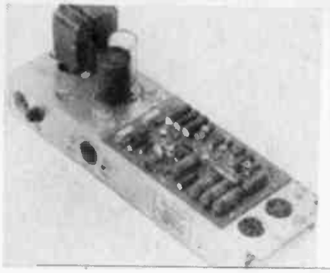


FIG. 5: Console home style electronic piano costs less than $500, yet has complete 64-note standard keyboard and pedals. At keyboard side are volume and vibrato control knobs. Electronic amplifier (inset) operates on 9 transistors, delivers over 10 watts audio.

a lead mass. By filing or grinding away tiny amounts of this weight, factory technicians working with precise frequency measuring equipment establish the pitch. Once set, it stays right on the note. Should the reed ever break, a rare happening, you will be able to buy a replacement for less than 50 cents.

Electronic Function. All the reeds, one for each key of the piano, are bolted securely at one end to the cast aluminum reed bar (Fig. 3). When they are at rest, the reeds are centered slightly below the slotted cavities of the pickup plate. This pickup plate is charged at a plus 270 volts dc while the reeds are at zero or at ground voltage.

The piano in effect is a big capacitor. It is similar to the variable capacitors (condensers) used to tune a radio. When the piano is not playing, the reeds are in a neutral position and capacity is very low. The hammer strikes a reed and as it starts to vibrate, the tip swings upward. Capacity increases until the reed travels through the slot and slightly beyond. At that point the capacity starts to decrease until the reed reaches the end of its upward swing. Now as it starts to travel downward back through the pickup plate capacity again increases. This action repeats itself for every cycle . . . from 50 to

FIG. 6: Eighty-pound portable piano (left) can be used outdoors, on boats, in army camps without ac power. Entertainer Marian McPartland (above) uses Wurlitzer electronic transistor piano at Savoy Hilton, New York. Battery power pack will be available in early 1963.

FIG. 7: Electronic piano installation at Ball State Teachers College, Muncie, Indiana, equals 13 separate practice rooms. Students hear private comments and only their own piano on phones. Instructor can demonstrate on main unit, connecting individually to any student, or to entire class by means of control.

2093 times per second depending on which note of the piano you are playing.

The varying voltage feeds through a load resistor, is then amplified through a transistor amplifier (a less expensive tube amplifier is also available) and fed to the loudspeaker. Pianos are equipped with the standard sustain pedals, and volume controls. In the portable model, the volume control is on the keyboard; in the home model, a pedal controls volume. But there is also a second rheostat control which controls the vibrato section of the amplifier. By adjusting this control, you can obtain effects from Hawaiian guitar to vibraphone.

The amplifier puts out enough sock to fill a small auditorium. Wide open, the electronic piano will deliver considerably more sound volume than a standard spinet. External speaker jacks, and a jack for input permit a wide variety of electronic hookups. For example, a musician can rig his electronic piano so pre-recorded music plays through the piano speaker system along with what he plays. A musician could easily play duets with himself!

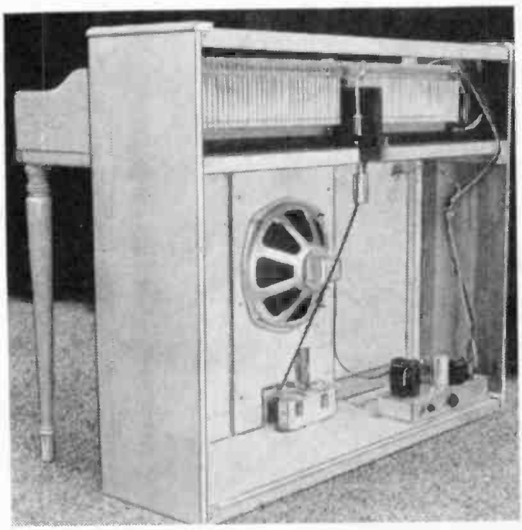
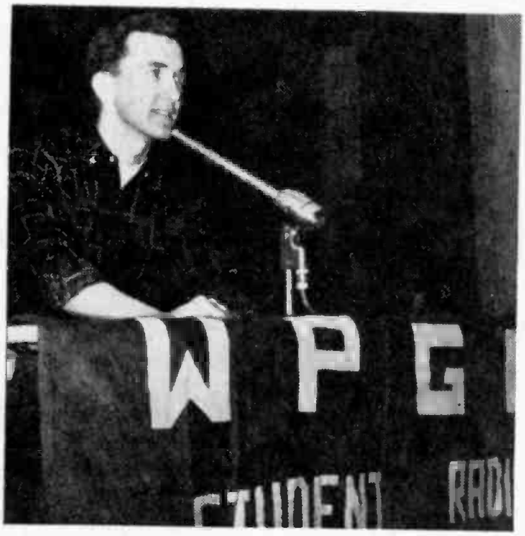


FIG. 8: Electronic piano design (right) shows reduction in weight and cost. Wood framing which supports heavy cast iron plate and soundboard of conventional piano (left) is eliminated. New piano is 1/6th the weight. Electronic amplifier delivers more sound than standard piano, produce special effects.

College Radio Stations

Over 250 of these stations broadcast unlicensed in the AM band

By DON A. TORGERSEN

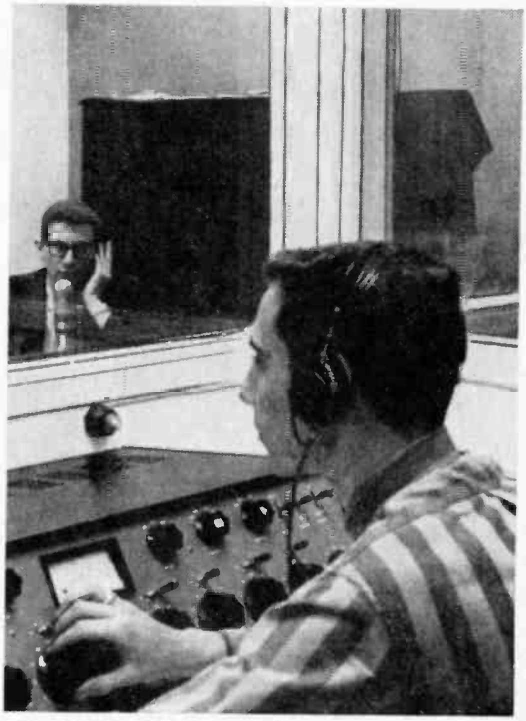


WPGU at the University of Illinois dedicates its broadcasting to the "best in music, news, and sports."

ALTHOUGH seldom publicized as a broadcasting medium, the college radio station has become an important function in more than 250 college and university communities. These stations not only provide a reliable source of news and entertainment to the community, but also supply the broadcasting industry with a number of highly trained personnel, most of whom are acquiring degrees in radio and television, journalism, advertising, and engineering.

College radio stations broadcast on the AM band, and can usually be heard on any AM radio in the vicinity—even car radios and portables. By means of a special engineering principle called "carrier current," the college station is able to deliver a powerful, high quality signal to the community without being heard much beyond the boundaries of the campus itself.

Carrier current is a technique whereby transmitters, instead of being coupled to antennas, are coupled directly to the power lines of dormitories and resident halls. This same engineering technique completely solves the noisy reception problems which reduce the listenability of other stations in many of the new, steel-and-concrete, fluorescent-lighted dormitories now being constructed. Very often, the college station may supply the only strong signal going into these build-



(A) Usually, an engineer and an announcer work as a team to produce a show.

ings. One student engineer described carrier current in this way: "You might say that what a person hears on his radio is 'controlled interference' in the power lines."

Unlicensed Broadcasting. What is peculiar about these stations is that they operate unlicensed. This is due to a provision in part 15 of the Rules and Regulations of the Federal Communications Commission, which states that a transmitting device may operate in the broadcast band with a signal strength of 15 microvolts per meter, at a distance of one wavelength divided by two pi (157,000 feet/frequency in kilocycles) from any radiating source. Any such transmitter may operate unlicensed so long as it does not interfere with regularly licensed stations. Citizens band communication is another type of transmission governed by this provision.

Two such stations are WPGU (University of Illinois, 610 *kc*, Champaign-Urbana) and WRCT (Radio Carnegie Tech, 900 *kc*, Pittsburgh). These stations are staffed, managed, and operated entirely by undergraduate students as an extracurricular activity independent of formal school administration. WRCT has a staff of over 125 students, while over 200 students run the affairs of WPGU.

Most of the equipment has been designed and constructed by the students themselves. By keeping abreast of the latest developments in the electronics industry, the students have been able to design high fidelity units with a frequency response higher than that allowed for other AM stations in the same

Photos by Ed Wahl

(B) But some announcers do their own engineering.

An announcer gathers the latest news from a UPI teletype network.

area, since the commercially licensed stations are required to suppress their high frequencies. WRCT uses seven transmitters conveniently located that broadcast flat within 2 *db* up to 15,000 *cps,* and range in power from 10 to 75 watts output with a total output of about 150 watts.

Other facilities at WRCT include four studios, two of which are audio participation studios; remote equipment for live or recorded programs; and audio equipment to handle stereo recordings at 33 and 45 *rpm*, monophonic recordings and electrical transcriptions (lateral to 16 in.) at 33, 45, and 78 *rpm*. Their tape recording equipment consists of half track at 7½ and 15 *ips,* full or half track tape playback at 7½ and 15 *ips*, and cartridge tape machines. To round out their studios, they employ United Press International radio news service, NBC radio network, citizens band transceivers, and beep telephones.

WIIT (Illinois Institute of Technology, 610 AM, 91.9 FM, Chicago) has experimented with dual broadcasting of AM and FM channels, and has even tried multiplex. An engineer describing the power of their two transmitters boasted, "We load 'em up with 20,000 milliwatts."

Programming at these stations often covers as much as 133 hours per week. It includes classical, popular, folk, and show music, news, press conferences, drama, and play by play broadcasts of football and basketball games.

In times of emergency, the college radio station will often serve as an auxiliary to national networks. In May of 1962, when a tornado struck Rantoul, Ill., after a severe wind and rainstorm, the news staff of WPGU sent dispatches, both taped and telephoned, for use by UPI and ABC.

Financing these stations, since they are not for profit, is not much of a problem. Some of them are supported in part by grants from the student body, and in part, since they are not classified as educational stations, by the sale of commercial time to local merchants as well as many national advertisers. WPGU, which is financially self-sufficient, solicits a certain amount of its advertising through a New York agency, and actually realizes a small profit at the end of the year. This profit is turned back into the Illini Publishing Co. for use in other campus information activities.

Training. Although these stations are not required to have licensed technicians on their staffs, WRCT has imposed its own requirements, and 12 staff members hold first class radio telephone licenses. WRCT conducts regular classes in order to prepare their technicians and announcers for FCC examinations.

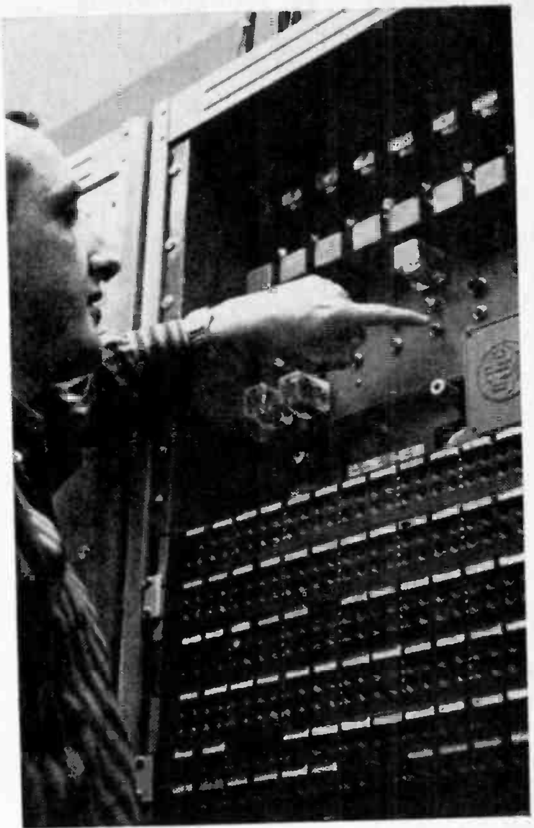
At WPGU, before a prospective announcer is even placed on probationary status, he is given an audition to see if his voice is suitable for radio work, and to make sure that he will not tense up or freeze in front of a mike. To become a staff announcer, he must pass a written test and a simulated-broadcast examination under stress. One of the favorite techniques of the practical test is to tell the announcer that something has gone wrong

Making a spot check on the taping of a news broadcast.

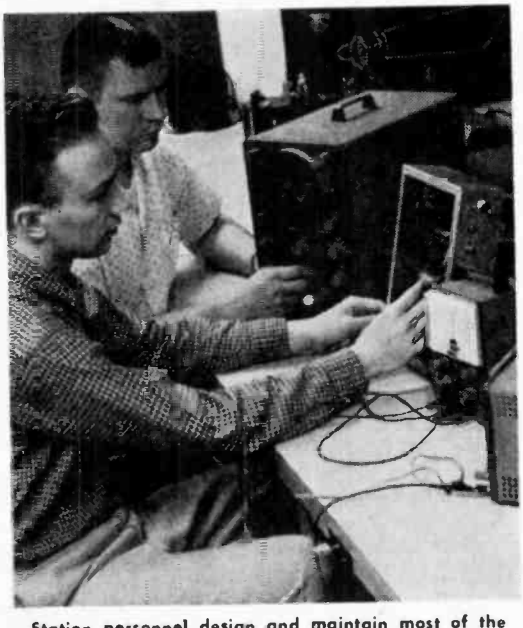
The record library at WPGU contains almost 20,000 records.

with the record deck after he has introduced a record, and force him to ad lib for several minutes.

In testing engineers, it is better to face them with actual engineering predicaments. Tape decks can be bumped to the wrong speed, or transmitters in certain buildings can be mysteriously shut off. The hardest test for an engineer is known as the "flip-segue." This antic requires him to turn a record over after a number has been played, and im-



After 19 hours of continuous daily broadcasting, a weary engineer puts the station to bed at the master control panel.



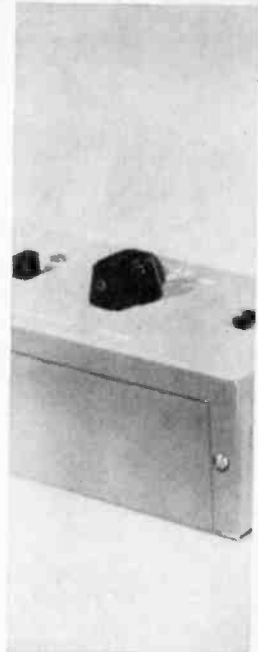
Station personnel design and maintain most of the equipment. These technicians are checking out a malfunctioning transmitter with an oscilloscope.

mediately play a number in the middle of the opposite side. Whereas the standard time for this maneuver is 15 seconds, one ambitious engineer at WPGU has got it down to a split lightning four seconds.

Not all staff members are males. At least one-fourth of the staff at WPGU is composed of coeds. Besides being valuable as copywriters and production managers, several coeds have joined the engineering staff so that they can engineer the shows that their boyfriends announce.

WPGU actually owns the largest record library in the state of Illinois south of the Chicago area. There are almost 20,000 records locked up in the record library. With several bands to each record, this adds up to over 125,000 selections.

To give the station a touch of personality, famous stars such as Tennessee Ernie Ford, Pat Boone, the Four Lads, Shelley Berman, and Connie Francis send short taped spot promotions to the station. In summing things up, Pat Boone said, "This is Pat Boone. I don't know a whole lot about WPGU, but they do have good taste in music. They play my records."



$4 Transistor Tester Uses

By ROBERT E. KELLAND

THIS neat looking transistor tester costs $4 or less, going by current catalog prices, and you can probably build it for half that much by using scrap parts.

The unit checks transistors either on the bench or in the circuit, and results are adequate for most service and experimental needs. The advanced electronics expert needs a complete range of tests to pin down the detailed performances of any semiconductor, and so might find this tester wanting. But it is surprising to see what can be done by using this simple tester along with manufacturer's transistor spec books.

The tester will work with any VOM or VTVM that has R x 1 and R x 100 ohmage scales. The ohmmeter provides the indicating meter, and also eliminates the need for a separate power supply for the tester.

Build the Tester in a 5¼ x 3 x 2½-in. gray hammertone aluminum utility box. Photos show a transistor socket mounted on the top panel for testing out-of-circuit transistors. If you want to add a power transistor socket, there is plenty of room, but you will have to rearrange the available space. The pin jacks on the end of the box are for testing transistors in circuits, and you will need three color coded alligator clip test leads. For transistor work, the small size clips are the best.

Follow the chassis layout (Fig. 3), as you cut the holes for the sockets, switches, and jacks. Ready-painted chassis should be protected with cloth when clamped in your vise. Exact measurements are not given for the tube sockets since various brands will differ in size. Less expensive wafer sockets salvaged from old radio sets will also fit.

The chassis has two pin jacks for the prods of the ohmmeter. If your meter has banana or alligator clips as prods, substitute the proper jacks to fit. Two 5-way binding posts would also serve this purpose.

Use #22 solid insulated wire to hookup the connections on the chassis, and then connect the tube sockets with flexible stranded insulated wire.

How It Works. A transistor consists basically of two diodes; the collector-base diode and the emitter-base diode. By measuring the forward and back resistance of these two diodes and comparing the results you get an indication of transistor condition. Checking resistance between the emitter and the collector will indicate leakage or "break down" of the transistor base. When checking the diodes, a high *ratio* between the forward and back resistance will indicate a good

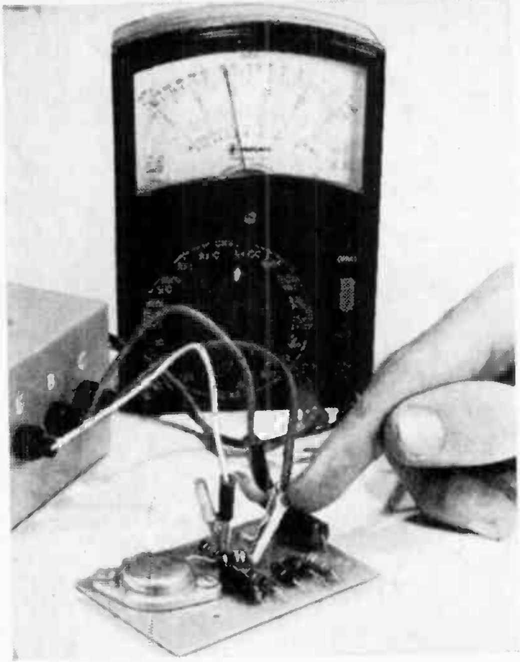


Fig. 1-1A: S & M consultant Mort Friedman (far left) checks tester plugged into inexpensive Monarch VOM. Manufacturers transistor manual provides reference. Transistors can be inspected in seconds and graded for relative performance. Use short probe leads (left) with miniature alligator clips for checking transistors in wired circuit. This setup has been used for production inspection and proves fast and practical. An otherwise time-consuming test is accomplished without using expensive laboratory gear. Delicate low power transistors are protected from burnout by 1K resistor in tester.

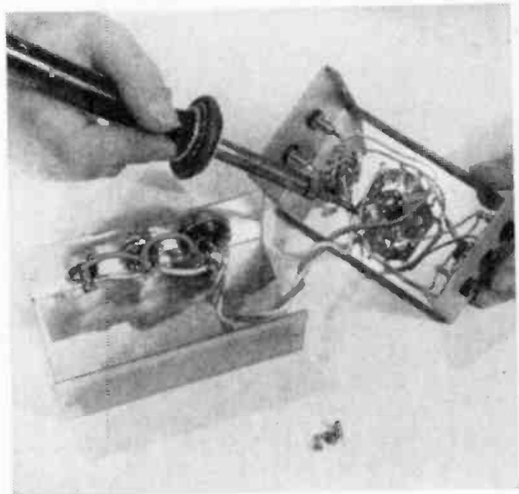


Fig. 2: Tube filament checking sockets are optional. Wire your chassis connections with solid hookup wire, and use flexible wire for the tube socket connections.

Your VOM

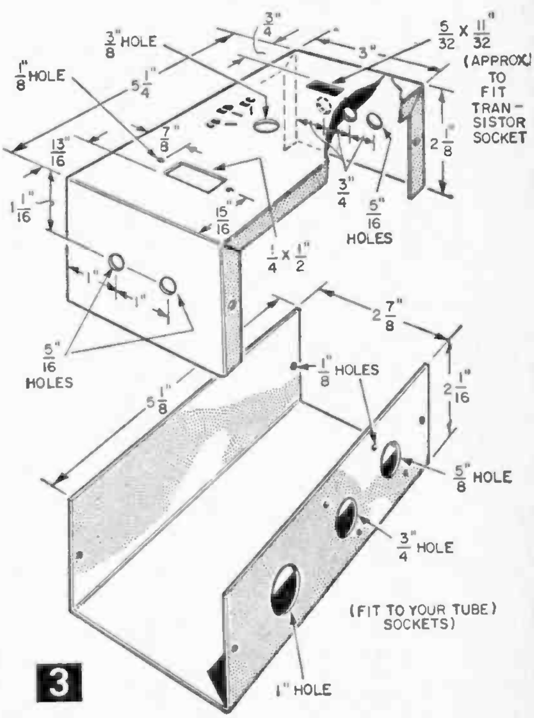
diode. Many technicians and experimenters rely on their ohmmeter to make these measurements, but connecting the ohmmeter leads to the transistor and reversing them at least half a dozen times is time consuming and often leads to incorrect results. The simple switching circuit used in this tester makes these measurements easy.

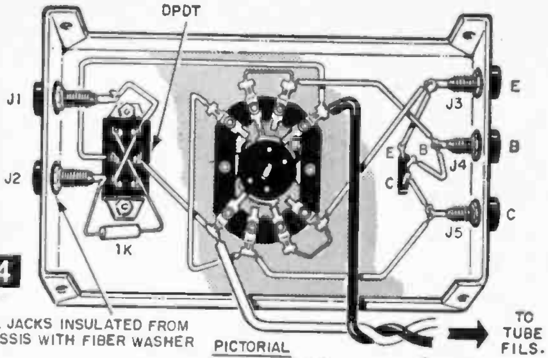
Using the Tester. Zero adjust your ohmmeter on the R x 100 scale and plug the prods in the tester. Polarity of the prods is not important since the DPDT slide switch reverses meter polarity. Now you can set the rotary

MATERIALS LIST—TRANSISTOR TESTER

No. or Amt. Req.	Size and Description
R1	1000 ohm 1/2 watt carbon resistor (#1MM000)*
S1	DPDT slide switch (#36B148)
S2	DP 3 Pos. non-shorting rotary switch (#35B235, knob supplied)
J1, 2, 3, 4, 5	insulated tip jacks (#41H115)
3	alligator clips (#45H171)
3	tip plugs (#41H200)
1	transistor socket, 3 pin (#40H294)
1	8 pin octal tube socket, retainer ring mount (#40H058)
1	9 pin miniature tube socket (#22H594)
1	7 pin miniature tube socket (#22H567)
1	chassis, aluminum minibox 5¼x3x2⅛" gray hammertone finish (#80P348)
Misc.	#22 solid Insulated hookup wire. Stranded insulated wire. Screws, nuts, solder

* All numbers from Allied Radio, 1963 Cat. 220. Address 100 N. Western Ave., Chicago 80, Ill.





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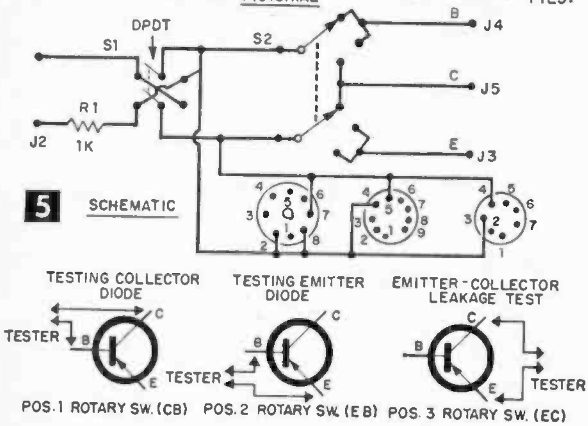

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EMITTER-COLLECTOR LEAKAGE*

Transistor	Meter Scale	Minimum Readings
RF-IF-Conv.	R x 100	6000 Ohms
Low Power Audio	R x 100	1500 Ohms
High Power	R x 1	1050 Ohms

Transistors Removed from Circuit-Tested Room Temp.

NOTE: Readings Are 1000 Ohms Higher than Actual Transistor Resistance Because of R1

* Cut out and cement to meter case.

(Courtesy of Delco, Div. G. M.)

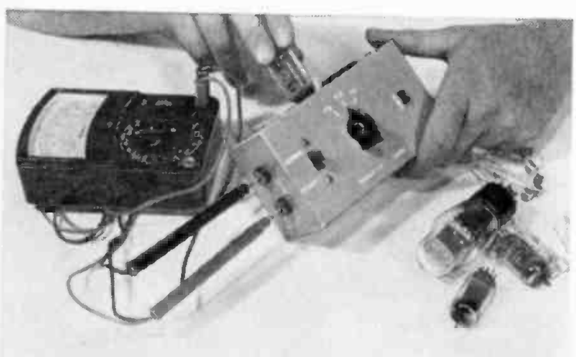


Fig. 6: Tube checking circuits on side of box are handy extra feature for radio and TV servicemen working on sets in homes. Binding posts for other kinds of tests can be added to this handsome case.

switch to position CB (Collector Base) and insert a transistor in the socket. Your ohmmeter should indicate either a very high resistance between 200K and 1 megohm or a very low resistance, 1500 ohms or less. All readings are 1,000 ohms higher than the actual transistor resistance because of current limiting resistor R1. Changing the polarity with switch S1 should immediately give you a different resistance, lower or higher. A high ratio in the two readings indicates a good collector diode.

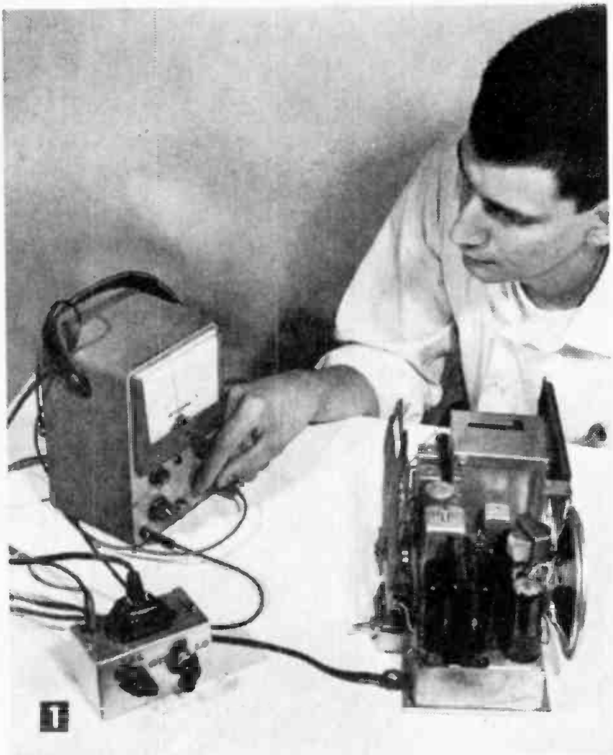
The second position of the rotary switch EB (Emitter Base) measures resistance of the emitter to base diode. The pair of readings should be similar to the collector base diode.

Position EC of the rotary switch tests the emitter-collector leakage. Readings lower than those indicated in Table A indicate breakdown or shorting of the base. This seldom happens with low power transistors running on normal voltages. Changing the polarity reverse switch should give you a different reading, but both readings should be higher than those listed. For permanent reference, cut out Table A and cement it to the underside of the Tester Case for quick reference.

Both PNP and NPN transistors are tested in the same way. In the circuit testing will produce different sets of readings on the meter, but your low resistance readings should be about the same or slightly lower. High end readings will decrease to 2K to 100K depending on the shunt resistance present in the circuit being tested. A ratio of 5 to 1 indicates a good transistor. For example, a reading of 1200 and 2000 ohms is actually a 5 to 1 ratio, because you must subtract the 1,000 ohm value of R1 from each. If a transistor shows bad in the circuit, remove and confirm your test out of the circuit. The leakage test cannot be taken with the transistor in circuit.

A Caution. Some ohmmeters can deliver enough current to ruin transistors, and for this reason R1 is included in the circuit as a current limiting device. Except for power transistors on which you can use any ohmmeter scale, always use the R x 100 meter scale. High impedance ohmmeters are best suited as the current supply is generally much lower, and the accuracy of the meter itself is better. Resistor R1 also limits current when testing low-volt tube filaments. This test is simple continuity, and a reading indicates a good filament. Check a tube manual for proper filament connections.

Read AC Current with Your Voltmeter



Author Lucas demonstrates how "Mini-Amp" and sensitive VTVM can be used to observe small changes in power consumed by radio. Unsteady reading indicates defective parts.

Pickup coil converts VOM to AC current reading instrument

By ALFRED R. LUCAS

AN OLD transformer that may be kicking around your scrap box is all you need to read ac amperage. The ordinary VOM (volt-ohmmeter) or VTVM (vacuum tube voltmeter) usually has a dozen or so scales ranging in ohms, volts, and dc amps, but it won't read ac current! This is a measurement most meters can't handle, and yet it is very important in many radio or appliance service jobs and on the electronic design bench.

The "Mini-Amp" pickup coil, made of a transformer (Fig. 8) is similar in principle to the clamp-on ammeters commonly used by electricians. The measuring head couples to the line by induction, so you can read the ac amperage consumed by a motor or appliance without having to cut into the power wire! Any ordinary ammeter has to be wired right into the circuit in series with the appliance *every time* you want to take a reading.

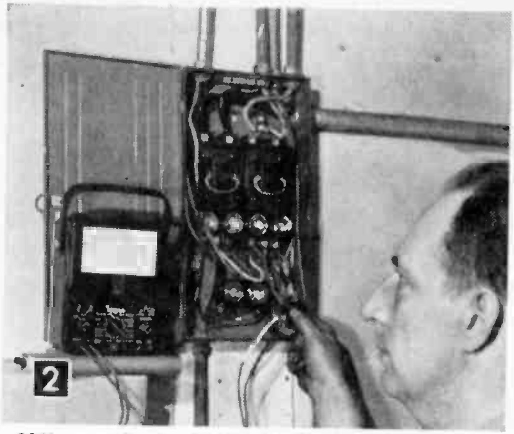
There are two ways to build the probe head. The split core magnet can be used directly to read large currents from 1 to 25 amps ac. The voltage induced in the transformer winding is proportional to the current, so you simply connect the transformer to your ac voltmeter, and read on a calibrated scale (Fig. 2). A more sensitive ac current meter can be built (Fig. 1) for less than $5.00. Calibrated properly, it will perform as well as instruments costing $100 or more. Depending on the quality of your VOM, sensitivity can extend down as far as the microamp range and up to heavy appliance currents as high as 25 amperes and more.

Altering the Transformer is your first step. No specific transformer is listed since you can use any audio output transformer that has E-type core construction similar to the one shown in Fig. 8. Such transformers are common in radios and amplifiers. Dismantle by bending back the transformer cover tabs as in Fig. 8. Next remove the two retainers with long nose pliers. Remove the coil and place it over one of the side legs of the transformer core (Fig. 8).

Replace the frame by bending one of the mounting tabs straight and pushing it over the core and through the transformer coil. Finally, remove the primary leads of the transformer (usually heavier solid wires). The transformer modification is now complete.

If you are building the simplified model (Fig. 2) solder two test cord leads to the secondary windings and solder the plugs, PLI and PL2, to the other ends. This finishes the construction of version one.

The more sensitive version of the pickup coil uses the same transformer and a printed circuit amplifier. Mount the transformer so

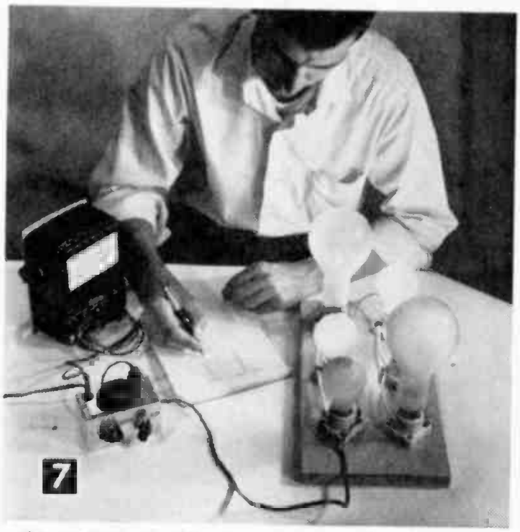


S&M consultant, Erving Edell checked out this method of reading power consumed in home circuits. It was easy to trace circuits, in any part of the building. The VOM is far more sensitive than the usual electrician's instrument and even a 25 watt test lamp added to an existing amperage on the dial was clearly seen on the meter's calibrated scale.

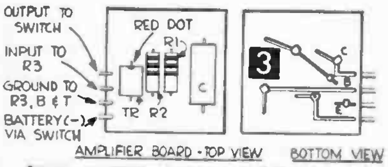
that the core piece fits snugly against the side of the case. If necessary shim the fit with thin strips of wood. Mount all other parts (Fig. 9) except the amplifier chassis. Wire in the wall receptacle, splitting the two-conductor line core, and running only one of the wires through the gap in the transformer core. Then wire the circuit-board amplifier according to Fig. 3.

Insulate circuit board with electrical tape and wire it into the circuit under the switch as in Fig. 9. Complete construction by using the grounded side of R3 as a common terminal.

Calibration. Before using either unit, a conversion table or tape-on scale must be made for the VOM or VTVM. There are two ways to make this calibration. Several known currents must be sent through Mini-Amp and the output voltages recorded. These currents can be obtained by placing known resistors in series with the line. Knowing the line voltage, the current is given by Ohm's Law as the voltage divided by the resistance. In using this method be sure to use a resistor with a high power rating. If you have a variable transformer, the entire process can be done with one resistor. Simply change the voltage by step-wise amounts and calculate the current at each point. Different size light bulbs can also be used with slightly less accuracy. The current through them is found by dividing their power rating by the line voltage. Current ratings appear in catalogs available from the lamp manufacturers.



This method of calibrating ammeters should be used only if you have no power resistor and variable transformer. Lamp wattages in various combinations will give you an accurate enough reading to plot a scale. Accuracy will be within 5 percent, provided that you keep your incoming line voltage steady.



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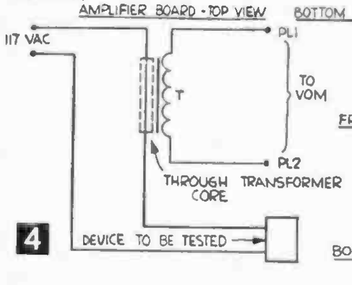

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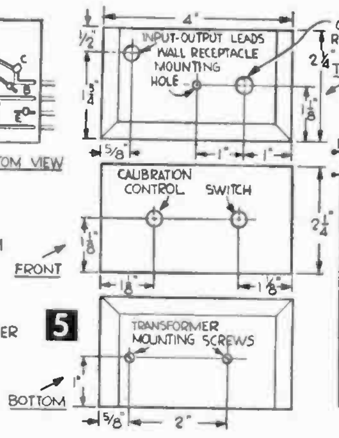

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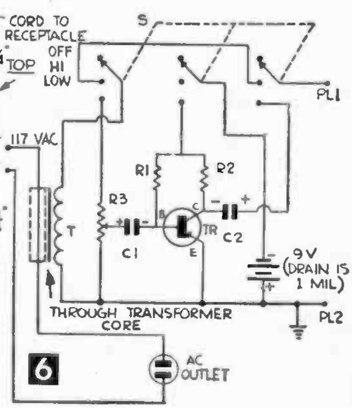

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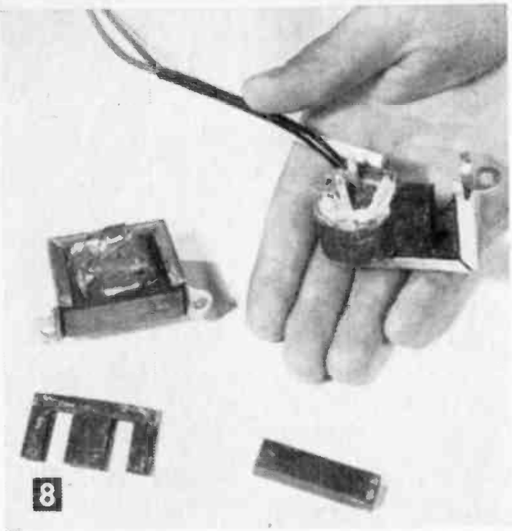
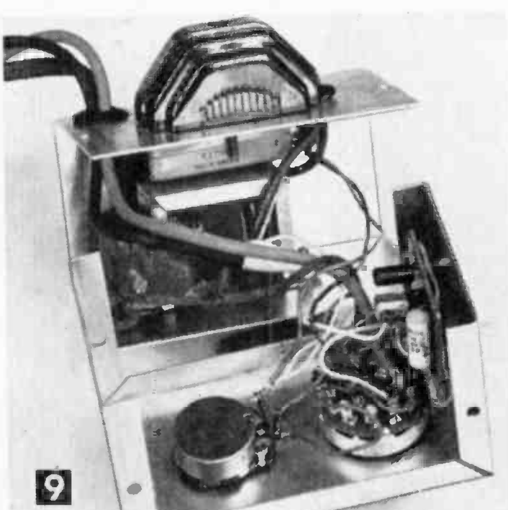


The completed pickup fits in the palm of the hand. To read amperes, you pass the conducting wire through the open side of the transformer. Top left is transformer (common in radios) before alteration.

Calibrate the high scale first. Put the selector switch in the "HI" position and set the VTVM or VOM to the lowest ac voltage range. Send increasing known currents through Mini-Amp and record the position on the voltmeter scale for each one. If a higher current scale is desired, turn the VTVM or VOM to the next higher ac voltage range and calibrate it in a similar manner.

To calibrate the low range, select a value



Inside view shows Mini-Amp chassis. Device to be tested plugs directly into receptacle on top. Power line (arrow) feeds through opening in transformer. Transformer secondary winding output is amplified and feeds to test leads. R3 is common terminal.

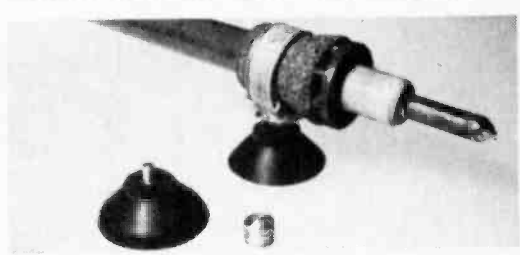
MATERIALS LIST—MINI-AMP

Amt. Req.	Size and Description
	Simplified model for higher currents
1	modified audio output transformer of your choice (see text)
1 or 2	plug(s) to fit voltmeter
	Amplifier model for any current range
1	5 mfd. 15 volt miniature capacitor, Cornell Dubilier 405 (Allied #18L159) C2
1	9 volt battery (Burgess 2U6 or equiv.)
1	5 mfd. 6 volt miniature capacitor, Mallory TT6X5 (Allied #18L769) C1
1	680K ½ watt resistor
1	10K ½ watt resistor
1	10K carbon potentiometer linear taper, IRC Q11-116 (Allied #30M306)
1	4 pole, 3 position, non-shorting rotary switch, Mallory 3243J (Allied #34B357)
1	CK722 transistor
1	aluminum case, Bud Minibox CU-3003A (Allied #80P363)
1	modified audio output transformer of your choice (see text)
1	battery connector, Cinch-Jones Type 5D (Allied #54J037)
1 or 2	plug(s) to fit voltmeter
1	wall power receptacle (baseboard mounting type)

of full scale current from 50 milliamps to 10 amps. With the VTVM or VOM set on the lowest scale, Mini-Amp in the "LO" position, and the selected current flowing through Mini-Amp, adjust the calibration control until the voltmeter reads full scale. Mark this setting of the calibration control with a piece of tape. Calibrate the remainder of the scale in exactly the same manner as the high scale.

The simplified Mini-Amp is also calibrated in the same manner as the high scale of version one, only in this case one lead of the load must be placed in the opening of the core, and the core piece placed over it to close the gap. A more permanent arrangement can be made if an extension cord is split, and one of the wires is run through the core with the core piece fastened permanently in place. Then the device to be tested can be simply plugged into the extension cord. You can calibrate as many different scales as you need by simply employing a different setting of the calibration control for each one.

Suction Fastener for Soldering Pencil



• A rubber suction cup attached to your soldering pencil's handle by means of a cable clamp comes in mighty handy at times. For example the pencil can be suction-fastened to any smooth tool or toolbox or other object for difficult jobs requiring more than two hands. Or it could be fastened to the side of a chassis when standing idle while building or servicing.—John A. Comstock.

DX America

Maybe you've monitored five continents, logged 100 countries, verified stations on the other side of the world, but what about our own United States?

By C. M. STANBURY II

ONE of the best things about DXing America is that you can start right in, using any ordinary AM radio you may have around the house. At night, find a place where you will disturb other members of the household the least, plug in, and get set to listen.

Tune away from local stations, push the volume up, and look for a weak signal: you will soon have your first "logging." With just a simple receiver, especially after midnight, you will be able to log 50-*kw* clear channel stations (see WHITE'S RADIO LOG, page 159) up to 1000 miles away. The better your receiver, of course, the more you will hear.

One improvement you should make, if you can, is the addition of an outdoor antenna, as long and as high as possible. Most receivers are provided with means for attaching such an addition: if yours is not, simply connect the antenna to the terminal of the built-in loop with a .05-mfd. capacitor. If the terminal is difficult to locate, any competent repairman can help you. Make sure the bare antenna wire is not grounded against a metal window frame or tree limbs.

If you live in an apartment and cannot erect an outdoor antenna, the copper pipes of a heating system make an excellent substitute. Even a piece of copper screening in a window helps.

When and What. At sunset, and again around sunrise, numerous daytime stations can be heard as they sign off and on again. This type of listening is not easy, as two or three stations are often heard simultaneously, but careful monitoring can produce a bagful of calls logged. It just takes practice.

During the evening, distant U. S. reception is usually limited to clear channel broadcasters and a few regional outlets. (A regional station is one that operates with 1 or 5 *kw* at night.) The clear channel powerhouses are excellent targets for the beginner, as almost all verify, and they are good sources of news.

From midnight until 5 a.m., DX is possible on almost any channel, even the "graveyard" spots—1230, 1240, 1340, 1400, 1450, and 1490 *kc*—where a number of low-powered stations transmit. DX will not be possible, of course, on frequencies where local and semi-local stations operate all night. In recent years all-night stations have become the broadcast band DXer's primary problem; coast-to-coast reception is still possible, however, and includes daytime stations that are permitted to test during the night.

Targets. Broadcast band DXers have many different goals. Some try to verify all 50 states (or often just the 48, due to the great distances involved in shooting for Alaska and Hawaii); Eastern listeners wanting to log the Pacific coast, by the way, should start with KFI, Los Angeles, on 640 *kc*.

Other DXers are more interested in logging and obtaining QSL's from 500-, 1000-, or 1500-watt stations—and on up the ladder. Maybe you'll want to try for at least one station on each frequency.

Another interesting target is on-the-spot news coverage. This includes such things as state primaries of national interest, like Gen. Edwin A. Walker's try for the governorship of Texas. The Dallas-Fort Worth clear channel transmitter on 820 *kc* (shared by WBAP and WFAA) carried a Walker speech live, then later the vote count as returns came in.

During local emergencies stations that normally sign off around midnight may operate all night; WCOV, Montgomery, Ala., on 1170 *kc*, was widely received during the Ku Klux Klan integration riot. If the emergency is serious enough, such as flood or hurricane, even daytime stations broadcast continuously.

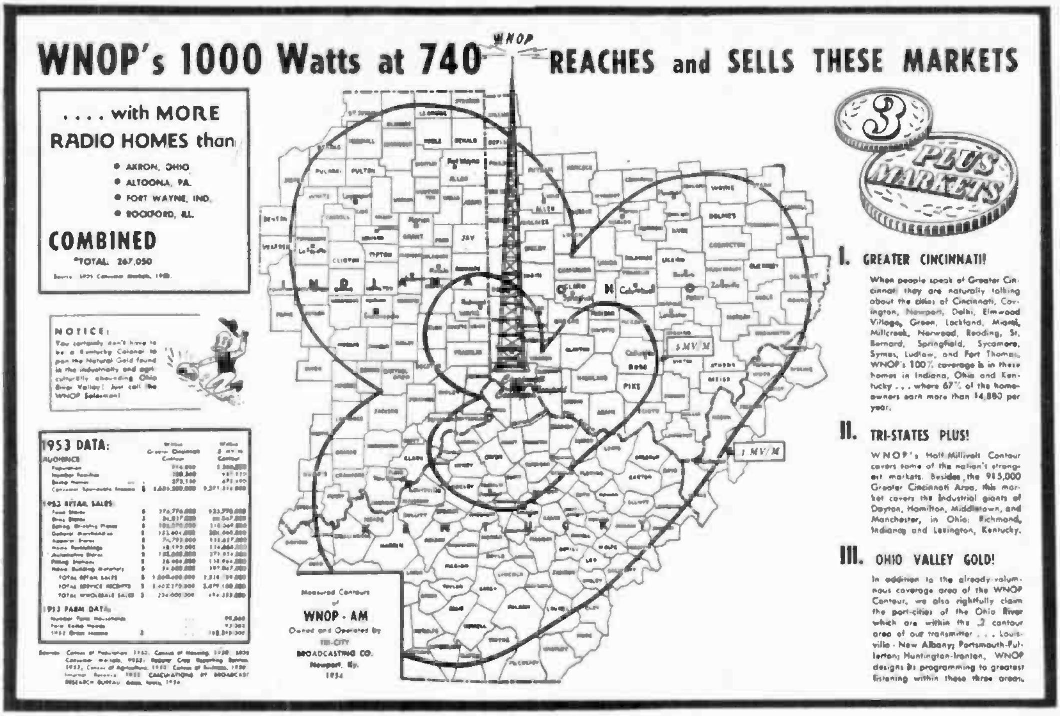
On the lighter side, distance listening is a boon to the sports fan. Clear channel stations often carry baseball, football, and basketball games of national interest.

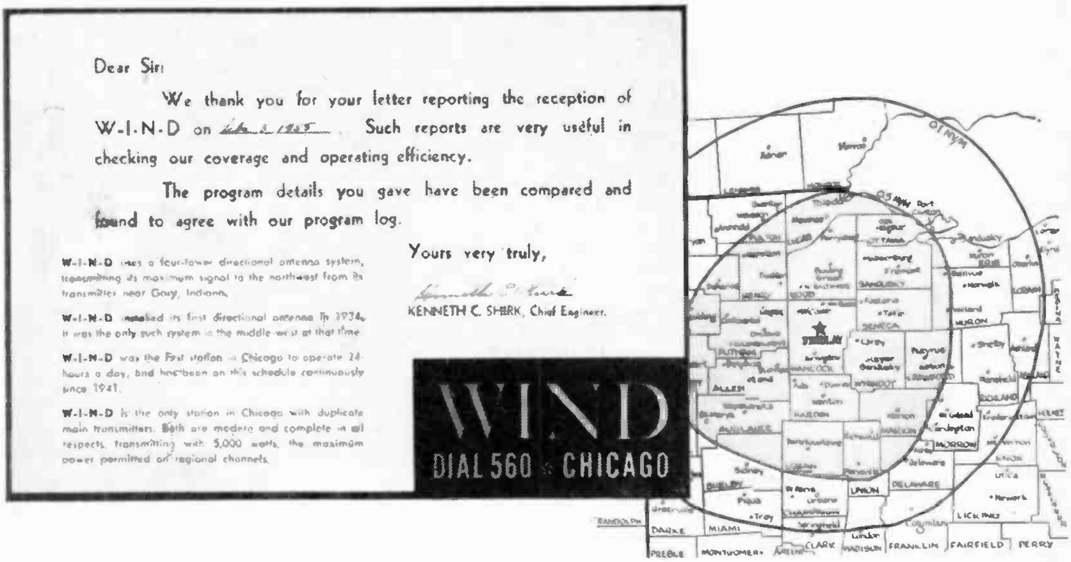
The procedure for BCB news hunting is quite direct. Get to know what locations can be heard when, and which channels are clearest during the early morning hours. Then, when something is up, determine from WHITE'S RADIO LOG what stations are in the area, and look for those most likely to be heard.

QSL Hunting. While broadcast band stations do not answer reception reports quite as readily as their short wave cousins, at least 75% do verify in one way or another.

It is important to remember that AM stations, with the exception of some clear channel broadcasters, derive no revenue from the distant listener, and therefore verify only out of courtesy. Never *demand* a QSL: politely request it, and be sure your report is accompanied by return postage.

Although reports are usually answered by





The majority of AM broadcasters verify in one way or another, and some QSL's are very elaborate, like these maps from WNOP, 740 kc, Newport, Ky., and WFIN, 1330 kc, Findlay, Ohio. The postcard from WIND, 560 kc, Chicago, measures 7x10 in.

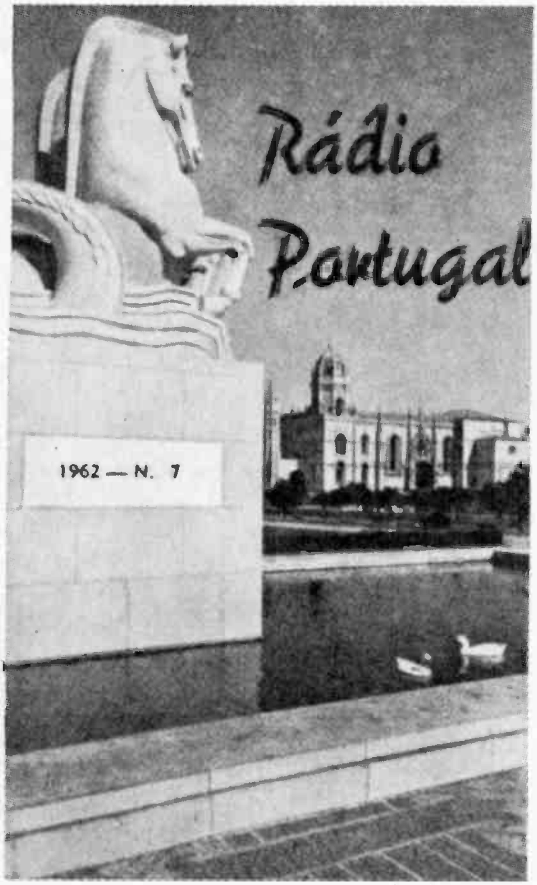
the chief engineer of the station, and it is a good idea to address them to him, write in plain English, so that anyone at the station can understand and answer it. Do not use QRM to indicate interference or QRN instead of static.

Describe the program heard, and try to include the names of a few advertisers and the times of their spots (impossible, of course, when a test is logged). Describe your equipment and pinpoint your location—unless you live in a large city whose location is well known. The more distant the reception, the better your chance for a reply.

Three-Way Listening Dynamite

Tune in on the most controversial of all foreign broadcasters

By C. M. STANBURY II



Radio Portugal's monthly program guide, sent free to those who report.

AMONG the most outspoken short wave stations on the air today are Radio Cairo, the Voice of the West from Lisbon, and Radio Katanga. SWL's in the U. S. cannot agree as to whether each is ally or enemy, hero or villain. The reasons for the confusion are easily come by.

Radio Cairo. A few years ago this one followed the Communist line very closely; since then, however, the English language broadcasts at least have shifted strongly toward the neutral center. On June 22, 1962, for example, during Radio Cairo's English news beamed to West Africa (on 17690 *kc* at 1420 EST), there were numerous quotes from Secretary of State Dean Rusk, plus a long item on British fears over a Chinese Communist arms build-up.

On July 12, the English news to Europe (11915 *kc*, 1645 EST) played up the withdrawal of U. S. troops from Thailand. Needless to say, Moscow and company did everything possible to minimize this.

On the other side of the coin, every day at 1200 EST Cairo switches a transmitter from 17920 to 17895 *kc* and calls itself Radio Free Africa, a simulated clandestine station. Its broadcasts on this frequency are designed to stir up rebellion in such places as Kenya and Rhodesia—a legitimate cause, perhaps—as well as the Congo: and for the last named, Cairo's chief selling point is Patrice Lumumba, a communist martyr seldom mentioned by moderates and rightists in Africa. Maybe Radio Cairo hasn't reformed after all!

Before you jump to that conclusion, however, note that Radio Moscow is on the same channel, also beaming to Africa, throughout the entire period of Radio Free Africa operation (in English until 1230 EST). In effect, Moscow is jamming RFA: you figure it out.

The Voice of the West is a special English language transmission for North America by the Portuguese National Radio (Emissora Nacional). EN, as it is known in SWL circles, probably uses more names than any other station: for English to Africa and Asia it becomes Radio Lisbon, and its monthly program guide bears the title Radio Portugal (Fig. 1).

On March 7, 1962, shortly after inauguration of this North American service, the Voice of the West signed on with a musical "V" for victory, launched an attack against the new Italian government, and then turned its guns on President Kennedy, finishing up with this: "There are some people who believe Kennedy is holding off nuclear tests until his family—Jackie, Robert, and Ted—are safely at home."

The above is a typical sample. Even the use of the "V" for victory is controversial: this was the rallying call transmitted by Allied stations during World War II. Although Portugal did lease bases in the Azores to the U. S.—a year and a half before the end of the war—she remained neutral throughout the conflict.

Claims are made on VOW for Lisbon's nonracialism, which is supposed to set it apart from other fascist nations—such as South Africa. On March 5, however, Africa was described as a "racial hodgepodge" which, if given independence, would return to its "hazy origins."

Such sentiments have made the Voice popular with some American right wing groups, and its stock is boosted with them by statements like "Democratic governments have been proven incapable of upholding the might of great empires," and that there are Communist advisors around the American Secretary of Defense. However, on May 25, in answer to a listener's question, VOW described Portugal's all-encompassing system of state medicine, considered by these same rightists to be the mark of a socialist society.

Broadcasts are beamed to North America every night at 2100 and 2245 EST on 6025 and 6185 *kc*; if neither frequency is heard, try 9740, an alternate channel. Of the three stations discussed here, Lisbon is by far the most easily received.

The Voice of the West is anxious for reports, and any listener who submits one is likely to have a song dedicated to him; this is partly to give the impression that the broadcasts have a large number of supporters in the U. S.

One veteran SWL describes it this way: "They send me two or three program schedules every month, enclosing reception report forms which I do send back once a month as a matter of courtesy . . . don't listen too much to them, not in love with their comments." This listener had a selection dedicated to him on June 6, after being thanked over the air for his "letter."

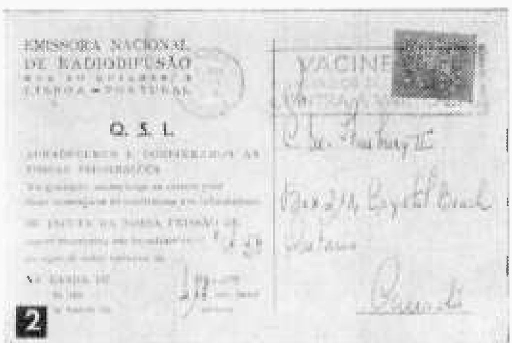
Radio Katanga. During the first week of July, 1962, the Elisabethville government's powerful international transmitter returned to the air, after a silence of more than six months—it had been destroyed by the UN force on December 6, 1961. Radio Katanga is the station which on May 7, 1961, while supposedly representing a legitimate African government, emphasized that white South African troops were being employed against colored UN forces: five days later, it was quoting in detail UN charges against the racial policies of South Africa and Portugal.

The resurrected RK—which still quotes the South African government—is even less predictable. On July 19, 1962, it quoted a long statement by the UN representative in Elisabethville which concluded with an accusation against Radio Katanga itself, charging it with following one line on its European broadcasts and another—against integration into the Congo—on its African service. RK made no attempt to deny the charge: either it is the most honest broadcasting organization in the world—or is trying to convince its listeners of this—or there is a civil war going on right inside the station.

Without a doubt, Radio Katanga offers the most surprising listening within our torrid triangle. It can be heard on 11870 *kc*, with news in English at 130 and 1520 EST.

TABLE A—WHERE AND WHEN

KC/S	Band	Station	English At.........(EST)
6025	49M	VOICE OF THE WEST	2100-2145 & 2245-2300
6185		VOICE OF THE WEST	2100-2145 & 2245-2300
	31M		
9740		VOICE OF THE WEST	2100-2145 & 2245-2300 (alternate freq.)
11870		RADIO KATANGA	0130 & 1520
11915	25M	RADIO LISBON	1315-1430 (to Africa)
		RADIO CAIRO	1630-1730 (to Europe)
15125		RADIO LISBON	1315-1430 (alternate freq. to Africa)
	19M		
17690		RADIO CAIRO	1415-1500
17895		RADIO FREE AFRICA	
	16M	RADIO LISBON	1315-1430 (to Africa)
17920		RADIO CAIRO	



QSL card from Emissora Nacional (alias Radio Portugal, Radio Lisbon, and the Voice of the West).

1

When you buy that communications receiver, be sure to get a set of headphones for it. By excluding outside noises, they make for better listening. They also make wee-hour DXing more acceptable to the other members of your family.

Photos courtesy
Allied Radio Corp., Chicago

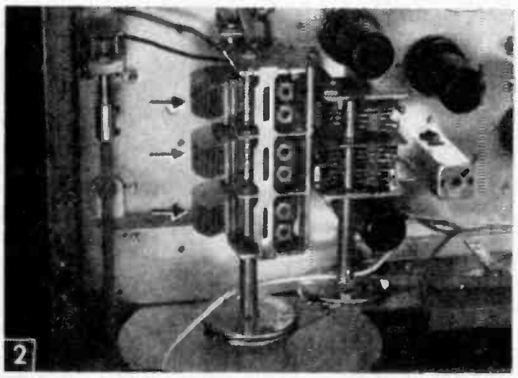
Selecting the Right Short Wave Receiver

By JERRY SKELLY

SHORT wave listening can be one of the most enjoyable and informative of hobbies, but only if you have adequate equipment—a receiver that covers the right bands, has the sensitivity to pull in weak signals, and can separate stations that are close together on the dial.

By learning what makes a receiver a top performer, you can compare the sets on the market and select the one you want. Keep in mind that the purchase of a communications receiver is something of an investment. A good one depreciates slowly and after four or five years may still be worth half its cost. So resist any temptation to buy off-brands or marginal-performance sets merely because they are low-cost. Stick with widely known names such as those in the table on page 64.

In the table we've listed 12 already-assembled and four kit-type receivers that, together, account for most of the communications receivers sold today. All of them are superheterodynes and use a time-proved circuit that converts the signal frequency to an "intermediate frequency" where large amounts of stable amplification can be applied.

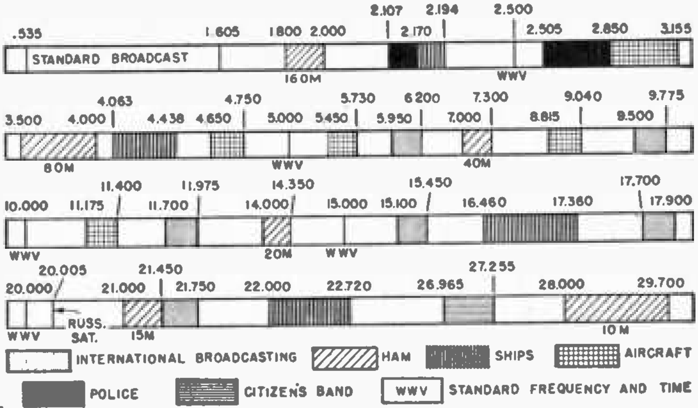


2

To determine how many r.f. stages a set has, look inside and count the gangs on the tuning capacitor. Set shown here has three gangs (arrows), which means there is one r.f. stage. Just two gangs means no r.f. stage, while a four-gang capacitor indicates two r.f. stages.

We'll explain each of the performance features listed in the table, so that you can see how each contributes to the set's performance. And you can use the same information to judge sets that *aren't* in the table, such as models that are no longer built but may still be found in some stores.

Many of the performance features are given in manufacturers' brochures or mail order catalogs, which means you can get a good idea as to a set's quality even before going to a store and trying it out.



3

Drawing shows *all* the broadcast bands and what can be heard on them. A receiver with general coverage (such as in Fig. 4A) will bring in all of these. Receivers with non-continuous dials, as in Fig. 4C, will pick up only some.

How Many Tubes? The first thing to check is the number of tubes. In general, the more tubes, the better the receiver—and the higher the cost. The number of tubes reflects the number of amplifying stages and is a rough index of how much "guts" a set has.

Get the Right Bands. If you want to use your set for all types of listening—news broadcasts from foreign countries, music, radio amateurs or "hams", police calls, aircraft, or Russian satellites—you should steer clear of receivers that cover only the radio amateur bands. Instead you will want a set that, like the sets in the table, has general coverage and will bring in *all* the bands (Fig. 3, 4).

An R.F. Stage? At least one radio frequency stage is desirable, because it gives the received signal some preamplification before it is subjected to the relatively noisy process of conversion to the intermediate frequency of the superhet. This contributes to the set's sensitivity by helping boost the signal *over* the noise.

An r.f stage also reduces annoying image response. (A strong signal may be received at two different points on the dial, one of them the correct frequency and the other, the "image", incorrect. Receivers with good image rejection attenuate the image below hearing level. You can easily determine how many r.f. stages a receiver has, even when it doesn't tell you in the catalog, by counting the number of gangs, or sections, on the tuning capacitors (Fig. 2).

At Least Two I.F. Stages? Intermediate frequency amplifier stages (don't confuse them with the r.f. stages) provide most of a superhet's sensitivity and much of its selectivity—or the ability to separate stations.

The i.f. amplifiers operate at a lower frequency than the signal (usually at 455 *kc*), and at that frequency tubes and transformers can be designed to give tremendous amounts of stable amplification.

The receiver you buy should have at least two i.f. stages. One stage is barely adequate, and will mean low sensitivity. You can determine how many i.f. stages a set has by checking the set's specifications in a catalog or by looking at its schematic diagram (Fig. 5).

Sensitivity. A sensitive receiver pulls in the weaker signals clearly and is a great help in DXing—trying to pick up distant signals.

Receiver manufacturers do not publish sensitivity ratings, and you would have to be an electronics engineer to figure them out yourself, but the number of i.f. and r.f. stages a set has will give you a rough idea of sensitivity. You'll note from the table that we have evaluated the sets for sensitivity and rated each as either Fair, Good or Excellent.

Selectivity is also difficult to determine unless you're a radio expert. Besides separating close-together stations, it aids the reception of weak signals close to strong ones and improves the ratio of signal to noise. As with sensitivity, look for i.f. stages; we have rated each set in the table as Fair, Good or Excellent in selectivity.

BFO for Code and Satellites. If you want to listen for Morse code (CW) or signals from satellites, your set should have a beat frequency oscillator (BFO). Normally, code signals are poorly audible. The BFO is a special circuit which—when you turn it on—"beats" with the code to give an easy-to-read musical pitch to the dots and dashes.

Receivers with BFO will have markings on the front panels such as "Code," "CW," "Pitch Control" or "BFO Pitch."

Other Valuable Features include an "S" meter, a noise limiter, an antenna trimmer, a crystal calibrator and a phono input:

Performance Guide to Communications Receivers

Manufacturer Model No.	Price	Number of Tubes (5)	Frequency Range in. Mcs.	R. F. Stages	I. F. Stages	Sensitivity	Selectivity	S Meter	Antenna Trimmer	Internal Crystal Calibrator
National NC60	59.95	5	.540-30	0	1	F	F	No	No	No
Hallicrafters S108	139.95	8	.540-34	1	2	G	F	No	No	No
Hallicrafters SX110	169.95 + 12.95 spkr	8	.540-34	1	2	G	E	Yes	Yes	No
Hammarlund HQ100AC	199.00 + 14.95 spkr	10	.540-30	1	2	E	E	Yes	Yes	15.95 extra
Hallicrafters (4) SX62A	395.00 + 19.95 spkr	16	.540-108	2	3	E	E	No	No	No
Heath-Kit AR-3	29.95 (1)	5	.550-30	0	1	F	F	No	Yes	No
Knight-Kit R-55	59.95	6	.540-36	0	2	G	F	No	Yes	No
Knight-Kit R-100	99.95	9	.540-30	1	2	E	E	12.95 extra	Yes	No
Heath-Kit GC-1A	109.95 (2)	10 Tr. (3)	.550-32	1	3	E	G-E	Yes	Yes	No
Lafayette HE-30	wired — 99.95 kit — 79.95	9		1	2			Yes	Yes	No
Lafayette HE-10	wired — 79.95 kit — 64.50	9		1	2			Yes	No	No

Note (1): Cabinet $4.95 extra.
Note (2): Supplied with batteries. A-C power supply is $9.95 extra.
Note (3): Uses 10 transistors and 6 semiconductor diodes.
Note (4): The SX62A has a hi-fi audio system. Also covers the standard FM band.
Note (5): Includes rectifiers and voltage regulator tubes.

All models have BFO's, and all have noise limiters except NC60. All models are current, made by standard brand manufacturers with national distribution. Price is subject to change. Excise tax is included; but shipping charges and sales tax, if any, must be added.

• The "S" meter occupies a distinctive place on the front panel (if the set has such a meter) and is calibrated from 1 to 9; in some cases, the meter will be marked "Carrier Level." The calibrations indicate the strength of the received signal and are helpful for on-the-nose tuning, since signal strength is greatest when tuning is correct. Not an absolute necessity for average listening, this feature is found on only the more expensive receivers.

• Noise limiter. This circuit minimizes the effect of extraneous electrical noises. If the receiver has one, a front panel switch will be marked "Noise Limiter" or "ANL" (for Automatic Noise Limiter).

• Antenna trimmer. This is another front panel control which almost always is marked either "Antenna" or "Antenna Trimmer." Important to top performance, it tunes the antenna and the receiver input circuit together for better signal energy transfer. (You will have difficulty getting clear reception on distant stations without a good out-door antenna. Weaker signals may represent an energy of less than a few millionths of a millionth of a watt. Give your receiver a break by collecting as much as possible of this energy in a good antenna before asking the receiver to go to work on it.)

• Crystal calibrator. Inevitable variations in mass-produced parts, together with changes in temperatures, humidity and line voltage, produce inaccuracies in the tuning dial scale. A good way to overcome this is by use of a precision frequency source and its harmonics as dial calibration reference points. The receiver can then be adjusted to bring in stations at the correct spot on the dial. Receivers that provide internally for a crystal calibrator have a "Calibrate" marking on a front panel switch.

• Phono input. This is an unessential extra that permits the use of the receiver's amplifier and speaker with accessory record changers, FM tuners and such (Fig. 6).

Finding the Right Dealer. You can check out a receiver for the preceding features merely by looking at a catalog or brochure.

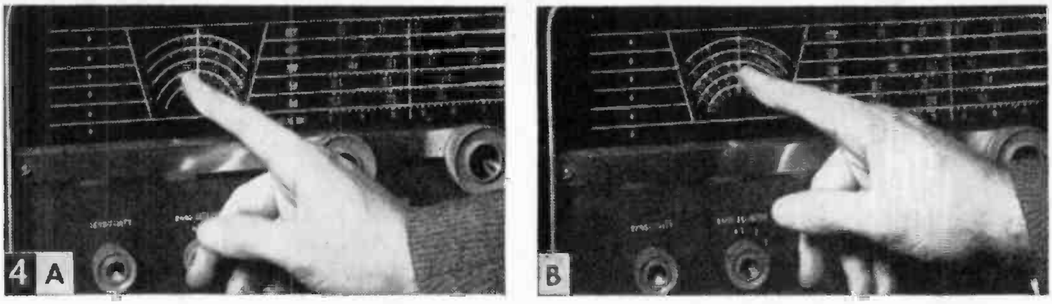
But you should also put it through its paces to see how it performs. This can be done only by going to a dealer (or by purchasing a set through a mail order house with a money-back guarantee if you're not satisfied).

It's important to select your dealer carefully. Check your classified telephone directory for names of radio parts jobbers or ask a local radio amateur where he shops.

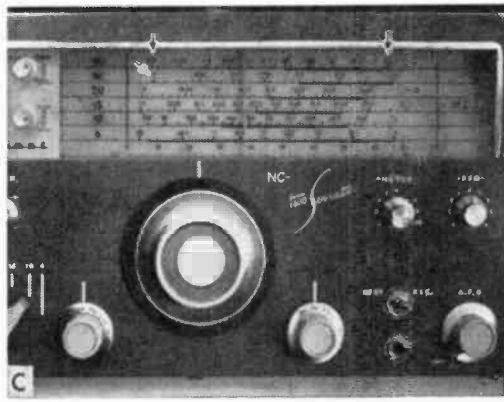
Be wary of department stores and jobbers who serve radio-TV servicemen exclusively, because your dealer should have a service department to back up a new set's guarantee. He should also have a wide selection of sets.

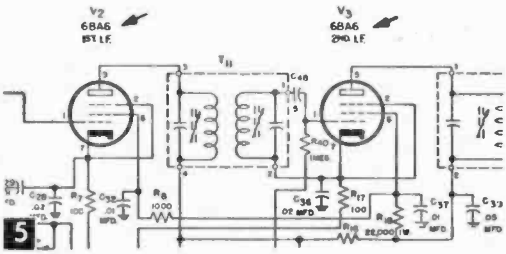
Through the Paces. Once you are ready to give a receiver its on-the-air test, turn it to short wave broadcast and amateur signals. These should be heard on one band or another at any time of the day or night. If you can't hear *any* signals, try another set.

Next, rotate the band selector switch. Some

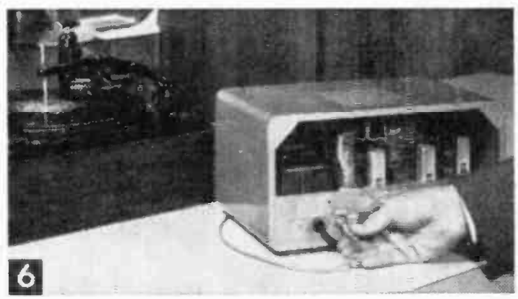


Here's how you can easily tell if a set has general coverage, will pick up all the bands shown in Fig. 3. In 4A, finger points to 4.5 megacycles, which is at extreme left of the *second* band on the dial. In 4B, finger points to 4.6 megacycles, which is on extreme right of the *third* band; thus there is no gap between the bands. In 4C, though, note that the top band runs from 3.5 to 4.0, while the band below it picks up at 7.0. This receiver covers only the ham bands.





It's easy to tell how many i.f. stages a communications receiver has. Just take a close look at its schematic diagram. The stages (arrows) will be clearly labeled as shown in this section of a typical schematic. This set has two i.f. stages.



Receivers with a phonograph input will have the word "Phono" on a front panel switch position, but the jack will be on back of the set as shown here. Don't confuse the "Phono" jack with "Phones"—which designates the headphone jack as shown in Fig. 1.

signals or noise should be heard on all bands. No band should be 100% dead.

Now, after tuning in a station, rotate all the controls and throw all the switches—one by one—listening carefully as you do so. Each control or switch should have some audible effect on what you hear.

Potentiometer controls should not give scratchy sounds when they are turned. If one does, it probably is worn or defective.

Last, turn the tuning dials over their entire range. They should move easily with no noticeable slack motion or backlash.

What About Portables? If you don't need the portability that comes with a transistorized receiver, you probably would do well to avoid it and buy a regular tube set. The less expensive of the transistor models—those costing up to about $90—do not have the sensitivity of a comparable tube set.

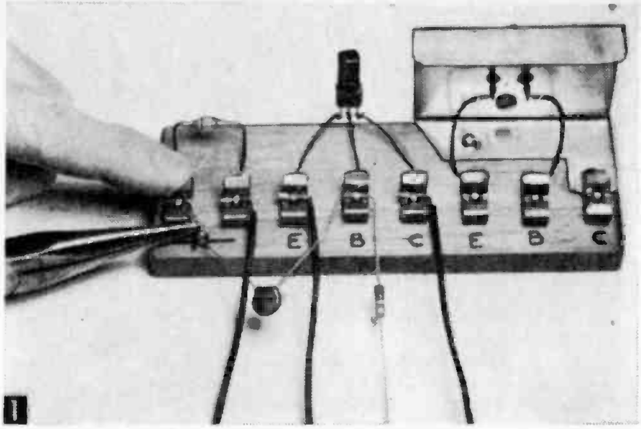
The more expensive transistor portables charge a high premium for the combination of portability and good performance—yet may lack many features desired by DXers.

Buy a Used Set? A used receiver may be a good buy, but only if it comes with the standard 90-day new set guarantee—in writing—covering parts and labor. Used sets should be purchased only from those jobbers who have service facilities and will give you an additional guarantee in writing—stating that you can get a full refund within 10 days if you are not satisfied with the set.

If you plan on buying a used receiver, you should look for the same features listed in the table, but be sure to give it a real wring-out during the on-the-air check. If possible, take an experienced radio amateur along when you go to buy the set. He'll probably be able to assess it for you pretty well.

Experimenter's Transistor Breadboard

By ART TRAUFFER



1

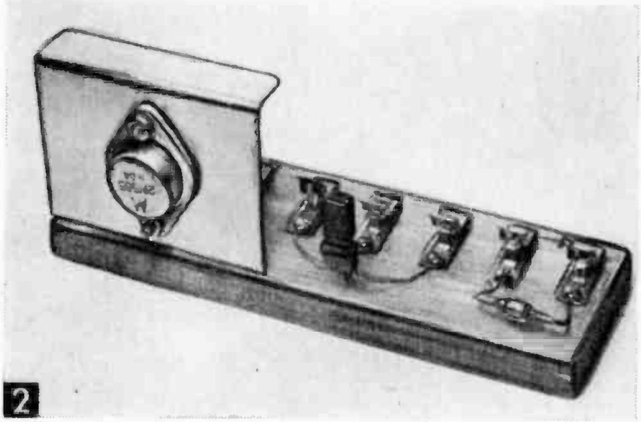
Front view shows breadboard set up as crystal detector with one stage of audio. Rear view shows power transistor bolted directly to copper heat sink mount. Engrave the symbols with a ball point pen.

TRANSISTORS and small diodes are fragile and easily ruined by excessive handling. With this miniature breadboard you can instantly test circuits in any combination without soldering and unsoldering leads.

The power transistor is mounted on a copper bracket which doubles as a heat sink, and the clips are marked so you can't make a mistake in your connections. Size and placement of the parts are not critical. For the base use a 6 x 2 x ½-in. piece of wood. Mount the clips with ⅜-in. *rh* wood screws. Solder a general purpose diode (Sylvania 1N34A or equal) directly to a pair of the clips. Solder three short wire leads to the terminals of a three transistor socket, and run these leads to the three Fahnestock clips.

Bend the power-transistor bracket from 1/32-in. sheet copper. The "C" clip goes over the long ear of the bracket. Mount the power transistor (Motorola 2N555, RCA 2N301 etc.) directly to the copper surface, using two 6/32 x ⅜-in. *rh* machine screws and nuts. Do not solder directly to the emitter and base pins on the power transistor. Use lugs removed from a miniature tube socket.

If you work with more complex circuits, you'll find that several of these boards will be handier than one large breadboard.



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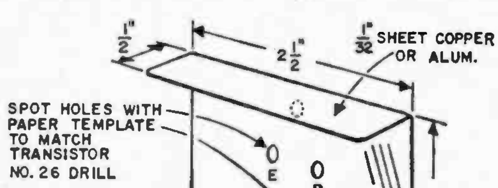

3

POWER TRANSISTOR MOUNT

MATERIALS LIST—
EXPERIMENTER'S TRANSISTOR BREADBOARD

Amt.	Size and Description
1	general-purpose germanium diode (Sylvania 1N34A, etc.)
1	general-purpose PNP transistor (Raytheon CK722, etc.)
1	AF power amplifier transistor (Motorola 2N555, RCA 2N301, etc.)
1	Raytheon CK722 transistor socket
2	terminal clips for power transistor
1	4 x 2½ x 1/32" sheet copper (heat sink for power transistor)
2	6-32 x ⅜" *rh* with hex nuts
8	¾ x 5/16" Fahnestock clips
9	round-head wood screws ⅜" long
1 pc	6 x 2 x ½" hardwood

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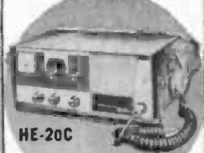

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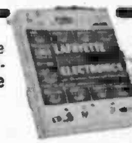

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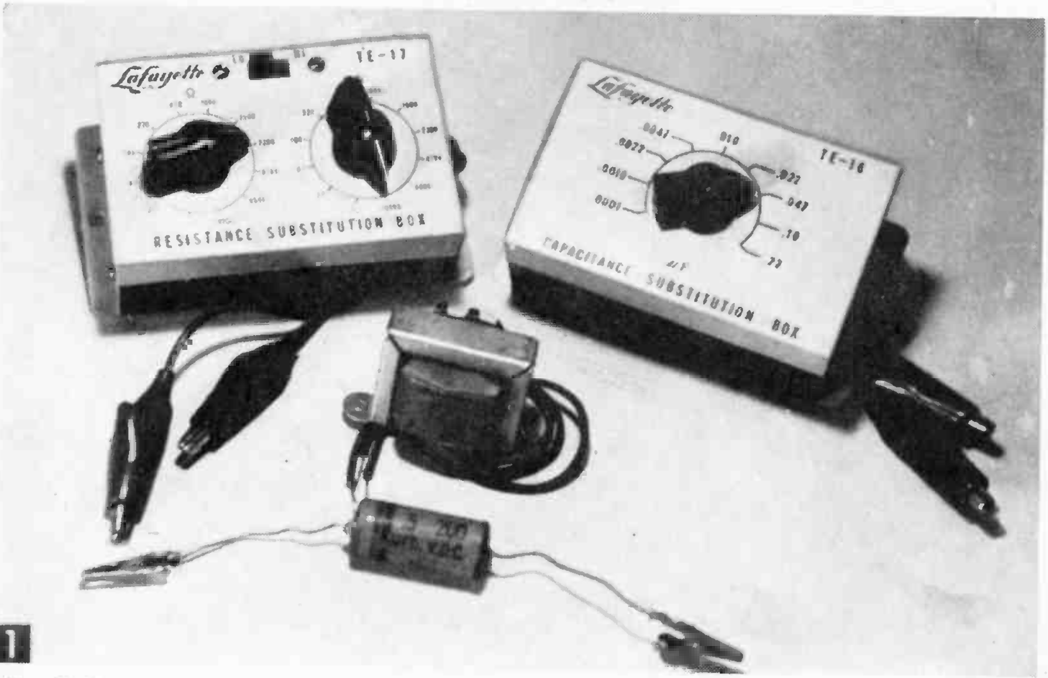
AC Experiments with Series Circuits

Why voltage, unlike that in dc, can often be much greater than the amount applied—10 tests you can make with simple, safe, and inexpensive equipment



1

These basic passive components plus a 6.3-volt transformer and an ac voltmeter are all that's needed for some challenging ac experiments.

By FORREST H. FRANTZ SR.

ALTERNATING current (ac) circuits are excitingly different from direct current (dc) circuits. The dc circuit situation with a steady voltage applied at a relatively long time after any switching has occurred, is influenced only by the circuit resistance. But in a circuit operated from an ac power source, capacitance and inductance also influence steady state conditions.

The sum of voltages across the elements in series ac circuits add up to a voltage greater than the applied voltage if inductance and/or capacitance are present. And that voltage can be many times the applied voltage if inductance and capacitance with proper value relationships exist in the circuit.

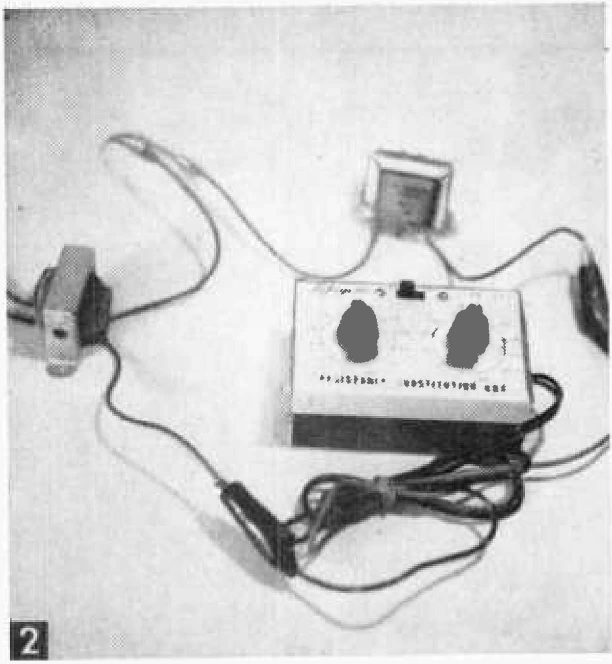
Equipment Used. You can conduct the experiments that follow with capacitance and resistance substitution boxes (available at most radio shops) or, if preferred, you can just as readily use loose capacitors and resistors.

For the inductance, we used an inexpensive universal output transformer with the secondary left open (no connections).

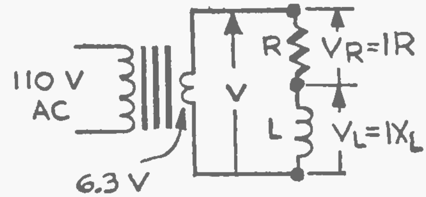
In addition to these components forming the *passive* elements of the series ac circuit (Fig. 1), you'll need a power source and ac voltmeter. Any 6.3-volt filament transformer can provide the power. It provides an exact frequency of 60 cycles since the power line frequency is well regulated.

The low voltage is preferable because it keeps the larger voltages which you'll encounter at resonance down to about 35 volts. If you were to use a 25-volt power supply, the voltage across the capacitor at resonance would be close to 150 volts! A transformer has the additional safety feature of isolating the circuit from the ac line and preventing accidental shock if you should become grounded in any way.

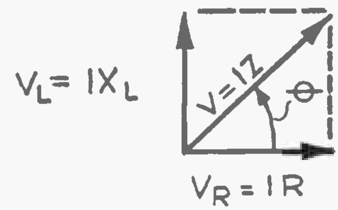
Many experimenters have their own voltmeter. I used a Heathkit MM-1. If you wish to buy one, you might check the catalogs of the mail order houses and kit companies for a meter to fit your needs and pocketbook. You should select a vacuum-tube voltmeter (VTVM) or a multimeter with an ac sensitivity of 5000 ohms per volt or better. You'll



Series R-L arrangement.



A CIRCUIT



B VECTOR DIAGRAM

have considerable error if you use a meter with only 1000-ohm per volt sensitivity.

Series Resistance: Inductance (R-L) Circuit

First connect the resistance substitution box and the inductance in series, using brown and blue leads, then connect the leads to the transformer 6.3-volt secondary as in Fig. 2A. Measure the voltage across the coil (IX_L—current times reactance) and the voltage across the resistor (IR—current times resistance) for R values of 1000, 2200, 4700, 6800, and 10,000 ohms. Record IX_L and IR.

You'll note that IX_L plus IR is greater than V (measure V) for most values of R. Why is this so? Can you deduce anything about ac circuits from your data?

PROJECT 1

Vector Diagrams. Here's a partial explanation: Current lags the induced voltage in an inductive circuit. The amount of lag is defined by a *phase* angle (Θ) and is 90° for a pure inductance. The phase angle in a resistance is 0°, so resistor current and voltage are in phase.

These relationships show up in a vector diagram, as in Fig. 2B. IR and IX_L are drawn to scale for a typical set of R and L values, with IX_L leading IR by 90°. Now the value of IX_L is the magnitude of the reactive voltage only and should be symbolized more properly as V_L. If the vector diagram is completed, the voltage V is the resultant. The angle between V and IR is the phase angle (Θ).

Now, draw the vector diagrams for the data you took previously, ignoring the measured value of V. You might, for example, let 1 in. equal one measured volt. Complete the diagrams to solve for V, then compare the values thus obtained with that of the measured V. You'll note that there's a difference. Why is this so? Write a short explanation as to why you may have obtained these seemingly erroneous answers, then put it aside for comparison with the explanation which will be given later.

PROJECT 2

Understanding Circuit Computations. The preceding project has probably alerted you to some of the possible computations for this circuit. First, the vector addition of V_L (which is IX_L) and V_R (which is IR) to obtain the resultant V (which is IZ as will be seen shortly), can be solved analytically. Units used are V, volts; Θ, degrees; I, amperes; X_L, ohms; R, ohms, and L, henries:

(1) $V = \sqrt{V_R^2 + V_L^2}$

(2) $\tan \Theta = V_L/V_R$

The fact is that

(3) $V_L = IX_L$

and

(4) $V_R = IR$

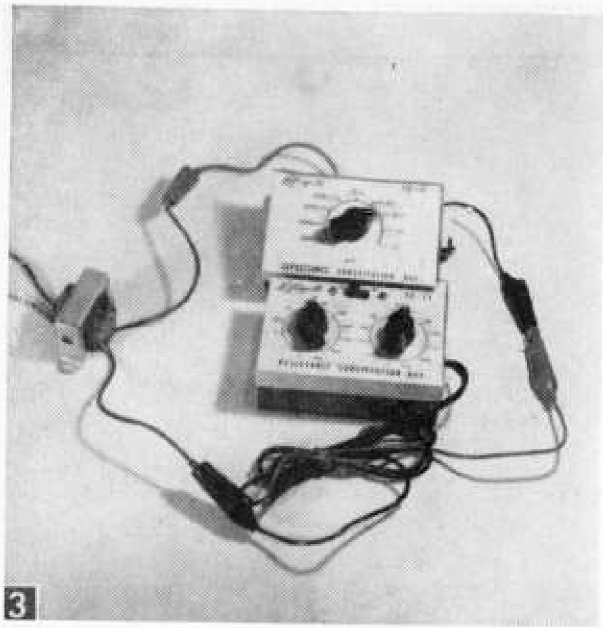
have already been mentioned. From this,

(5) $I = V_R/R$

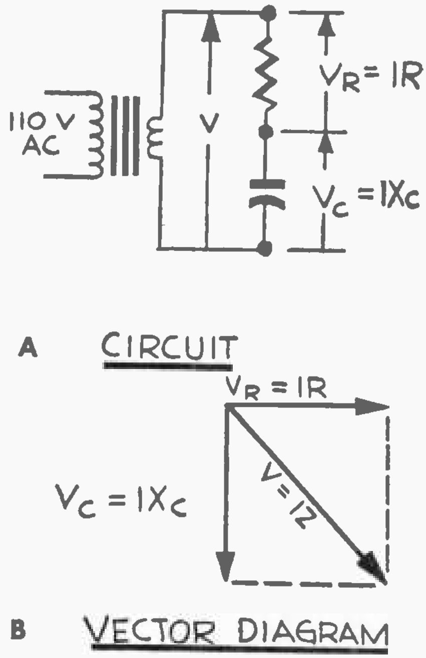
(6) $X_L = V_L/I$

Now, what is X_L? It is the inductive reactance of the coil. The inductive reactance is a function of the inductance of the coil and the frequency of the applied voltage.

(7) $X_L = 2\pi fL$



Series R-C arrangement.



For our experiment, the frequency f is 60 cycles. Therefore $2\pi f$ is 377 for our problems. I'll use 377 wherever $2\pi f$ is involved in most subsequent formulas and calculations and leave substitution of $2\pi f$ when a different frequency is to be used as a student responsibility. Then, for our case

(8) $X_L = 377L$, and

(9) $L = X_L/377$

Now what about this "Z" bit? Z is the impedance of the circuit in ohms. It is the vector sum of the resistance and the reactance. Hence,

(10) $Z = \sqrt{R^2 + XL^2}$, and

(11) $\tan \Theta = X_L/R$

Note that equations 1 and 2 are equations 10 and 11 with all terms multiplied by I. Hence,

(12) $V = IZ$, and

(13) $Z = V/I$

Has any of this explanation given you a clue as to why you got erroneous results in Project 1?

PROJECT 3

Examples of Circuit Computation. At this point, let's try an example. Take the data for the series circuit where R = 4700 ohms. I got values of $V_R = 4.2$, and $V_L = 3$. Applying the formulas presented in Project 2, and rounding off to two significant figures:

from	(1)	$V = \sqrt{4.2^2 + 3^2} = 5.2$ volts
from	(2)	$\tan \Theta = 3/4.2$, $\Theta = 35.6°$
from	(5)	$I = 4.2/4700 = .0009$ amp
from	(6)	$XL = 3/.0009 = 3300$ ohms
from	(9)	$L = 3300/377 = 8.8$ henries
from	(13)	$Z = 5.2/.0009 = 5800$ ohms
check	(10)	$Z = \sqrt{(4700)^2 + (3300)^2}$

The latter check equals 5700 ohms, which is adequate since we've been rounding off numbers. Why equations 10 and 13 check while measured V and computed V don't check will be explained in the next project.

At this point, perform the computations, using your data for R = 2200 ohms.

PROJECT 4

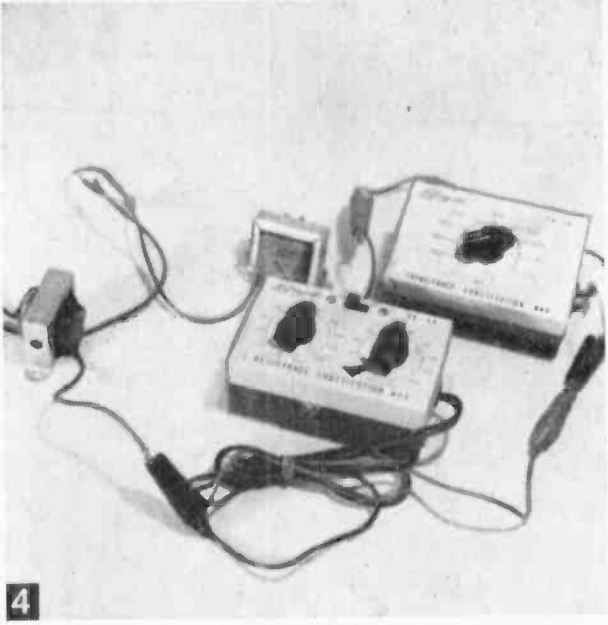
The Fallacy. Use the ohmmeter function of your multimeter to measure the resistance of L, while L is disconnected from the circuit. You'll find the resistance is roughly 200 ohms. This should give you the first clue to the difference between the computed V and the calculated V. In calculating V, we assumed that L was a pure inductance. In practice, however, this is impossible because a length of wire exhibits resistance.

Furthermore, when a length of wire is wound into a coil, there is capacitance between turns. In the case of our experiment, the capacitance between turns introduces more error than the resistance of the coil.

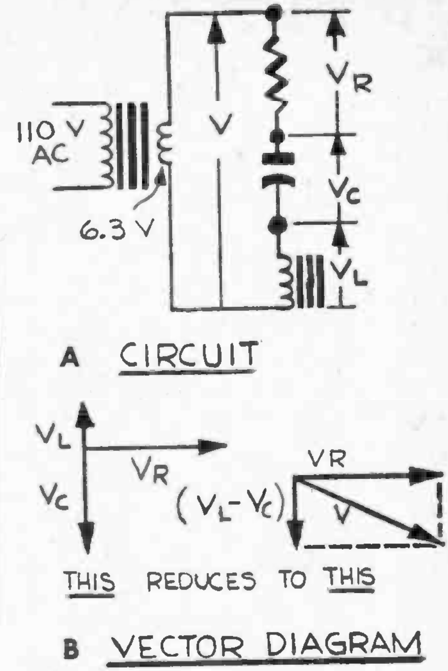
There is an additional error due to the loading of the circuit by the meter during the measuring process. This error plus others mentioned above introduces an error of about 8% to 15% in the measured and calculated values of V.

Series Resistance: Capacitance (R-C) Circuit

If the facts of practicality in the preceding projects are puzzling you may relax and smile for what comes next. The inductance and resistance associated with practical capacitors is negligible at 60 cycles. Consequently, a practical capacitor looks like an ideal capaci-



Series R-L-C arrangement.



tor. In experiments described here, then, the error will be due to meter-loading during measurement only. For a 5000-ohm-per-volt meter this should be less than 8%.

Connect the circuit as shown in Fig. 3. Set R at 6800 ohms on the resistance box. Record V_C and V_R for C = .1, .22, .5, and .72 microfarad *(mfd)*. Note that the capacitance box is disconnected and the external .5 *mfd* capacitor is used for the .5 *mfd* measurements. The .5 *mfd* capacitor is connected across the capacitance box (set to .22) to make the .72 *mfd* measurements. Measure V and record the value.

PROJECT 5

Vector Diagram for R-C Circuit is shown in Fig. 3B. Note that the V_C vector is directed downward. Current leads in a capacitive circuit.

Draw vector diagrams for this data as you did for the data in Project 1. Then determine V from the vector diagrams. The error between the measured V and the calculated V is much smaller.

PROJECT 6

Understanding Circuit Computations. The applicable formulas are:

(14) $V = \sqrt{V_R^2 + V_C^2}$
(15) $\tan\Theta = V_C/V_R$
(16) $V_C = IX_C$
(17) $V_R = IR$
(18) $I = V_R/R$
(19) $X_C = V_C/I$
(20) $X_C = 1/(2\pi fC)$
(21) $X_C = 1/(377\,C)$ (for f = 60 cycles)
(22) $C = 1/(377\,X_C)$ (for f = 60 cycles)
(23) $Z = \sqrt{R^2 + X_C^2}$
(24) $\tan\Theta = X_C/R$
(25) $V = IZ$
(26) $Z = V/I$

These units are V, volts; I, amperes; R, ohms; X_C, ohms, C, farads, and Z, ohms.

The matter of making most of the computations is pretty much in line with the examples of Project 3. The generation of a group of examples corresponding to the set for the R-L circuit given in Project 3 is a good exercise for the student. There is considerable similarity in most cases.

PROJECT 7

Another Experiment. Adjust circuit capacity to .72 mfd. Then record V_R and V_C for R = 2.2K, 4.7K, and 6.8K.

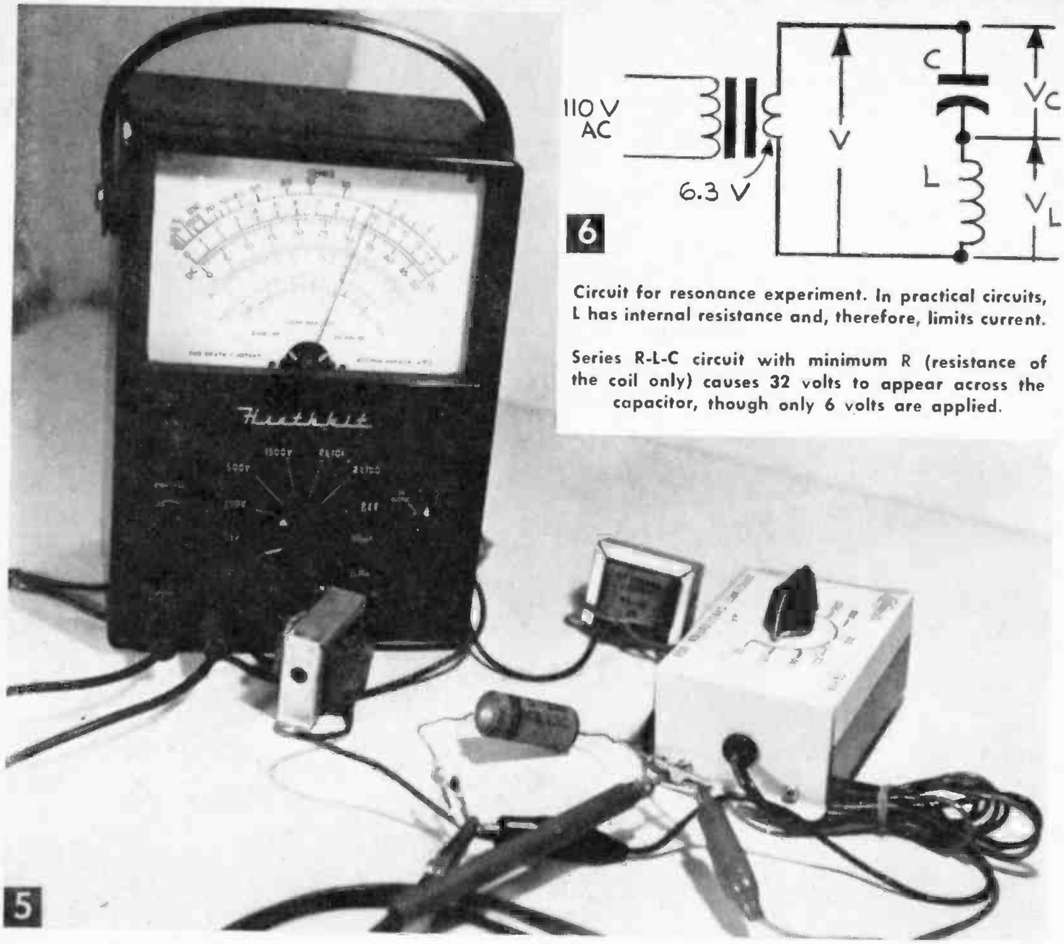
Now you can draw vector diagrams for this data. Compare the values of V obtained from the vector diagrams with the measured values of V.

If you wish additional practice, you may perform the computations for all sets of data. The more problems you do, the better you get to understand the subject. With this experimental set-up, you can get a large amount of dage for practice problems.

Series Resistance-Inductance-Capacitance (R-L-C) Circuit

Hook up the series R-L-C circuit as in Fig. 4 and 4A. Set R = 2200 ohms and record V_L, V_C, and V_R for C = .1, .22, 15, and .72 *mfd*. Measure and record V.

In the vector diagram (Fig. 4B), you can see that V_L and V_C are 180° out of phase and hence can assume large values. What is happening here? The capacitor and inductor al-



5

6

Circuit for resonance experiment. In practical circuits, L has internal resistance and, therefore, limits current.

Series R-L-C circuit with minimum R (resistance of the coil only) causes 32 volts to appear across the capacitor, though only 6 volts are applied.

ternately store and dump energy on each other. A special relationship exists between V_C and V_L at resonance, a phenomena that we'll discuss later.

PROJECT 8

Draw the vector diagrams for the series R-L-C circuit.

PROJECT 9

New Formulas and Practice. The formulas presented earlier apply for the most part. However, there are new formulas for V, Θ, and Z:

Desig.	Description
C	capacitance, .1 to .7 mfd (Lafayette TE-16 capacitance substitution box, $2.95, and a Sprague 2EP-P50 .5 mfd., 200-v. capacitor, 36¢).
L	inductance (Use the brown and red leads on Lafayette TR-12 output transformer, $1.19). Tape or keep the red lead out of the wiring. Leave the secondary open.
R	resistance, 1K to 10K (Lafayette TE-17 resistance substitution box, $3.95).
	6.3-v. filament transformer (Lafayette TR-11, 89¢).
	AC voltmeter, 5000 ohms per volt or better sensitivity. (Heathkit MM-1, $33.95). Least expensive suitable unit is Lafayette TK-10, $11.95.
	Sources: Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., N. Y. Heath Co., Benton Harbor, Mich.

MATERIALS LIST—AC EXPERIMENTS

(27) $V = \sqrt{V_R^2 + (V_L - V_C)^2}$

(28) $\tan \Theta = (V_L - V_C)/V_R$

(29) $Z = \sqrt{R^2 + (X_L - X_C)^2}$

Now you can perform a complete group of computations for one set of your data.

PROJECT 10

Resonance. Removing R from the circuit will change the circuit to that shown in Figs. 5 and 6. Then adjust C till V_C reaches a maximum value. Note that V_C will be somewhere between 30 and 40 volts. On measuring V_L, you will find it is nearly equal to V_C.

When $V_L = V_C$, the circuit is in resonance. This occurs when $X_L = X_C$. A relationship of interest at the resonant frequency fo is:

(30) $f_o = 1/(2\pi \sqrt{LC})$

The manipulation of this formula to solve for L and for C is left as an experimenter exercise.

We haven't used an ideal inductance, so you'll notice some errors (seeming contradictions) in some of the voltages computed. But since we went into that subject in relative detail earlier, you're prepared for it at this point and know why it occurs.

1

Two-Tube Long Wave Receiver

This compact ac-dc receiver features good sensitivity, better than average selectivity, and simplified construction. It has an adjustable tuning range of 85 to 550 kc. and is easily modified for broadcast-band reception

By JOE A. ROLF, K5JOK

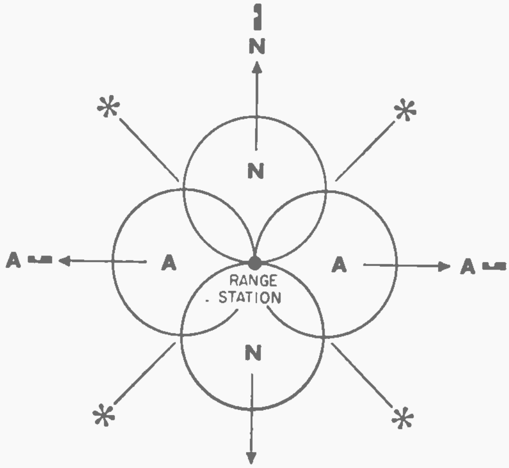
THE circuit of this economical receiver (see Fig. 4) employs two miniature high-gain TV tubes. The 6AN8 is a regenerative detector; the pentode section of the 6AU8 is an audio amplifier. The triode of the 6AU8 serves as an ac-dc type rectifier.

The heart of the circuit is the detector, a regenerative cathode-follower type commonly known as the "Regenode." If you're not familiar with this hybrid circuit, here's how it works: The pentode section of the 6AN8 is a conventional grid-leak detector, with the exception of the signal grid which is separated from the tuned antenna circuit by the cathode-follower connected triode section of the tube. This arrangement permits a degree of selectivity not possible with the detector grid connected directly to the antenna circuit, since the signal-grid loads the tuned circuit and reduces its Q, or selectivity ability. The cathode-follower isolates the detector from its input circuit and allows a great improvement in selectivity. The circuit operates smoothly, is easily adjusted, and eliminates hand-capacity effects common to most regenerators. These advantages are particularly desirable in a LW receiver.

Since hand capacity does not affect operation, an all-wood chassis constructed with simple hand tools can be used. Chassis details are shown in Fig. 5. Large holes (for tube sockets and controls) can be made with a coping saw; fastener holes can be made with a hot ice-pick in the absence of a drill. A

What to Listen To on LW

The long waves provide up-to-the-minute reports on weather and flying conditions, code practice and some good DX



1 RANGE STATION PATTERN

* CONTINUOUS TONE A & N SIGNALS OF SAME STRENGTH

YOU'LL be pleasantly surprised at the number of interesting signals to be heard below the standard broadcast band, though at first they may sound like nothing but jumbled dots and dashes intermixed with weird howls and squeals. Careful listening, however, will reveal this apparent bedlam to be important communication services which make unusual listening and challenging DX.

The main divisions of the 10 Kc. to 535 Kc. band are shown in Table A. It is occupied mainly by aeronautical and marine services, although 150-535 Kc. is part of the standard BC band in Europe and Asia. However, without discounting the possibility of logging some of these BC stations, the marine and aeronautical stations are of prime interest to most LW listeners.

The most popular are the navigational aids, or radiobeacons, heard between 200 Kc. and 405 Kc. Some are marine beacons, others aeronautical. Both employ very slow amplitude modulated code and are easily distinguished from one another by their signals.

Marine beacons usually transmit their call signs continuously in an omni-directional pattern. In some cases the call, consisting of from two to four letters or numerals, is separated by a number of dashes. Many marine beacons can be heard constantly over a considerable range, while the less powerful can be logged at great distances under favorable conditions.

Aeronautical range stations transmit a combination A-N signal in a four-leaf pattern like that of Fig. 1. They identify themselves every thirty seconds and employ two pairs of antennas to obtain the four-leaf radiation pattern. The transmitter is operated continuously and is alternately switched between the two antenna systems so that an *A* (dit dah) is radiated in the directions marked *A* in Fig. 2, and an *N* (dah dit) in the directions marked *N*. Midway between the A and N patterns, the signals merge as a steady tone which aircraft follow to or from the station. If the pilot leaves this course, he will hear either the *A* or the *N*.

These radiobeacons offer an unlimited

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metal chassis will afford more compact construction, but a wooden panel and cabinet should be used to avoid accidental grounding of the chassis.

Construction is not critical and will pose no difficulty if the general layout shown in Figs. 2, 3, and 5 is followed. Keep RF and AF leads separated and away from ac leads. This is best accomplished by wiring the filaments and power supply first, then the AF and detector stages.

Ground connections are made to solder lugs mounted to the socket and tuning capacitor fasteners. Components R4, R6, R9 and R10 mount on a 7-lug terminal strip at the rear underside of the chassis (see Figs. 3 and 4). The filter capacitor, C11, can be wedged between the 6AU8 socket and chassis leg, or secured with a mounting clip. Two sections of this capacitor are used in the power supply filter, the third is used as a cathode bypass for the audio stage.

Other components under the chassis, except R3, C7 and C9, mount to respective tube sockets. Capacitor C9 is connected from J2 to the grounded terminal on R5. Resistors R3 and C7 connect to a machine screw and solder lug placed between L1 and C2. One lead of L2 connects to a solder lug on the same screw on the chassis top.

The antenna trimmer, C1, is secured by the antenna terminal mounting screw as shown in Fig. 3. This component requires only infrequent adjustment, but it can be mounted on the front panel for easier access, if desired.

Inductance L1, a standard TV replacement coil, is mounted last. Before inserting the core, as explained in the manufacturer's instruction leaflet, thread on the 5/16-in. mounting clip and remove ½ in. from the slotted

TABLE A—LONG WAVE ALLOCATIONS

quency (Kc.)	Communications Service	Sunset Skip	Night DX
10–14	Radionavigation	none	4 am to 7 am
14–200	Fixed Public Services and Coastal-Marine CW		
200–283	Aeronautical Beacons and Communications		
285–325	Marine Radiobeacons		
325–405	Aeronautical Beacons and Communications	10 pm to 2 am	
405–415	Radio Direction Finding		
415–490	Coastal and Marine CW		
500	International Calling and Distress Frequency	2–4 hours after sunset	11 pm to 7 am
510–535	Misc. Radiobeacons		

Note: Frequencies between 150 Kc. and 535 Kc. also used by foreign BC stations.

TABLE B—STATION LISTS

The Airman's Guide	Superintendent of Documents, Washington 25, D. C. 25¢ per copy. A bi-weekly publication listing all U. S. aeronautical radio beacons.
Location Identifiers	Superintendent of Documents, Washington 25, D. C. $1.50 for copy and one-year supplement service. General listing of all domestic beacons.
Broadcasting Stations of The World, Part II, According to Frequency	Superintendent of Documents, Washington 25, D.C. $2.00. Includes European LW broadcasting stations.
Air Navigation Radio Aids	Department of Transport, Air Service Branch, Ottawa, Ontario, Canada. Complete list of Canadian Radio Beacons, published every two months.
Radio Facility Charts —Caribbean & South America	ACIC, USAF, 2nd & Arsenal Streets, St. Louis 18, Mo. One year subscription $3.50. Listing of Caribbean & South American beacons.
Radio Navigational Aids	Hydrographic Office, U. S. Navy. An annual publication listing worldwide marine beacons.
List of Coast Stations (4.10 Swiss francs) List of Ship Stations (12.80 Swiss francs) List of Call Signs (21 Swiss francs)	Secretary General, International Telecommunications Union, Geneva, Switzerland. Very complete listings of worldwide stations.

source of unusual DX. At first sight, these stations seem to offer poor DX since most are relatively low powered and have a daytime range of less than 200 miles. However, their range is greatly increased at night—best times for night DX are given in Fig. 1. These hours will vary somewhat with the seasons, with the choicest DX being heard from early fall to late spring.

Above 325 Kc. sunset skip is often heard for a half-hour during early darkness. Notable examples are PJG, 343 Kc. in the Netherlands Antilles; ASN, 350 Kc. on Ascension Island; and SWA, 406 Kc. from Swan Island.

Since beacons identify continuously or every thirty seconds, less than a minute is required to log a station. However, in order to determine the locations of the stations you hear, you need a reference log listing the stations you are interested in. Such listings can be purchased (see Table B).

Range stations also transmit verbal weather reports for air fields in their area 15 minutes before and 15 minutes after the hour.

In addition to radiobeacons, many CW stations operate on long waves for maritime, aeronautical, and public service communication. For the CW enthusiast, these are interesting to copy and the slower stations, sometimes sending as slow as eight words a minuite, provide plenty of code practice. Many good DX signals can be heard between 415 Kc. and 500 Kc., particularly on the 500 Kc. international calling and distress frequency. The frequencies below 200 Kc. are also widely used by public service and maritime CW stations.

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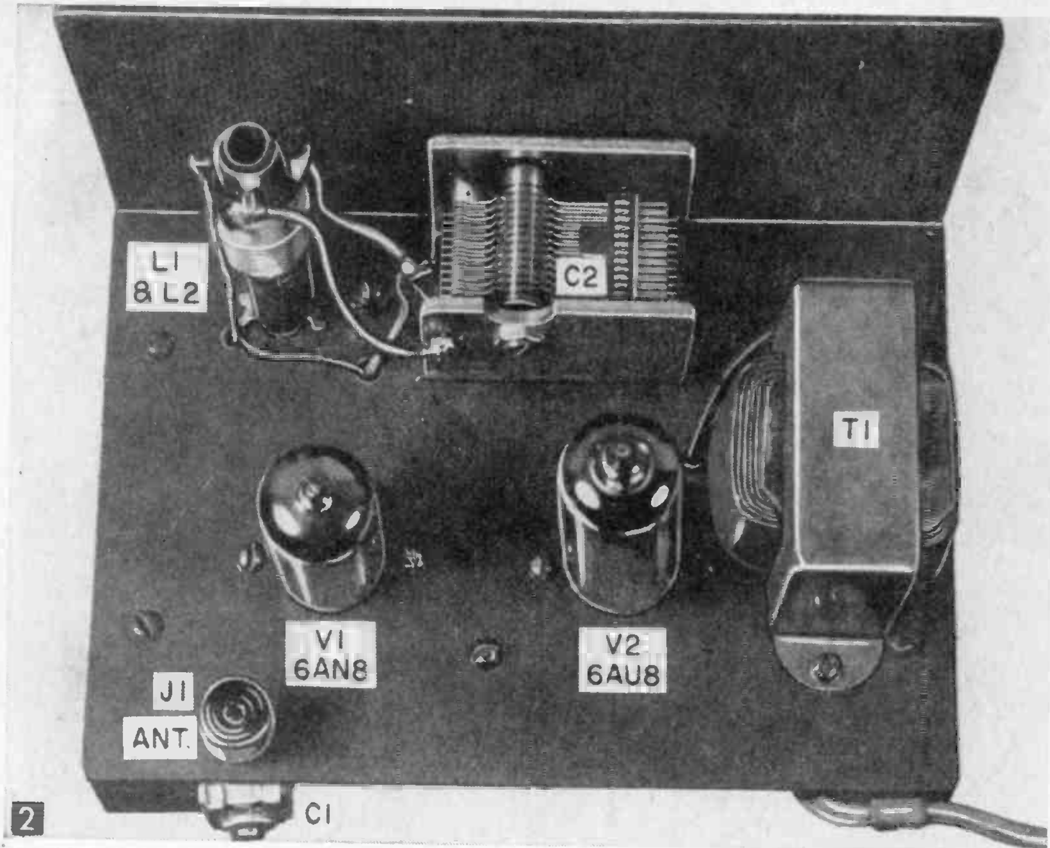
end of the core adjustment screw, otherwise it will protrude below the chassis when the coil is mounted. Clamp the section to be removed in a vise and cut it off with a hacksaw, then cut a new screwdriver slot. Take care not to break or fracture the fragile ferrite coil.

Inductance L2 consists of 35 turns of #26 (or smaller) enameled wire scramble-wound over a 9/16 in. ID tube which slides freely over L1. If not available, this form can be made by winding four or five layers of moist gummed tape, sticky side out, over L1. When dry, slip the tube off and trim to proper length with a razor blade. With L2 in place, secure L1 to the chassis with a bead of Duco cement.

For maximum sensitivity, the position of L2 on L1 should be adjusted for the individual receiver. This simple adjustment is well worth the effort and can be made with a long antenna, 455 Kc signal generator, or a BCB receiver with a 455 Kc intermediate frequency. If possible, use a signal generator or BCB receiver, since this will permit adjustment of L2 and the core of L1 at the same time.

Short out L2 temporarily by connecting a short piece of wire from the R3-C7 solder lug to pin No. 7 of the 6AN8 socket. Turn the core adjustment screw full counterclockwise and connect the antenna, signal generator, or BCB receiver to the antenna terminal.

If a BCB set is used, tune to a strong BCB station and turn the set's volume down. Connect a short piece of insulated wire to your LW receiver antenna terminal and place it near the underside of the BCB set's IF tube socket or IF transformer to hear the 455 Kc IF signal of the BCB receiver.

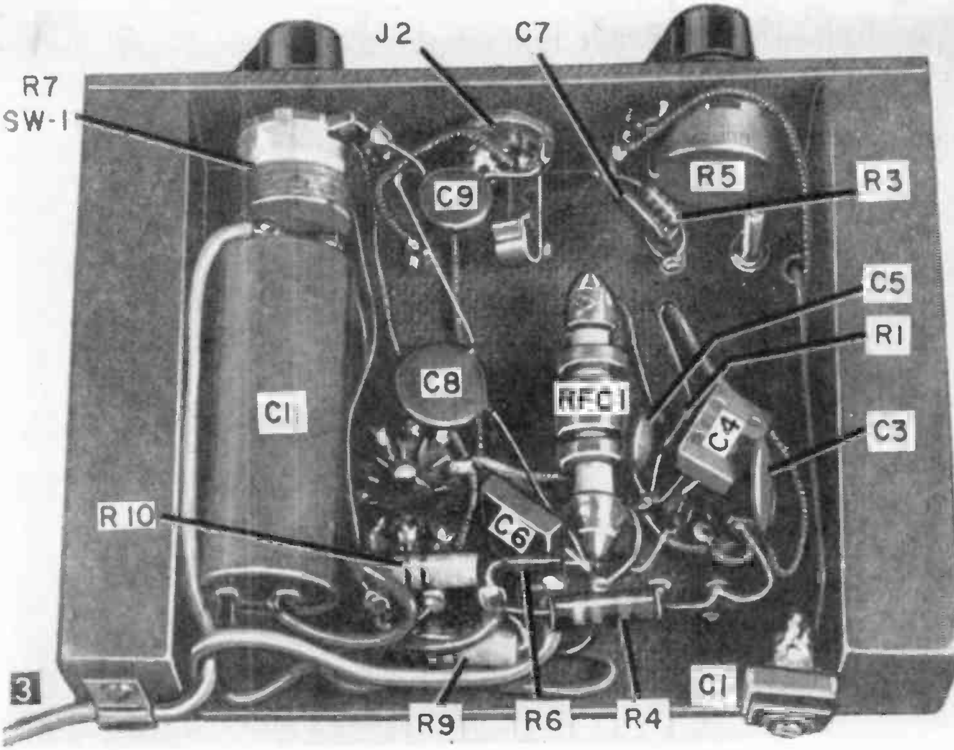


Topside of the receiver's Masonite chassis. The antenna coil, L1, is mounted so that its slug is adjusted from below the chassis.

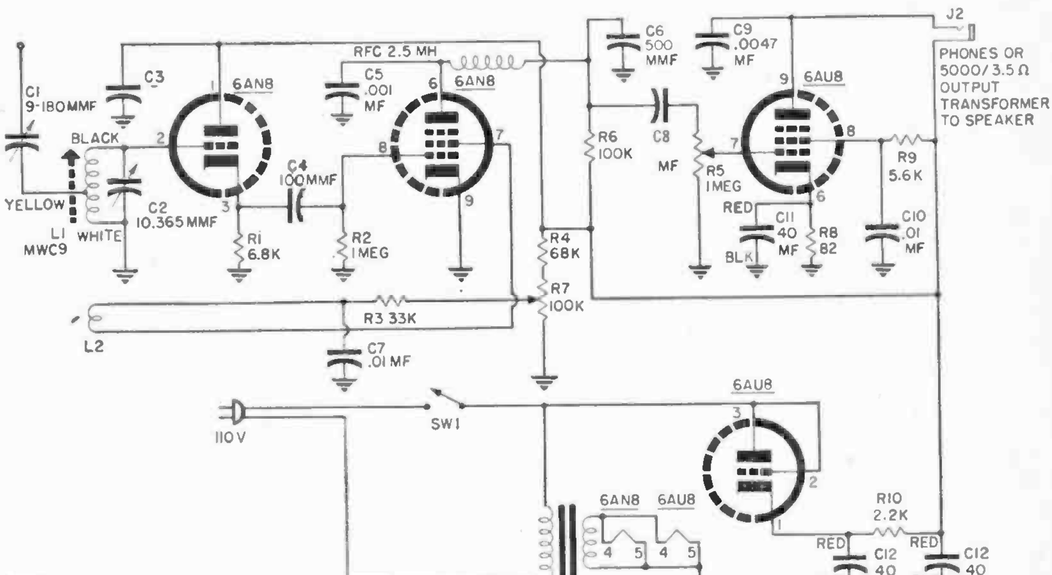
MATERIALS LIST—LONG WAVE RECEIVER

Desig.	Description
C1	9 to 180 mmf trimmer capacitor
C2	10 to 365 mmf variable capacitor, standard single-gang TRF type
C3	.01 mfd disc ceramic
C4	100 mmf mica
C5	.001 mmf disc ceramic
C6	500 mmf mica
C7	.01 mfd disc ceramic
C8	.01 mfd disc ceramic
C9	.0047 mfd disc ceramic
C10	.01 mfd disc ceramic
C11	40-40-40 mfd, 150 wv capacitor, 3-section electrolytic filter capacitor (Cornell-Dubilier BBRT 44415, or equivalent)
R1	6.8 K, 1/2 watt resistor
R2	1 meg, 1/2 watt
R3	33 K, 1/4 watt
R4	68 K, 1 watt
R5	1 meg, 1/4 watt volume control with SPST switch (Mallory U-53 Midgetrol with US-26 switch, or equivalent)
R6	100 K, 1/2 watt
R7	100 K, 1/4 watt, volume control (Mallory U-41 Midgetrol, or equivalent)
R8	82 ohm, 1/2 watt
R9	5.6 K, 1 watt
R10	2.2 K, 1 watt
J1	antenna terminal post, or Fahnestock clip
J2	standard phone jack
L1	*Long Wave:* Merit MWG-9 Width or Linearity coil, .3 to 12 ma., tapped (see text) *Broadcast:* Ferri-loopstick BCB antenna coil (see text)
L2	*Long Wave:* 35 turns #26, or smaller, enameled wire scramble wound on 9/16" ID x 3/8" form (see text) *Broadcast:* 3 turns #26, or smaller, enameled wire on adjustable form (see text)
RFC1	2.5 mh. RF choke (National R-100, or equivalent)
SW1	on R7
T1	filament transformer, 6 3 vct, 1.2 amp (Stancor P-6134 or equivalent)
T2	optional—for speaker use only; 5000/3.2 ohm, 3 watt, 40 ma, output transformer. (Merit A-3026, or equivalent)
V1	6AN8
V2	6AU8
1 pc	1/8 x 4 1/2 x 6" Masonite (panel)
1 pc	1/8 x 4 x 6" Masonite (chassis top)
2 pcs	pine strip, 3/4 x 1 1/8 x 4" (chassis sides)
	two miniature 9-pin tube sockets
	one 7-lug terminal strip
	hardware, power cord, dial, knobs, etc.

With the volume control at maximum and the regeneration control set at half-scale, place the tuning capacitor about 85% open and turn L1's core clockwise until the 455 Kc signal is heard. Adjust the regeneration control for maximum volume and mark its position. This is the detector's most sensitive point and will determine the position of L2. Remove the jumper across L2 and slide the coil up or down over L1 until regeneration (signal distortion) occurs just above the point previously marked on the regeneration control. If the detector fails to regenerate, reverse the leads on L2.



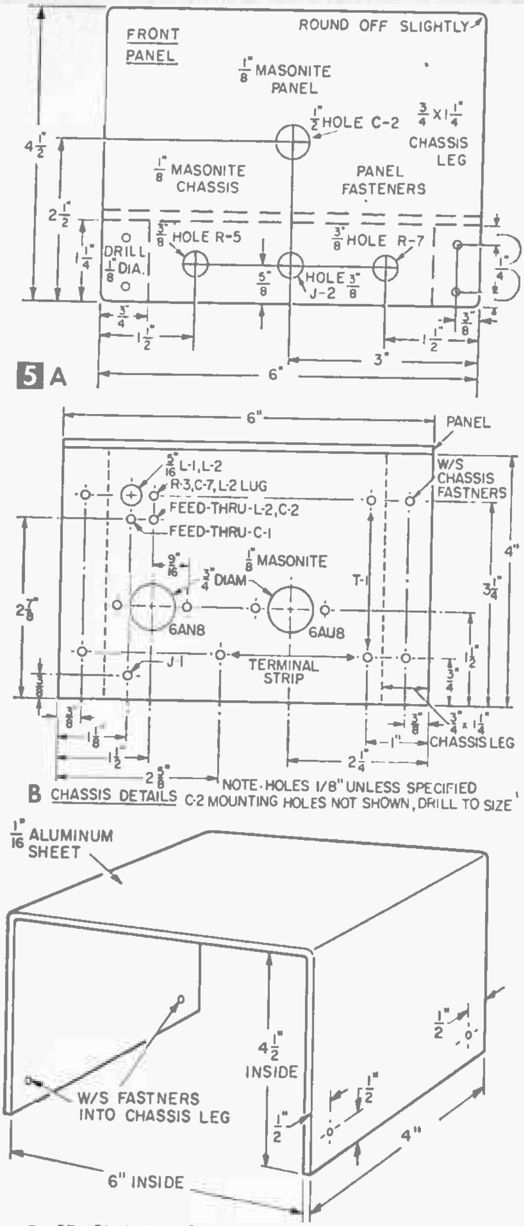
Under-chassis view, showing placement of components.



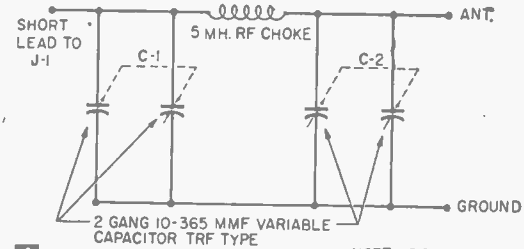
4 SCHEMATIC

This receiver's tuning range, from 85 to 550 Kc, is covered in two adjustments of the core on L1. When set to receive 550 Kc at C2's minimum capacity, the receiver will tune down to about 200 Kc. The range from 85 to 200 Kc is tuned when the slug is almost fully inserted into L1. Overlap on both bands will permit easy bandchanging once the operator is familiar with the stations heard around 200 Kc. On the lower band, L2 may require slight readjustment for best reception of weak signals.

For BCB reception, a ferri-loopstick is used for L1. Inductance L2 consists of three turns



C OPTIONAL CHASSIS COVER



6 PI ANTENNA TUNER

and adjustment is similar to that of LW operation. The lead from C1 should be connected to the grid end of the loopstick.

A high, long-wire antenna will give best all-'round LW reception, though a short length of wire will give satisfactory local reception. Capacitor C1 should be adjusted for best reception on each band and the receiver should not be grounded.

In some localities, interference from strong BCB stations may be bothersome, a trouble commonly encountered with LW receivers having only a single tuned circuit. Such interference can be minimized by reducing the antenna coupling or, in severe cases, by the use of the simple Pi antenna tuner (shown in Fig. 6). The tuner can be built on a small pine block. Adjust C1 and C2 for minimum BCB interference.

Four or five feet of hookup wire is sufficient antenna for BCB reception. The receiver will give good loudspeaker volume on the BC band and on the stronger LW stations. Due to the low power used by most LW stations, however, headphones are recommended for serious LW listening. For speaker operation plug a 5000-3.5 ohm, 3-watt, output transformer into J2.

Inverted Brush Cleans Gun's Tip

• To keep the tip of your soldering gun clean of scale, woodscrew-fasten a brass-bristle suede shoe brush to one end of your workbench. Wipe the soldering-gun tip across the brush occasionally to keep it clean for efficient soldering.—J.A.C.

Why Inside Gun-Tip Care?

• To receive maximum soldering efficiency and long-tip life, be sure that cleaning and tinning operations of your soldering gun's tip also include the *inside* surfaces of the tip. A gun's tip that is maintained on the outside, but allowed to deteriorate on the inside, is sure to give lowered soldering efficiency and it will shorten tip life.

Versatile Code Practice Equipment

By
HOWARD S. PYLE

THE teaching of code to a group of students is made easy with this control unit. The control unit (Fig. 1) with connections to a key and an ac supply line, is a keyed audio oscillator of variable tone and volume, with the resultant tone reproduced in a loud speaker with sufficient audibility to handle a group of up to thirty students.

The control unit is housed in a Hamcab #12. Layout the front panel, chassis and the rear panel according to Fig. 2 and cut the holes for the components. Several holes in the sides of the cabinet are also required. Mount the components (see Materials List). Wire the unit according to the schematic, Fig. 3. The isolation transformer is mounted inside the cabinet.

1 This control panel is a versatile aid in group code instructions.

When you have completed the control unit and have selected a space for the students' table (Fig. 4), make the table of plywood, suitably supported. Wire the table in accordance with schematic (Fig. 5) and Fig. 6.

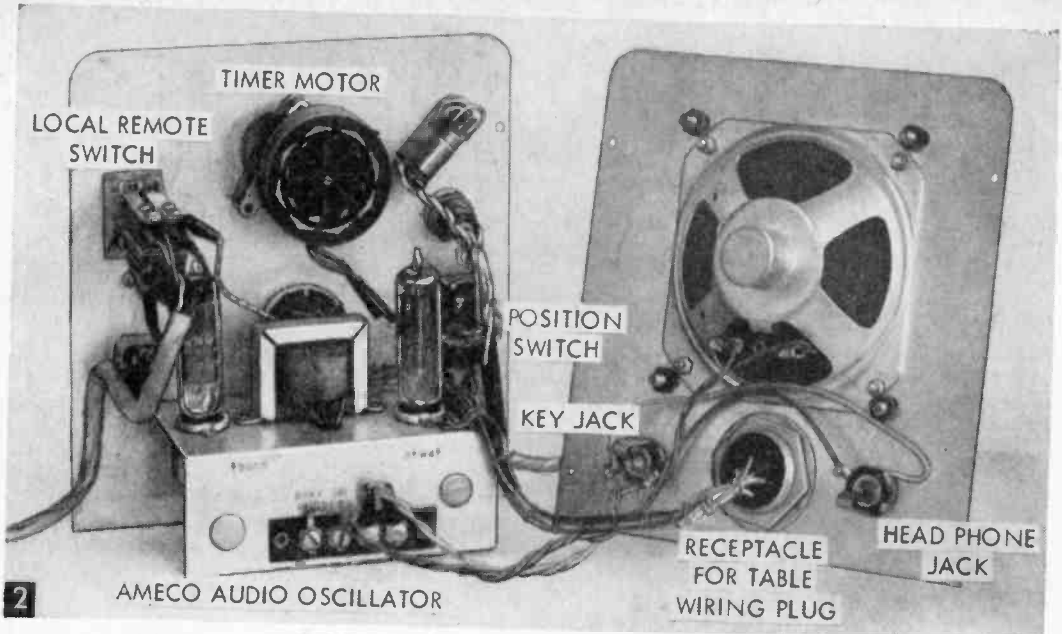
Through the plug P-1, provided on the table cord, connect the table wiring to the instructor's control unit through the multi-terminal jack, J-2. With the instructor's switch S-2 in the LOCAL position, the audio oscillator is keyed and the reproduction emanates from the loud speaker. All of the table circuits are now connected to the control unit through the cord and plug. Any student whose toggle switch SX is placed in the A position, now has his key in parallel with the instructor's and he, too, may then key the oscillator.

One or all students may be so switched in through their SX switches and have keying control of the oscillator, with loud speaker reproduction. The instructor may then send to all students or work with any one or more students two-way, with the rest of the class monitoring.

Any two or more students may work each other, simulating on-the-air operation and, as the reproduction is still from the loud speaker, the remainder of the class may still monitor all sending and, if desired, may break in on the communication as can the instructor.

Now let's throw the instructor's switch S-2, to the REMOTE position. This immediately disconnects the loud speaker from the circuit and at the same time shorts the instructor's key, thereby producing a continuous, steady audio tone which is fed through J-2 and P-1 to the tables and made available to all students through their keys and head telephone receivers, provided each student has thrown his toggle switch SX to the B position. The second switch S at each student position, if all thrown to the ON position, will parallel all positions, and the same conditions existing when the instructor's switch S-2 was in the LOCAL position will appear except that reproduction will now be in the head telephone receivers rather than through the loud speaker.

Suppose now that we leave the instructor's switch, S-2, in the Remote position and that



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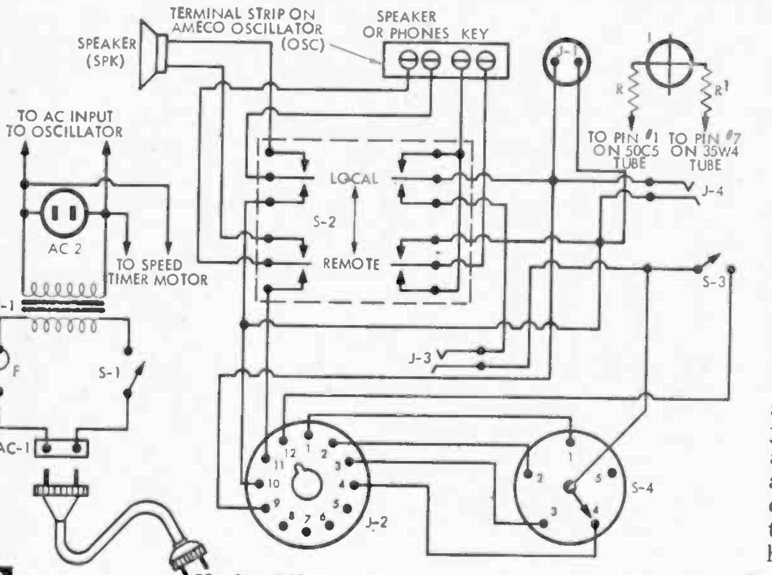
Parts layout and wiring of instructor's control panel



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two-way with student #3 at the same time that all of the others are engaged in independent individual sending practice. Student #2 need merely throw his switch S to the ON position which will parallel him with student #3 and they may then work together without causing or receiving interference from any of the others! Perhaps student #4 wants to join this group (#2 and #3). He merely asks student #3 to close his S switch to the ON position and he, too, is in!

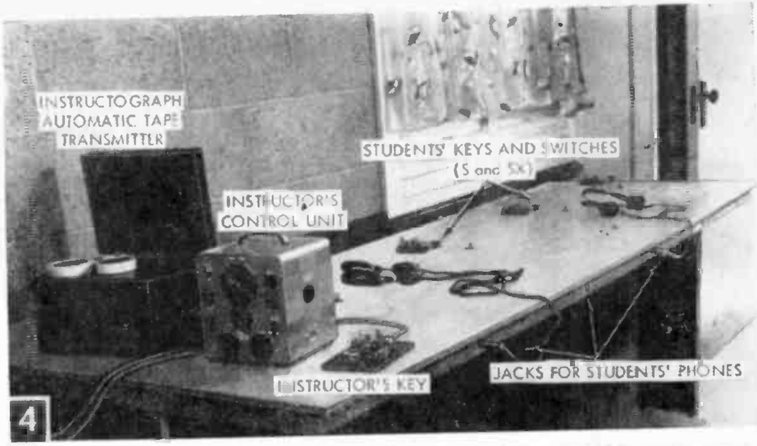
Student #1 may come in also, if desired, merely by closing his S switch to ON.

all student switches S are placed in the open position. Each student may then practice sending by himself with reproduction in only his own headphones and without interfering with any other student who may be engaged the same way. In other words, each and every student may conduct sending practice and listen to himself in his headphones while all other students are doing likewise simultaneously and with no inter-position interference.

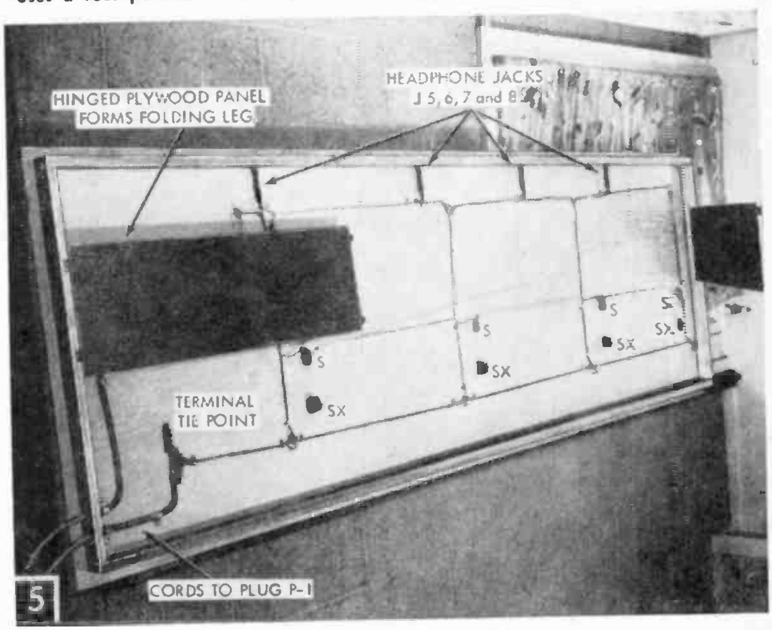
Now, suppose student #2 wants to work

And the instructor may listen to any individual student, any pair or more who may be working together and may break in on any position or any group of paralleled positions by merely placing his monitor position selector switch S4 on the single position he wishes to monitor or work, or to any of the positions which are paralleled.

The speed timer is a standard electric clock movement and motor—in this case a new Telechron from one of the mail order electronic supply houses (cost $1.95) without hands or face. The octagon shaped dial shown in the photos is made by removing the clear plastic cover from a box of dressmaker's pins purchased at the local variety store. Give it a coat of black enamel and fit small white decals, procurable at any amateur radio supply store, to indicate the 15, 30, 45 and 60 second points. A light strip of aluminum is cut and fitted to the central shaft of the clock driving mechanism or a standard sweep hand may be procured from a local watchmaker. This makes one revolution every 60 seconds; five times around equals five minutes and enables the instructor to time code speed.



Complete equipment as set up in the author's home class-room. This arrangement uses a four position table hinged to wall and with folding plywood wing legs.



Wiring of the students' table.

The audio oscillator is an Ameco or other brand purchased in kit form and the cabinet discarded after removing the speaker. Unfortunately these oscillators are of the ac-dc type and require installation of a small 1/1 ratio isolation transformer on the inside of the control cabinet, feeding the oscillator, clock motor and an ac outlet from the secondary side and with the primary connected externally to the 115 ac line through the power switch and fuse on the control panel. The ac outlet AC-2, of conventional chassis mounting type, is installed on the side of the cabinet to provide a convenient point at which to plug in the ac supply to an automatic tape transmitter, if one is used. If you use a tape transmitter (such as Instructograph) the contacts of the tape transmitter are paralleled across the instructor's key through a two conductor cord and plug with a matching socket mounted on one side of the control cabinet.

For the indicator lamp (I) use an NE-51 neon bulb connected through a 47 K resistor in each leg, to pin 1 of the 50C5 tube and to pin 7 of the 35W4. The NE-51 element will not fire until the neon gas has become sufficiently heated, which will take a few seconds. Conversely, the bulb will also require a few seconds to extinguish after the ac switch is placed in the off position. This is an added safety factor in that the false indication that the unit is still hot allows any stray high voltage in the oscillator to bleed off before you touch exposed terminals.

If, due to use of high impedance headphones (2000 ohms) with the oscillator, there is an annoying undertone of audio feed-back when unkeyed, place a 670-ohm (not critical value) ½ watt resistor across each headphone jack.

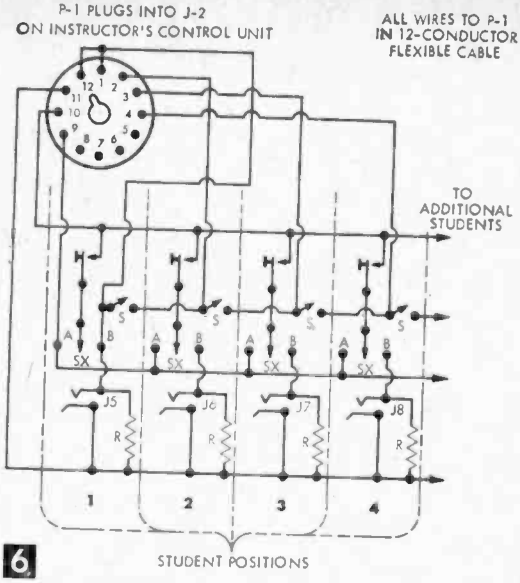
MATERIALS LIST—GROUP CODE EQUIPMENT

INSTRUCTOR'S CONTROL UNIT

Design.	Description
AC-2	110 V. AC chassis type receptable (Amphenol 61-F)
T-1	115/115 V. isolation transformer (Triad N-51X)
F	panel mounted fuse holder, insert type (Buss HKP)
S-1/S-3	SPST bat-handled toggle sws. (Cutler-Hammer 8098)
AC-1	recessed 115 V. AC plug (Cinch-Jones 2RP)
SPK	4" PM dynamic speaker (incld. in Ameco oscil. kit)
OSC	code practice oscillator (Ameco CPS-KL Deluxe)
S-2	locking type lever switch (Switchcraft 60012-L)
J-3/J-4	open circuit phone jacks (Mallory LA-1 Midget)
J-2	terminal jack (Amphenol Military type AN 12 for up to 8 students or Cinch-Jones Series 300)
J-1	single contact, male microphone receptacle. Insulate from cabinet with extruded fibre washers. (Walsco 1882 or equivalent)
S-4	rotary switch (Mallory 3215J for 4 students, 32112J for 8 students)
I	jewel light assembly with NE-51 neon bulb (Drake 10)
R-R1	47K-ohm resistors, 1/2-watt
	cabinet with chassis—mount chassis upside down in cabinet to form rigid base plate. (Hamcab 12, L. M. Bender Co., 2528 W. 9th St., L. A. 6, Calif. or supplier)
SPEEDTIMER	Telechron electric clock motor with sweep hand

PRACTICE TABLE EQUIPMENT (FOR 4 STUDENTS)

Design.	Description
P-1	plug to match J-2 on Instructor's control unit.
S	SPST toggle switches—1 for each student (Cutler-Hammer 8098)
Sx	SPDT toggle switches—1 for each student (Cutler-Hammer 7140)
KEYS	military surplus or builder's choice
J-5, J-6, etc.	midget open-circuit phone jacks (Mallory LA-1)
R	670-ohm, 1/2-watt swamping resistors, one for each student
CABLE	12-conductor (for up to 8 students) flexible cable to reach from table to J-2. Conductors may be unshielded. (Belden 8747 Intercom cable)



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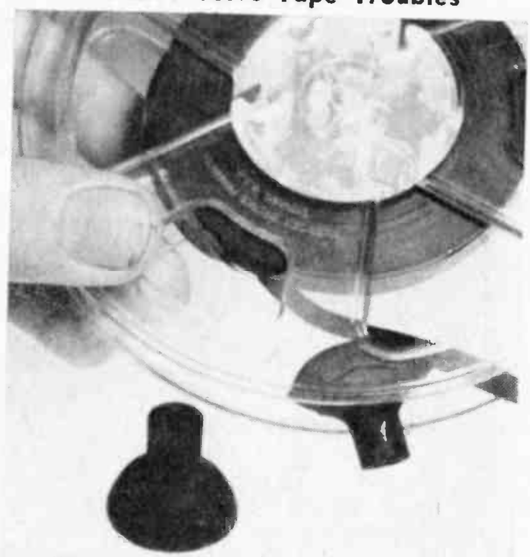
Wiring for one four-position table; additional tables are wired identically.

Fast Turn for Large Knobs

• When the turning ratio of a large knob on a receiver is too slow, a rubber suction cup will solve the problem. Place the cup directly in the center of the knob and use it as an additional knob for fast tuning. A bottle-cap force-fitted into the cup (or over the cup) will make turning easier and improve appearance.—J. A. C.

Stickers Solve Tape Troubles



• Need a good pair of recording tape spool locks for your tape recorder? A pair that isn't easily misplaced when not in use? Two medium-size rubber suction cups—the type with open tops—are ideal for this purpose. The cups are easy to slip over the spindles to hold the spools, or they may be used as wedges to hold tape on the spools. When they aren't in use, you can store them neatly on the tape deck by means of suction. They might be used this way as holders for your regular spool locks.—J. A. C.

ELECTRONIC NUMBERGRAM

By JOHN A. COMSTOCK

THIS puzzle is especially for those electronics hobbyists who are fascinated by numbers and calculations. This should keep you busy the rest of the day!

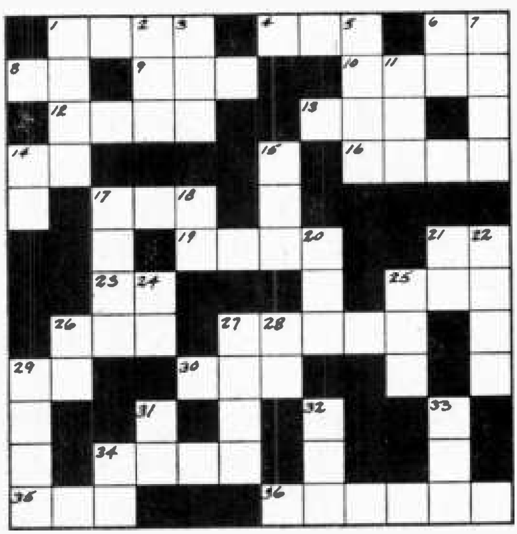
When you have worked out the problems presented by the clues, and filled in the right numbers, turn to page 158 for the solution.

ACROSS

1. Year Hertz proved radio possible.
4. Frequency in Citizens Band set aside for radio-telephone.
6. Maximum efficiency commonly obtained in actual practice when an amplifier is operated class B.
8. Last TV channel in UHF group.
9. Wire left on 1000-ft. spool after you have run a line 300 ft. long.
10. Frequency of a parallel tuned circuit tuned to 3600 *kc* after inductance has been reduced by half and capacitance doubled.
12. Lowest useful frequency in radio spectrum for accurate and reliable communications (in kilocycles).
13. Second harmonic of a 400-meter wavelength signal, expressed in kilocycles.
14. Voltage across a capacitor that has been connected to a source of 100 volts, then removed and connected in parallel with another capacitor of the same value.
16. Largest AWG wire gauge.
17. 2.71 x 10^{-6} henries expressed in microhenries.
19. Image frequency of a superhet when tuned to 1450 *kc* and IF is 465 *kc*.
21. Total capacitance of three capacitors—4, 6, and 12 microfarads — connected in parallel.
23. Third harmonic of 5 *kc*.
25. Voltage drop across series resonant circuit when capacitive reactance and inductive reactance are 175 ohms each, resistance is 65 ohms, and applied voltage is 248 volts.
26. Width of commercial FM broadcast channel in kilocycles.
27. Inductive reactance of a 2-henry choke at a frequency of 3000 *cps*.
29. Amount of resistance in ohms when a voltage of 100 volts will maintain a current of 10 amps.
30. .000005 amp converted to milliamps.
34. The number of years required for radium to lose one-half its energy.
35. Decimal multiplier used when you have the peak value of a sine wave, but want to find the average value.
36. Velocity in kilometers of a 20-*mc* signal having a wavelength of 15 meters.

DOWN

1. Received signal frequency of a superhet when IF is fixed at 176 *kc* and mixer oscillator is operating at 1586 *kc*.
2. Dah-dah-dah-dit-dit, dah-dah-dit-dit-dit, dah-dah-dah-dah-dah.
3. Second harmonic of 300 *kc*.
5. Xc of a .01-mfd capacitor at a frequency of 3000 *cps*.
6. .080 millihenries expressed in microhenries.
7. Output frequency of a 5-*mc* transmitter expressed in kilocycles.
10. Lower limit of medium-frequency band in kilocycles.
11. .0006 microfarads converted to micromicrofarads.
14. Total resistance of 15 ohms, 30 ohms, and 5 ohms, connected in series.
15. Color burst frequency in megacycles.
17. Oscillator frequency in kilocycles of a transmitter having an output signal of 16880 *kc* and three doubler stages.
18. Number of equalizing pulses transmitted per field in monochrome TV.
20. Wattage reference level in watts of 0 decibels.
21. Number of joules in 24-watt seconds.
22. Radiated output in watts of a station when transmitter output is 1 kilowatt, line loss is 50 watts, and antenna power gain is 3.
24. Theoretical field strength in *mc* per mile at 200 miles when 100 *mc* per mile is measured at 100 miles.
25. Applied voltage when two resistors are connected in series, the value of one 50 ohms, the other with a voltage drop of 50 volts; current flow is 3 amps.
26. Value of negative bias on a tube when grid resistor is 2000 ohms, grid current 10 milliamps.
27. Upper limit in megacycles of UHF band.
28. Wavelength in meters of a 4-*mc* transmitter signal.
29. Year radar was first used to make contact with moon.
31. Current flow in amperes when a resistor drops a voltage of 10 volts and the power dissipated is 270 watts.
32. Total number of electrical degrees that plate current flows in a class "A" amplifier.
33. 7 x 10^2 micromicrofarads in ordinary notation.
34. Value of a resistor color-coded brown, blue, black.



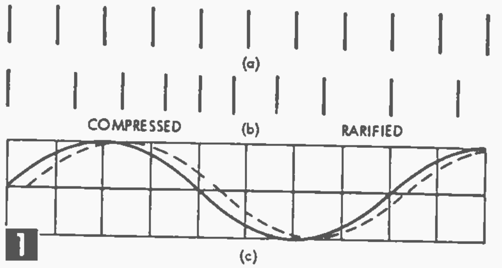
Experimentally Determining the Velocity of Sound

This experiment may be performed with equipment available to physics students, or by the home experimenter with a preamp, AC voltmeter and audio signal generator

By FRANK WOODS, Jr.

SOUND is propagated by longitudinal waves consisting of alternate compressions and rarefactions of air as shown in Fig. 1b. If a sine wave of voltage (solid line Fig. 1c) is applied to the terminals of a loudspeaker (an electrical to sound transducer), the air in front of the speaker will have the pressure distribution shown in 1b at a given instant of time. The pressure at a given point will of course vary with time, and a microphone or speaker placed at that point will react to these changes in pressure. This reaction to the pressure will produce a waveform of electrical voltage at the terminals of the microphone or second speaker that is a copy of the solid line of Fig. 1c, except that it will be smaller in magnitude and will be displaced in time, as shown by the dotted line in Fig. 1c.

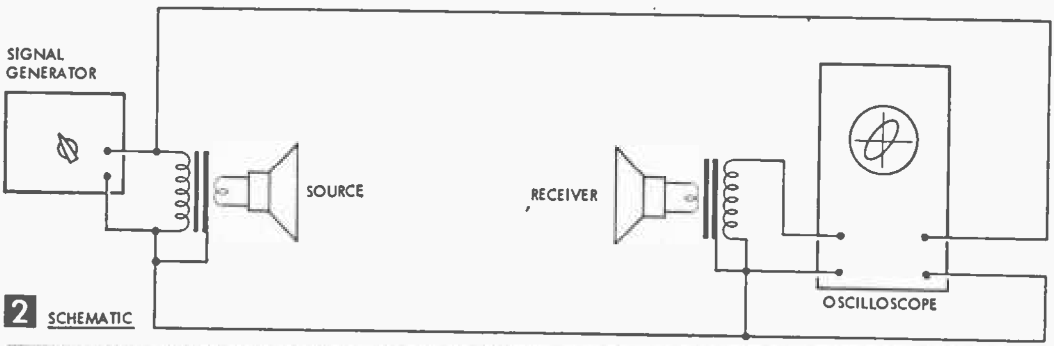
If a source speaker and receiver speaker are a whole multiple of one wavelength apart, the receiver waveform will be in time with the source speaker signal. The measurement of this distance would be difficult to perform accurately. A wavelength — the distance

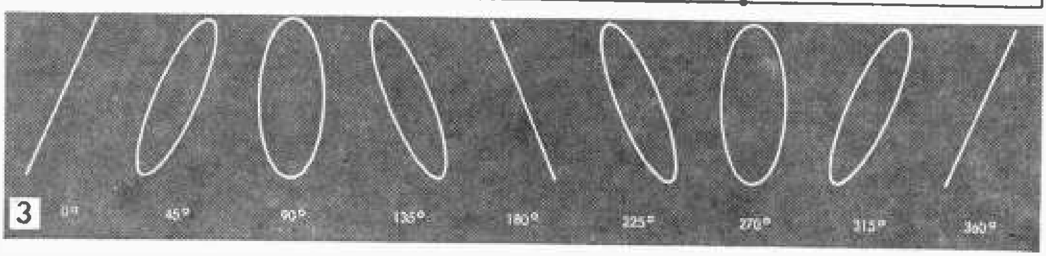


1 The normal positions of particles of air (a) are changed upon becoming the carrier of a sound wave—they are alternately compressed and rarified (b). If the sound source is a speaker producing a wave represented by the solid line in (c), a receiver speaker would receive a copy of this wave slightly later (dotted line).

2 Lissajous figures for two voltages of same frequency. The angles given refer to the differences in phase between the vertical and horizontal input voltages where 1 cycle time is considered equal to 360°.

3 Oscilloscope method for determining the velocity of sound. Transformer cores are connected to common connection to minimize hum pick-up.



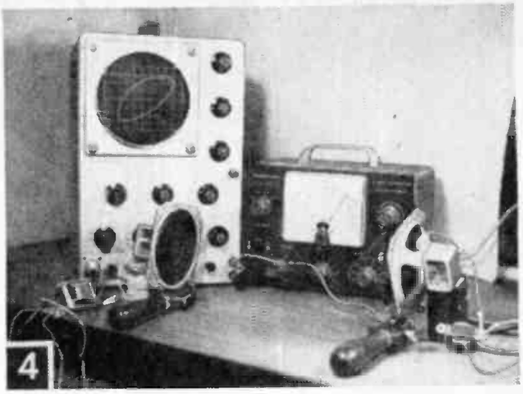


through which a cycle of sound is distributed at a given instant of time—may be determined more accurately in another way. A cycle corresponds to a complete excursion from nominal to maximum to nominal to minimum to nominal air pressure. Suppose the position of the receiver speaker relative to the source speaker is adjusted for a given time relationship between source and receiver voltage. If the receiver speaker is moved away from the source speaker the time relationship will change, till at some new position the voltage waveforms of source and receiver voltage bear the original time relationship. The distance that the receiver must be moved to attain the original time relationship is a wavelength.

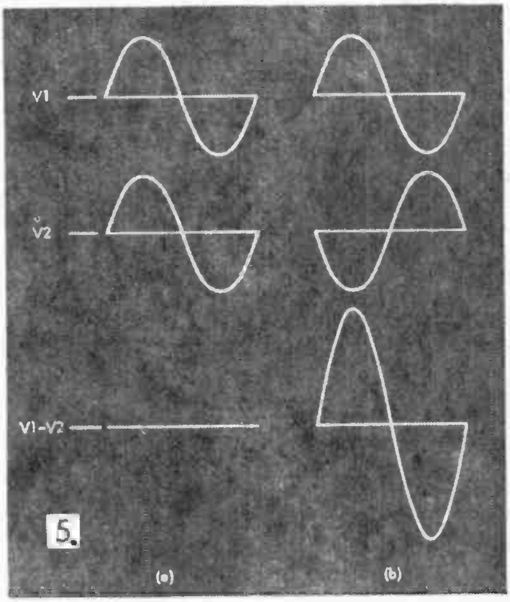
The relationship between the velocity of sound (v), the frequency (f), and the wavelength (w) is v equals fw. Thus, if wavelength and frequency are known, the velocity of sound in air may be computed. An audio signal generator may be used as a sinusoidal voltage source speaker driver. The frequency may be read from the signal generator dial. Wavelength may be determined by the method described in the previous paragraph.

All that remains is to find the time relationship between source and receiver signals.

There are two good methods of determining the time or phase relationships between two voltages of the same frequency. One of these methods requires an oscilloscope and employs Lissajous figures. The other employs an ac voltmeter in a comparison circuit. Since the receiver voltage is small, an audio millivoltmeter such as the Heathkit AV-3 or an amplifier driving an ac voltmeter should be employed if the latter method is used. (The "Hi-Qual Preamp," ideal for this experiment, appeared in RADIO-TV EXPERIMENTER #569 available from Science and Mechanics, 505 Park Ave., New York 22, for $1 including postage and handling.



Oscilloscope set-up for determining velocity of sound.



In the meter method, V1 and V2 in phase result in minimum voltmeter reading (a), while V1 and V2 180° out of phase (b) give maximum voltmeter reading.

Oscilloscope Method. The experiment is diagrammed in Fig. 2 and shown visually in Fig. 4. The loudspeakers may be inexpensive ones such as the 4-in. Lafayette SK-25. The transformer secondaries should match the speaker voice coils and the primaries may have any impedance value from 2K to 25K. A high impedance is preferable for the receiver circuit since the transformer is reverse connected and a voltage step-up results. The Stancor A3327 (25K to 4 ohms) is an excellent choice. If an audio signal generator which does not have sufficient power output to drive the speaker audibly is used, connect an audio amplifier between the signal generator and the source drive transformer. Connect the receiver transformer input to the vertical input of the oscilloscope, and the source signal to the horizontal input.

Fasten the speakers in hand vises and support them at the same height. Set the signal generator for 500 cycles and adjust the output till an audible signal comes from the source speaker. Adjust the oscilloscope controls to display the Lissajous figure. Move one of the speakers relative to the other till the 0° waveform of Fig. 3 is observed. Measure and record the distance between the speakers, in ft. Now increase the distance till the 360° waveform of Fig. 3 appears. Measure this distance, and subtract from it the first distance, which gives the wavelength of the signal. The velocity of sound in ft./sec. may then be computed from v=fw.

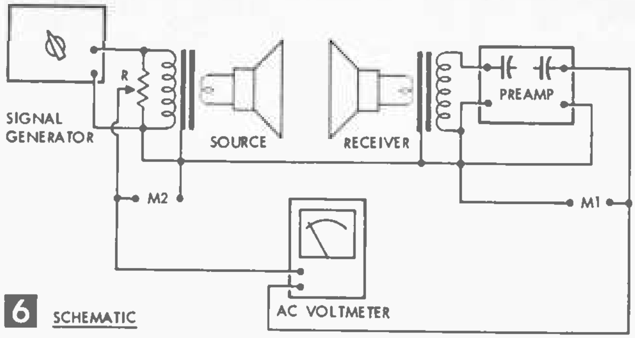
The velocity of sound is known to be 1,054 ft./sec. plus 1.1 × the temperature in degrees F. Thus, in a room at 70° F, the velocity of sound is 1,131 ft./sec. The accuracy of the experimental results may then be computed:

$$\% \text{ error} = \frac{v - v'}{v'} \times 100\%$$

where v is the experimental value and v' is the known value.

The author's experiment produced fairly accurate results. The wavelength at 1000 cycles was 1.167 ft. Thus v was 1,167 ft./sec. The room temperature was 80° F. The value of v' therefore was 1,142 ft./sec. The error was +2.2%. The experiment was repeated with the signal generator set at 500 cycles. The measured wavelength was 2.29 ft. The slide rule computed value of v was 1145 ft./sec. The error was 0.26%. Note that the accuracy improved considerably when a longer wavelength was involved.

Meter Method. The difference of two sine waves of equal amplitude and frequency for 0° and 180° phase relationships is shown in Fig. 5, and this leads to a method of finding sound wavelength with more common equipment. Either an audio millivoltmeter or an ac voltmeter is needed, the latter requiring an amplifier such as the "Hi-Qual Preamp," referred to earlier, as a driver. The value of voltage which an ac meter will read does not give an indication of phase relationships. But, since the value which the meter will indicate is a function of peak value, the differencing principle may be employed to determine phase relationships. The schematic is shown in Fig. 6 and the set-up in Fig. 7.



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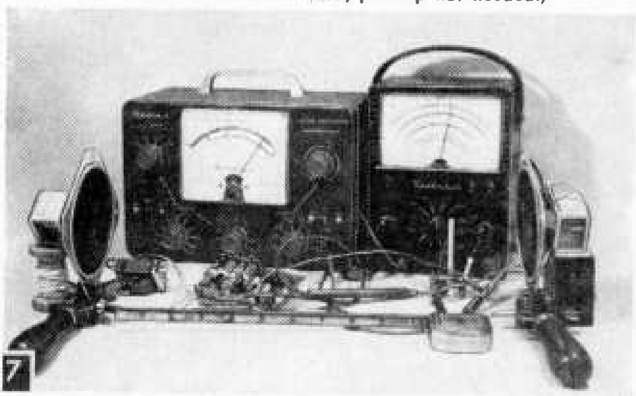
Schematic for determining velocity of sound with an ac voltmeter. (If audio millivoltmeter used, preamp not needed.)



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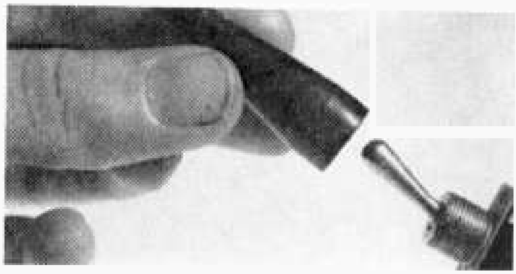
Set-up for voltmeter method of finding speed of sound.

The signal generator drives the source loudspeaker. A 1K potentiometer (R), in the original apparatus a Clarostat 58C1-1000, is connected across the signal generator output. Its purpose is to allow the adjustment of the voltage between the slider and the common connection to the receiver to be approximately equal to the voltage at the output of the preamp. This is accomplished by measuring the voltage across the preamp output with the voltmeter and then connecting the voltmeter across the potentiometer to make the adjustment of R. The two sets of connection terminals for this adjustment are designated M1 and M2 in Fig. 6. After this adjustment has been made the meter is connected in the circuit as shown.

With the meter connected as shown in Fig. 6, receiver and source voltage buck each other (subtract). This process causes the meter to read minimum voltage when both voltages are in phase (5a) and maximum voltage when both voltages are 180° out of phase (5b). Thus, the receiver speaker is moved through one wavelength when the meter indication goes from min to max to min or from max to min to max. The distance measurements, frequency used and the computations are the same as those required with the oscilloscope method.

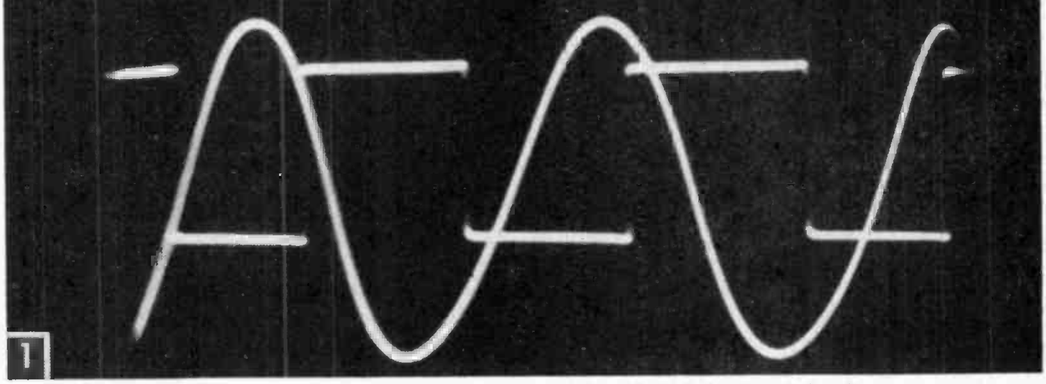
Shockproof Switch Covers



• To avoid any possible shock from the bat-handles of toggle switches, place plastic test-clip insulators over them. These insulators are also good dust covers to prevent particles of metal and other foreign materials from entering the switch mechanism.

The covers enable one to throw the switch safely and easily, and to distinguish from tilt, whether the switch is on or off.—J. A. C.

Combined Voltage Calibrator And Electronic Switch



Sine and square wave seen simultaneously with aid of electronic switch unit.

Single unit multiplies oscilloscope usage

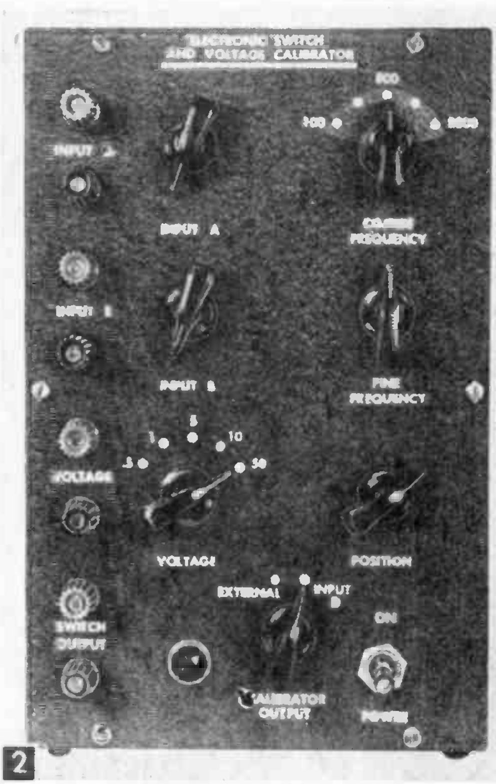
By W. F. GEPHART

THE unit shown in Fig. 2 combines two useful 'scope accessories: 1) an electronic switch which permits viewing of two signal patterns simultaneously (Fig. 1), and 2) a voltage calibrator, allowing the 'scope to be used for ac voltage measurements. The first accessory, the switch, permits both the input and output of an amplifier to be viewed together to check fidelity, for example. The second accessory, the voltage calibrator, gives the magnitude of a signal as the wave form is viewed.

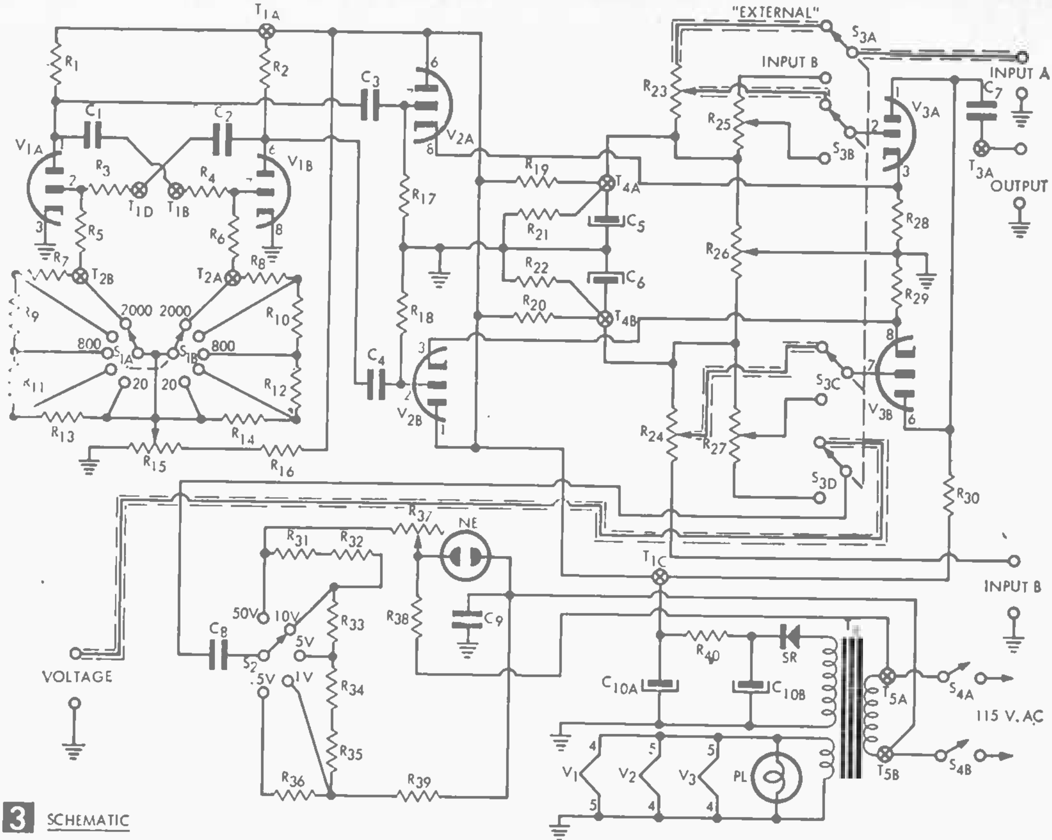
Our unit has a special switching system that permits the calibrated voltage signal to be one of the signals seen simultaneously.

An electronic switch switches signals so fast that both images appear on the oscilloscope together, due to the persistence of the cathode ray tube. A multivibrator type oscillator switches amplifier tubes "on" and "off" so they conduct alternately. Separate signals are fed into each amplifier tube, whose output is common. This output is actually both signals, presented alternately.

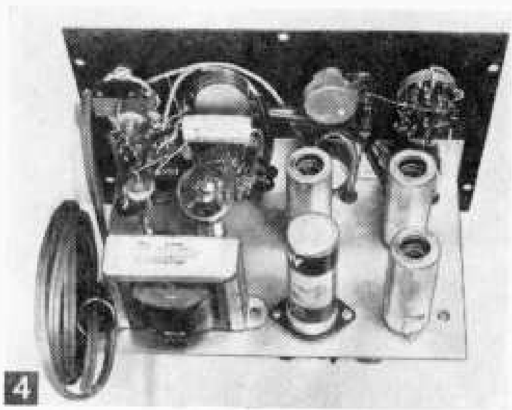
Figure 3 shows the schematic, in which V1 is a twin triode multivibrator. It generates square waves, with frequencies between about 20 and 2000 cycles, as set by SW1 and R15, the frequency controls. The multivibrator drives the grids of a second twin triode (V2), which acts as a switching tube. The two plates of the multivibrator are connected to the two grids of the switching tube. Since the signals on the plates of V1 are 180° out of phase, the two halves of V2 conduct alternately. The output of the multivibrator is a square wave and quite high. Thus, when the plate of V1a is positive, the grid of V2a is positive and V2a conducts. At the same time, the plate of V1b and grid of V2b are negative,



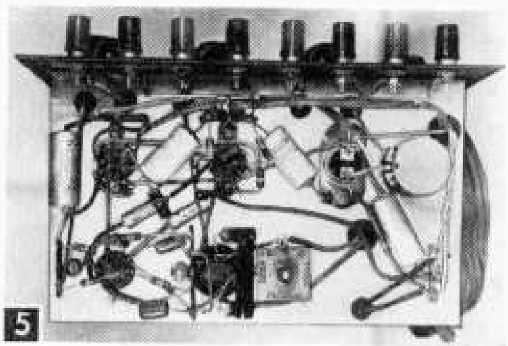
Front view of the completed unit.



3 SCHEMATIC



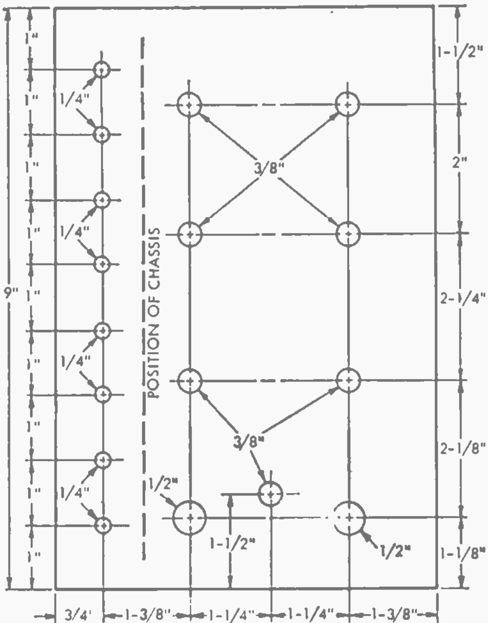
4 Back-of-panel view shows miniature pots mounted by stiff wire leads.



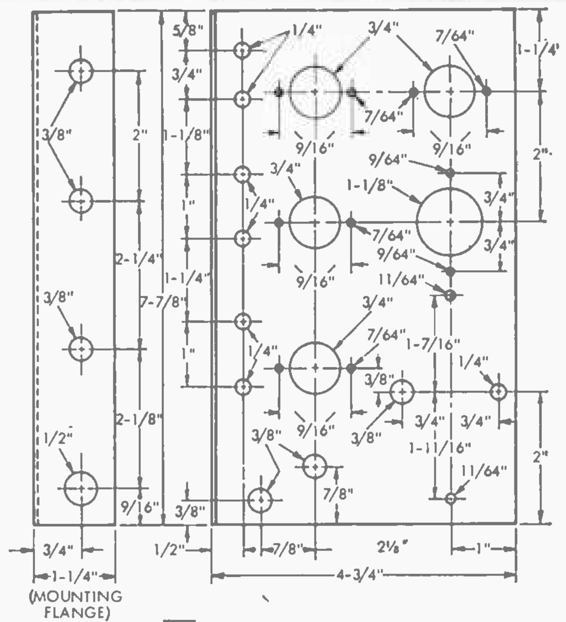
5 Under-chassis view shows shielded lead attached to common negative lead of binding posts.

which prevents V2b from conducting. At the half-cycle point, the situation instantly reverses (since the multivibrator is a square wave generator), and V2b conducts and V2a cuts off.

As the two halves of V2 alternately conduct, the current they draw flows through the cathode resistors (R28 and R29) of V3a and V3b. The twin triode amplifier (V3) is two ordinary amplifiers, biased at a normal operating point by cathode bias. If the cathodes of the switching tube were not connected to their cathodes, both halves of V3 would amplify equally. However, as the two halves of V2 draw current, this current flowing through the related cathode resistor of V3a or V3b biases that half of the amplifier tube (V3) to cut-off. In this way, the two halves of the amplifier tube (V3a and V3b) are alternately switched on and off at a rate equal to the multivibrator frequency. Therefore, the two input signals take turns appearing at the out-



6 PANEL LAYOUT



7 CHASSIS LAYOUT

put terminals. But, due to the persistence of the fluorescence of the CR tube and the rapid switching rate, both signals appear on the CRT at the same time.

By adjusting the dc potential of the grid of the amplifier tubes, the position on the CRT screen of each signal can be changed. This is done by having a dc voltage from twin voltage dividers R19-R21 and R20-R22 across potentiometer R26 (Position). Adjusting this control varies the voltage on each grid by changing the grounding point.

The voltage calibrator section uses a neon bulb to get square waves at line voltage frequency. Neon bulbs ignite at a certain voltage, and if a resistor is connected in series with the bulb, the voltage drop across the bulb will be constant. The ignition voltage of the NE32 bulb used is approximately 60 v., and gives square waves of 60 v. in this circuit. On the positive half of the cycle, the voltage increases until the ignition point (about 60 v.) is reached. The tube then fires, and starts drawing current. As the voltage increases, more current is drawn, but the voltage drop across the resistor in series with the tube (R38) holds the voltage across the tube constant. As the voltage passes the peak and decreases below the ignition point, the bulb goes out, and current stops flowing through the resistor. The voltage drop across the tube then follows the pattern of the cycle, and the process is repeated on the negative half of the cycle. In this way, fairly good square waves are obtained.

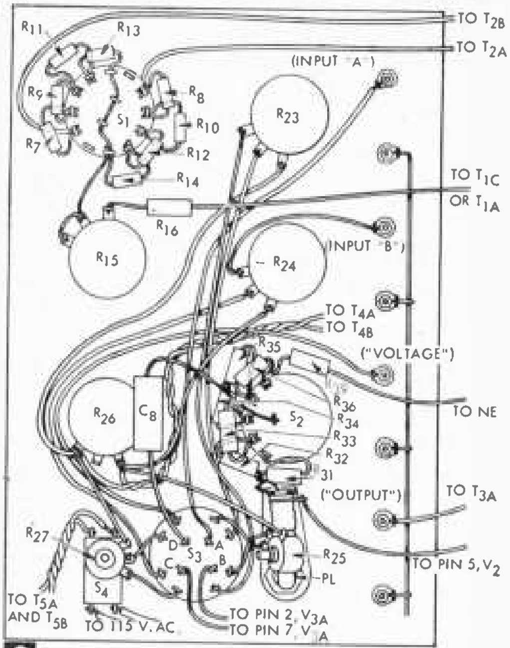
The ignition voltage is reduced to a reference level by R37, and subsequently divided for other ranges by R31 through R35. For oscilloscope use, these levels are usually set at peak-to-peak values rather than the RMS values shown on meters.

Switch S3 and potentiometers R25 and R27 permit the output of the calibrator to be used as one of the electronic switch inputs. The usual method of using a calibrator is to note the height of the calibrator pattern, remove it and connect the signal to the 'scope, and compare the heights of the patterns. By switching the calibrator output into the electronic switch, the calibrator voltage pattern remains on the screen to be compared directly with the signal pattern.

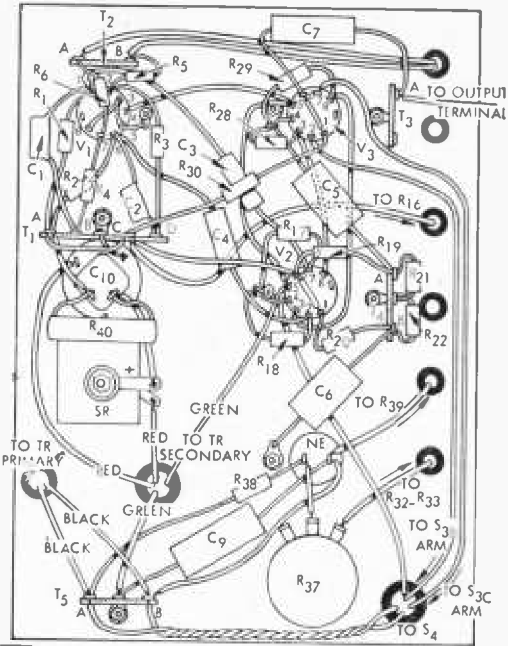
Potentiometers R25 and R27 are required to keep conditions constant when using the calibrator through the electronic switch. If the calibrator were fed directly into Input-B terminals, the output of V3b would vary with the setting of B-gain and the amplification of V3b. Potentiometer R27 is set so the output of V3b is equal to the input.

Since the magnitude of the signal to be measured must not be altered in this case, potentiometer R25 is set so that the output of V3a is equal to the input, making it a 1:1 amplifier. This prevents the electronic switch from affecting the magnitude of the signal whose voltage is to be measured by comparing it with the calibrator signal.

The unit is built on a vertical arrangement to minimize bench space required, as shown in Figs. 4 and 5. The panel and chassis layouts are shown in Figs. 6 and 7, with pictorial wiring shown in Figs. 8 and 9. Notice that R25 and R27 are miniature units, supported



8 PANEL WIRING



9 CHASSIS WIRING

by stiff (#16) wire leads.

The power supply and filaments are wired first, followed by the neon bulb circuit. In mounting resistors on the voltage switch (S2), be sure they will clear the neon bulb. No particular care is required in wiring, except that certain leads (as shown on the schematic) should be shielded, and care used that the grounded shield does not short out any terminals.

After wiring, output of the calibrator must be set. Connect a vacuum tube voltmeter between R37 and ground, and set the voltage switch S2 on 50. Calibration should be for peak-to-peak voltages, so the reading on the VTVM should be .3535 of the values shown on S2. Turn the unit on, and adjust R37 so the voltmeter reads 17.7 v., which is .3535 of the 50 v. indicated on S2. Due to the divider, other readings will be appropriate.

Next, potentiometer R27 should be set. With Calibrator Output S3 on External, set Voltage S2 on 5, and connect the Voltage terminals to the vertical input of the 'scope.

MATERIALS LIST—'SCOPE CALIBRATOR AND SWITCH
(All resistors 1/2 watt and 10% unless shown)

Desig.	Description
R1, R2	51K, 5%
R3, R4	12K
R5, R6	.22 meg.
R7, R8	1 meg.
R9, R10	3.3 meg.
R11, R12	4.3 meg., 5%
R13, R14	5.1 meg., 5%
R15	.1 meg. potentiometer (Fine Frequency)
R16	.15 meg.
R17, R18	.1 meg.
R19, R20	.33 meg.
R21, R22	15K
R23, R24	.1 meg. potentiometer (Input A and Input B)
R25, R27	1 meg. miniature potentiometer (Clarostat Series 48)
R26	50K potentiometer (Position)
R28, R29	1000 ohm
R30	33K, 1 watt
R31	68K, 1%
R32	12K, 1%
R33	10K, 1%
R34, R35	4K, 1%
R36, R39	1K, 1%
R37	50K potentiometer
R38	10K
R40	250 ohm, 10 watt, wirewound

Desig.	Description
C1, C2	.001 mfd., 200 v.
C3, C4	.047 mfd., 200 v.
C5, C6	25 mfd., 25 v. electrolytic
C7, C8, C9	.5 mfd., 200 v.
C10	40-40 mfd., 150 v. electrolytic (Mallory FP-221 or equiv.)
S1	2-pole, 5-pos. rotary switch (Coarse Freq.) Mallory 3226J
S2	1-pole, 5-pos. rotary switch (Voltage) Mallory 3215J
S3	4-pole, 2-pos. rotary switch (Calibrator Output) Mallory 3242J
S4	DPST toggle switch (Power)
PL	6.3 v., .15 amp. pilot light (#40 or #47)
SR	65 ma. selenium rectifier
T	power transformer, 120 v. @ 50 ma., 6.3 v. @ 1 amp. (Merit P-3045)
NE	NE 32 neon bulb
V1, V2, V3	6CG7 vacuum tubes
	5 x 6 x 9" utility cabinet (Bud CU-1099)
	three 9-pin miniature sockets
	neon bulb socket
	pilot light holder
	8 binding posts
	7 knobs
	miscellaneous hardware

Turn both units on, and adjust the vertical gain control on the 'scope to give a pattern of convenient height, and note the height of the image on the CRT. Do not touch the vertical gain control on the 'scope after this.

Move the leads from the 'scope to the Output terminals, set Frequency controls S1 and R15 to mid-position, and adjust Position R26 so a single trace appears on the CRT. Switch Calibrator Output to Input-B and adjust R27 so that the trace height on the CRT is the same as the voltage trace height found above. Seal R27 shaft with nail polish.

To set R25, feed a low gain signal from an AF oscillator or other unit into the vertical input of the 'scope, adjust the vertical gain for a convenient height, and note the trace height. Then connect the 'scope to the Output Terminals instead of the signal source and adjust the Position control to get a single trace on the CRT.

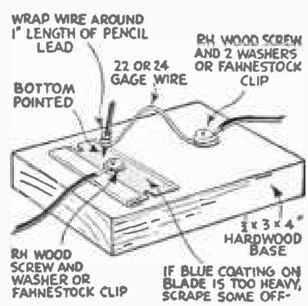
Remove the neon bulb and set S3 to Input-B. Connect the AF oscillator to Input-A terminals, and adjust R25 to give the same trace height as given when the signal was connected directly to the 'scope. Seal R25 shaft with nail polish and replace the neon bulb.

It will be found that adjustment of the position control will affect signal magnitudes somewhat, so the voltage calibrator section should be used through the electronic switch section only when approximate results are sufficient. When using the unit in this manner, the Position control should be set so the signal pattern is superimposed over the voltage calibrator pattern, and ready comparison can be made. Also, most accurate results can be obtained when the two signals are superimposed. For more precise work, the electronic switch section is not used. Output from the Voltage terminals is connected to the 'scope, the vertical gain set, and trace height noted. The leads from the Voltage terminals are removed, and the signal is then connected directly to the 'scope. A comparison of the trace height produced by the signal, with the noted height of the voltage calibrator trace will then give a precise peak-to-peak voltage measurement.

In using the electronic switch, the two signals to be viewed are connected to Input A and Input B, and the Output is connected to the vertical input of the 'scope. The frequency controls of both the 'scope and the electronic switch are adjusted for proper frequency, and the gain controls on the switch adjust the individual trace heights. By use of the Position control on the switch, the two patterns can be shown separately or superimposed (as in Fig. 1).

Improved Razor-Blade Detector

• Here is a more rugged version of the familiar fox-hole razor-blade "crystal" detector. The original was a piece of pencil lead bridged across the edges of two razor-blades and sometimes used by G.I.'s in fox-holes to pick up local broadcasting stations. This was fairly sensitive, but it was very difficult to hold an adjustment, as the least vibration or jar caused the lead to rock and roll on the blade edges, resulting in erratic and noisy reception. For the arrangement shown, blue steel single edge or double edge blades (such as *Pal* razors) seem to be the most sensitive, but many other blades also have sensitive spots on them. Use with a conventional circuit and a good antenna and ground.—ARTHUR TRAUFFER.



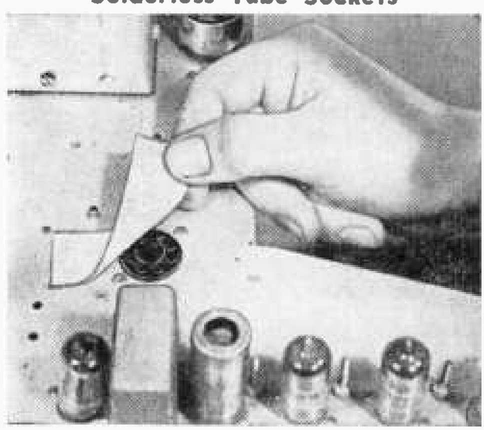
Removing Enamel Wire Insulation

• To remove enamel insulation on magnet and hook-up wire quickly and cleanly, wrap a piece of sandpaper around the wire and give a twisting, rotary motion.—E. L. BURNER.

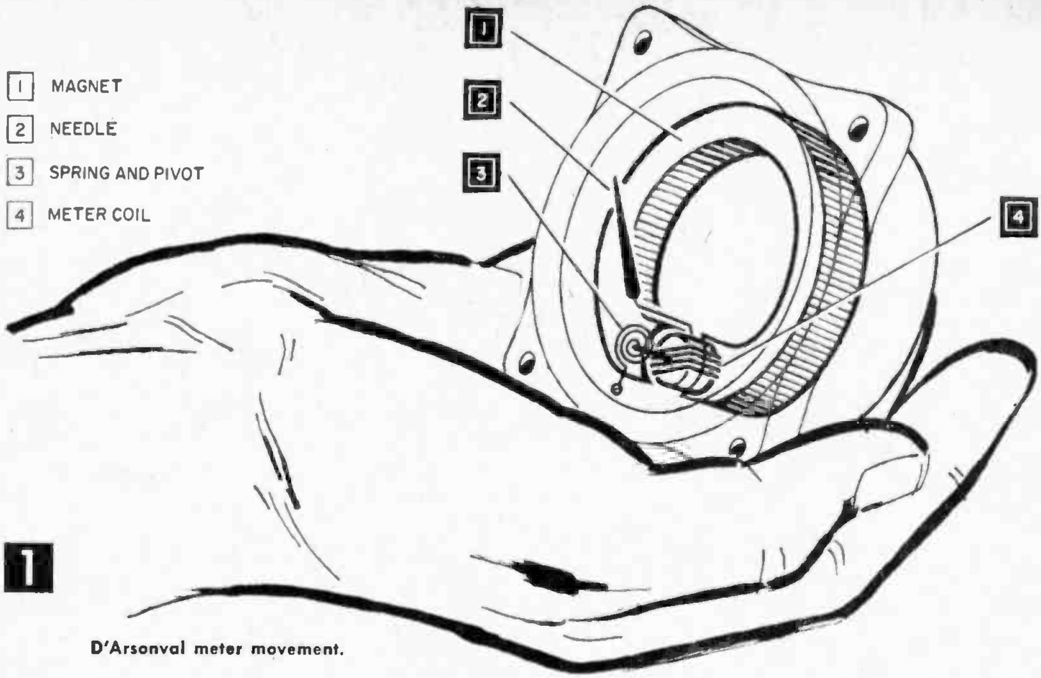
Pointed-End for Radio Ground Pipe

• A simple pointed end makes it easier to drive a radio ground pipe. Insert the lathe-turned point into the bottom end of the pipe to keep dirt from plugging the pipe. Holes drilled through the pipe for soil wetting reduce electrical resistance between ground pipe and soil.—ARTHUR TRAUFFER.

Solderless Tube Sockets



• When soldering on top side of radio or TV chassis, dropping solder in an open tube socket can cause trouble. Eliminate this possibility by placing a strip of wide adhesive tape over the open socket.—H. LEEPER.



1

D'Arsonval meter movement.

Meters and Multimeters

By FORREST H. FRANTZ, SR.

THE type of meter we are concerned with has an electromagnetic mechanism known as a d'Arsonval movement. From it I'll show you how to make voltmeters and ammeters and ohmmeters.

How Meters Work. The d'Arsonval meter (Fig. 1) contains a permanent magnet, a coil that is free to rotate about its pivot axis, a needle attached to the coil and a spring that resists displacement of the coil from zero and tends to restore the coil to zero.

The torque that causes the coil to turn is developed when a current passes through the meter coil. The amount is proportional to the current passing through the meter coil. The coil and needle are supported by low friction bearings so that mechanical resistance is low. The pole pieces conduct the flux from the magnet poles and the circular iron core over which the coil rotates. This core and the curved pole piece faces assure that the magnet's flux is always cutting the coil windings at right angles.

The most common basic d'Arsonval meter movement is the 0-to-1 milliampere dc meter.

Designing Your Own Meter Instruments. Assume for simplicity in the examples, that all of the work is being done with a 0-1 ma. meter. The resistance of the meter, if not known, can be determined by the circuit of Fig. 2. Adjust pot R, which is connected as a high resistance rheostat, for full scale meter deflection. Connect shunt RS across the meter terminals, and adjust it until the meter deflection is reduced to half scale. The resistance to which RS is adjusted is the resistance of the meter movement. The resistance of RS may be measured with an ohmmeter or Wheatstone bridge.

Once you know the basic movement (I_m) and the resistance (R_m) of the meter, you can increase the current range with a shunt resistance (R_s in Fig. 3.). The value of the shunt resistance for a new range is determined using these formulas:

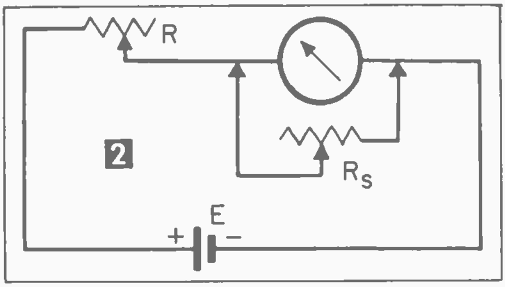
(a) $I_s = I - I_m$

(b) $R_s = R_m\left(\frac{I_m}{I_s}\right)$

You can buy a 1% shunt resistor, or you can make the shunt by winding insulated resistance or magnet wire on a form, such as a matchstick or a Bakelite bobbin. Or you can use a rheostat, adjust it to the proper resistance, and lock it with a cement seal between the shaft and bushing. Most shunt resistance values will be so low, though, that it's best to wind your own.

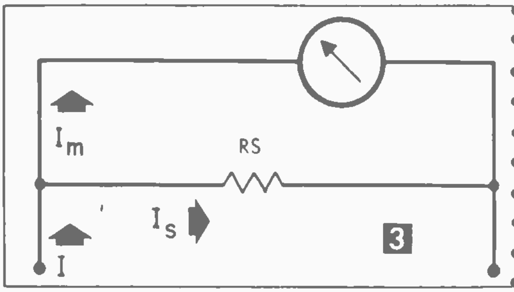
In designing an extended-range meter

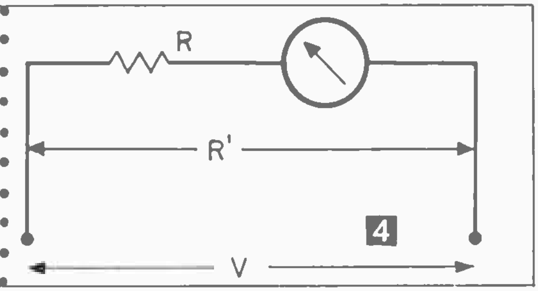
Circuit for measuring meter resistance. With RS out of the circuit adjust R for full-scale meter deection. Then connect RS across the meter as shown and adjust it till the meter reads half scale. The meter resistance is equal to the value to which R is adjusted.



3 Extending the range of a current meter with a shunt resistance.

4 Converting a milliammeter to a voltmeter with a series resistance.





using a basic meter movement, try to select a range that is a convenient multiple of the meter scale range. Multiples of 10 are best since you can read the meter directly, and have to supply only the decimal point. Two and five are the next best choices for scale number multipliers, and of course, multiples of 10 can be used with these also. (Same applies to voltmeters.)

The circuit for converting a milliammeter to a voltmeter is given in Figure 4. These formulas are used:

(a) $R' = \left(\frac{V}{I_m}\right)$

(b) $R = R' - R_m$

By connecting a switch (Fig. 5) you can make a multi-range voltmeter.

These current range extensions and voltmeter conversions are solved by applying Ohm's law. In the ammeter application of Fig. 3, the meter and shunt are in parallel. Thus, the voltage across the meter equals the voltage across the shunt. Therefore, the current through the meter times the meter resistance equals current through the shunt times the shunt resistance. And the current into the combination equals shunt plus meter current. The voltmeter arrangement of the second problem (Fig. 4) was based on the idea that the current through the shunt must equal the current through the meter, and the sum of the voltage drops across the meter and the series resistor equals the voltage drop across the combination.

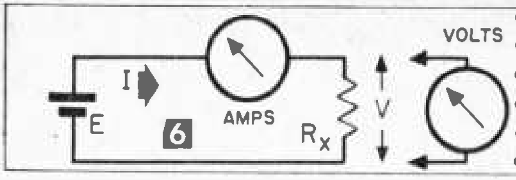
What about measuring resistance with a meter? There are several approaches. The first (Fig. 6) utilizes an ammeter and a voltmeter to measure the current through, and the voltage across, an unknown resistance R_x. Then R_x is calculated from Ohm's law. For example, if V is 4.5 v and I is .005 amp (5 ma.), using:

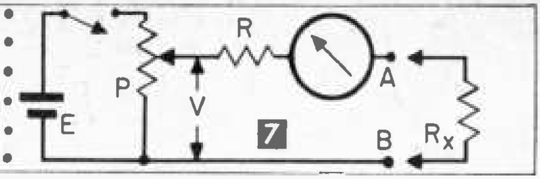
$R_x = \frac{V}{I}$. Then $R_x = \frac{4.5}{.005}$, and $R_x = 900$ ohms.

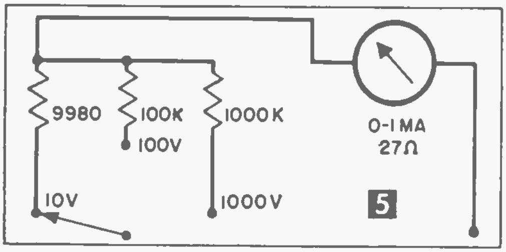
This method is cumbersome, so let's see if we can get around it. If we know the voltage E of the battery, do we need to measure V? No, if R_x is much greater than the resistance of the meter measuring the current I. This leads us to the circuit of Fig. 7, where a pot P is employed to adjust the voltage V to a value around which we'll design our ohmmeter. Assuming that we'll use a 1-ma, 27-ohm meter movement, as before, we'll want the resistance of P to be about 500 ohms. This choice is made on the assumption that the current from the battery should be 10 or more times the current through the meter, for accurate results. The resistance across A and B is zero, if we short these terminals. Therefore the resistance of R and the meter should be 5v (the design voltage) divided by the meter current, .001 amp. Resistance R, therefore, is 5000 ohms, minus the meter resistance of 27 ohms, or 4973 ohms. Since 5000 and 4973 ohms differ by only about ½%, you can let R equal 5000 ohms without noticeable error. The ohms scale may be calculated in terms of the I scale on the meter by assuming different values of R_x using this formula:

$$I = \frac{V}{R + R_x}$$

Thus, R_x in ohms	I in ma.
0	1.000
500	0.909
1000	0.832
2000	0.715
3000	0.625
4000	0.555
5000	0.500







5 A simple 3-range voltmeter. Resistance values were obtained by the method of Fig. 4 and rounded off to practical values.

6 Determining resistance by the volt-current (Ohm's law) method.

7 A simple ohmmeter circuit. In the example in the text, P is 500 ohms. For less critical zero adjustment, substitute (for P) a 100-ohm pot in series with a 400-ohm resistor.

8000	0.384
10,000	0.333
15,000	0.250
20,000	0.200
30,000	0.143
50,000	0.091
100,000	0.048
200,000	0.024

You can compute additional values yourself. Note that the half-scale meter deflection is equal to R for any meter combination which uses this arrangement. That's a handy piece of information for estimates, before you begin design. The ohm readings may be obtained using a table such as that above, or an ohms scale may be pasted on the meter glass. The switch S is turned on only when the ohmmeter is being used.

The potentiometer P may be made up of a 100-ohm pot in series with a 400-ohm, fixed resistance. This arrangement makes the zero resistance adjustment less critical. You can double battery life by doubling the value of P (use a 200-ohm pot and an 800-ohm resistance) with a decrease in accuracy that's negligible.

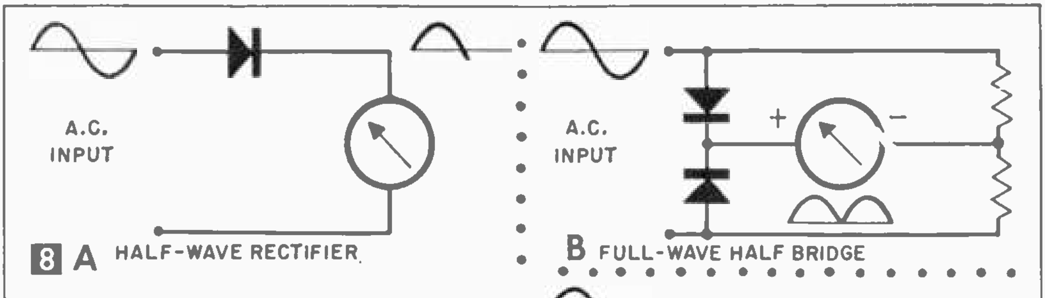
To convert a basic dc meter movement for ac measurements, rectifiers are used. Their difference in forward and back resistance is so great that we generally assume a rectifier acts as a switch. The rectifier circuit of Fig. 8A, not often used with meters, conducts during only half the ac input cycle. The full-wave half bridge of 8B passes current during all of the input cycle. A 2.7K resistor for each R works well with most germanium diodes. The output current is about 0.72 times the input current. The full bridge of Fig. 8C passes current during the entire input cycle also, but presents a greater output for a given input current. The output current is 0.9 times the input current.

The rectifiers may be germanium diodes or copper oxide types. Germanium diodes are more readily available and cover a broader range of frequencies. The GE 1N64, Sylvania IN34A and the Raytheon IN66 are suitable.

The shunt resistances for current meters and the series resistances for voltmeters of the ac variety may be determined in the same way as they were determined for dc instruments, but bear in mind that the transfer factor of the rectifier arrangement alters the value of the ac voltage required for full scale deflection, and that the apparent meter resistance is changed, too. Use the circuit of Fig. 2 for experimentation, considering the rectifier input terminals as the meter terminals and an ac voltage source instead of a battery to determine the apparent meter resistance. The current through the meter is the voltage across R divided by the resistance of R. Then, the formulas of Fig. 3 and 4 can be applied.

Multimeters. There are many meter kits available at low prices. They're called VOM (volt-ohm-milliammeter) or multimeter kits and are good for measuring ac and dc current and voltage, and for measuring resistance. Although many factors enter into the choice of a meter kit, the primary consideration is meter sensitivity: the number of ohms resistance that the meter movement and the series resistance present between the input terminals of the meter, divided by the corresponding voltage range. This is expressed in ohms/volt. This number is a function of meter movement current for full scale deflection. A 1-ma meter has a sensitivity of 1000-ohms/volt; a 200 microamp. meter has a sensitivity of 5000 ohms/volt; and a 50 microamp. meter has a sensitivity of 20,000-ohms/volt.

The sensitiviy is important, because when you connect a voltmeter into a circuit to make a measurement, you're connecting a resistance across the circuit. If you connect too low a resistance across the circuit, you'll draw enough current from the circuit to get a wrong voltage reading. Figure 9 illustrates what can happen. When you connect the meter across AB, its resistance is in parallel



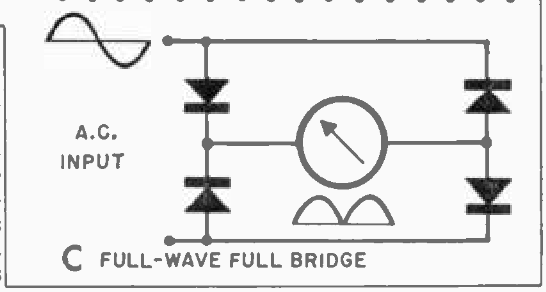
with the bottom 5K resistor and the resistance of the combination is lower. With a 1000-ohm/volt meter (0-1 ma movement) set to the 5 v range the resistance between A and B looks like 2500 ohms. This increases total circuit current to 1.33 ma from the value of 1 ma which flowed prior to meter connection. The voltage drop between A and B is only 3.33 v now instead of the actual 5 v that would exist under normal circuit conditions —a big error. However, if a 20,000 ohm/volt meter were used to make the measurement, the resistance paralleling R2 would be 100,000 ohms on the 5-v range, and the resistance between AB would be 4760 ohms. The total current through the circuit would be 1.023 ma, and the voltage between A and B would be 4.87 volts, very close to exact.

Using a Multimeter. My young son uses his meter to check the resistance of a toy motor. If it's open, the needle reads infinite resistance (no deflection). Sometimes he checks his toy motors by using them as generators, switching the meter to a low dc voltage or current range and looking for a meter deflection as he rotates the motor shaft.

The motor used as a generator with a meter indicating output voltage across or current through a resistance makes a good *rpm* indicator for lathes, drills, motors and engines (including cars). The same scheme may be used for a speedometer for bicycles or a child's wagon. Equipped with a propeller or vane that is outfitted to face into the wind or equipped with anemometer type cups, this same electrical arrangement may be used to measure wind speed. The hook-up of Fig. 10 may be used for any of these applications. The size of the series rheostat must be determined experimentally and may include a series resistance in the meter if you use the dc voltage range of a VOM for the meter. A more versatile approach is to use a dc current range.

Usually the pot adjustment can be made to calibrate the meter so the existing meter scale with a suitable fraction or multiple of 10 will provide the desired range of rpm or mph. Sometimes, though, you'll have to provide a paper and ink scale, and you'll have to figure out the mechanical coupling.

A multitester's ac volts range can be used



Meter rectifier circuits.

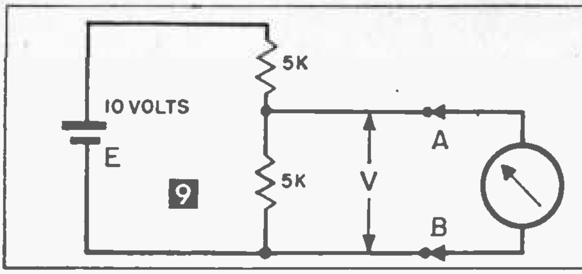
with an audio amplifier to produce an audio millivoltmeter, a sound survey meter or an applause meter (Fig. 11A). Figure 11B shows resistance-capacitance meter coupling, and 11C shows transformer coupling to the meter. You can rig up a calibration template for the amplifier volume control so you can use it as you'd use a range switch. You can use the meter's decibel or voltage scales.

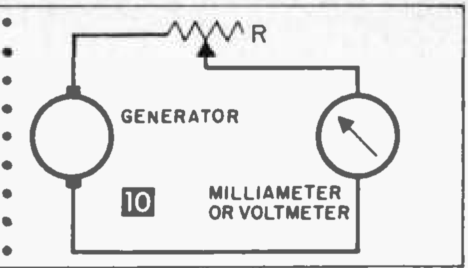
The ac voltmeter ranges may be used to measure capacitance of paper, oil or mica dielectric capacitors. Use the circuit arrangement of Fig. 12. Adjust the pot till the voltages at A and B are equal. Then disconnect the pot and measure its resistance R. For the capacitance in microfarads, substitute the value of R in this formula:

$$C=\frac{1{,}000{,}000}{377R}$$

This circuit works best with higher ac voltages, but 30 v is the top, safe limit. (The voltages across C and R won't add up to the applied voltage.) Get the 60-cycle ac voltage from a transformer—either a filament transformer or a train transformer will do. And, don't use this arrangement to measure low-voltage electrolytic capacitors, or you may ruin them! You can use a 6.3-v transformer in the circuit to test electrolytic capacitors rated 100 v or more, without damage.

Beginners can use a meter to get a good understanding of electricity. Use it to find out: What happens when you connect batteries in series and parallel; what happens to the battery voltage when you decrease the resistance connected to it; what happens to the voltage and current when resistors are connected in series or parallel; how to apply





9 Illustrating how a low sensitivity voltmeter upsets low current circuit operation and gives false readings (see text).

10 A toy motor used as a generator in this simple circuit has many practical uses. Determine R experimentally.

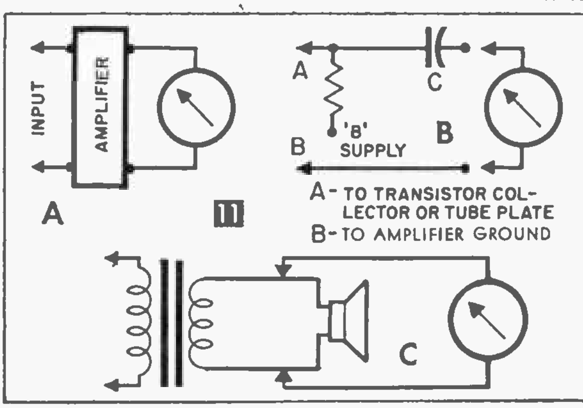
Ohm's law; the difference in the resistance of a light bulb before it's turned on and after it has been on a while. Incidentally, never use the ohms scales to measure resistance in a circuit under power. Always disconnect the voltage from the circuit before you measure resistance.

The resistance ranges may be used to check light bulbs and lamp wiring. If the ohmmeter needle deflects at all on the low ohm range, the bulb (or lamp wiring with a good bulb in the lamp and the switch on) isn't open and if the meter needle doesn't hit zero, the bulb or lamp isn't shorted. In the case of a table or floor lamp, if you get this kind of indication, everything's good, except that you're not sure that the switch will work. When you turn the switch off, the meter needle will return to its normal rest position if the switch is operating properly. This is the technique for trouble-shooting radios, electrical appliances and home and car electrical wiring.

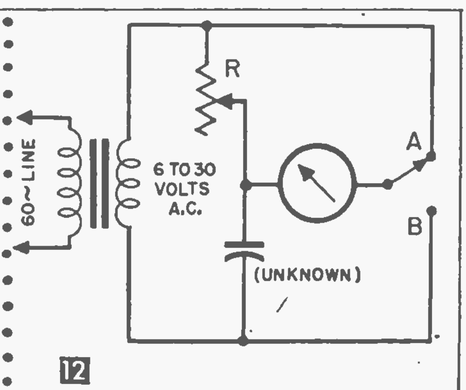
Another example of the continuity check just outlined is locating tubes with open heaters in a radio or TV. If none of the tubes in an ac-dc (transformerless) radio light up when the radio is on, the probable cause of trouble is an open tube heater. An open tube heater will also cause a TV set to be inoperative, but won't necessarily prevent all tubes from lighting up. To check tube filaments for opens, use the ohmmeter test leads across the heater pins (power disconnected). The pin numbers may be obtained from tube manuals.

An ac voltmeter is useful in checking ac line voltages, transformers, circuit wiring, oscillator output, model railroad and toy circuits and for numerous other applications. The dc voltmeter is useful in checking batteries (check them for voltage with the normal load connected), checking dc power supplies, trouble-shooting in radios and car wiring, and for numerous other applications. You should have little difficulty in voltage measurement.

Current measurements are not used as commonly in routine trouble-shooting and experimenting, but are becoming more important with the advent of the transistor. The important thing to remember in making dc current measurements is that the meter is connected in series with source and load. That is, one of the leads connects to the source of voltage and the corresponding connecting point on the device that is receiving power. You might look at it as simply cutting one of the leads in the circuit and connecting the current meter to the lead ends that you've created. The microampere range on the meter is also useful as a current detector in Wheatstone bridge circuits.

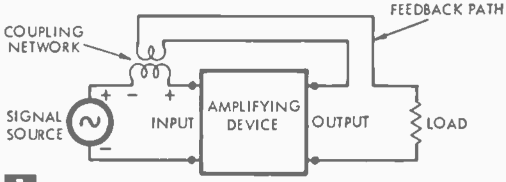


11 Using an amplifier with an ac voltmeter as an audio millivoltmeter, sound survey meter or an applause meter (a); R-C coupling meter to amplifier (b); and meter-connected amplifier output transformer (c).



Using Positive Feedback

By C. F. ROCKEY



1 DIAGRAM OF AMPLIFIER EMPLOYING FEEDBACK

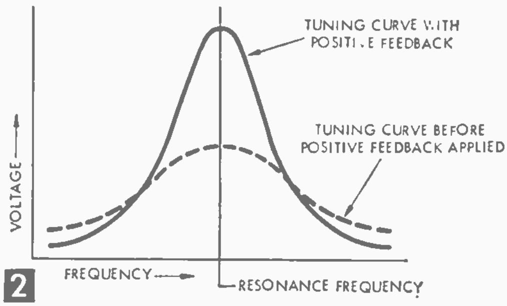
ONE of the truly valuable techniques available to the small-receiver designer is positive feedback, or regeneration. Most small receiver projects utilize it; in fact, all truly sensitive receivers using less than five tubes or transistors probably apply this principle.

Positive feedback owes its effectiveness to the reduction of circuit losses which it accomplishes. All apparatus contributes some loss of energy to a radio signal as it passes through; even one inch of hookup wire has measurable resistance. This unavoidable extraction of signal energy reduces both the available amplification and the selectivity of a receiver. Positive feedback takes a little of the relatively strong signal appearing in the output of an amplifier and transfers it around to the input, overcoming some of the losses in the circuit (Fig. 1).

Thus the losses of the circuit are reduced, and in effect the resistance of the tuning circuit or other circuit is reduced. In the case of the tuning circuit, since selectivity is an inverse function of its resistance, the tuning curve will be sharpened considerably (Fig. 2).

By "positive" feedback is meant that the feedback path and coupling network are arranged to make the feed-back voltage add to the original signal voltage at any instant. Such a connection enhances the gain and reduces the bandwidth of the circuit involved.

The additional gain is expressed in this formula:



2

$$\text{Gain with Positive Feedback} = \frac{\text{Normal gain}}{1 - \text{Normal gain} \times \text{Feedback Ratio}}$$

The feedback ratio is the ratio of the voltage fed back over the output voltage. It is always a number smaller than one.

Even though you've let your algebra slip, you can still see that as the feedback ratio (amount of voltage fed-back, in effect) is increased the denominator of the fraction grows smaller. And as the denominator grows smaller, you will recall, the whole quantity becomes larger, since the numerator remains constant. This means that a comparatively small amount of feedback will give a large increase in gain.

Suppose we have an amplifier with a normal, non-feedback gain of five. Now, let us arrange that 1/10 of the amplifier's output voltage will be additively (positively) fed-back into the input. Substituting these values into our equation we see that:

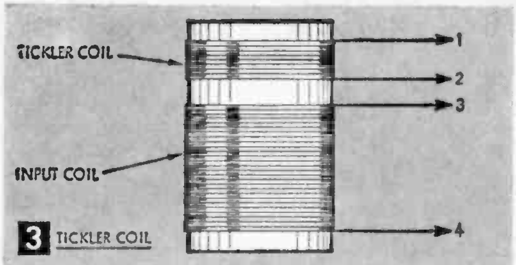
$$\text{Gain with Feedback} = \frac{5}{1 - (5 \times 1/10)} = \frac{5}{5/10} = 10$$

Thus we see that even this comparatively small amount of feedback has doubled the actual amplification of our system. Some calculated gain values obtained from this same hypothetical amplifier with various values of feedback are tabulated below:

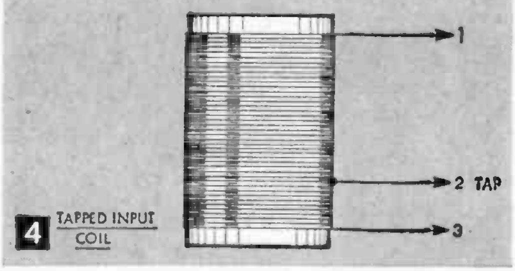
Ratio $\left(\frac{\text{Feedback Voltage}}{\text{Output Voltage}}\right)$	Effective Circuit Amplification
Without Feedback	5.0
0.05	6.7
0.10	10.0
0.125	13.7
0.150	20.0
0.175	40.0
0.195	200.0

The value of feedback is limited by the fact that when the product of the normal gain times the feedback ratio becomes equal to one, the system breaks into oscillation. As the feedback is increased toward the maximum value, the circuit adjustment becomes exceedingly critical. But positive feedback makes it possible to obtain as much amplification from one tube or transistor as would be gotten from two or three without it, so it is well worth the drawbacks.

Positive feedback is always employed in the



3 TICKLER COIL



4 TAPPED INPUT COIL

higher frequency circuitry of a receiver, since the bandwidth-limiting action makes its use in the audio section inadvisable. While most often employed in the detector circuit, regeneration often also improves the operation of if or rf amplifiers; here it increases both sensitivity and sharpness of tuning to a marked degree.

In any case, the requirements for successful application of positive feedback may be summarized as follows:

1. The feedback must add to the signal input voltage at all times. This means the phasing or polarity of the coupling circuit must be correct.
2. The magnitude of the feedback's effect must be under perfect control and smooth at all times.
3. Normal control of feedback must have a minimum effect upon the frequency to which the circuit is tuned.

Most often, an inductive feedback system is used wherein the energy is transferred via a magnetic field.

The first method of inductive feedback employs a tickler coil, connected in series with the output circuit and coupled magnetically to the tuned input coil. If the two coils, tickler and input coil are wound in the same direction and on the same form, they must be connected according to Fig. 3 and Table A.

The tickler coil should be spaced as closely to the input coil as possible, and should contain the fewest possible turns, determined by experiment.

Another commonly-used arrangement for providing positive feedback is by the use of a tapped input coil. This is shown in Fig. 4, connections in Table B.

Again, exact placement of the tap along the coil must be determined experimentally in new designs; in most cases, however, the number of turns between connections one and two will be appreciably greater than between two and three.

TABLE A—TICKLER COIL CONNECTIONS

Type of Circuit	Connection Numbers			
	1	2	3	4
Vacuum Tube Grounded Cathode	Plate	B+	Ground	Grid
Vacuum Tube "Hot" Cathode	Ground	Cathode	Ground	Grid
Grounded Emitter Transistor	Emitter	Battery	Ground	Base
Grounded Base Transistor	Battery	Collector	Ground	Emitter

TABLE B—TAPPED INPUT COIL CONNECTIONS

Type of Circuit	Connection Numbers		
	1	(Tap)2	3
Vacuum Tube Grounded Cathode	Plate	Cathode	Grid
Vacuum Tube "Hot" Cathode	Grid	Cathode	Ground
Grounded Emitter Transistor	Collector	Emitter	Base
Grounded Base Transistor	Collector	Emitter	Base

Although physical arrangements may vary, other taps may be used in certain applications, particularly with transistors, but the identical principles apply in coil connections.

Control of the effects of feedback is most often accomplished by controlling the gain of the circuit rather than by varying the feedback coupling. This is because most feedback variations tend to influence the tuning of the circuit at the same time.

The most widely-used method for controling the effect of feedback involves varying of either the dc plate voltage (with triodes) or the screen-grid voltage (with pentode tubes). With transistors, current practice involves variation of the dc base bias in most instances. This is practically done with a well-bypassed volume control potentiometer. When set up properly, these means provide absolutely smooth and reproducible control of the effects of feedback with a minimum of influence upon circuit tuning. This, along with a little circuit savvy and shielding, suffices for requirement three that we stated earlier.

From the operational standpoint, these two rules should be observed:

1. For maximum gain, adjust the effective feedback as closely to the oscillation point as possible. The oscillation-point is manifested by a click or plunk, followed by evidences of instability or reduction or gain as the feedback is advanced.
2. If for any reason it is desirable to operate the circuit in an oscillating condition; as for CW radiotelegraph reception with the simple receiver, for instance, again always operate as close to the oscillation-point as expedient.

1

STEREO MUSIC CENTER

Complement your electronic finery by matching its beautiful sound with a handsome hardwood cabinet far below cost of its manufactured counterparts

By CHILTON E. PARKER

TRUE stereo—two high fidelity units operating together—is a wonderful experience, especially when you have purchased quality equipment in kit form at substantial savings and successfully wired the project. But you're really only halfway along the road to complete enjoyment of your achievement until you house all of the components in a lastingly-beautiful hardwood cabinet.

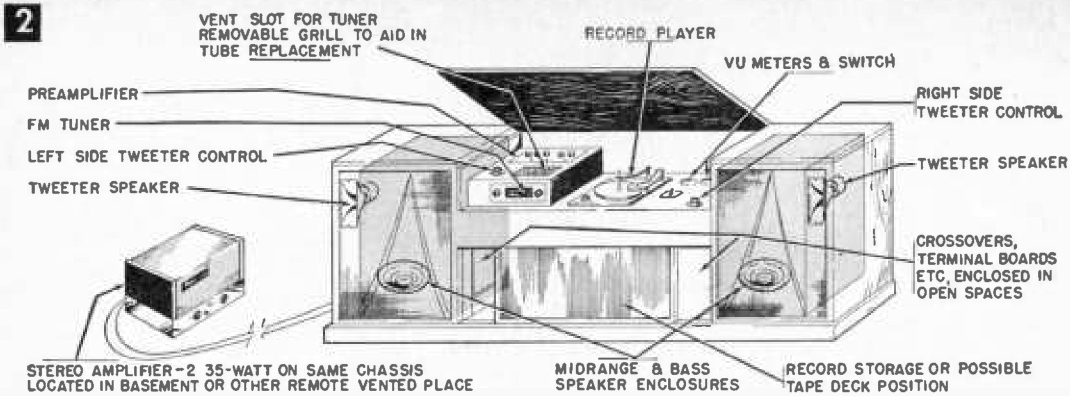
A cabinetmaker will custom-build such an elaborate enclosure for you at a price to match its handsomeness. For somewhat less, you may be able to "pick up" a fine cabinet of adequate dimensions at a large furniture store or radio shop. And, you can realize still more savings by building the 7¼-ft.-long cabinet shown in Figs. 1 and 12, if your home shop is equipped with good hand tools and a few power tools. Its clean, simple styling will allow placement with practically any type of home furnishings, save the most extreme contemporary pieces.

Though solid and veneer cherry was selected as the primary wood, you can easily substitute any other hardwood that suits your taste or is more available in your area. Inner frames and base pieces are of pine. All details have been worked out so that only a minimum of shop equipment is required. Power tools used include a table saw, ½-in. drill press, a borrowed or rented router, and portable drill. Special tools used were a Stanley doweling jig and a set of Sears screw pilot drills.

Before ordering materials give special consideration to your speaker enclosures, as size will govern the dimensions of the cabinet. The speaker units in Fig. 2 have an overall height of 30 in. and can accommodate enclosures with a maximum height of 24 in. plus padding. A great many kits on the market will fit these dimensions comfortably.

The Cabinet Base, constructed in two distinct operations, consists of a sub-assembly and final surface assembly. Lay out pieces of pine for the sub-base as in Fig. 3A. For the long end pieces, rip a 10-ft. 1x8 into two boards, 3½ and 3⅜ in. wide. Put the boards together to be sure they will be cut square and trim them to 86¾ in. long. From the remaining parts of this ¾-in. stock, cut out four 3½ x 15-in. pieces; also cut three 2x4

2



Minimum acceptable distance for placement of speakers is 6 ft., which provides a stereo zone 11 to 17 ft. from front of cabinet. Low- and mid-range speakers are spaced on 6-ft. centers. Tweeters are placed further out to extend the stereo listening area.

pieces to the same length. A simple way to ensure squareness is to cut the pieces slightly oversize and clamp together, trimming all seven ends at the same time.

Drill for two #8 x 1½-in. flathead (*fh*) screws on the ends of the long pieces as in Fig. 3A. A wood screw pilot bit will do a faster, more efficient job than ordinary drill bits. Glue and screw the ¾-in. side pieces to the ends, then line up the three 2x4 pieces and repeat the operation. Before the glue dries, make sure all corners are perfectly square. After glue has set, assemble the two remaining inner pieces.

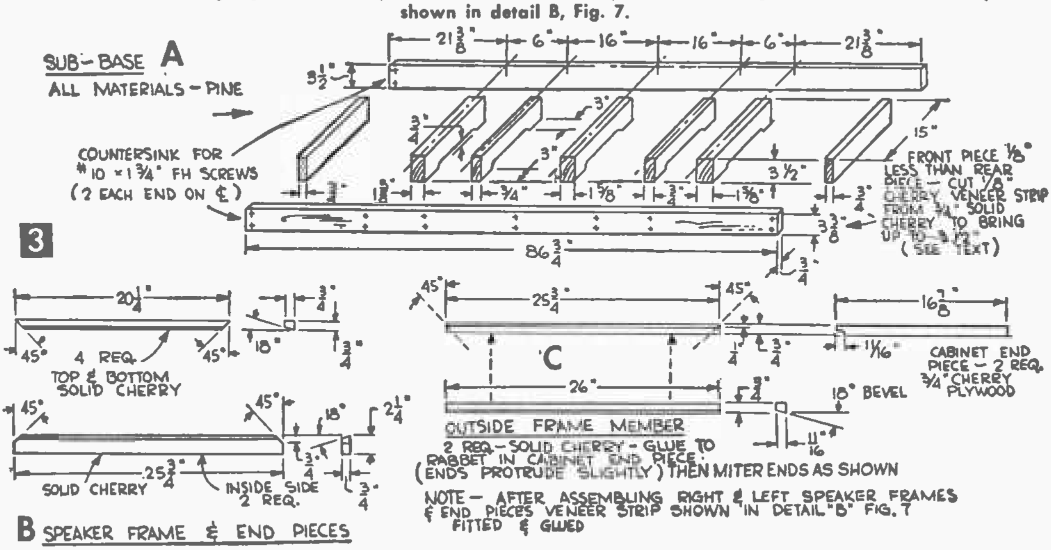
The Inner Frames are next (Fig. 4A). Cut two 48-in. pieces each out of two 8-ft. 1x8 pine boards, then rip these 3 in. wide. Now cut out an 18-in. and a 28-in. length out of each of the four 3x48-in. lengths. Measure 5⁵⁄₃₂ in. from the center of each of the shorter pieces and, with the saw blade set at half the thickness of the wood, rabbet the ends for a half-lap miter joint. Measure 9⅞ in. from center of the longer pieces and rabbet these ends. If no other means, line up the edges on the edge of your saw table to check that corners are square.

Now you can glue and clamp the frames together then drill for and install two #8 x ¾-in. *fh* screws at each joint. Unclamp the frames, now slightly oversize, and let dry.

Use of Plywood. We cut our principal wood sections out of a 4x8-ft. sheet of ¾-in. sliced lumber core cherry plywood available through cabinet shops and lumber dealers nationally. Ask your source to rip your sheet into two pieces, one being 18¼ x 96 in. It will then be easier to handle when you finish sawing it at home. This piece should be cut from the side and edge having the most beautiful grain.

Put your best hollow ground or planer blade on your table saw and set the rip fence at 17¹¹⁄₁₆ in. These blades give amazingly

Note: After assembling right and left speaker frames and end pieces, fit and glue 1/16-in. veneer strip as shown in detail B, Fig. 7.



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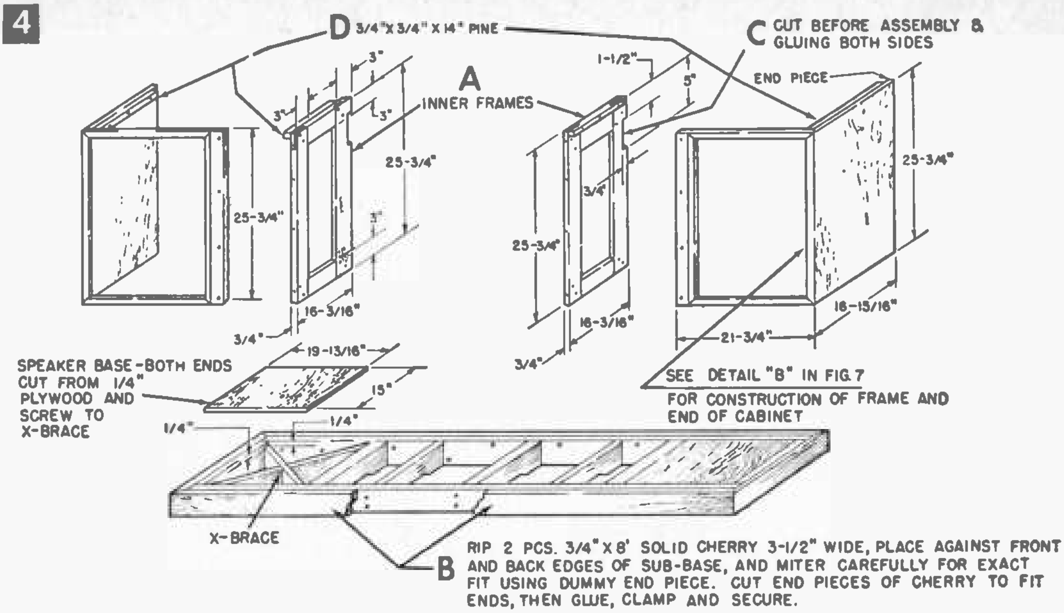


Caution: **Assemble subframe before gluing. After checking for squareness, cut X-braces for each end. Disassemble, glue, and complete assembly, including braces. Check for perfect squareness.**

smooth surfaces but must be exactly parallel to the rip fence; otherwise gum pick-up and resultant heat burn the wood and rapidly dull the blade.

Parts of the same width are cut at the same time, resulting in fewer settings of the saw and perfect fitting during assembly. With the fence set at 17$\frac{11}{16}$ in., rip the narrow piece of plywood. Set this piece aside, now cut the two end pieces as one piece of wood 16⅞ in. wide and 53 in. long. Next cut a panel 21½ x 43⅛ in. which will be the base for the control center and front piece of the cabinet. Turn the saw blade to a 45° angle and miter the front edge as in Fig. 6A. The long narrow piece left is reversed for use as the front of the inner portion of the cabinet.

Take two ¾ x 5 x 96-in. pieces of solid cherry and rip them to 3½ in. wide (we asked our source of supply to plane one edge, which makes the sawing operation easier and gives a perfectly finished top edge). Also cut two pieces ¾ x 3½ x 19 in. for the ends of the base. Miter the ends, then glue and screw this "veneer" to the sub-base as in Fig. 4B.

This can be accomplished with only four clamps. Line up one side perfectly and clamp, making sure the loose end pieces fit properly. Drill pilot holes every 18 in. on a line 1 in. from both edges. The holes should be staggered so there is approximately 9 in. between screws. Now remove clamps, apply glue and carefully reclamp back in position. Install screws, remove clamps, and follow the same procedure with the three other pieces. Cut a strip of cherry ⅛x¾ in. from one of the remaining 8-ft. pieces, trim to length, clamp, and glue onto the long piece of the sub-frame that was cut to 3⅜ in. width. Be extremely careful not to let any surplus glue ooze onto an outside surface.

Cut the 16⅞ x 52-in. plywood in half and then trim the two pieces together to a length of 25¾ in. (Fig. 3C). While cutting this dimension, cut the inner frames (Fig. 4A) to 25¾ in. long by 16$\frac{3}{16}$ in. wide. It is imperative that these four pieces be identically square.

Select the graining that you prefer to be exposed on the end pieces. On the inside of what is to be the front, rabbet the edge on both pieces as in detail B in Fig. 7.

Speaker Framing Stock. Cut four pieces of ¾x¾-in. cherry 24 in. long, two pieces of the same stock 26 in. long and two ¾ x 2½-in. pieces 30 in. long. Bevel all of these pieces on one side 18° as in Fig. 3B. Trim the two 30-in. lengths to 26 in. and the four 24-in. pieces to 20¼ in. long. Do this by first mitering one end, then carefully measuring to the other end and mitering it. Trim the two ¾ x 2½ x 30-in. pieces to 25¾ in. with the miter being cut last as in Fig. 3B.

Next put the two 26-in. long pieces through the saw and remove $\frac{1}{16}$ in. of the face (detail B in Fig. 7) to compensate for $\frac{1}{16}$-in. veneer to be attached later.

Now glue and clamp these pieces, one each, into the rabbets of the already cut end pieces. Scrap from the 18° angle cuts can be used to get a square clamping surface. Once these are dry, cut miter and, using the edge of your saw table or other square surface, clamp and glue one of the 20¼-in. pieces as in a picture frame construction (Fig. 6B). Since both the bottom and top edges will be covered, drive a #8 x 1½-in. *fh* screw from the bottom pulling the corners together. This produces a "professionally" tight joint without special clamps.

Join another 20¼-in. piece in the same manner and when glue has dried, take one of the 2½-in. x 25¾-in. pieces and complete the frame, again screwing from top and bottom. Using the other pieces of end stock, assemble your second frame.

Draw a light guide line 1⅙ in. from the edge across the front of the base (front edge has the ¼-in. strip of cherry glued in) and ¼ in. in from the edge of each end. Set the ends and speaker frames on the guide lines. Then carefully measure, cut, and trim the inner frames. Tack the frames together, trimming both at the same time. While they are tacked, cut a notch ¾ in. deep by 3½ in. wide (Fig. 4C). Use a thread or light string stretched across the end pieces at the front and back corner to check that all four: the two inner frames and end pieces, are the same height and in line.

Cut eight pieces of ¾-in.-square white pine glue strips. Attach them to top and bottom of each end panel and inner frame as in Figs. 4D and 6B, using glue and #8 x 1½-in. *fh* screws. Check that edges are flush.

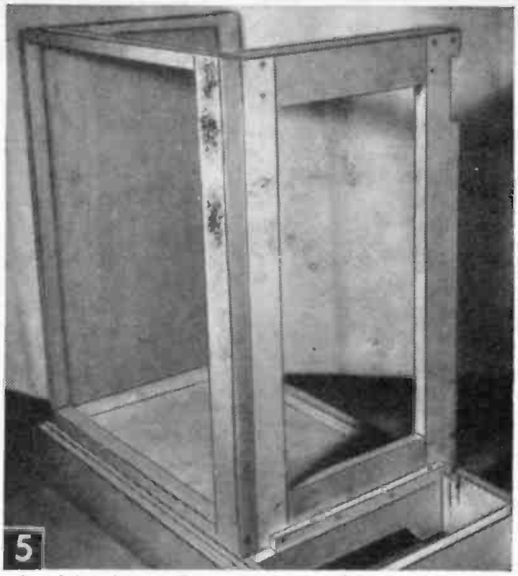
Just before gluing end panels in place, mark and cut dadoes for knife hinges on each end as in Fig. 6C. Replace in position, drill four pilot screw holes in both the lower glue strips of the end piece and inner frame. Glue and screw in place as in #2 of Fig. 6B, and wipe off any excess glue immediately.

Through the bottom of the speaker platform, drill three screw pilot holes and drive three screws to pull the bottom member of the speaker frame down to the base (#3 of Fig. 6B). Drill and screw the inner and speaker frames together after squaring up. Repeat these operations to assemble and glue the remaining end.

Control Center Construction. Cut a 7½ x 48-in. piece of ¾-in. cherry plywood for the control center back piece. Notch ends and cut dadoes as in Fig. 6D and observe the 45¾-in. dimension, which is critical. Trial fit back piece into the inner frame notches, and check that the edge should be 3/32 in. lower than the top of the inner frames (critical). Glue and screw the back piece in place.

Cut and dado both sides of the control center as in Fig. 6E, using a router or saw and chisels. Carefully position these sides; glue and clamp. Drill holes for and drive #8 x 1¼-in. *fh* screws. Dadoes must match those in the back piece as in Figs. 8 and 9. Properly mounted, side pieces will be 1/16 in. below the top of the inner frames.

The previously cut control center base and front (Fig. 6A) can now be installed. Slide the base in place into the side piece dadoes as in Figs. 10 and 11 so that mitered front edge is flush with front of the sides. At this point, front and side dadoes were marked as in Fig. 6F to fit our tuner and preamp case. Check yours and modify the panel as needed.



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Lap-jointed inner frame is supported by heavy member of sub-base. Pine components are concealed by solid and veneer cherry in finished cabinet.

Remove the base, make the marked dado and other cuts. Also cut out the record player mounting hole on the other side according to a template supplied by the manufacturer. In addition, lay out and cut any holes you may need for control switches and meters (Fig. 6G). While doing this, be careful not to dent or scar the mitered edge.

Now trial fit the previously cut front piece (Fig. 6A) to the base. Once satisfied, apply glue carefully to the side panel dadoes and slide the base in position. You've no doubt noticed that the dadoes are slightly wider than the ¾-in. base thickness. After checking that dadoes for tuner and preamp case line up drive wedges in from the underside to push the base up tight. Allow to dry.

Apply glue to mitered edge of the installed control center base and its front piece, place latter in position, and secure with two #8 x 1¼-in. *fh* screws on each end. Use wood clamps to draw into position, then screw wood strips to base and front inside. Allow to dry.

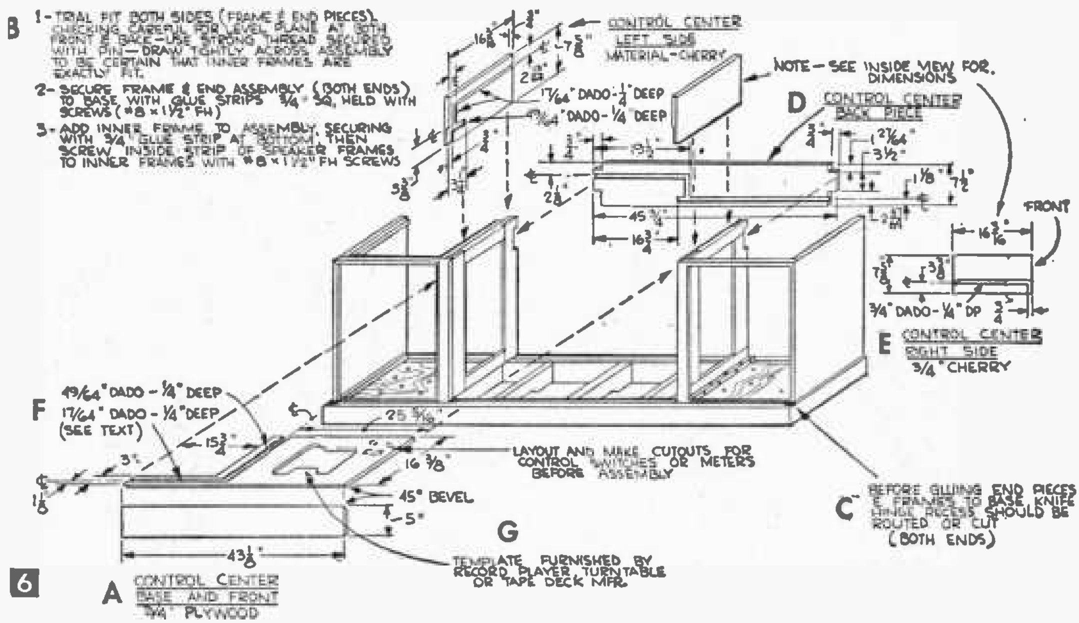
Record Compartment. A number of remnant pieces were splined together here to reduce waste or scrap to a minimum. Spline cuts were made the same way as other dadoes, with a saw blade making as many runs as needed for proper width.

Cut the floor for the record storage compartment from ¾-in. plywood as in Fig. 7A, dadoing and rabbeting the underside to receive the cross members of the base and cutting ⅜-in. wide dadoes with a router bit for partitions and back.

Partitions are shaped from ⅜-in. birch plywood and finished with cherry strips splined and glued to the front as in Fig. 7C. If you wish, partitions can be left square so dadoes can be cut with a table saw and hand chisel.

dado to fit over compartment back.

The Tuner-Preamp Case is cut from solid cherry stock, except for the front and top which are ¼-in. cherry veneer. Dimensions given in Fig. 14A are about $^{3}/_{16}$-in. longer than the ¼-in. dadoes on the control panel base. This allows them to be easily inserted in



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Cut two $16^{11}/_{16}$ x 18⅛-in. pieces from the ¾-in. plywood sheet for end panels, then dado and notch as in Fig. 7D. Cut and dado the solid cherry front and rear top pieces and the birch plywood back as in Fig. 7E.

Glue and screw the record compartment to the frame (Fig. 14). Cut a ¾ x ¾ x 3-in. guide block for the top of the record compartment and install it with glue and screws to the inside of control panel front piece as in Fig. 11. Now you can apply glue to bottom dado on left side of record compartment, slide it into position as in Fig. 14 and attach to base of compartment and guide block.

Cut a ¾ x ¾ x 33¾-in. spacer strip from scrap pine and secure it flush with the bottom of control panel front piece and butting against left side of the compartment.

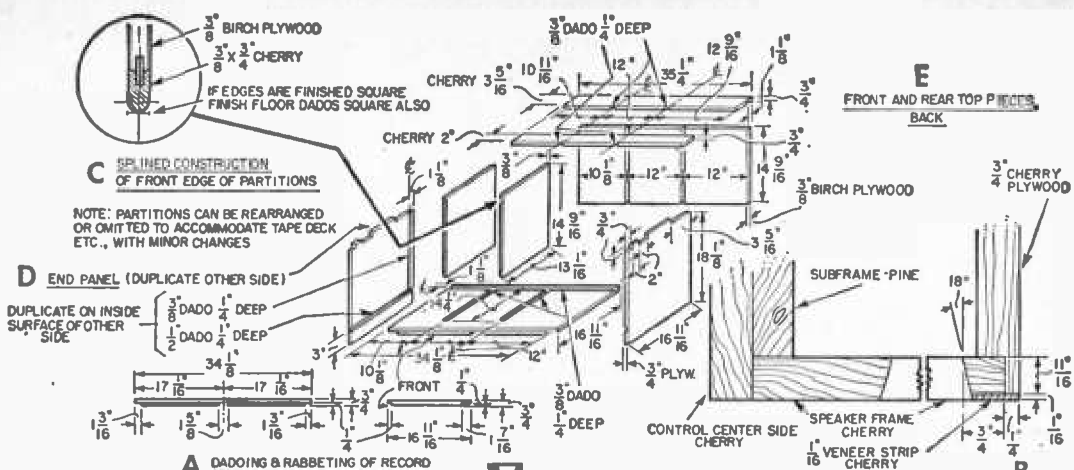
Glue the vertical dado on the left side of compartment, the dado in the rear of bottom piece, and both dadoes in the right side. Position compartment back and assemble the right side similar to the left. In order, glue compartment dadoes and place them in position; glue and screw front partition, holding bar in forward notches cut in sides; glue and screw rear bar in rear notches in sides, and

place. Rout or drill and chisel the end piece to receive the lid support. No dimensions are given for the preamplifier or tuner cutouts as there are many slight variations and manufacturers supply their own mounting instructions. Also, the position of the tuner's cooling panel may change in order to improve ventilation or for easier tube replacement.

We found the following method easiest for setting and gluing the finished blanks in place. First glue and slide the top in position, then the side. Depth of side is cut approximately $^{1}/_{16}$ in. short of total height. After the side is in place, slip in a filler strip to bring it to proper height so the miter edge of top and side meet. The strip should be about 1 in. shorter than total length of the dado.

Glue and slip in the front. A number of small clamps are a real asset here. Since this is a focal point of the finished cabinet, be sure to lift all glue that may ooze from the joints. Edges around the tuner vent and preamp are optional. These are ¼ in. square and are glued and screwed to the top after the selected preamp and other equipment were set in for fitting.

Panel Door Building. There are 13 nar-



7 RECORD STORAGE COMPARTMENT

row doors attached accordion style by concealed hinges. All wood is ¾-in. solid cherry except for the ¼-in. inner frames. To simplify the job, cut all similar parts at the same time. Set up a cutoff gauge on your saw, clamp strips to cut six at a time, making sure the cross feed is perfectly square.

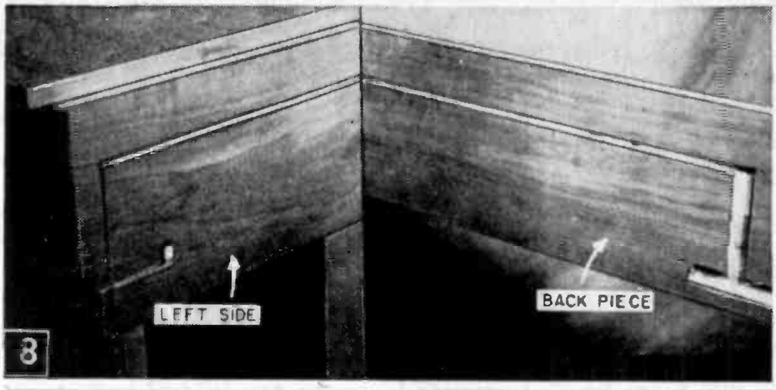
Cut 26 pieces 1¼ x 25¾ in. for the sides, 26 pieces 1¼ x 4¼ in. for the ends, 13 pieces 1 x 4¼ in. for the centers, and 26 pieces 3¹⁵⁄₁₆ x 10¾ in. for the insert panels, all from ¾-in. solid cherry. Run off 85 ft. of ¼-in. stock to be machined in two basic operations. Set the saw blade ⅛ in. high and dado the strips ¼ in. wide as in detail A of Fig 15.

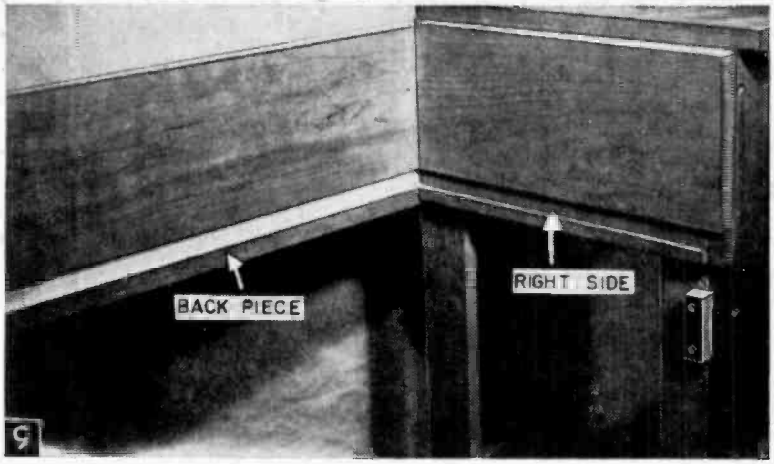
You'll need a molding head cutter to round both edges of the ¼-in. stock, such as Sears #9H-2352.

Make a jig by taking a strip of scrap wood about ¾ in. thick and 4 in. wide. Saw a dado ½ in. deep on it with the width just enough to allow the ¼-in. stock to slide through

MATERIALS LIST—STEREO MUSIC CENTER

No. Req.	Size and Description
1 pc.	¾ x 7½" x 10' pine (sub-base framing)
1 pc.	1⅝ x 3⅝ x 48" pine (sub-base framing)
2 pcs.	¾ x 7½ x 96" pine (inner frames)
1 pc.	¾ x 5½ x 60" pine (glue strips)
1 pc.	¾ x 48 x 96" lumber core cherry plywood (top, ends, control center back piece, record compartment floor)
1 pc.	¾ x 48 x 48" lumber core cherry plywood (control center base and front piece, record compartment end panels)
1 pc.	¼ x 24 x 36" cherry plywood (speaker platforms)
1 pc.	¼ x 16 x 20" cherry plywood (tuner-preamp control box top, front)
2 pcs.	⅜ x 24 x 36" birch plywood (record compartment partitions, back)
	All wood listed below is solid cherry
2 pcs.	¾ x 5 x 96" (finished base, long pieces)
2 pcs.	¾ x 3½ x 39" (finished base, end pieces)
4 pcs.	¾ x 2½ x 30" (speaker frame strips)
1 pc.	¾ x 3½ x 18" (side of tuner-preamp box)
7 pcs.	¾ x 5½ x 36" (door sides, ends, centers)
7 pcs.	¾ x 3¹⁵⁄₁₆ x 35" (door insert panels)
2 pcs.	¾ x 7⅝ x 16⁷⁄₁₆" (control center sides)
13 pcs.	¼ x 1½ x 72" (door inner panels) Note: Solid cherry available at Craftsman Wood Service Co., 2727 S. Mary St., Chicago 8, Ill. Order the 96" lengths and the ¼ x 1½ x 72" strips separately. An order for 18 sq.ft. of ¾" cherry dimension stock in 42" lengths and random widths (4" to 8") should be sufficient to cut all other solid pieces. Latest catalog (1962, #28) price is 55¢ per sq.ft.
200	⅜" D. x 1½" long spiral hardwood dowel pins (Craftsman, 92¢)
9 prs.	⅜ x 1" Soss invisible hinges for doors (Craftsman #0100, $2.39 with screws. For this quantity, it is cheaper to order 12 pairs of hinges at $21.50.)
2 prs.	⁵⁄₁₆ x 1⅝" reversible knife hinges (Craftsman #1595, 54¢)
1	48" long piano (continuous) hinge 1¹⁄₁₆" wide when opened, with screws (lid hinge)
1	lid support (#9379J, left hand style, used in project available from Lussky, White & Coolidge, 216 W. Monroe St., Chicago 6, Ill. Price $2.68. Cheaper type is new type of adjustable friction brass plated support with nylon roller to hold lid at any height. Available as #7074 from Craftsman, 42¢)
8	¼" D. x ½" long magnets with ½" D. steel disk contacts (door closers—available for $1.90 from J. F. Simpson Co., 4754 W. Washington St., Chicago 44, Ill.)
1 lb.	casein stainless glue (Craftsman #524C, 85¢)
1 pt.	contact bond cement (Craftsman #CBP10, $1.49)
1 qt.	pigmented wiping stain, French provincial (Craftsman #202, $1.77)
1 qt.	wiping stain reducer (Craftsman #205, 94¢)
1 doz.	#10 x 1½" flathead (*fh*) screws
1 gross	#8 x 1½" *fh* screws
1 gross	#8 x 1¼" *fh* screws
16	#8 x ¾" *fh* screws
2 pcs.	24x29" grille cloth (speaker sections)
Misc.	cherry veneer edging ¹³⁄₁₆" wide, 1 pt. linseed oil, 1 pt. turpentine, insulation for speaker cabinets, 1 box ⅜" brads, 1 box ¼" tacks





Views of left and right sides of control center back piece, after fitting side pieces. Note perfect match of dadoes at each end. Right side piece is cut about 1 in. narrower than recommended in Fig. 6E.

easily. Now change the saw blade for molding cutters and measure carefully so that when the cutters are raised, one of the beads will be exactly centered in the dado on the guide board. Raise cutters enough to place a rounded edge on stock and run both sides.

To shape the insert panels, change to a molding cutter shape such as that of Sears #9H-3202 (Fig. 15). Since there is a lot of wood to remove, take three passes to do it.

As you will be cutting against the grain on the ends and there will be slight splintering on the edge, cut the ends first and sides last. This will leave a smooth-finished edge as the splintered portion will be cut away.

Clamping Jig for Dowel Work. Now construct a clamping jig—flat, and with a surface at least 28x36 in. Cut two 3x28-in. pieces of scrap pine and attach them to the base, leaving 28½ in. between the inside edges. Cut a 1⁹⁄₁₆-in. wide strip into two wedges. Lay the pieces for four doors in position: two 1¼ x 4¼-in. pieces for ends, one 1 x 4¼-in. piece for the middle.

With the pieces in alignment, lightly drive the wedges into position and mark the dowel guide lines: two for each side top and bottom, and one each side for the center. A Stanley dowel jig and the complete directions that come with it make easy work of this. To cut dowel holes, we used a Delta ⅜-in. spur drill bit with ½-in. shank.

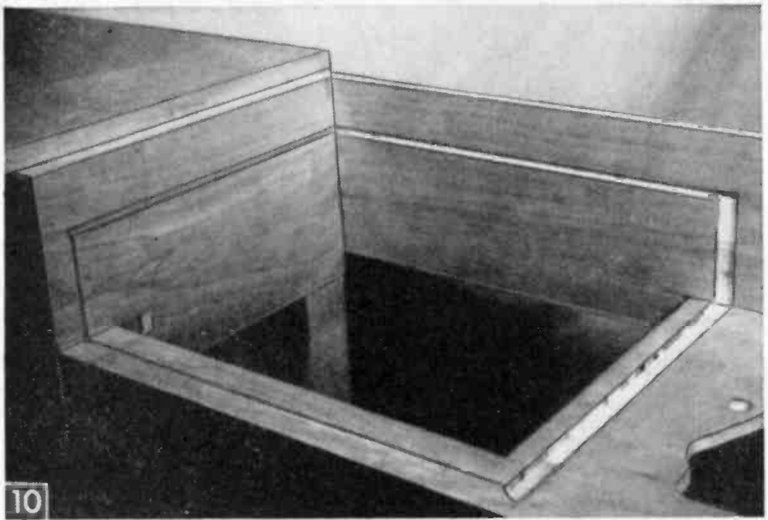
Mark all door sides and cross members as in Fig. 15 and then drill. Place glue in one side of each door only and tap in dowel pins (the prepared kind, ⅜-in. diameter and 1½ in. long). Place dry dowels on the other side and carefully tap together.

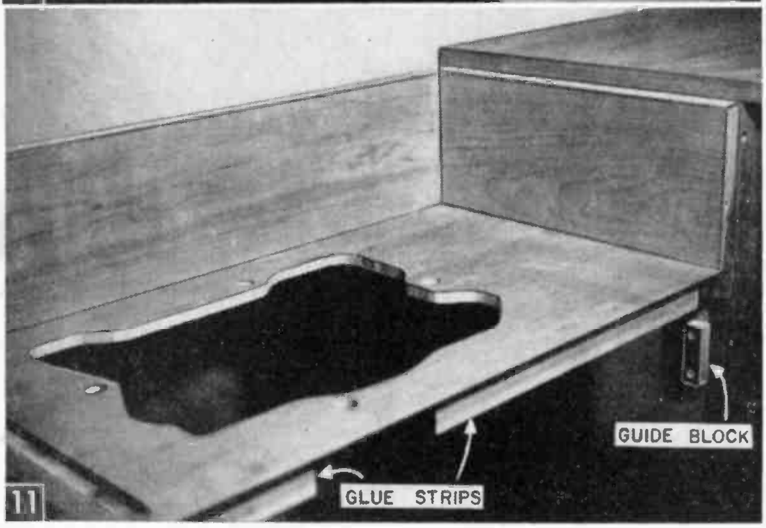
Again, lift excess glue. Complete four doors in this manner and place in press, driving wedges in fairly snug. As the wedge pressure will tend to raise the doors in the middle, place a board on top, and weights, such as old barbells. Allow to dry. Complete the other doors the same way.

Sand the surfaces flush with medium production paper and finish off with a fine grade. A slight surface variation is possible.

The frames (still with one side not glued) are now ready for fitting with inner frames. For a perfect fit, miter these individually for each opening. Cut all inner frames, then label and bind each set of four separately. We suggest this individual-fit method since it is quite unlikely that each door will have precisely the same measurement.

With the frames intact, apply glue and position inner frames, then secure each end piece





View of control center base during trial fit to check all cuts with equipment selected. Changes should be made and checked again before securing this panel in place. Front panel of base is removed here, exposing gluing strips at joint with bevel of base, also the small guide block for top of the record compartment.

with two ⅜-in. brads and each side piece with three brads. Use a small counterpunch to set the brads. Be sure *not* to glue the miter of the inner frame of the loose side on the door frame—let it dry thoroughly.

Now tap the loose side out and trial-fit completed panels in their respective positions. They should go in freely, not sloppily. Trim any panel edges that need it and, working in groups of four, apply glue carefully to the inner frame dado. When the two panels are in place, glue the loose side and tap into position. Remove dowels, glue these holes, and put the dowels back in place, tapping slowly and with care.

Considerable pressure builds up in the dowel holes and the wood will split unless the glue is allowed to pass by the sides of the dowels. You will be wise to have a partner ready to lift any glue that may ooze out. This type of glue sets rapidly and you cannot handle both operations on four doors alone.

Now lay the four doors in the wedge vise, set weights on top, and drive home the wedges. This will bring on more oozing of glue, so be ready for it. Use strips of aluminum foil on the bottom and under weights. Finish the remaining doors in like fashion.

Multiple Door Assembly. Lay out the 13 doors across the floor, arrange them for most pleasing appearance, then number them. Rabbet doors numbered 2, 3, 6, 7, 11, and 12 as in the three details in Fig 16A. Install a ¼ x ¾-in tongue in the rabbets of doors numbered 3, 6, and 11 to lock the sections closed.

Doors 1 and 13 are routed or chiseled out at top and bottom for knife hinges, while the others are hung on Soss invisible hinges. The dowel jig makes installation of this type hinge extremely simple.

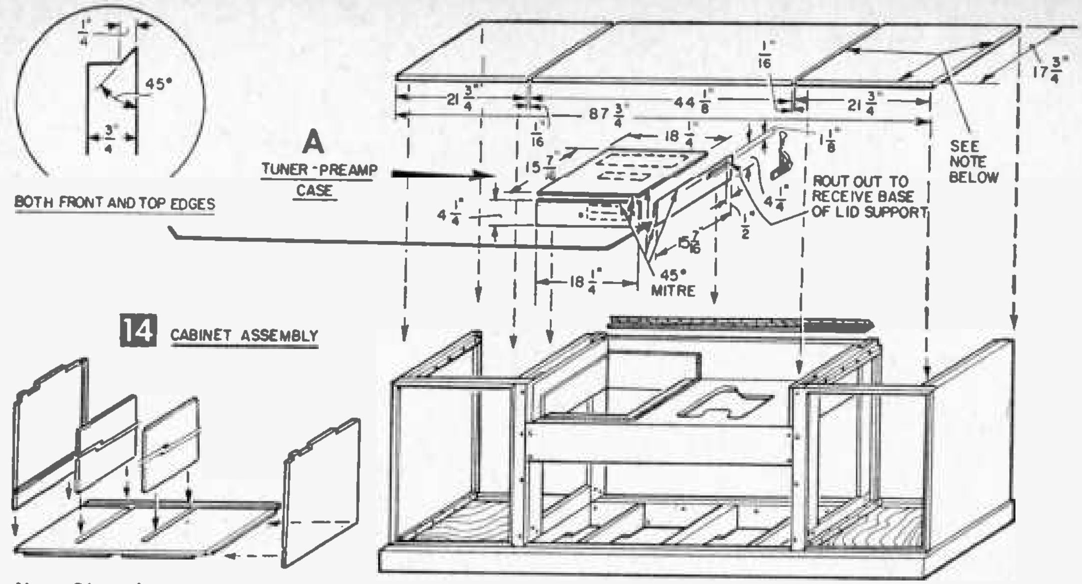
When closed, these hinges have 3/64-in. spacing between their faces, so take this into ac-

Completed stereo music center with doors and top open to reveal control and speaker area cabinetry.

Without cabinet, the equipment looks like this: preamp over one speaker enclosure, amplifiers (to be remotely installed as in Fig. 2) over the other, record player. Tuner and tweeters not shown.

count when trimming the sides of all doors. When the doors are laid out, the outside edge of end doors should be flush with the respective end panels of the cabinet. The 3/64-in. spacing is also carried into the rabbeted edges to allow freedom of opening. Trim ends of doors to 25⅝ in., which will allow 1/16 in. clearance at top and bottom.

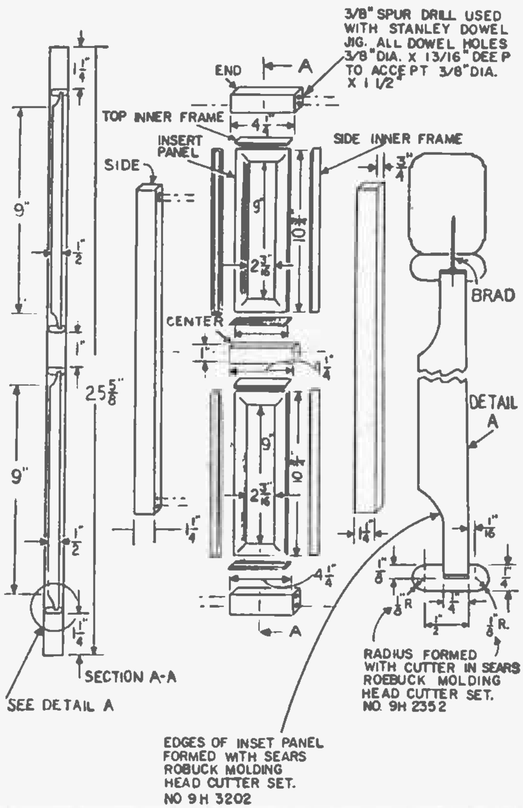
Working with two adjoining doors at a time, measure and mark a line on each one 3¼ in. from the top and bottom. Then, measuring toward the middle, mark at ½, ¾, and 1¼ in. Drill at these points with a ½-in. drill, following instructions furnished with the



14 CABINET ASSEMBLY

Note: Dimensions given for top panels are finished measurements. Be sure to allow for thickness of 1/16-in. veneer strip to be added on front and side edges of all three pieces.

15 DOOR ASSEMBLY
13 DOORS REQUIRE: 26 INSERT PANELS, 13 CENTERS, 26 ENDS, 26 SIDES, 52 INNER FRAMES (TOP AND BOTTOM), 52 INNER FRAMES (SIDES)



hinges for depth and cleanout. Tap hinges in place, drill pilot holes and secure with screws. Finish the hinge installation for the four sets of doors and lay aside.

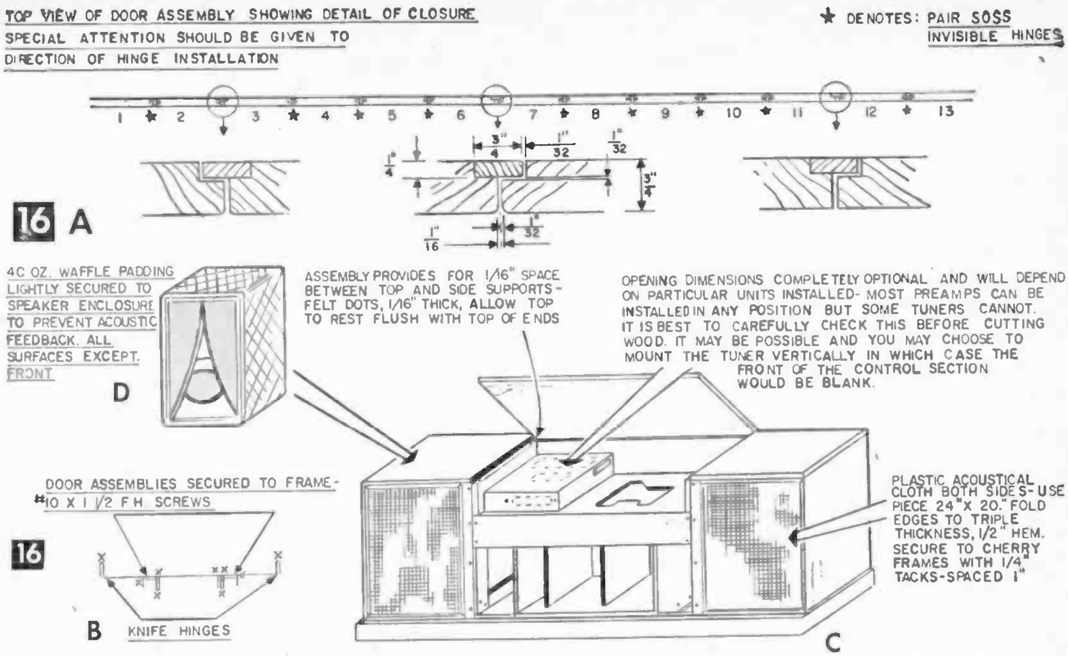
Check a radial saw to be sure its cut is perfectly square, then take the piece of cherry plywood blank previously earmarked for the top and cut it into three pieces: two 21⅝ in. long and the other 44 in. long.

Final Assembly. Overall length of the cabinet should be 87¾ in. If any variance, allow for it in the center panel before gluing any veneer strips. Using a scrap 8-ft. piece from the base as a straightedge, cut three pieces of cherry veneer 1/16 in. thick and 13/16 in. wide. Attach the veneer to all exposed plywood edges on front and sides, using contact cement. Sand edges flush.

Glue and screw gluing blocks in place on the inside top (flush) edges of outer panels and inner frames. After they are dry, apply glue to the two top end panels, clamp them in position, drill pilot holes from underneath through the blocks and secure with #8 x 1¼-in. *fh* screws.

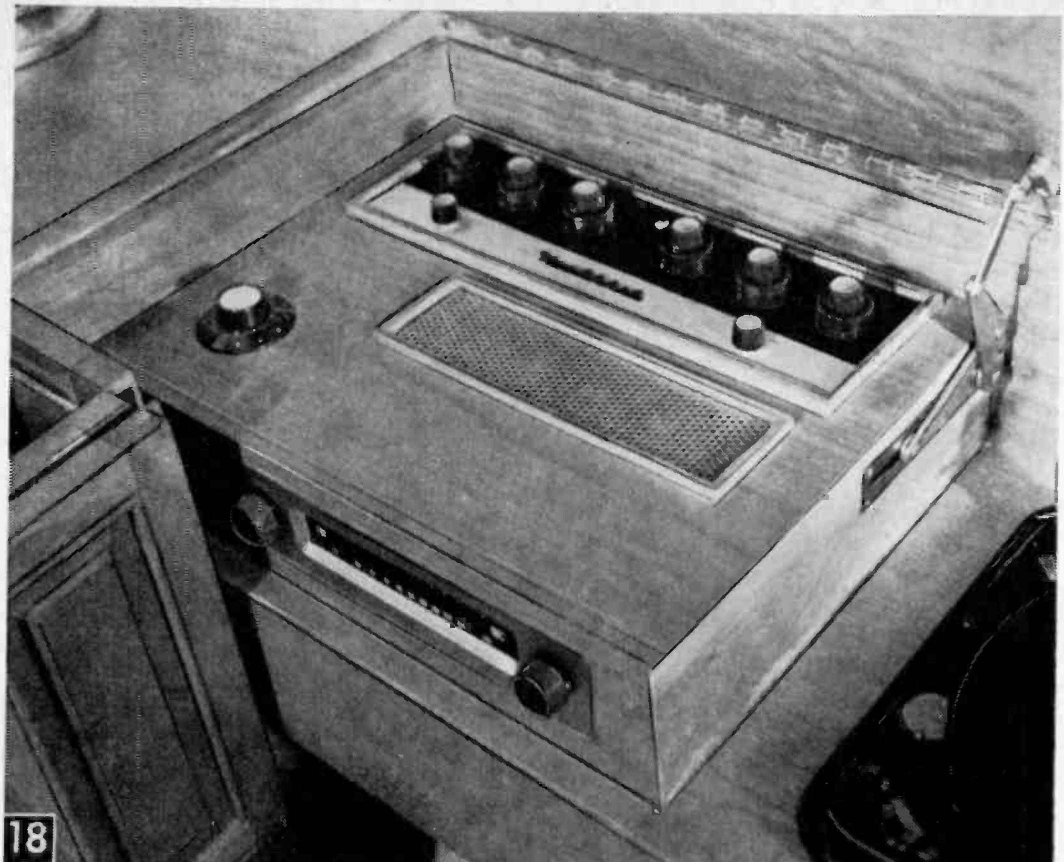
Screw a 44-in. length of piano hinge in position on the control compartment back panel. Rabbet the inside rear edge of the center top panel, previously cut and adjusted for length, to accept a flush mounting of the piano hinge. Set the panel in place, mark and screw to hinge, using only a few screws until you get it properly centered.

Place the lid support in position in the routed-out side of the preamp-tuner cabinet (Fig. 14A) to locate and drill an adjusting hole through the back panel. Adjust the tension; install support with screws.



Opening dimensions depend on style and make of units to be installed. Most preamps can be installed in any position but some tuners cannot. Check units before cutting wood. You may, if possible, choose to mount the tuner vertically, in which case the control section would be blank.

Completed control section and record compartment. Note tiny magnet recessed in front panel. Strong enough to hold doors closed, it releases with a slight pull.



Tuner-preamp case in place. Note ventilator panel and single dial at left which controls tweeter mounted in top outside corner of speaker cabinet adjoining. Tension of bracket can be set to hold lid open as desired.

Using knife hinges, secure both sets of end doors in position. Lay a 1/16-in. spacer on the base and set the remaining doors in place, using 1/16-in. shims behind doors 4 and 10. Wedge lightly in position and drill six pilot holes on each side from the rear of the cabinet (doors 4 and 10). Insert #10 x 1½-in. *fh* screws (Fig. 16B), check alignment, and drive them home tightly.

Apply a cap strip of veneer in front of the exposed edge of the piano hinge, using contact cement.

Small magnets only of ¼ in. diameter, and ½ in. long can be imbedded in ¼-in. holes in the cabinet as in Fig. 17 to keep the free doors closed. Small metal plates can be cut into the doors to make contact. Only a 2½-lb. pull will open the doors.

Finishing the Cabinet is a pleasure—there's no long and drawn-out painting or pumice polishing. Remove two center door sections for staining and oiling, then replace.

To complete the cherry finish, we used French provincial pigmented oil stain, cutting it well with the reducer recommended for it. Test it first on scrap pieces to be sure of the correct degree of color depth.

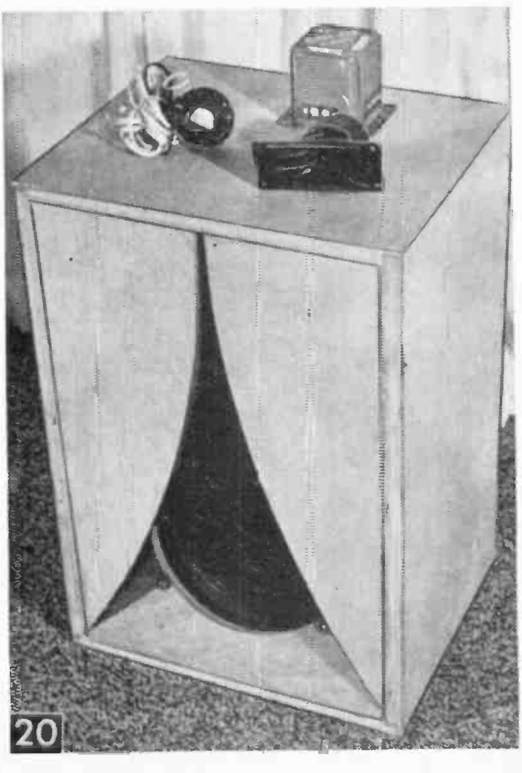
Apply the stain (½ pt. of stain plus 1 pt. of reducer) by dipping a soft, lintless cloth in the can and wiping it over the surface. Remove any excess left standing on the wood and use only the stain immediately absorbed. After a 24-hour wait for drying, apply a liberal coating of linseed oil and turpentine (2:1) with a clean, soft rag. Wait five minutes, then rub briskly to remove any excess oil. This will give a very rich, non-glossy appearance.

Remember not to start with a too-dark finish. With each subsequent oiling (every three or four months), the finish has darkened slightly. No polishes are needed since the oil application cleanses the wood and continues to protect it.

After the finish, select your grille cloth for the speaker sections and purchase enough to cut two 24x29-in. pieces. Turn the edges over ¾ in. and stitch the edges to triple thickness. Fasten in place with ¼- or ⅜-in. tacks. Start at top and bottom centers, stretching the cloth as you tack toward the edges.

Since vibration from the speaker cabinets can be transmitted to both tuner and record player, the least you should do is insulate the bottom. We used 40-oz. rug waffle padding

Completed right side of control panel includes two meters and switch as well as another tweeter control.

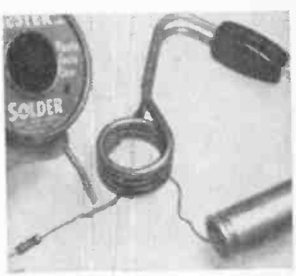


Medium and low-range speakers come with this enclosure. Tweeter, control and crossover on top will be mounted in cabinet outside this enclosure.

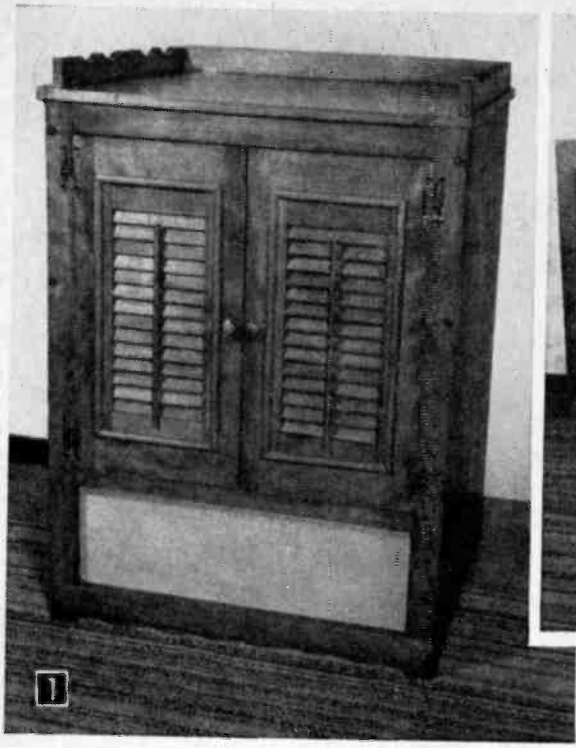
tacked all around except for the front (Fig. 16D).

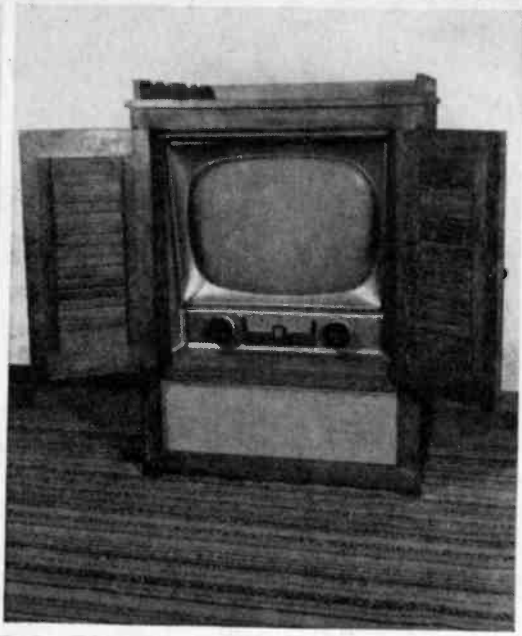
If you're using tweeters as we did, install them first, then slide in woofer enclosures. Install the other components, re-balance your record player, and you're in business.

Soldering with Immersion Heater



In a pinch, the occasional electronic builder, serviceman, or experimenter can solder wire connections with an immersion heater like the one shown. Simply wedge the wires between the heater coil turns and plug the heater in intermittently until the joint gets hot enough. Use the heater to aid heating large work when your iron or gun isn't large enough to handle the job.—JOHN A. COMSTOCK.





This Early American styled cabinet combines modern living with an old design to give you a piece of furniture that is both decorative and functional.

Early American TV Cabinet

Any portable or table TV set becomes a handsome console model when installed in this Early American styled cabinet

By RAY AYERS

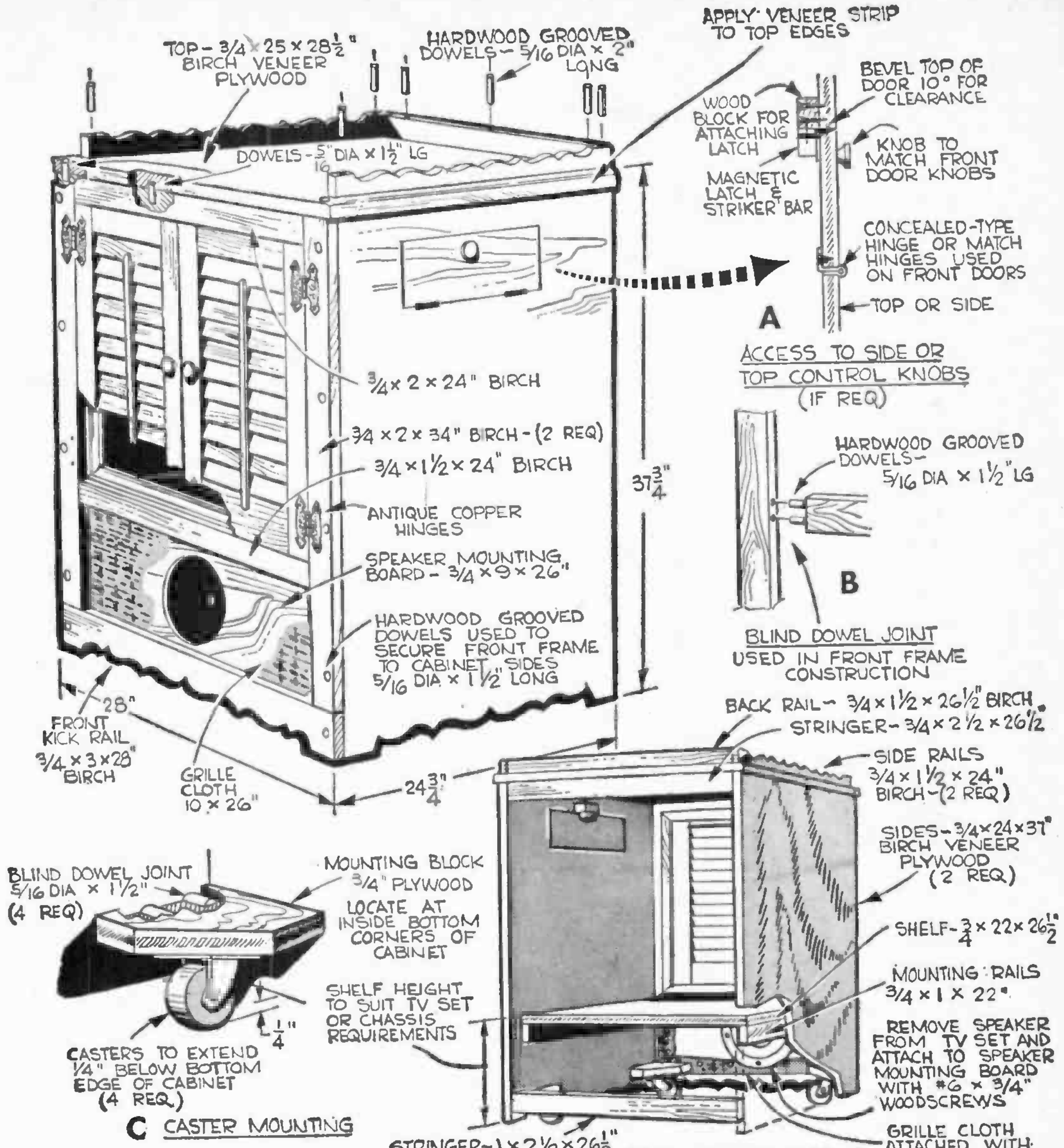
ENJOY the beauty of a console TV without paying the high cabinet price by customizing a cabinet that sheathes your present portable or table model set. Even an old TV chassis can be brought up-to-date by installing it in this Early American styled cabinet.

This particular cabinet was designed to house a table model Motorola, but with a few dimensional changes any model can be adapted to it. If the controls of your set are mounted on the side, an access panel can be made (Fig. 2A) to permit convenient operation.

First Measure the TV you are going to enclose; then make the necessary dimensional changes directly on Fig. 2 so you won't have to double check every measurement when cutting the materials.

Next, cut the birch (see Materials List) for the front framework and rails to size (Fig. 2). Then shape the 3/4 x 3/4-in. hardwood corner support blocks for the top shelf. Duplicate the scrolled designs used on the lower part of the front framework and sides, and top rails (Fig. 4) on cardboard, so the design can later be transferred to the wood. The design can be fashioned with a saber or coping saw.

Use blind dowel joints (Fig. 2B) to assemble the front framework. Dowel centers are preferable when spotting the holes in the frame pieces. For greater accuracy in matching the 3/16 x 3/4-in. holes, bore them in the horizontal members first. Groove all dowels to allow trapped air and *Blue-Bird* white glue to escape. Remove the squeezed-out adhesive



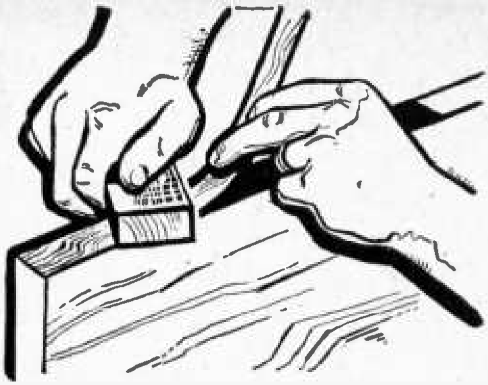
2 CABINET CONSTRUCTION

immediately with a moist cloth. Be sure the framework is squared when you set it aside to dry.

Cut the Top Shelf so it overhangs the cabinet by ¼ in. on the sides and ⅛ in. on the front and back. This is the only piece of plywood that will have exposed edges; but these edges will later be covered with veneer. Other components that have to be cut from the ¾-in. birch veneer plywood are the sides, TV shelf and mounting rails, and the speaker mounting board. The two stringers used for added support in the back (Fig. 2) can be cut from plywood or 1 x 2½-in. hardwood.

Disconnect the speaker and use it as a template to locate the center cut-out and mounting holes in the speaker mounting board. Grille cloth can be made from dyed burlap or can be bought in 12 x 36-in. lengths from many radio and TV supply outlets.

Grille material used in Fig. 1 is described as "Tan with Bronze Threads," pattern 811, and was purchased from Allied Radio, 100 N. Western Ave., Chicago 80. After stretching the cloth across the mounting board, use thumb tacks to hold it in place. When attaching the speaker to the board with wood screws, be sure you don't damage the paper cone.



3 APPLYING VENEER

MATERIALS LIST—
EARLY AMERICAN TV CABINET

No. Req.	Size and Description	Use
3 pcs.	¾x1½x24" birch hardwood	frame, side rails
1 pc.	¾x1½x26½" birch hardwood	back rail
1 pc	¾x2x24" birch hardwood	frame (horiz.)
2 pcs.	¾x2x34" birch hardwood	frame (vert.)
1 pc.	¾x3x28" birch hardwood	frame
1 pc.	¾x¾x4" birch hardwood	corner blocks
2 pcs.	1x2½x26½" hardwood or fir	stringers
1	¾"x4x8' birch veneer plywood	speaker mounting board top, sides, TV shelf, mounting rails
1 pc.	5/16x60" hardwood dowel	fasteners
2 pr.	3½" long "H" type antique hammered hinges (Sears & Roebuck Co.)	louver doors
Misc.	#5 and #6 wood screws, 1½" finishing nails, grille cloth and thumb tacks, casters, Glu Bird glue, Miniwax stain, Weldwood veneer, louver doors.	

After cutting the scrolled design on the sides (Fig. 4), and, if necessary, the side access opening (Fig. 2A), attach the TV shelf mounting rails to the sides with 1¼-in. flathead (*fh*) wood screws. Use 1½-in. finishing nails to fasten the sides to the top, and countersink these fasteners when attaching the stringers to the sides so the nails can be covered with wood filler. The nails used to attach the top to the sides are covered by the scrolled side rails.

Molding used to mask the old TV cabinet should not interfere with the viewing area. It should also fit flush against the installed set, which should be back far enough so the standard size louvered doors can close.

The ½x 2-in. cove molding used in Fig. 1 was shaped from solid stock, with all corners mitered. Attach it to the front framework by first drilling ⅛-in. pilot holes, then fasten with glue and woodscrews.

Use furniture clamps to hold the frame against the assembled sides and top when you drill the 1½ x 5/16-in. dowel holes. Attach the top to the front with a dowel in front of each side rail (Fig. 2), and with two blind dowel joints that are positioned 8¾ in. from the sides of the top. Drill the holes for the blind dowel joint ½ in. into the plywood top and 1 in. into the birch frame.

Make the cabinet mobile by attaching casters (Fig. 2C). The ¾-in. plywood caster blocks should be large enough so the casters clear the cabinet when it turns.

The type of flooring you have will determine how far the casters should extend below the cabinet. A ¼-in. clearance between cabinet and caster is enough on tiled floors or on carpeting not backed with a thick pad. Use 1½-in. dowels to hold the caster mounting blocks in place.

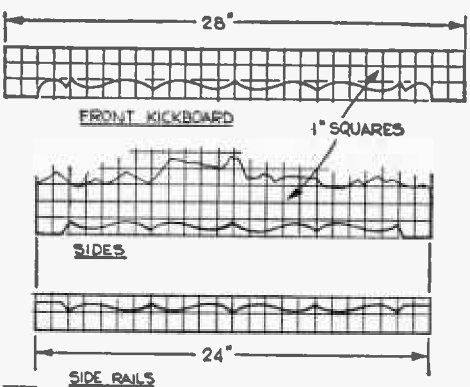
While the cabinet is still resting on the top, glue the ¾ x ¾-in. corner blocks in the angles formed where the top meets the front, and the back stringer.

Final Step is to install the TV shelf and the top rails. Position the shelf and drill two pilot holes on each side so 1½-in. *fh* wood screws can be driven in to add further support to the cabinet.

Cut the scrolled design on the side rails (Fig. 4), then attach them to the top with 5/16 x 2-in. dowels. The back rail fits between the side rails, and is held in place with three dowels.

The *Weldwood* veneer strip used to cover the exposed edges of the top can be applied with glue and pressed in place with a small block (Fig. 3). An excellent bond can be assured if a hot iron is run over the strip immediately after it is positioned. After the glue sets, trim any surplus veneer edge with a razor blade and sand smooth. Since the veneer strip is so thin, no mitering is required, only a light sanding and rounding of the edges.

Lightly sand the cabinet with a fine abrasive paper and slightly round off the edges. After thoroughly cleaning the wood surfaces, apply a light coat of *Miniwax Early American* stain. Brush on two coats of clear lacquer. Rub on several coats of paste wax.



4 SCROLL EDGES

A Musical Annunciator

With this device hooked into your front door-bell circuit, you substitute the soft, tinkling tones of a music box for the jangle of bell, rasp of buzzer or raucous cling-clang of chimes

By HARTLAND B. SMITH, W8VVD

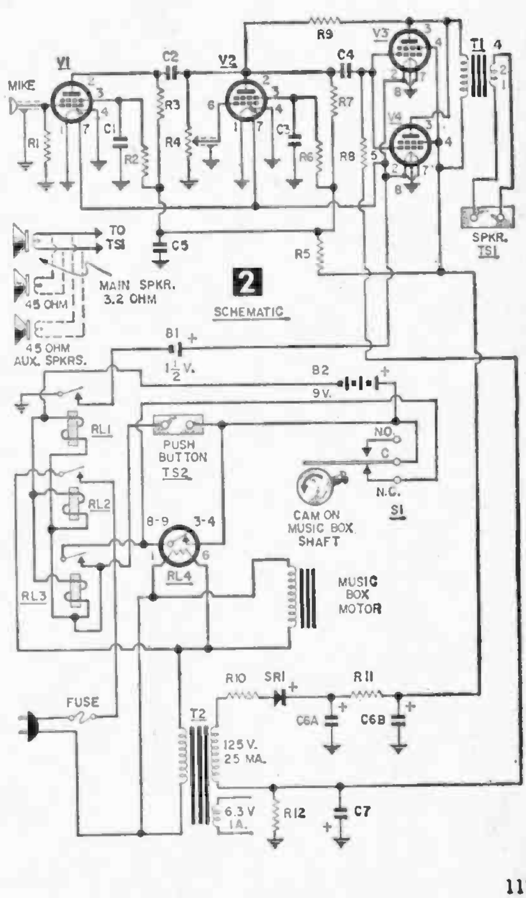
An electronically amplified Swiss musical movement (at left front) makes a pleasant door annunciator.

THE heart of this annunciator is its Swiss musical movement. Powered by a miniature 110-v, shaded-pole motor, this movement will play a 20-second excerpt from one of your favorite melodies. (The available tunes range from *Adeste Fideles* to the *Third Man Theme*, so you should have little difficulty in finding a composition to suit your taste.)

If this tiny music maker is to be heard throughout your home, however, some form of amplification must be employed—and the amplifier must be ready to operate the instant the front door button is pressed.

For economy's sake, no power should be drawn by the unit during standby periods. Consequently, heater-type vacuum tubes cannot be used. The choice, therefore, lies between battery tubes and transistors. Despite continued transistor price reductions, the capacitors, transformers, etc. needed for transistor circuitry are still relatively expensive. In contrast, the parts required for a vacuum-tube amplifier are quite reasonable and, in addition, many are likely to be found in the average experimenter's junk box. For this reason, the unit shown in Fig. 1 utilizes filament-type tubes rather than transistors.

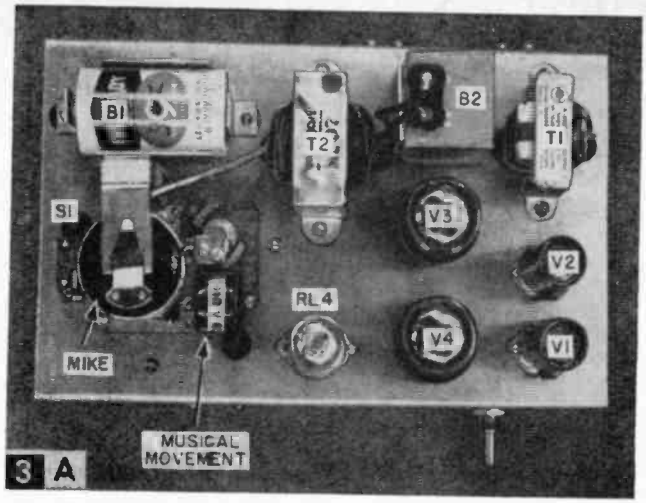
An inexpensive high-output crystal lapel mike converts the sound produced by the musical movement into electrical impulses. These impulses are fed to the control grid of vacuum tube V1 (see Fig. 2). A dynamic mike cannot be employed at this point, be-



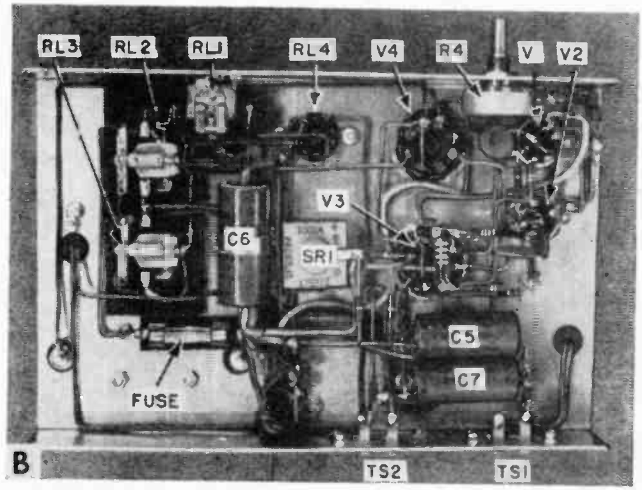
cause it would be sensitive to the hum resulting from the magnetic field that surrounds the motor. A vibration pickup mike, as used for electric guitars and similar musical instruments is also impractical, because of its sensitivity to the mechanical noises generated as the motor and its associated gearing operates.

Because of this mechanically generated noise, a relatively shockproof bracket (see Fig. 6) must be used to mount the mike. This bracket makes use of a small section of plastic sponge to deaden vibrations which would otherwise travel up the mount and excite the mike.

In most respects, the four-tube amplifier is of conventional design. Since the power capability of a single 3Q5GT is rather limited, two of these tubes are operated in parallel. The extra 3Q5GT provides a very useful increase in power output. Parallel, instead of push-pull operation was chosen because no phase inverter tube is needed and an inexpensive output transformer can be employed. Preliminary tests of the completed amplifier showed that its overall gain was so high that there was a tendency toward self-oscillation when the volume control was well advanced, but the addition of resistor R9 (see Fig. 2) provided sufficient inverse feedback to lower the gain and completely eliminate the oscillation problem. The use of inverse feedback also improved the frequency response and minimized distortion in the output stage.



Top-chassis (above) and bottom-chassis (below) views of annunciator circuitry.

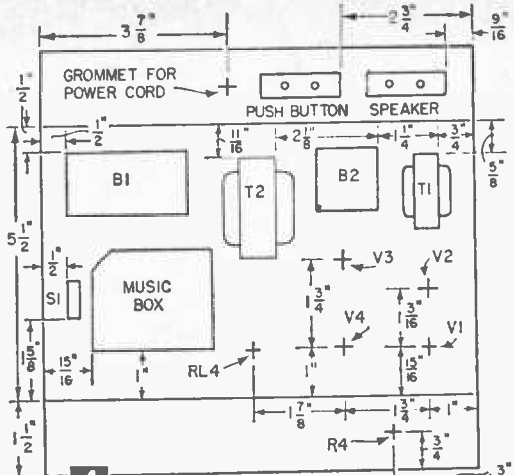


When the annunciator is first plugged into the line, no power can be drawn because relay RL2 is open. However, as soon as the pushbutton is pressed current from the 9-v battery will flow through the coils of RL1, RL2, and RL3. Relay RL2 closes and applies 110 volts to the primary of T2, to the heater of delay relay (RL4), and to the motor of the musical movement. Relay RL1 closes and applies filament power to the tubes. The amplifier becomes operative at once and the tones of the musical movement are heard via loudspeakers placed in convenient spots throughout the home.

Relay RL3 also closes at the instant the button is pressed. The contacts of RL3—as long as RL4 or S1 remain closed—act as a short across the pushbutton. Thus, current continues to be supplied to the coils of RL1, RL2 and RL3 via the contacts of RL3, even after the visitor stops pressing the button.

As the unit operates, the heater in RL4 warms up. After a period of approximately 10 seconds, it becomes so hot that the bimetal arm in RL4 bends far enough to open the normally closed contacts of this relay. At the moment, this action has no effect on the operation of the musical movement or amplifier because the points of RL4 are paralleled by those of S1, the miniature snap action switch operated by the cam on the shaft of the musical movement. As soon as the 20-second tune has been completed, the cam opens S1, breaking the current path from the 9-v battery to the coils of RL1, RL2 and RL3. The relays open and the entire unit shuts down until such time as it is reactivated by the push-button.

The cam on the music box is constructed from a short length of volume control shaft and a 6-32 machine screw (see Fig. 5). This



4 PARTS LAYOUT

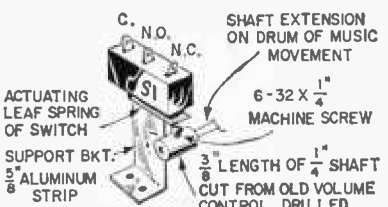
cam must be so positioned that it actuates the lever of S1 when the tune on the barrel has been completed.

The power transformer T2 in Fig. 3A happens to be a surplus unit designed to provide 125 v at 25 ma and 6.3 v at 1 amp. A suitable substitute would be a Knight 62G008 which furnishes 125 volts each side of center-tap, plus 6.3 v. Only half of the high-voltage secondary on the 62G008 should be employed with the center-tap going to R12 and one end of the high-voltage winding going to R10. Since the other end of the secondary and the 6.3-v leads are not required, clip them short and insulate with electrical tape.

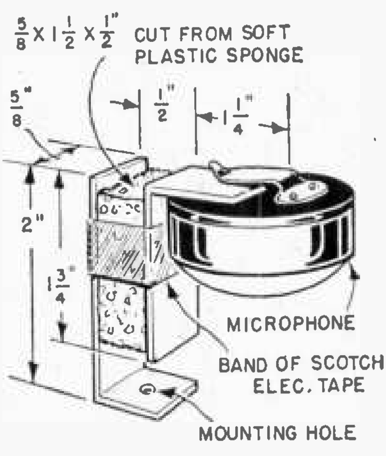
The two small batteries B1 and B2 are subjected to so little use in this particular device that they can be expected to have almost shelf life. Consequently, the battery cost per month will be insignificant.

Constructed on a 1½ x 5½ x 9-in. aluminum chassis, the amplifier is easy to wire since there is plenty of room between the components for the tip of a soldering iron. The armatures of the three small relays are directly connected to the frames. Therefore, RL2 and RL3 should be insulated from the chassis. Figure 3B shows how these relays are mounted on a thin sheet of Bakelite. Any easily worked plastic can be substituted for the Bakelite.

No knob is needed on the shaft of R4. Once the volume has been set to the desired level, no further adjustment is necessary. Battery B1 is kept in place with a home-made battery holder (or use a commercially built holder, such as a Keystone type 175). Two L-shaped brackets bent from small pieces of aluminum clamp battery B2 in position. Since the No. 5



5 METHOD OF ACTUATING S1



6 SHOCK PROOF MOUNT FOR MICROPHONE

MATERIALS LIST—MUSICAL ANNUNCIATOR

Desig.	Description
R1, R6, R8	2.2 megohm, ½ watt (Allied 1MM000)
R2	1 megohm, ½ watt (Allied 1MM000)
R3, R7	220,000 ohm, ½ watt (Allied 1MM000)
R9	330,000 ohm, ½ watt (Allied 1MM000)
R10	75 ohm, ½ watt (Allied 1MM000)
R11	560 ohm, ½ watt (Allied 1MM000)
R12	330 ohm, ½ watt (Allied 1MM000)
R4	500,000 ohm volume control (Allied 29M773)
R5	33,000 ohm, 1 watt (Allied 1MM020)
C1, C2, C3, C4	.01 mfd. disc ceramic capacitors (Allied 11L437)
C5	12 mf., 150-v electrolytic capacitor (Allied 15L194)
C6	20-20 mf., 150 v electrolytic capacitor (Allied 15L247)
C7	100 mf., 15 v. electrolytic capacitor (Allied 16L236)
RL1, RL2, RL3	Sigma 11F-1000G-SIL SPDT Relay (Allied 75P068)
RL4	Amperite 115C10T miniature delay relay (Allied 75PP296)
T1	Stancor A-3822 4 watt universal output transformer (Allied 64G005)
T2	Knight power transformer 125-0-125 v, 25 ma; 6.3 v, 1 amp (Allied 62G008)
B1	1½ v size D A battery (Allied 80J903)
B2	9 v battery VS-305 (Allied 80J838)
SR1	Federal 1002A, 65 ma. rectifier (Allied 4A606)
S1	Unimax USML SPDT Subminiature leaf switch (Allied 34B848)
TS1, TS2	2 screw terminal strip (Allied 41H505)
Mic	Crystal lapel Mike (Lafayette PA-9)
Battery Holder	for 1 size D cell (Lafayette MS-175)
Fuse	3AG ½ amp (Allied 52B232)
V1, V2	1U5 tube
V3, V4	3Q5GT tube
Musical movement	Reuge ELR 1.18 110 v, 60 cps with extended shaft. From Novelties of Distinction, 131 West 42nd St., New York 36, N. Y., or direct from the manufacturer, Reuge S.A., 26, Rue des Rasses, Ste. Croix, Switzerland.
	two octal tube sockets (Allied 40H058)
	one 9-prong miniature socket for RL4 (Allied 41H534)
	two 7-prong tube sockets with shield (Allied 40H194)
	two 1¾" tube shields (Allied 40H198)
	open-end chassis 1½ x 5½ x 9" (Allied 80P440)
	fuse clip (Allied 52B292)
	three terminal tie-point strip (Allied 41H501)
	5" loudspeaker, 3.2-ohm voice coil (Allied 81D617)
	wall baffle for 5" speaker
	wire, power plug, assorted 4-36 and 6-32 screws and nuts

Components available from Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois, and Lafayette Radio 111 Jericho Turnpike, Syosset, L. I., N. Y.

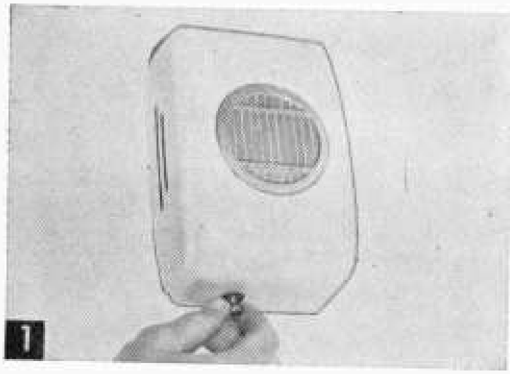
pin on a 1U5 and the No. 1 and 6 pins of a 3Q5GT are not connected to elements within the tubes, those terminals on the sockets can be used as convenient tie points to support resistors and capacitors. Grid bias for the 3Q5GT's is obtained from the voltage drop across R12. Capacitor C7, the bias filter capacitor, must be wired with its positive terminal grounded.

Locate the amplifier where output from the speakers cannot get back into the microphone to produce acoustical feedback—put it in the basement or, if you have no basement, in a utility room. Wherever you put the amplifier, make certain that it is out of reach of your youngsters. With the exception of the terminals on the motor of the musical movement, which ought to be insulated with electrical tape, all high voltages appear only on the under side of the chassis. A fuse has been included as a protection against overheating which might result from a shorted component.

Once it has been permanently installed, plug the amplifier into the power line and run a pair of wires from TS2 to a pushbutton near the front door. Run a second pair of wires from TS1 to the main speaker which may be a 4-in. or 5-in. unit with an impedance of 3.2 ohms. Mounted in a wooden baffle, this speaker can be placed at a convenient point in the most lived-in section of your home.

Overall volume in any one part of the house need not be high, since additional speakers can be placed in those areas where the sound of the main speaker does not penetrate adequately. These extra speakers can be wired in parallel with the main speaker as shown in Fig. 2. Since the desired volume level at remote locations will normally be less than that of the main speaker, intercom replacement units with 45-ohm voice coils will work effectively in these spots. Each intercom speaker will give adequate acoustical output to cover a room or two, but because of the relatively high impedances involved, even when several are connected in parallel, they will not seriously shunt the 3.2-ohm main speaker.

The electronically amplified music box, as a replacement for an ordinary door bell or chime has a number of important features, in addition to its basic one of providing pleasant music. Unlike the ordinary bell or solenoid-operated chime, it plays for a period of 20 seconds, whether or not the pushbutton is held down. The sound of a doorbell is usually of rather short duration and is often masked by noises around the house. On the other hand, the continued output from the music box tends to get through such distractions as children's voices, loud hi-fi's, clacking typewriters, and pounding hammers.

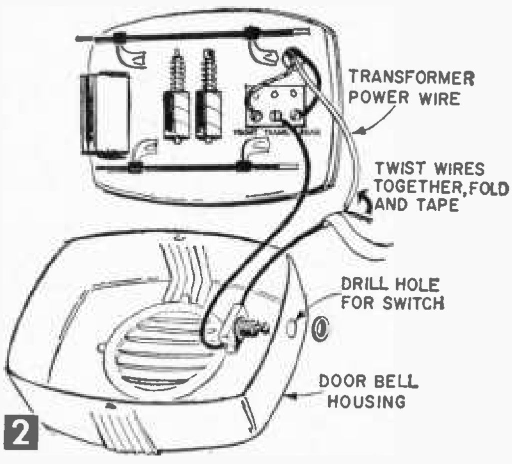

1

Door Bell Silencer

HERE'S a simple way of silencing that door bell so that it won't wake babies taking afternoon naps.

Obtain a small twist switch with threaded shaft and nut for mounting from your hardware store. Remove the cover or housing from your door bell and drill a hole through it large enough to pass the threaded shaft on the switch (Fig. 2). Make sure the switch parts inside the housing won't interfere with the bell mechanism.

Remove the wire coming from the bell transformer from its terminal and connect one of the pigtail wires on the switch to the transformer terminal. Then connect the transformer wire to the other pigtail wire on the switch by twisting them together and taping.



2

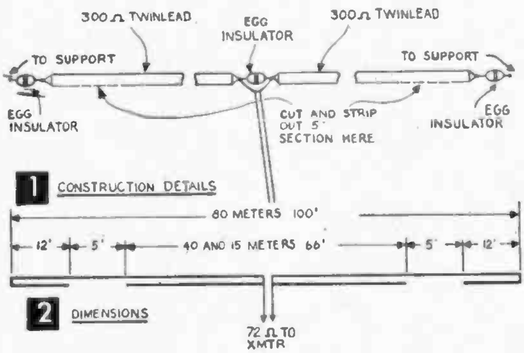
You don't have to turn off the house current for this job—house bell circuits carry only 6 volts.

Replace bell housing, and have someone press door bell button so you will know if the switch is in the "on" or "off" position.

SHORTY:

the Compact 3-Band Antenna

By JOE A. ROLF, K5JOK



LIMITED in antenna space? Here is an inexpensive three-band system that will fit the average backyard and is ideal for the novice amateur operator since it's designed for 80, 40, and 15 meters.

The system is constructed with 300-ohm television twin lead and consists of a 40- and 80-meter dipole with the same feed line at the center. The entire system is "shrunk" to 100 ft. by bending the 80-meter section back 12 ft. at each end. There is no noticeable sacrifice in performance.

Construct the antenna to the dimensions of Fig. 2, using a grade of TV twin lead such as Belden 8230 that is strong enough to stand the stress. Start by cutting two 50-ft. lengths of twin lead and attaching an egg insulator to one end of each piece. Tie the other ends to a single insulator to form the center feed point as in Fig. 1.

From each outer end, measure back 12 ft. toward the center, then remove a 5-ft. section of conductor from one side of the twin lead. Attach the feed line and the system is ready to go on the air.

Either 72-ohm coax or twin lead may be used for feeding the system. A 72-ohm twin lead reduces the weight which the antenna must support and keeps the system electrically balanced. There's an advantage to coax, however, in that it reduces feed line radiation and will prove easiest to connect to most transmitters. If neither is available, a good grade of plastic lamp cord can be used.

You should obtain adequate results with this antenna system of 80, 40, and 15, and it will also work fairly well on 20 and 10 meters. But for the best overall performance, use an antenna tuner, if available.

Patch Up Test Clips

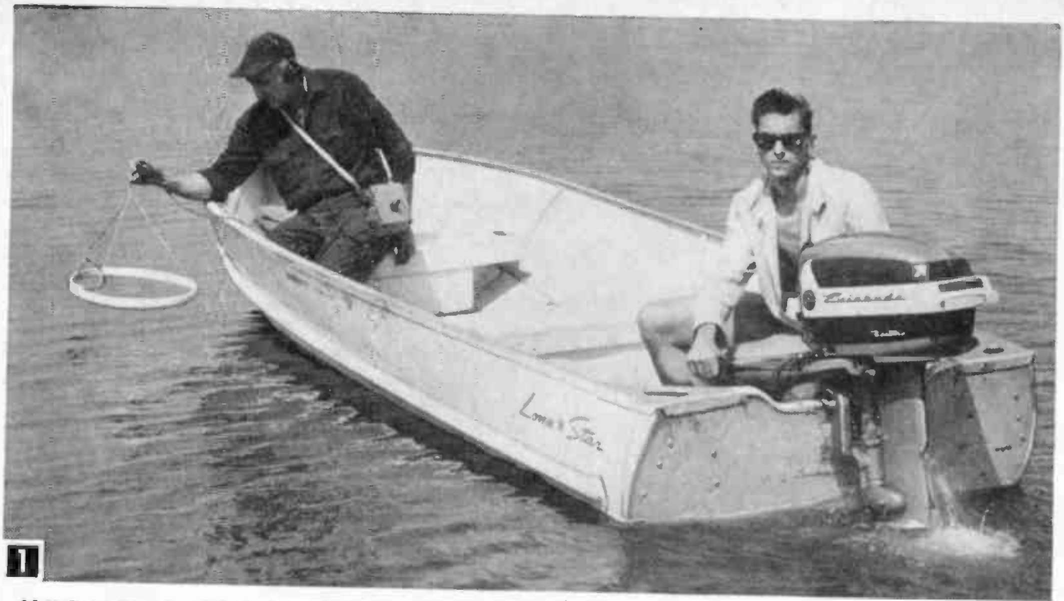
• When small, bare uninsulated test clips are used on 'hot' wires connected to live circuits, insulate the clips with rubber-tire patching. When ordinary clip insulators aren't available, tire-patching covers come in mighty handy. Simply sandwich the clip between two of the patches and bring the outer edges together and squeeze. The adhesive on the patching is sufficient so you won't need to use rubber cement.—J. A. C.

Rubber-Mount Treble Speaker

• Rubber suction cups are ideal shock-mounts for treble loudspeakers. They make good mechanical mounts and acoustically isolate the speaker frame from cabinet panels which tend to accentuate the bass frequencies. Attach the cups to the speaker frame with screws (get the kind of cups having threaded inserts or screws) and to the cabinet panel with rubber or service cement.—JOHN A. COMSTOCK.

Easy Color Coding

• Perhaps the easiest way to color-code test clips used for marking circuit wires or parts to aid servicing is to attach a colored dressmaker's pin to each clip. The colored head of the pin sticks out like a sore thumb against wiring. What's more the pins are inexpensive and available in dozens of colors.—J. A. C.



S&M Boat Designer Bill Jackson demonstrates search method. A 26-in. loop is wired into a 100-ft. cable made of lamp cord. When the coil approaches the metal object, a change in tone is heard.

Underwater Metal Locator

Pinpoints Submerged Treasure

By JAMES E. PUGH JR.

Craft Print Project No. 341

WHETHER you are searching for a lost outboard motor or sunken loot, this easy-to-build underwater metal locator can make an otherwise impossible job both productive and interesting.

Just drop your search coil overboard, make a few easy tuning adjustments, then start searching. As the submerged coil nears a metal object, a tone is heard in the earphones. Since the detector responds to both ferrous and non-ferrous metals it is possible to locate nearly any metal object at the bottom of bays, rivers, lakes, and streams.

A low-frequency inductance bridge circuit minimizes the effect of water and cable length on sensitivity. This makes it possible to use an inexpensive unshielded cable, a 100-ft. length of rubber covered lamp cord between control box and search coil. If your treasure lies in deeper water this cable can be lengthened to 500 or 600 ft. with only a minor circuit adjustment. Similarly, it can be shortened to as

This small coil locates pipes buried in walls, floors, and concrete and can also be used to search for buried metal objects.

little as desired if you plan to work in shallow water or on dry land.

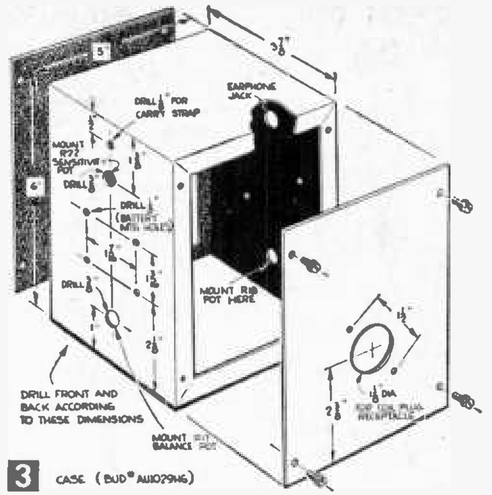
Besides the many possible underwater applications, this metal detector with a smaller coil can be used by landlubbers for finding buried pipes and tanks, shell fragments in old battlefields, ore deposits near the surface of the ground, and metal in lumber, logs, and livestock feed.

Transistorized circuitry is used for minimum weight, maximum battery life, and greatest resistance to mechanical shock. The inexpensive penlight size cells, easy to obtain, last about 100 hours in the oscillator and 200 hours in the amplifier section.

Detection range depends on size of the object, skill of the operator, and type of metal. Iron, steel, lead, and aluminum can be detected at a greater range than brass and copper. A small camera can be found at about 1 foot from the coil and a large outboard motor at about 4 feet. Maximum range is about 5 feet.

Drill the Case as shown in Fig. 3. Holes are the same on the front and back, for mounting of controls and jacks. Wire the battery clips in series, and solder each lug to its eyelet to avoid a possible source of trouble later. Bend each end of the battery clips inward to obtain a firm connection with each battery as a high resistance contact can cause noisy and erratic operation. Put a dab of red paint near the positive terminal of each clip and fasten the battery holders in the case. Mount the other parts in the case and wire the negative battery terminals to the two switch sections.

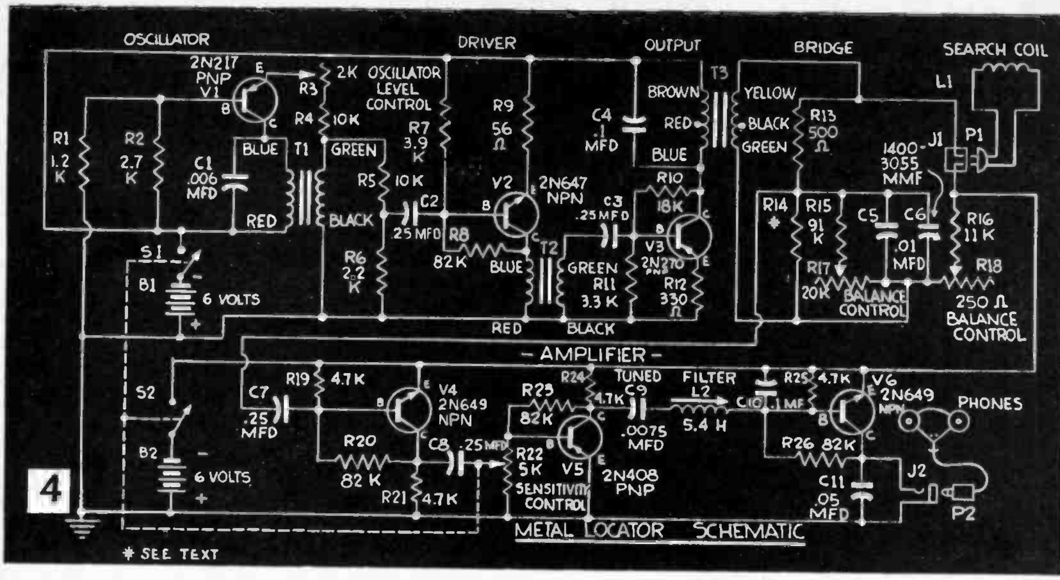
Start construction of the two plastic chassis (Figs. 5 & 6) by drilling all holes and mounting the terminal lugs. Mark C, B, E, +, and − near the transistor and battery connections. Identify the lugs on both sides to help avoid wiring errors and to make circuit tracing easy. Position the larger parts and wire. Solder resistors, capacitors, and interconnecting wires next and the 1% resistors



3 CASE (BUD* AU1029HG)

MATERIALS LIST—ELECTRONIC METAL LOCATOR

Parts	Size and Description
V1	2N217 PNP transistor, RCA (Newark 21F7004)
V2	2N647 NPN transistor, RCA (Newark 21FX7105)
V3	2N270 PNP transistor, RCA (Newark 21F7010)
V4, 6	2N649 NPN transistor, RCA (Newark 21FX7106)
V5	2N408 PNP transistor, RCA (Newark 21F7019)
T1, 2	20,000 to 1000 ohm transistor transformer, Argonne AR-104 (Lafayette AR-104)
T3	500 ct to 500 ohm ct transistor transformer, Argonne AR-162 (Lafayette AR-162)
L2	5.4 Hv variable inductor, UTC VIC-15 (Newark 3F414)
L1	search coil (info. for 3 sizes of search coils in Sept. '62 S&M))
C1	.006 MF, 100-v., ElMenco 1DP-1-602 (Newark 14F1001)
C2, 3, 7, 8	.25 MF, 100-v., ElMenco 1DP-3-254 (Newark 14F1021)
C4, C10	.1 MF, 100-v., ElMenco 1DP-2-104 (Newark 14F1017)
C5	.01 MF, 100-v. ElMenco 1DP-1-103 (Newark 14F1004)
C6	1400 to 3055 MMF mica paddler, ElMenco 315 (Newark 14F817)
C9	.0075MF, 100-v., ElMenco 1DP-1-752 (Newark 14F1003)
C11	.05 MF, 100-v., ElMenco 1DP-2-503 (Newark 14F1013)
R1	1.2K, ½ w, 10% carbon (Lafayette RS-10)
R2	2.7K, ½ w, 10% carbon (Lafayette RS-10)
R3	2K potentiometer, linear taper, Mallory U-6 (Lafayette VC-419)
R4, 5	10K, ½w, 10% carbon resistor (Lafayette RS-10)
R6	2.2K, ½ w, 10% carbon resistor (Lafayette RS-10)
R7	3.9K, ½ w, 10% carbon resistor (Lafayette RS-10)
R8, 20, 23, 26	82K, ½w, 10% carbon resistor (Lafayette RS-10)
R9	56 ohm, ½ w. 10% carbon resistor (Lafayette RS-10)
R10	18K, ½ w, 10% carbon resistor (Lafayette RS-10)
R11	3.3K, ½ w, 10% carbon resistor (Lafayette RS-10)
R12	330 ohm, ½ w, 10% carbon resistor (Lafayette RS-10)
R13	500 ohm, ½ w. 1% deposited carbon, Aerovox CP½ (Lafayette CP-½)
R14	about 1.5 megohm, ½ w, 10% carbon (see text) (Lafayette RS-10)
R15	91K, ½ w, 1% deposited carbon, Aerovox CP½ (Lafayette CP-½)
R16	11K, ½ w, 1% deposited carbon, Aerovox CP½ (Lafayette CP-½)
R17	20K potentiometer, linear taper, IRC Q 11-119 (Lafayette VC-940)
R18	250 ohm, potentiometer, linear taper, IRC Q 11-201 (Lafayette VC-961)
R19, 21, 24, 25	4.7K, ½-w, 10% carbon (Lafayette RS-10)
R22	5K potentiometer, audio taper, Mallory U-12 (Lafayette VC-423)
S1, 2	DPST switch, mounted on R22, Mallory US-27 (Lafayette VC-524)
B1, 2	6-v batteries)8—1½-volt Burgess 930 cells) (Lafayette BA-174)
2	battery holders for 4 type Z cells (Lafayette MS-182)
1	6 x 5 x 4" gray hammertone aluminum box, Bud AU1029HG (Newark 91F718)
2	rubber headphone cushions (Lafayette MS-34)
8	¼" dia. x ¾" threaded bushings, 6-32 thread (Newark 31F973)
3	1½" skirted knobs, Davies 4104 (Newark 26F024)
4	⅝" dia. rubber feet (Lafayette P-252)
1	shoulder strap and mounting hardware (at camera store)
2	3½ x 3¾ x 3/32" Bakelite sheet
33	Turret terminal lugs, USECO 1350C for 3/32" chassis (Radio Shack 16J432)
J1	female receptacle, Amphenol 61-MIP-61F (Newark 39F116)
J2	phone jack, Switchcraft 11 (Newark 39F782)
P1	male plug, rubber covered (Newark 36F864)
P2	phone plug, Switchcraft 220 (Newark 39F768)
Phones	5000 ohm magnetic headphones, Cannon AM-15-5 (Lafayette ME-32) Note: Standard 2K phones will also work
Misc.	wire screws, nuts, washers, solder lugs, gaskets, rosin core solder

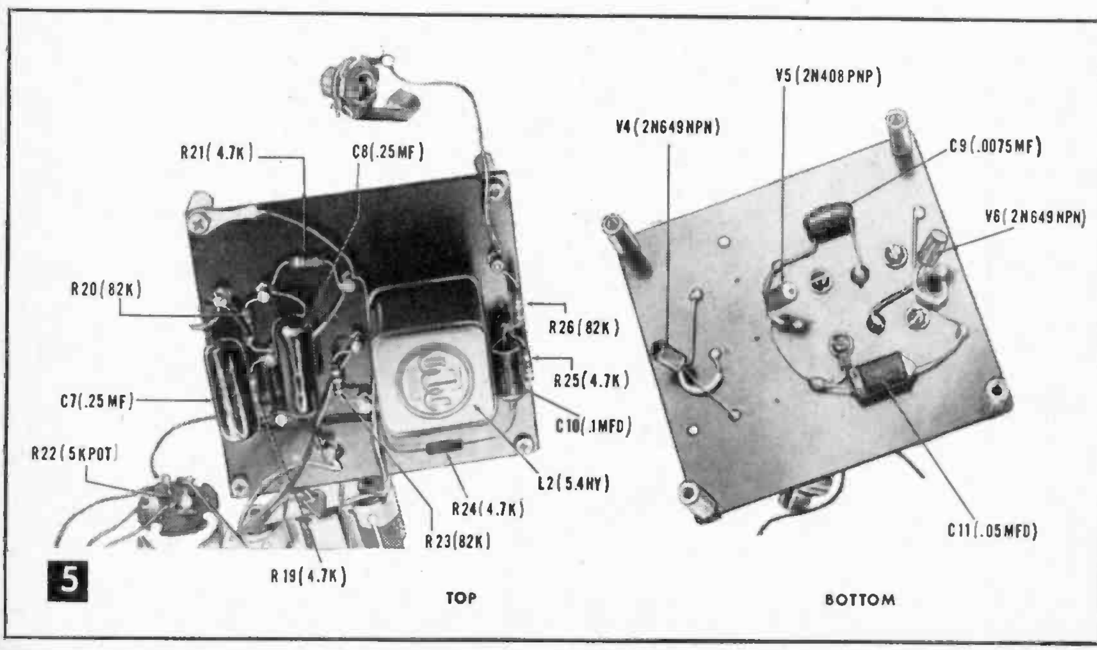


and transistors last. Hold these smaller parts with long nosed pliers to avoid damage from heat, being especially careful with the transistor and the 1% resistors.

Solder the wires connecting these two chassis to the jacks, batteries, switches, and controls to the chassis leaving adequate length to connect to the desired points. Trim and tin the ends, then when the chassis are mounted in place they can be soldered to the various parts in the case without risking damage to the small parts.

After all chassis wiring is completed, but before mounting in the case, clean the rosin off with alcohol. Then spray thoroughly with CRC 2-26 waterproofing solution. Allow excess to drip off and carefully wipe with a clean, dry cloth. Be careful that you don't wipe the color code off the resistors. Spray the various controls (protect openings with tape) wipe off the excess, and then mount the chassis in the case and solder all interconnecting wires. Remove the headphone covers and diaphragms and spray the inside and cords. Wipe dry and reassemble.

Make gaskets for both control box covers



from rubber electrical tape or a thick gasket material. Fasten to the covers, and if you use the rubber tape, apply talcum powder to the upper surface to prevent its sticking to the case.

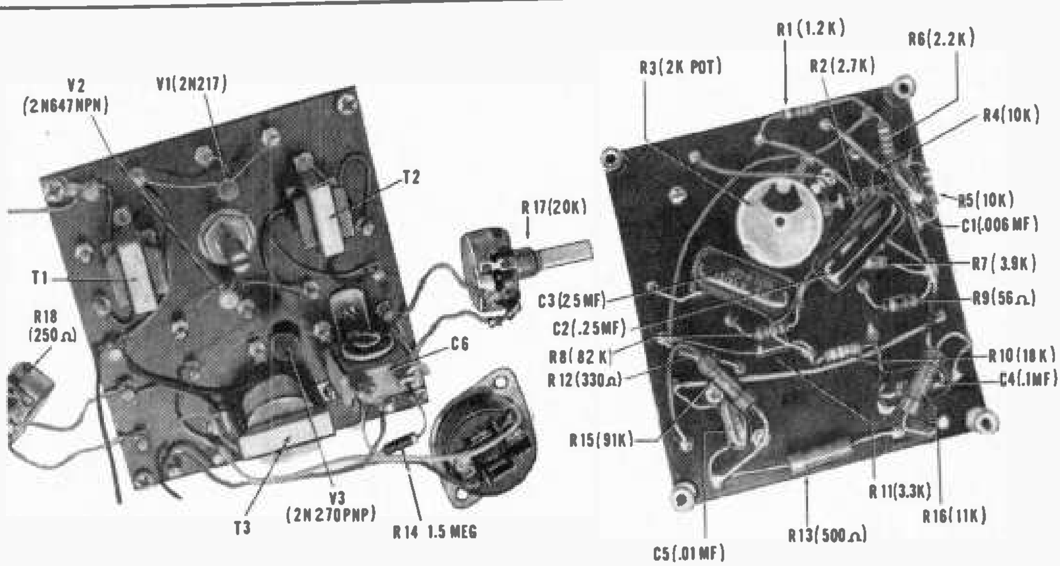
Principle of Operation. Transistor V1 (Fig. 4) is a stable, low distortion audio oscillator operating at approximately 1000 cps. Transformer T1 provides feedback as well as coupling from V1 to V2. R3 controls the oscillator feedback, thus the signal level and purity.

A voltage divider consisting of R5 and R6 reduces the input to V2 to a suitable level so as to help keep the waveform free from distortion. Transistor V2 amplifies the signal and isolates the oscillator from the output stage. This isolation improves oscillator stability since it prevents any change in the bridge circuit from reflecting back to the oscillator.

The output stage increases the voltage level to the bridge circuit for maximum detection sensitivity at the lowest harmonic distortion.

The bridge is a conventional Maxwell inductance bridge with the search coil L1 used as its inductive arm. Balance is obtained by comparing C5, C6, R14, R15, and R17 with L1. C6 is a trimmer capacitor used to compensate for manufacturer's variation in C5. It makes it possible to balance R18 at any convenient point of its range. Deposited carbon resistors at R13, R15, and R16 give maximum bridge stability during temperature change at the least cost.

When the bridge is balanced, the signal transferred through it from the oscillator to the amplifier is minimum. When the search coil is brought near a metal object its inductance changes. This unbalances the bridge and permits some of the signal available across the secondary of T3 to be transferred to the amplifier where its level is increased and fed to the headphones. Therefore, as metal is approached a 1000-cycle note will be heard in the headphones—the closer and larger the metal the louder the signal will be.



6 TOP BOTTOM

An adjustable filter consisting of C9 and L2 is tuned to 1000 cycles. It helps to increase the sensitivity by reducing the harmonics of the 1000 cycle note, thus makes small changes in the signal level more easily noticed. It also helps reduce 60-cycle pickup when operating the search loop near ac lines.

Capacitors C4 and C11 resonate with T3 and the headphones, respectively, to further improve the sensitivity by increasing the signal to harmonic ratio.

Separate batteries are used for the oscillator and amplifier sections to avoid coupling the signal from oscillator to amplifier through any circuit external to the bridge. This gives a better null when the bridge is balanced and maintains optimum sensitivity.

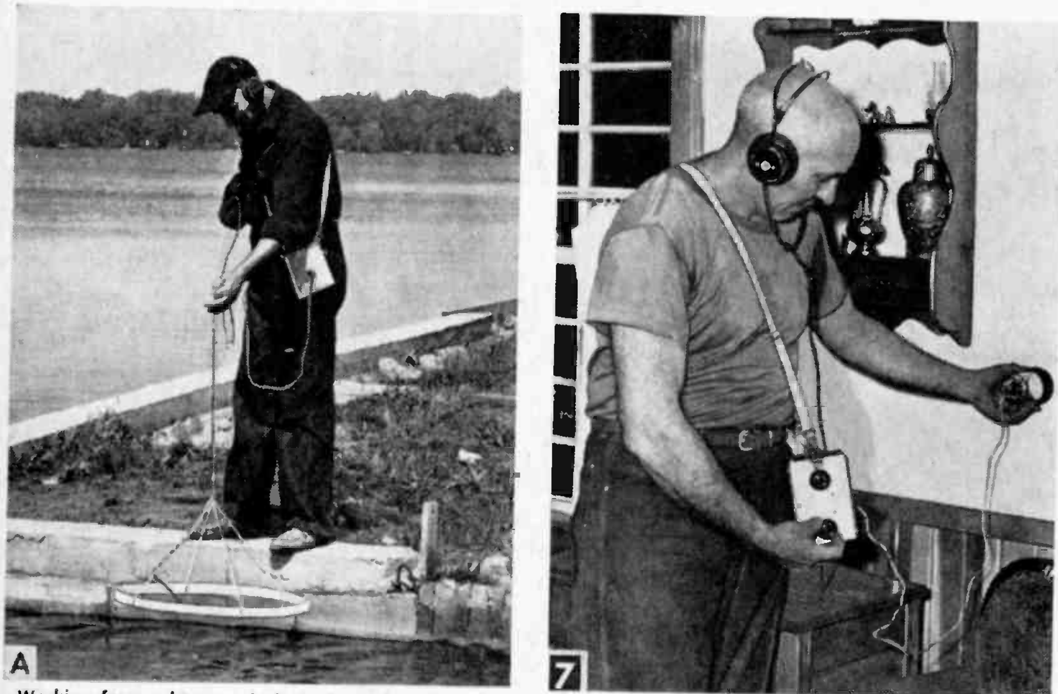
Now we shall describe the construction and use of three search coils that operate with the electronic detecting circuit. The largest coil (Fig. 7A) is designed for underwater use, while the 7-in. coil is intended for use on land in finding buried pipes and cables. The small, 2¾-in. coil will locate nails and even large tacks buried under plaster, or in auto tires.

Let's Start with the 17½ x 26½-in. oval search coil. Steam and bend the wood loop to shape (Fig. 8). Butt the ends together

a small rod through its hub so it will unwind easily without kinking. The rod can be held in a vise or with a cardboard box to keep it from shifting.

Pull about 1 ft. of the wire through one of the 1/16-in. holes in the frame and anchor by looping around the edge of the frame and back through the hole. Tape this end of the wire down to the inner face of the coil frame to keep it out of the way until the coil is wound.

Wind one turn about ⅛ in. from the edge



Working from a boat or dock the large loop finds lost outboard motors, cameras and even keys. A small loop wound on a plastic tumbler detects nails and pipes in the wall.

and glue the 5-in. strip of wood on the inner surface of the frame. Clamp tightly to dry. When dry, sand and drill a 1/16-in. hole about 3/32 in. from each edge of the frame where the 5-in. joint is fastened.

If you prefer an easier way, the inner hoop from an 18 x 27-in. quilting frame (available at Sears, Roebuck) can be used instead. Trim the wood brace on the inner surface down to ¼ in., drill the 1/16-in. holes, and it's ready.

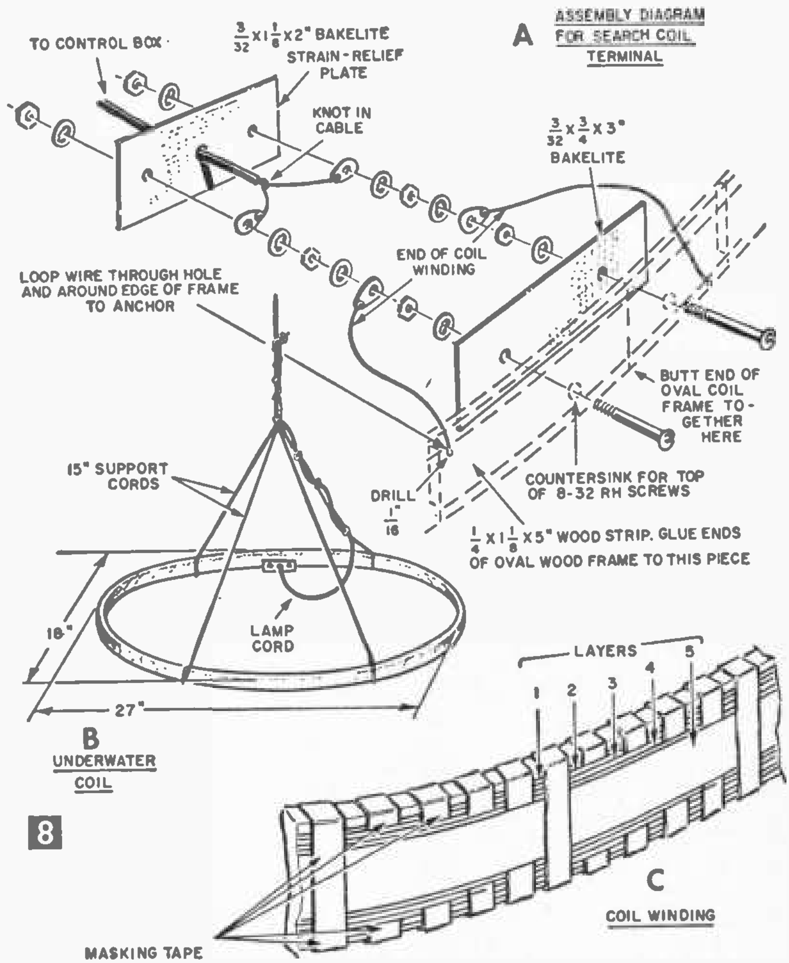
Winding the Coil. Find a clean, comfortable place to work, perhaps over a rug or heavy canvas to avoid scraping the insulation off the wire. Arrange the spool of wire with

of the frame and tape in place at 5-in. intervals. With the frame supported across the knees, rotate the frame with one hand and lay the wire on with the other hand. Press the wire in place with the thumb of the hand rotating the frame. Wind 10 turns and place strips of masking tape across these turns at 10-in. intervals. Every 10 to 15 turns, temporarily fasten the winding end down with masking tape and move these strips over to prevent wires from slipping off. Halfway through, and at the end of each layer, check that all wires are pressed together firmly, but do not push the outer turns off the frame.

Put 50 turns on the first layer. After adjusting the winding evenly on the frame, tape it down firmly with masking tape at 5-in. intervals. Remove the temporary strips of tape and save them for the next layer.

Start the First Turn of the second layer in slightly from the last turn of the first layer and tape. Wind 47 turns for the second layer, keeping it taped down as you go as with the first layer. Tape firmly in place at 5-in. intervals between the strips holding the first layer.

Repeat this procedure for a third layer of 44, a fourth of 41, and a fifth of 38 turns. The five layers total 220 turns. Loop the end of the last turn through the second 1/16-in. hole, tape the entire winding-down firmly, and the winding is done.



8

Next, assemble the search coil terminal strip up to the first nut (Fig. 8A). Tighten these nuts securely and tape this section of the terminal strip to the coil frame. Cut the coil wires, leaving 3 to 4 in. of slack, and carefully solder to the lugs. Fasten securely to the terminal strip with the second lock washer and nut, and tape the wires down, making sure there are no sharp bends or kinks.

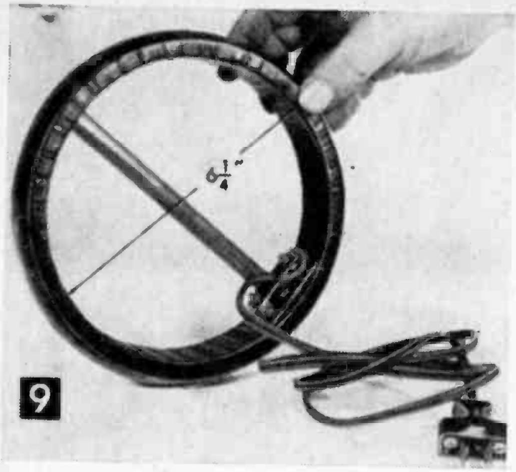
Fiber Glass Tape and Resin coating waterproofs the coil. Add white coloring to the resin to make the coil visible in the water and to help avoid the chance of damaging it when not in use.

Follow the manufacturer's mixing instructions exactly. Work in a clean, warm, dry place (75-80°), but not in the sun. After mixing the activator with the resin, you will have to work fast, because the mix jells in 30 minutes. Until then, the resin is fluid and easy to work, but as it starts to set it stiffens rapidly.

Roll the fiber glass tape into a small roll for easy handling. *Keep hands away from the eyes, and keep children away.* Fiber glass is safe and easy to use if you are careful, but the tiny glass particles can irritate eyes and skin.

Open the resin and pour into a pint jar that can be sealed. With everything ready, pour 4 oz. of the resin into a small can, mix in about 1 teaspoonful of the white coloring, add the exact amount of activator, and stir thoroughly.

Using a 1-in. Paint Brush, generously coat the area around the wood brace and terminal strip, and about 1 ft. beyond with resin. Hook the fiber glass tape end over the terminal strips as an anchor and spiral-wind the tape to the end of the resin-coated section. Wrap snugly and overlap the windings about 2 in. Coat another 10 in. of the coil and frame with resin and wind on more tape to cover. Repeat until the entire coil has been covered. Overlap the start of the winding with one or two turns and tie the end down with a long strand of fiber glass taken from one edge of the tape.



9

Seven inch coil detects pipes in walls, beams in concrete and small metal objects such as keys, and watches. Assembly steps are as follows:

1. Make 7″ O.D., 6¼″ I.D. x 1½″ cylindrical coil form by jig sawing out of solid wood, or of glued up sheets of plywood.
2. Drill holes for terminal strip as for large coil.
3. Install ½ x 6¼″ wood handle.
4. Wind ½ lb. #28 Nyclad wire, 473 turns total, same way as large coil. Only first turn each layer.
5. Check balance with bridge circuit at least 3 feet from any metal object.
6. To use with other coils, add about 10 turns and trim for balance at same control settings.

MATERIALS LIST METAL LOCATER COILS

Amt.	Size and Description
	LARGE COIL
1	¼ x 1⅛ x 70″ wood strip or 18 x 27″ wood quilting hoop (Sears Roebuck Cat. No. 25K5510)
1	¼ x 1⅛ x 5″ wood strip
1 pc.	Bakelite, ¹⁄₁₆ x 1⅛ x 2″
1 pc.	Bakelite, ¾ x 3″
1	Fiberglass tape kit (Sears Roebuck Cat. No. 6K5787)
1 pkg.	White resin color (Sears Roebuck Cat. No. 6K5764)
3 sets	Wire footage markers, 1-33; 34-66; 67-99. (Newark #30F200, #30F201 and #30F202)
1 lb.	#26 Nyclad magnet wire, Belden HNC 8079 (1260 ft.) Allied #48T092
100′	#18 lamp cord, Consolidated type POSJ (Allied #48T760)
1	16-oz. can CRC-2-26 (Northern Mining Equipment Co., Box 836, Hibbing, Minn.) For waterproofing headphones and control box.
	7-IN. COIL
1	circular wooden or plastic coil form approx. 7″ O.D., 6¼″ I.D., x 1½″
1	½ x 6¼″ wood dowel to fit above as handle.
½ lb.	#28 Nyclad magnet wire. Belden type HNC, 995′, (Allied Radio #48 TO 43)
4½′	Rubber covered lamp cord
1	Bakelite strip, ⅝ x 1½″
1	Bakelite strip ⅞ x 1⅞″
2	6-32 x ¾″ fh machine screws, nuts and washers for terminals
Misc.	Masking tape, plastic electrical tape, wood screws, appliance plug.
	SMALL COIL
1	8 oz. plastic tumbler, 2¹⁹⁄₃₂″ at top, 2¹¹⁄₃₂″ O.D. at base. Konite #209, Plastics Manufacturing Co., 2700 S. Westmoreland, Dallas 33, Tex. Available restaurant supply houses.
675′	#29 Formvar Magnet Wire (Allied Radio #48T144)
Misc.	male appliance plug, lamp cord for cable, plastic electrical tape

Now press the tape down around the terminals so that none is on or above the top surface of the 8-32 nuts. Clip off all loose threads from the tape edges and apply a heavy coat of resin to the entire surface of the tape. Work it in thoroughly with the brush, making sure all holes and seams are filled. If there are any large holes, fill with small threads of fiber glass mixed with resin. Wipe the threads of the 8-32 screws and the upper face of the nuts with a wet cloth to remove excess resin. Hang the coil in a warm dry place, and wash tools and hands with hot water and soap.

The Resin Will Harden in 24 hours. File all rough spots and connect the cable and strain relief plate. Now mix about 2 oz. of resin with the required amount of activator and stir in about ½ teaspoonful of white coloring for the second coat. Dry 24 hours and apply a third coat consisting of 1 oz. of resin, the specified amount of activator, and ½ teaspoonful of color.

Use a small amount of the resin to fill in all slots in the corners of the aluminum case for waterproofing. After drying, file smooth and cover with grey paint.

Fasten the Completed Search Coil to the lamp cord cable with four 15-in. supporting cords (Fig. 8B), allowing slack to avoid strain on the terminal strip. Apply markers to the cable every foot for measuring depth. The reel on which the cord is supplied can be used in the boat, provided you add a grommet to a hole near the hub and feed about 4 ft. of the inner end of the cable through.

Operating Adjustments. With the search coil and headphones connected, set R3 for minimum output. Then balance the bridge for least signal. This balance adjustment is a step-by-step process. Alternately adjust the two balance controls for minimum output until the 1000-cycle note can not be heard. Practice until you can balance in five steps or less.

Then adjust R3 slowly until you hear a distinct high-pitched note. This is a harmonic of the 1000-cycle note. Back R3 down until this note is barely noticeable. When you are approaching balance, the harmonic becomes predominant; when balance is reached, the 1000-cycle note will not be heard—only the harmonic will come through. Control R3 should now be near its mid-point.

If you have an oscilloscope, check for a 5-volt peak-to-peak signal across the bridge input. Then unbalance the bridge by rotating one of the balance controls off toward one end. The core of L2 is now adjusted for maximum output.

With the search coil in water and no metal nearby, adjust C6 until the balance point on R18 falls near the center of rotation. Also check that the second balance control (R17) is near center. When the search coil is removed from the water, the balance controls will need to be readjusted, but the balance points should not be too near one end of their rotation. If R17 is too far off, trim by changing the value of R14. Normally this resistor will be near 1½ megohms. If you plan to use the metal locator on dry land, balance adjustments must be made with the coil in air and no metal nearby.

Check the adjustments again, then lock L2 adjustment screw with a dab of cement.

Operation in Water. For best results with any metal locator, it is necessary to practice adjustment and search procedure. Improper use can cut your range in half.

This metal locator was designed to be used in boats. Or a diver can manipulate the search coil; while a helper operates the control box above. The large oval loop produces a field that combines the advantages of larger and smaller diameter loops. It will detect objects ranging from a camera to an outboard motor and—at close range—coins and keys. If there are strong water currents, tie small bags of sand to the loop frame for additional weight.

With the control box on a shoulder strap, one hand is free to manipulate the search coil while the other adjusts the controls. Lower the coil into the water, and while well away from *all* metal objects, adjust the two balance controls for minimum earphone signal. Then set your sensitivity control so the harmonic and amplifier noise are clearly but *not loudly* heard. If the sound is too loud, your car will not readily detect the 1000-cycle note when you approach metal.

Lower the search coil to the bottom, then raise it slightly, the distance depending on the size of the lost object. For example, if you are seeking a small camera, the search coil should be about 1 ft. from bottom. For outboard motors, about 3 ft. would be right. As you search, frequently drop the coil until it hits bottom, taking note of your cable depth markers, since there may be deep drop-offs on the bottom.

If there is a considerable difference between air and water temperature, you will have to readjust your balance controls (mostly R17) during the first few minutes, because temperature changes affect the search coil resistance. When the coil stabilizes at water temperature, only an occasional re-balance will be needed.

As soon as you suddenly hear the 1000-cycle note, it is likely the search coil is near metal. Move the coil back and forth over that spot to get an idea of how large the object is, and where the signal is maximum. Raise the coil, and mark the find with an anchor and marker float to guide diving or grappling. Many small ferrous objects can be pulled up with high powered magnets.

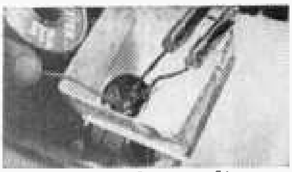
Small coil locates nails and tacks in walls and tires. A ¼" brad can be detected at 2 inches.

1. Wind coil on 8-oz plastic tumbler available at hardware stores. Diameter is approx. 2 19/32".
2. Drill lateral holes through tumbler and feed stiff wires through as guides for winding.
3. Wind about 950 turns #29 Formvar Magnet wire, and trim for balance setting to match other coils.
4. Cover with plastic electrical tape.

The detector will also indicate the kind of metal. Small ferrous objects will cause the bridge to unbalance in one direction, while non-ferrous objects will cause an opposite unbalance. A difficulty arises because objects the size of the coil and larger cause just the opposite effect. By first estimating size of the object, you can judge the type of metal.

After locating a metal object, readjust R17 for an approximate null. Then adjust R18 for null, noting which way it has to be rotated from its original setting. It is labeled to show the direction of rotation for small items; for large objects, this indication will be reversed.

Shield Simplifies Soldering



Soldering in crowded wiring of a circuit is simplified if the upper portion of a waxed milk carton is used as a shield. This helps avoid touching adjacent parts with the hot soldering iron or gun tip, helps you concentrate on the work, and often catches excess drops of solder.—JOHN A. COMSTOCK.

Trouble-Shooting Interference

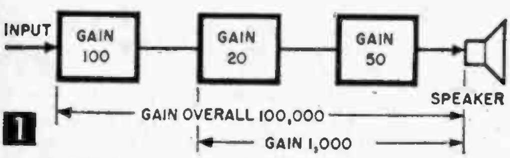
How to discover the source and eliminate noise in a radio or amplifier

By FORREST H. FRANTZ, Sr.

PUT a new LP on the phono and slump into the easy chair. The music is fine, but what's that d——— hum? The disturbing sizzle of a TV, the gasping of a hoarse, distorted radio or TV and the whine of a humming radio are other manifestations of interference. Fortunately, most of these troubles are easily recognized and fixed.

We usually differentiate interference as either hum, buzz, squeal, noise, distortion or station interference. Sometimes these are due to faults in the gear, sometimes to external sources. Frequent internal causes are: open, shorted or leaky capacitors, intermittent connections, intermittent short circuits, defective tubes and dampness. The antenna-ground system is also a frequent trouble spot. Externally caused disturbance is often traced to switches, thermostats, advertising signs, motors, radio stations and high voltage lines.

Let us look, first, at hi-fi audio amplifiers, remembering that this discussion is applicable also to the AF section of radios. Then we will cover radios specifically.



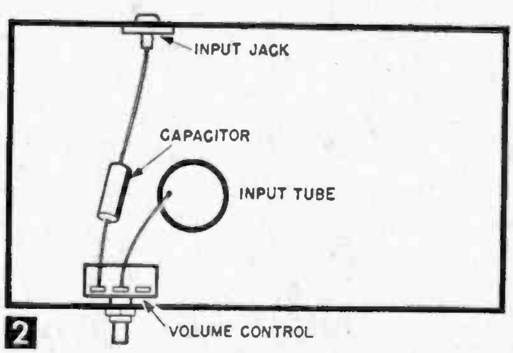
1 Hum introduced in first stage is amplified more than hum introduced in subsequent stages.

Audio Amplifiers. Amplifiers may exhibit interference in the form of hum, buzz, squeal, noise or distortion.

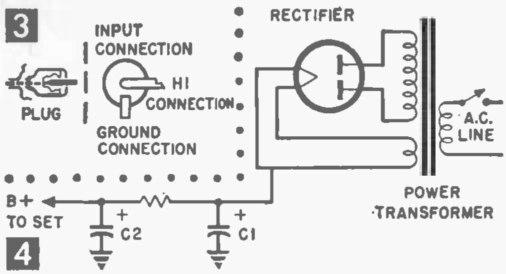
Hum in an amplifier is usually caused by insufficient shielding of the amplifier input circuit. The various stages of an amplifier have individual gains, which multiply as shown in Figure 1. The first stage usually has the highest gain. Thus, the gain from the first stage to the loudspeaker is much greater than the gain from any succeeding stage to the loudspeaker. If even a small portion of an amplifier input lead is unshielded, it acts as a capacitor to the ac line though it may be many feet away. A small amount of alternating current can therefore feed into the amplifier. The high gain of the amplifier multiplies this minute voltage into a sizeable signal at the loudspeaker.

Hum due to poor input shielding is easily recognized, since the loudness of the hum will decrease as the volume control setting is decreased. There are several steps to pinpointing and curing this. First, dress the input lead close to the chassis. The input lead can be traced from the input connector and usually goes to the high volume control terminal (possibly through a capacitor) as shown in Figure 2. The center terminal of the volume control goes to the grid of the input tube (possibly through a capacitor). In some amplifiers, a preamp stage precedes the volume control. If the input tube is glass, a shield may cure hum. Next, check the shell to chassis ground connection of the input connector. Then check the connection from the external input plug to the braided shield which encircles the unit's input lead (Figure 3). An open can cause hum.

Sometimes, in cheap construction, unshielded leads are used, and should be replaced. An open circuit from shield to ground or at the chassis connector results in loss of gain because the shield is frequently the chassis ground return conductor. Finally, check the ground connection at the remote input device and look for short lengths of



2 Leads likely to pick up hum. Remedy is to substitute shielded cable, dressed close to chassis.



3. A broken shield or disconnection from plug ground or a faulty or open input jack can cause hum pickup. 4. Filter capacitor (C1), which if open, causes hum in amplifier power supply. Leaky power supply output filter capacitor (C2) will cause hum or squeal.

input lead which may be unshielded.

Hum which occurs at all volume settings is often due to defective filter capacitors in the amplifier power supply, as shown in Figure 4. (The rectifier tube is connected to the power transformer and the high voltage electrolytic capacitors.) To test the filtering, bridge a 10 mfd. electrolytic (watch the polarity) across C1. The voltage rating should be equal to or greater than that of C1. If hum decreases, you're on the right track. Disconnect C1, and connect a replacement capacitor of the same or greater voltage and the same capacity in the circuit. If the hum is substantially reduced, replace C1 permanently. Otherwise, connect the original C1 back into the circuit, and bolster the filtering action with the 10 mfd. capacitor that scored the original improvement. If this isn't enough, try a 40 mfd. capacitor of adequate voltage rating across C2.

Caution! Don't work on an amplifier that has been used in the last few minutes—wait until capacitors discharge.

If you still haven't cured the hum, check for cathode to heater leakage in tubes, poor connections to chassis ground within the amplifier, and open or partially open capacitors elsewhere in the circuit (can usually be found by bridging with another capacitor).

Squeal in amplifiers may be due to open filter or bypass capacitors, which can be traced by employing the capacitor bridging technique described previously. Another cause of squeal is feedback caused by a high level signal lead being too close to an early amplifier stage lead—shorten the lead and dress it close to the chassis.

Noise may be due to a bad volume control, a microphonic, shorted or intermittent tube (which can often be located by tapping with a pencil eraser) or a rubbing loudspeaker voice coil (most readily checked by substitution of another speaker). Noise can also be caused by an intermittent capacitor (thump and jiggle the suspect), by poor connections which may be loose or intermittently shorted, by intermittently shorting output or interstage transformer windings or by arcs across rectifier or output tube sockets (usually indicated by a charred section of tube socket or a visible arc during operation).

Distortion in amplifiers is usually caused by leaky coupling capacitors (C4 in Figure 5). Coupling capacitors may be checked by substitution, but this requires disconnecting one end of the original capacitor. Other sources

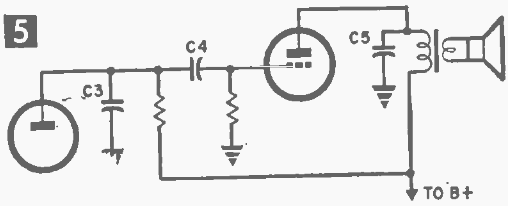


Plate bypass capacitors (C3 and C5) or coupling capacitor (C4) if leaky can cause distortion.

of distortion are leaky power supply output filter capacitors (C2 in Figure 4) and leaky bypass capacitors. Plate bypass capacitors (C3 and C5 in Figure 5) are likely offenders. In each of these cases, one end of the original capacitor must be disconnected before substitution of a similar capacitor is attempted. Another frequent cause of distortion in amplifiers is a gassy tube. Output tubes are the usual offenders.

Radios. Radios are subject to all the amplifier disturbances described, and the same solutions apply. In addition to amplifier troubles there are other possibilities.

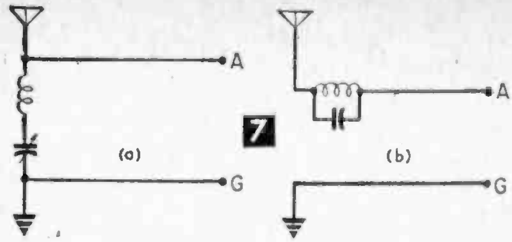
Hum caused by some strong local radio station can usually be cured by connecting a 0.05 mfd., 600 v. capacitor from one side of the ac line to chassis ground as shown in Figure 6A. If the set is ac-dc (no power transformer), the capacitor should be connected from the set side of the switch to the opposite side of the line as shown in Figure 6B.

Buzzing is due to external sources such as neon signs, motors, or high voltage lines.

Squeals may be caused by any of the things already discussed under audio amplifiers or may be due to open bypass capacitors, long unshielded RF or IF leads or other causes. Long leads on IF transformers are frequent causes of squealing.

Noise may be due to internal or external trouble. If the set uses an external antenna,

Suppressing a strong local station by connecting .05 mfd capacitor from one side of line to chassis ground for ac radio (a) and from set side of the switch to opposite side of line for AC-DC radio (b).



Suppressing an unwanted station with a wave trap, a tuned circuit across the antenna ground terminals (a) or in series with the antenna terminal (b).

disconnect it, and short the antenna terminal to ground. If the noise persists, it's in the receiver. Arc in the power supply, intermittent connections almost anywhere in the set or defective tubes are possibilities. Next, check the antenna by disconnecting it and connecting 20 ft. of wire to the antenna terminal. Noise in an antenna may be due to poor or corroded connections at the antenna, lightning arrestor, feed-in to the building, a break in the lead-in under the insulation or to the antenna or lead-in contacting metal such as the storm gutter.

Assuming noise to be external to the receiver, a capacitor connected as shown in Figure 6A or 6B may be helpful if your receiver doesn't already have one. If this doesn't help, try tracking down the external causes which were mentioned early in this article. For example, if noise occurs around meal times, it may be an electric stove or other appliance. Or, say the noise occurs only in winter—could be the thermostat.

The type of noise your receiver picks up is also a clue to its origin. Switches, relays, thermostats and poor electrical connections cause intermittent noise. Motors and industrial and medical electronic equipment produce a buzz or whine in nearby radios. High voltage lines produce a hum or buzz with a super-imposed crackle in radios. High voltage line noise is continuous, and the crackling is worse in damp weather.

A battery receiver, that has automatic volume control (which you must disconnect for this purpose) and a directional loop antenna, is helpful in tracking down noise.

When the source of noise is located, a commercial filter installed at the source of the noise will usually cure the trouble. These filters usually consist of capacitors or capacitors and inductors.

Distortion is usually due to AF section trouble. Refer to the previous discussion of distortion in connection with audio amplifiers.

An interfering radio station can be eliminated by a wave trap, a tuned circuit across the antenna-ground terminals (Figure 7A) or in series with the antenna terminal (Figure 7B) tuned to the frequency of the interfering station.

Wireless Remote TV Sound

Easily constructed unit permits private listening

By W. F. GEPHART

With TV speaker silent, the sound is picked up remotely by an earphone-equipped transistor radio.

EVER wish the TV set had earphones when the kids were watching a Western, or when someone is trying to sleep in the next room? It can be done, but usually requires a long cord stretching across the room to the earphones or a small speaker. It also requires an earphone, or extra speaker, and limits the movement of the listener.

With this little transistorized oscillator, the main TV speaker can be cut off, and the sound picked up anywhere in the room with an ordinary radio. If a transistor radio is used, the earphone can be used for complete privacy or the speaker used for listening in a small area. Even with an ac-dc radio, the sound can be cut down so that it doesn't bother others.

The unit, similar to a wireless phono oscillator, is mounted on the back of the TV set, and is turned on by a switch accessible at the top of the back of the cabinet. This switch also connects the TV sound to the unit, and cuts the TV speaker out.

The circuit (Fig. 4) consists of a transistor oscillator (TR1), operating in the broadcast band, which can be tuned to a blank spot on the radio dial. It also has an AF transistor modulator (TR2), and an optional power supply. It can be built for less than $10 without the power supply, and for about $15 with the power supply.

Through the use of an adapter for the TV audio tube, connections to the TV set can be made without modifying the TV set wiring. In some cases power from the TV set can be picked up for the unit, and in other cases, the standard 9-volt transistor battery is used. Since only 5 *ma* is drawn by the unit, a battery will last from several months to a year, depending on usage.

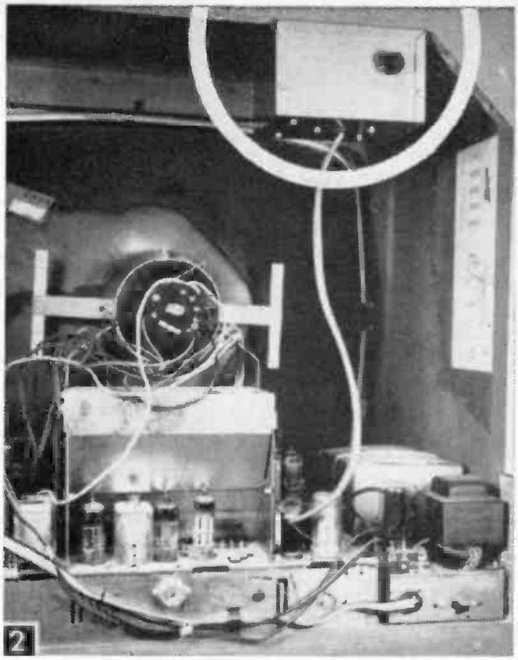
Circuitry. There are two general types of circuitry used in TV audio output stages, as explained in Fig. 3. The unit will work with any of these circuits, but battery power must be used if the TV set uses a circuit similar to 3C, or if the cathode voltage in circuits 3A or 3B is less than 13.5 volts. To determine the circuitry used and the cathode voltage, secure the adapter mentioned in the materials list, and solder the leads together.

Plug the adapter into the audio tube socket, and the audio tube into the adapter. (Typical audio tubes in TV sets are 5BQ5, 6AQ5, 6BQ5, 6V6, etc. Usually the tube location guide pasted on the back or inside the set will tell which is the audio output tube).

With the set on, measure the voltage between the cathode pin on the adapter and the set chassis. If it is relatively low (25 volts or less), the circuitry is probably similar to Fig. 3A or 3B and a self-powered oscillator can be used. If the voltage is relatively high (90 volts or more), the circuitry is probably similar to Fig. 3C, and a battery supply must be used for the oscillator. Even if Fig. 3A or 3B circuitry is used, a battery supply must be used if the cathode voltage is less than 13.5 volts.

Construction. Most of the parts are mounted on a 2x2-in. piece of *Bakelite*. The author used a surplus terminal board, but a similar mounting can be made as shown in Fig. 7. This board is wired first, and then mounted in the box with either a battery or power supply, as shown in Fig. 8.

Since this unit must work with various TV sets, some modifications may have to be made. The volume control (R1) can be eliminated in most cases, and in some cases it loads the oscillator enough to reduce the output depending on the size of the grid resistor in the TV set. Obviously, R4 is not needed



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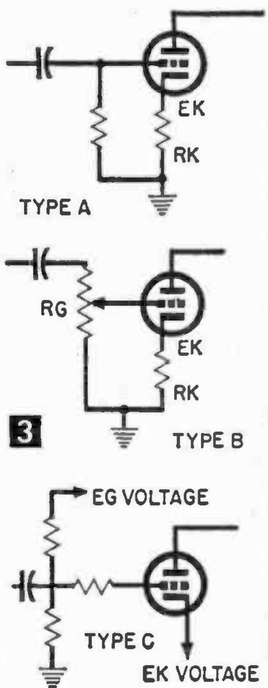
The audio tube is plugged into adapter from which cable leads to unit attached at top of TV cabinet.



3

This type is also found as half of a push-pull output circuit. Cathode voltages (E_k) vary from about 7 to 172 volts, depending on tube and manufacturer. Cathode resistors (R_k) vary from about 200 to 560 ohms, depending on tube and manufacturer.

This is essentially the same as type A, except that the volume control (R_g) is in this stage. Cathode voltages (E_k) vary from about 5 to 16.5 volts, depending on tube and manufacturer. Cathode resistors (R_k) vary from about 82 to 680 ohms, depending on tube and manufacturer.

Grid voltages (E_g) run from 120 to 135 volts (positive), depending on tube and manufacturer. Cathode voltages (E_k) run from 135 to 150 volts (positive), depending on tube and manufacturer. (These combinations give a negative grid bias of about 15 volts.)

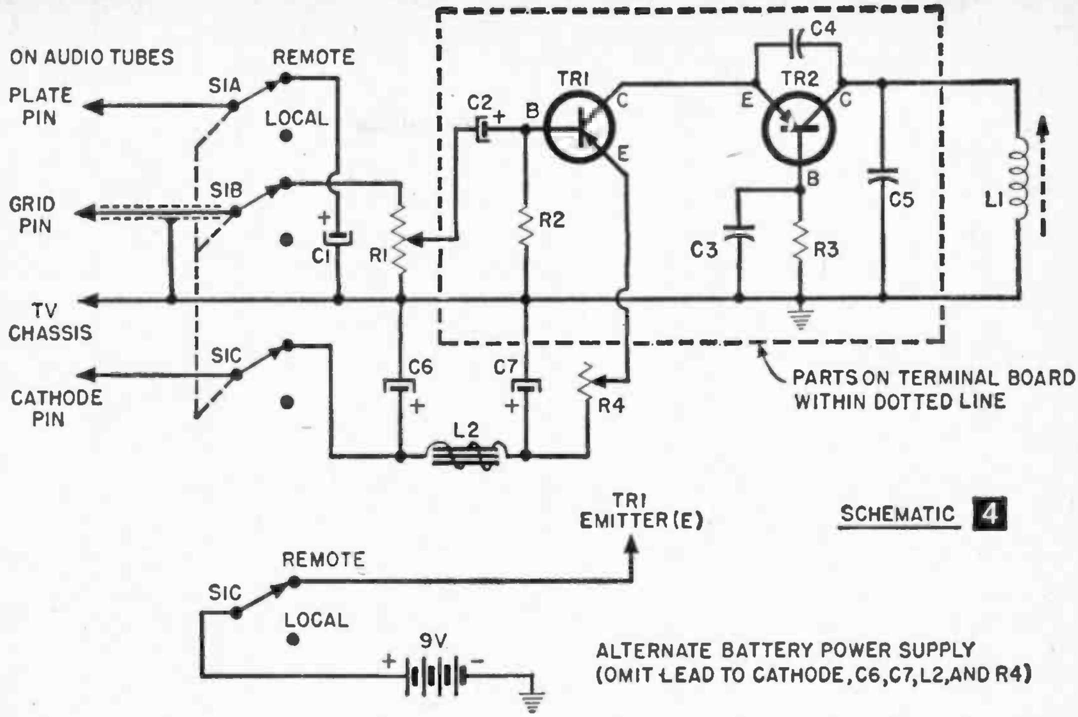
Typical Audio Output Tubes

5AQ5	6BQ5	12C5
6AQ5	6DG6	12CU5
	6V6	

Types of Output Circuits

MATERIALS LIST—REMOTE TV SOUND

Desig.	Description
R1	1-meg potentiometer (Mallory U-54; Allied 29M777) (see text)
R2	.15-meg, ½-w, 10% resistor (Allied 1MM000)
R3	47K, ½-w, 10% resistor (Allied 1MM000)
C1	10-mfd, 450-v capacitor (Sprague TVA-1705; Allied 15L225)
C2	10-mfd, 25-v capacitor (Sprague TVA-1204; Allied 15L205)
C3	.01-mfd. 50-v capacitor (Sprague S-10; Allied 15L996)
C4	270-mmf, capacitor (Cornell-Dubilier CD15-5T27; Allied 20L034)
C5	100-mmf, capacitor (Cornell-Dubilier CD15-5T1; Allied 20L023) or 25-280 mmf trimmer (Allied 60H343) (see text)
L1	Loopstick antenna (Miller 705A; Allied 60H893) or (Miller 2002; Allied 60H980) (see text)
S1	4-pole, 2-pos. rotary switch (Mallory 3242J; Allied 34B356)
TR1	Sylvania 2N1265
TR2	Sylvania 2N1264
	Parts Below Required If Power Supply Used
R4	1500-ohm w.w. potentiometer (IRC WPK1500; Allied 30MM216)
C6	500-mfd, 25-v capacitor (Sprague TVA-1209; Allied 15L869)
C7	500-mmfd, 15-v capacitor (Sprague TVA-1162; Allied 16L238)
L2	20-hy, 15-ma choke (Stancor C-1515; Allied 64G058)
Misc.	3 x 4 x 5" Minibox (Bud CU-2105A), 7-pin min. socket adapter (Vector TX-7M), knob, two terminal tie point, miscellaneous hardware
	Above parts available from Allied Radio Corp., 100 N. Western, Chicago 80, Ill.

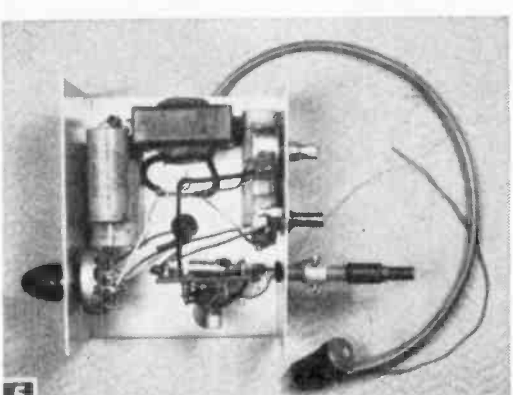


when battery power is used.

A small loopstick is used for L1, but larger units give better range. The one shown was later replaced with a larger one, and C5 changed to a 280-mmf trimmer. Small loopsticks, such as the Superex "Ferri-loopstick" (shown in the pictures), "Vari-Loopstick," and Miller #2002 or #2007 are compact and adjustable, but have limited range. Larger units, such as the Superex "7-in. Loopstick," and Miller #705 and #2000 take more room and will require an adjustable trimmer for C5, but will give greater range. These units will also permit the addition of a length of wire for an antenna without appreciably altering the oscillator frequency. Where space is available, the larger units are recommended.

Adjustments. When the box is in place and connected, the only adjustment required is the frequency setting. Turn the TV set on, and set to a channel. When it has warmed up and the sound is good, switch to a vacant channel.

Place a small radio on the TV set, and turn the knob on the unit to the REMOTE position. Gradually tune the radio through the broadcast band until you hear a whistle. Tune the radio to the center of the whistle, and then switch the unit to LOCAL to verify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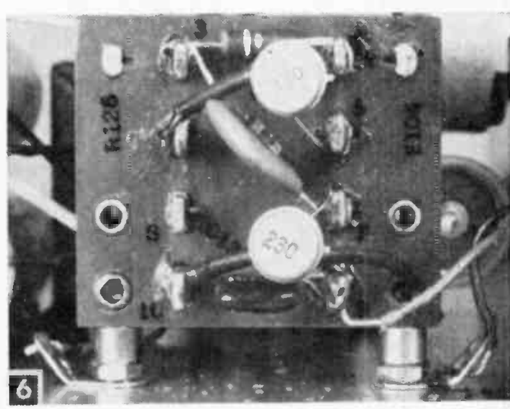
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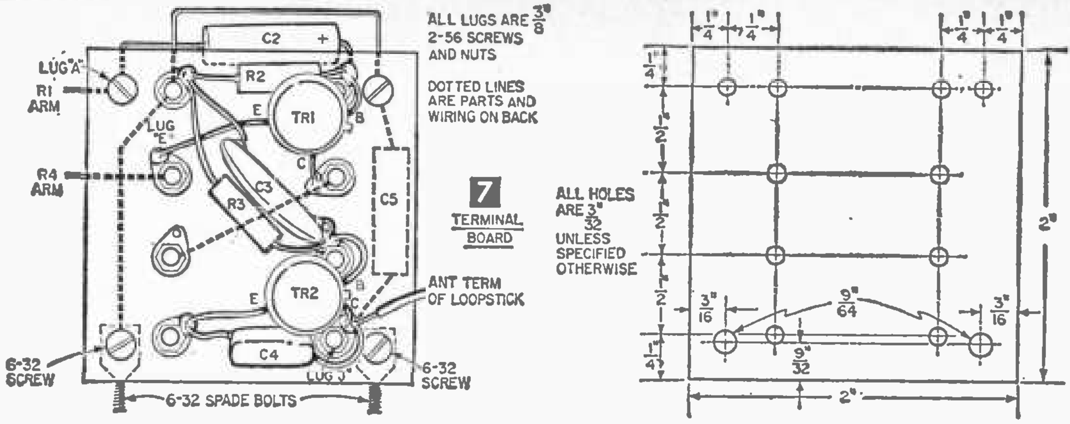
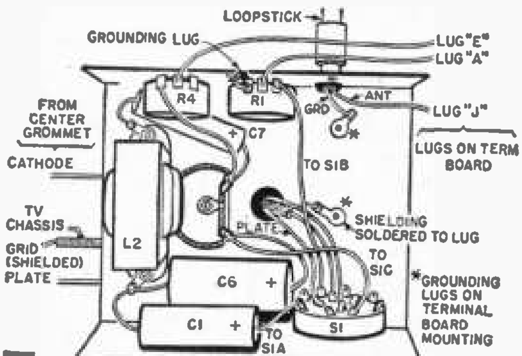
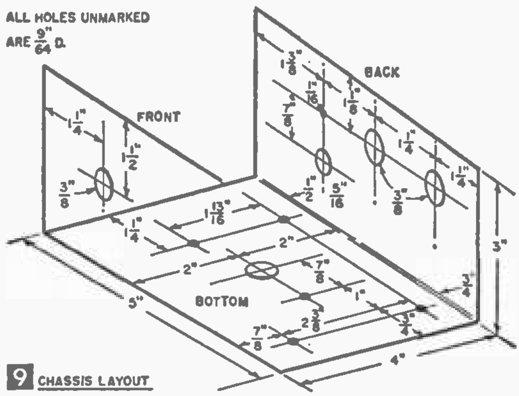
Interior view of unit showing power supply, cord, and adapter. When battery is used, it is placed where choke and capacitors are located. Close-up of terminal board showing resistors and capacitors.



7 TERMINAL BOARD



8 PICTORIAL (TERMINAL BOARD OMITTED)



9 CHASSIS LAYOUT

that the whistle is from the unit, as indicated by the whistle stopping.

If the output seems weak, and appears above 1100 *kc* on the radio dial, retune for half the frequency shown. This is to make sure that you are not picking up the 2nd harmonic of the oscillator. If, with a weak signal, the radio is tuned below 1100 *kc*, raise the oscillator frequency by moving the slug farther out of the coil or loosening the trimmer condenser, and make the test to be sure you are tuned to the fundamental frequency.

Once the proper frequency is found, turn the unit to LOCAL, and turn the radio volume all the way up without moving the dial setting. Make sure there are no stations on the frequency that will interfere with operation. This test should be made at night when reception is best.

If the oscillator is not tuned to a blank spot on the dial, its frequency can be changed by adjusting the slug in the coil (L1) on small units, or adjusting the trimmer (C5) on large coils. Moving the slug farther in the coil (or closing the trimmer) decreases frequency, and the reverse increases it.

Once the oscillator has been set to a blank spot on the dial, turn the TV set to a channel, adjust the sound to the desired level, and turn the unit on REMOTE. You should then pick up the TV sound on the radio, and can adjust the radio volume as desired. If, even at low radio volume and proper tuning, the sound is distorted, potentiometer R1 will have to be included, so that the sound input to the unit can be reduced.

You will find that, as you move the radio away from the TV set, the signal weakens. This can be minimized by attaching a 6- or 8-ft. piece of wire to the loopstick antenna post. If a small loopstick is used, this will change the frequency, so the radio or oscillator will have to be retuned. With transistor radios, position of the radio will also have an effect on signal strength as you move away from the TV set.

By eliminating C1, and using a high-gain radio, this unit can sometimes be of help to those with impaired hearing. It is often necessary for them to turn the TV sound up to a point uncomfortable for others. In some cases (where C1 is omitted) the TV sound can be adjusted to a comfortable level for all, the unit turned on, and the hard-of-hearing person can listen on an earphone-equipped radio set to the desired volume. With C1 omitted, the TV speaker remains in operation, even with the unit set on REMOTE.

HAM RADIO ANAGRAM

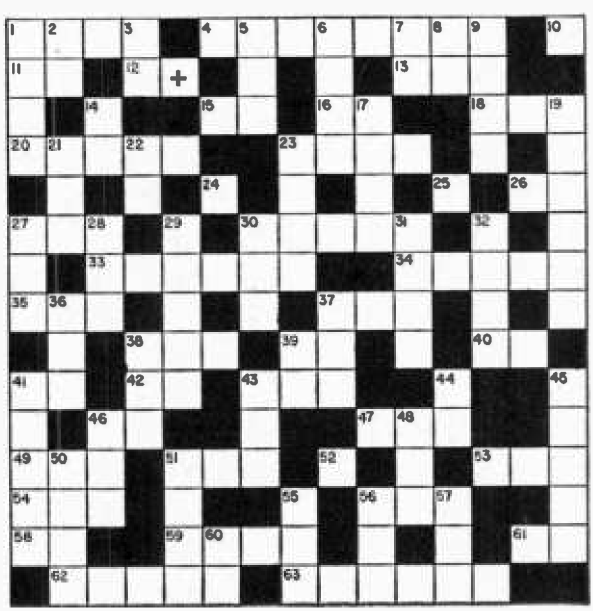
IF AMATEUR radio is your hobby, you will have loads of fun working this puzzle. Those in other branches of electronics will have almost as much fun trying to figure out the lingo that isn't so familiar to them. After you think you have all the correct answers, turn to page 158 for the solution.

ACROSS:

1. Radio-frequency effect
4. 8 kc. is the second - - - - - - - - - of 4 kc.
10. No
11. Same as #2 down
12. Positive terminal of grid bias voltage source
13. Famed manufacturer of electronics gear (abbr.)
15. Changeable current (abbr.)
16. Positive grid of a vacuum tube (abbr.)
18. Wire tiedown point
20. The maximum input - - - - - permitted for operating a transmitter with a novice class license is 75 watts
23. Short for crystal
24. Voltage (abbr.)
25. Capacitance (abbr.)
26. Power output (abbr.)
27. Are you troubled by atmospherics?
30. Tube and associated components
33. Many beginners learn to send code with one
34. Current used
35. Federal radio communications regulating agency (abbr.)
37. Transmitter stage (abbr.)
38. You are QRMing
39. Not a regular wire circuit (abbr.)
40. Wife
41. Type of national defense (abbr.)
42. Abbreviation for #51 down
43. Quadrature-phase subcarrier signal (abbr.)
46. Current that is not undecided which way to flow (abbr.)
47. Going out of the network
49. - - - hams should join the ARRL
51. Bunch of interconnected relay stations
52. Letter symbol for power
53. The strength of your signal is .....
54. Intentional loss
56. Send your information "QNC"
58. Type of magnet (abbr.)
59. - - - - directional antennas radiate equally well in all directions
61. Cathode resistor (abbr.)
62. Radiotelephone
63. Class of amateur radio license

DOWN:

1. Wave reflection phenomenon from ionosphere
2. One thousand watts (abbr.)
3. Broken or open circuit connection (abbr.)
5. Volume compensating circuit (abbr.)
6. Antenna support
7. Not far away
8. Current in vacuum tube cathode circuit (abbr.)
9. What's your - - - - sign?
14. Switch (abbr.)
17. Deck switch
19. Type of earthly radio wave
21. Operator
22. Resistor voltage drop (abbr.)
23. Short for something that generates and emits
27. Means network isn't busy
28. Major broadcasting network (abbr.)
29. Odor associated with electrical discharge in air
30. Short for says
31. Magnetically induced circulating current
32. K-King, L-Lewis, M- - - -
36. Could
37. Modulated continuous waves (abbr.)
38. Signal concerning network communications
39. Circuit etched on wafer (abbr.)
41. Series-tuned Colpitts oscillator
43. Stop transmitting
44. Not a distant oscillator (abbr.)
45. Ham's lair
46. Received
48. Type of transistor (abbr.)
50. Light source
51. Inert gas
55. It is a - - - to say amateur operators aren't of great help in time of a national emergency
56. Shall I send a series of VVV ....?
57. How many telegrams have you received?
60. Objective case of pronoun I, or the one who wrote this puzzle!



A Handy Home Appliance Tester

$6.50 electronic box will check out electrical units up to 15 amps at 125VAC

By JAMES ROBERT SQUIRES

APPLIANCE testing can be as simple as you make it. The little unit shown in Fig. 1, simplicity itself, can be used as the basic tool for a lot of tests that locate many appliance faults.

Most modern appliances provide a product name plate giving either total current drawn by the unit or total power consumed in its normal operation. New appliances will draw current in the general range of the same plate value. Older appliances usually draw less current as the heating elements age. Older appliances that require longer heating times or in general do not do the job in the time allotted are wasting electricity. The location and repair of these faulty units will soon pay for the slight expense of making this tester.

It will cost approximately $6.50 to build this unit. With it you can test all electrical appliances up to 15 amps at 125 vac with safety. As you know, these little boxes can attract all kinds of little gimmicks such as test points, and extra switches, in a hurry. Since these add to cost and construction time, they were not included.

Construction of the appliance tester is straightforward (Fig. 2) and it can be done in a few evenings. Close the aluminum *minibox* and fold a piece of white paper tightly over the flanged cover. Anchor the paper with cellulose tape. Also allow the paper to cover one end of the box. Now draw a center line on the paper as shown in Fig. 3, then locate the five cross points on the paper as indicated.

The SPDT switch requires a 15/32-in. hole, the neon light grommet one of 5/16-in. diameter. The 2-in. circular opening for the 0-15 ammeter is best cut with a chassis punch. Other useful ways to cut the hole are satisfactory, providing they leave a clean hole and do not mar the shiny aluminum face.

1

Just plug your appliance into the tester. An 8-ampere reading on the dial indicates normal operation of the iron, but an intermittent movement of the needle would indicate a faulty contact in the cord connector.

You will need two rectangular holes for the Cinch-Jones ac sockets. The simplest way I have found to start the rectangular hole is to drill the two ¼-in. holes in two places as indicated in Fig. 3. Then, using the socket as a pattern, lay out the rectangle on the paper. Now, with a small square file and the socket as a fitting template, file the rectangle to size. Again with the socket as pattern, lay out the mounting holes and drill them. These mounting holes were not laid out before, so that any error made in drilling or filing the rectangular holes would not be added to the position of the predrilled mounting holes. Drill a ½-in. hole for the power cord grommet.

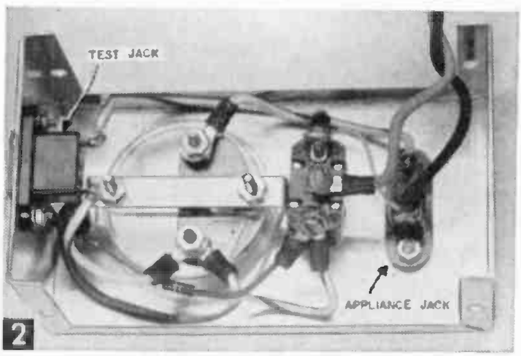
Wrap one of the neon lamp pigtails around the pigtail of the 56K resistor and solder the joint. Wrap the other neon pigtail around one end of a 5-in. piece of No. 22 shielded wire—then solder. Slip a 2-in. piece of sleeving over the joint and butt up against the glass of the NE2E bulb.

Remove any of the white layout paper and

MATERIALS LIST—HOME APPLIANCE TESTER

No. Req.	Description
1	0-15 amp ammeter (Shurite 8508; Burstein-Applebee 19B289)
1	double fuse plug (Elmenco; Allied 52N648)
1	aluminum Minibox (Bud CU3006A; Allied 80P366)
2	15-amp fuse (Buss ABC15; Allied 53B571)
1	56K, ½-w. resistor (Allied 1MM000)
1	SPDT switch (Cutler-Hammer 7502K13; Allied 34B796)
1	1/15-w. neon lamp (GE NE2E; Newark 25F027)
2	socket (Cinch-Jones 2R2; Allied 40H830)
1	ac plug (Allied 52N641)
6 ft.	2-conductor power cord (Belden 8472; 47T406)

The above parts can be purchased from Burstein-Applebee, 1012-14 McGee St., Kansas City 6, Mo.; Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill., and Newark Electronics Corp., 223 W. Madison St., Chicago 6, Ill.



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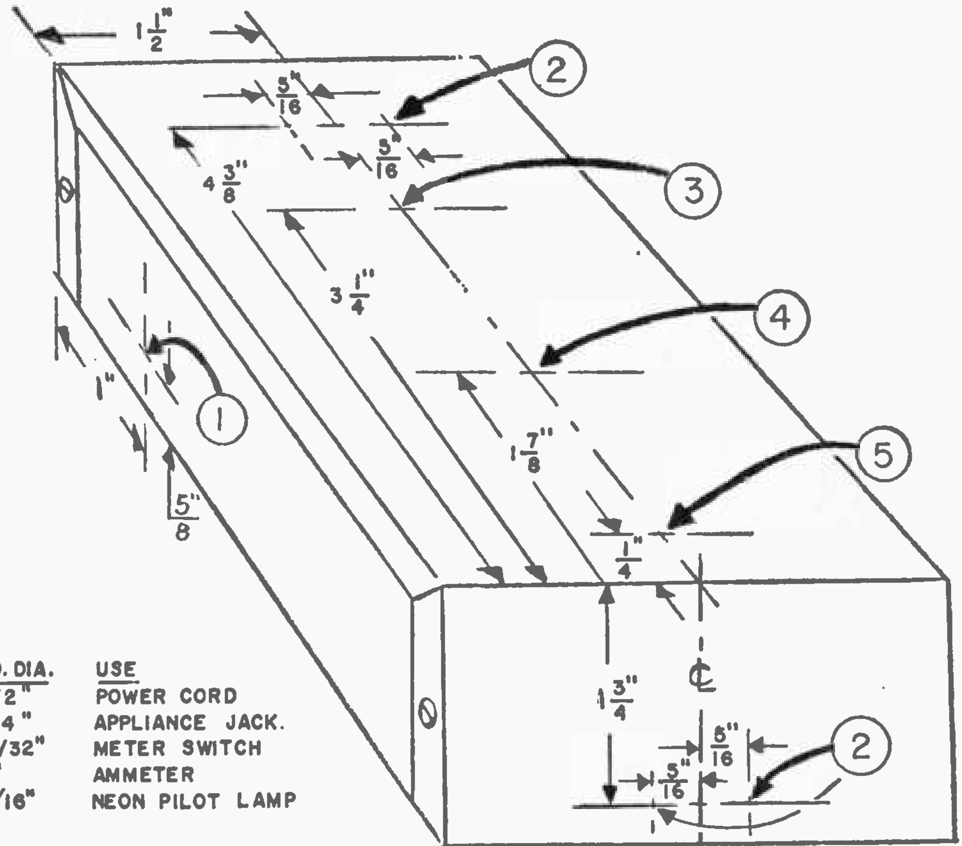
Interior view of tester showing parts placement.



HOLE	NO. DIA.	USE
1	1/2"	POWER CORD
2	1/4"	APPLIANCE JACK.
3	15/32"	METER SWITCH
4	2"	AMMETER
5	5/16"	NEON PILOT LAMP

3 DRILLING DIMENSIONS

cellulose tape left on the chassis. Insert the ⅜-in. neon grommet in its hole, moisten the neon tube glass with water, and slip into the grommet. Allow about ¼-in. of neon tube to project above the chassis.

Mount the *Shurite* meter, taking care to square and center the meter face with the Minibox sides. Now mount the SPDT switch and the two *Cinch-Jones* sockets. Strip 6 in. of outer rubber protective insulation from the power cord. Dampen the outer rubber of the power cord, insert the power grommet in its hole, then slip the power cord about ¾-in. into the grommet. A tight fit here assures a firm hold of the power cord at the grommet.

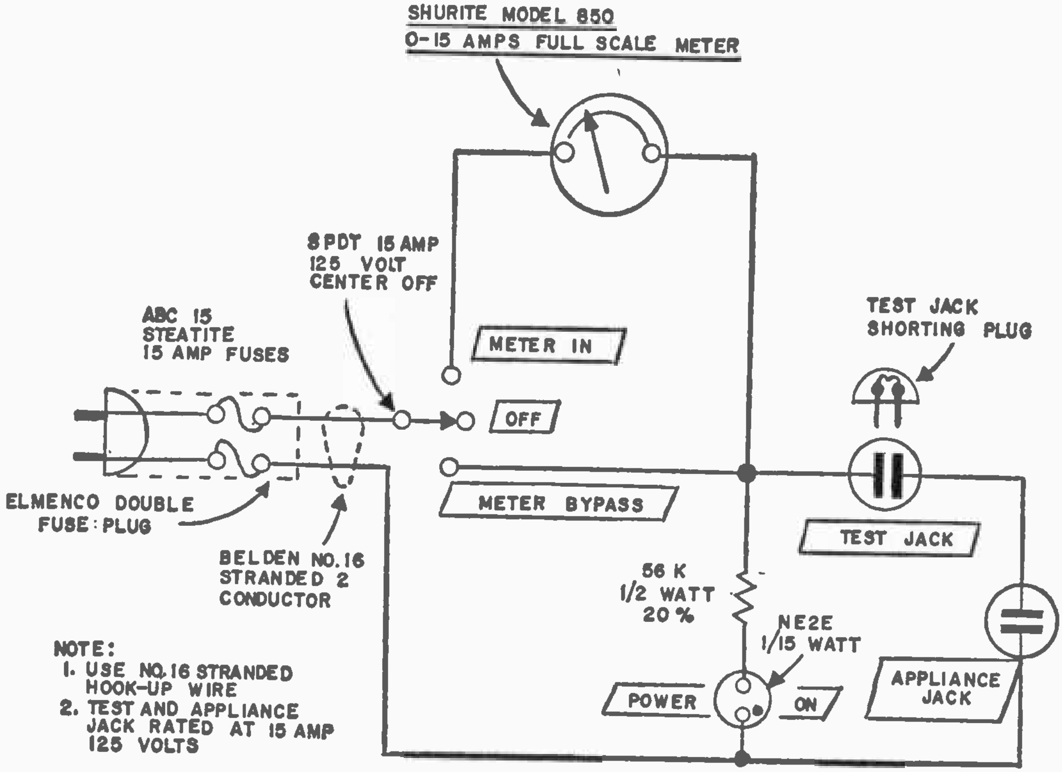
Disassemble the double-fused plug and, with a small round file, file the edges to permit the plug cover to close over the power cord. Strip, solder, and attach the wires to the plug. Reassemble the plug and insert two *Buss* ABC15 (3AB) fuses into the plug.

Wiring the Tester. It is always good practice to tin stranded wires before using the solderless connector crimp tool. Be certain to use internal lock-tight washers under every screw and nut used in the circuit. With exception of the neon circuit, work with #16 stranded wire throughout. The long length of power cord wire inside the box will allow servicing of the instrument.

Attach a solderless connector to one wire of the power cord pair and connect it to the center screw terminal of the SPDT switch, as in Figs. 2 and 4. Connect the other wire of the power cord pair to the left terminal, as viewed from the rear of the appliance jack. Also connect the wire from the neon pigtail to this terminal and solder. Connect a length of wire from the right screw terminal of the switch to the right terminal of the meter.

Using solderless terminals or solder where necessary, connect a wire from the left side of the test jack to the left side of the ammeter. On this same terminal of the meter, connect a wire to the left screw terminal of the SPDT switch. Also connect the pigtail of the 56K resistor to this switch terminal. Complete wiring of the tester with the connection of the right terminal of the test jack to the right terminal of the appliance jack. Using a small piece of #16 wire, short the two male pins of the ac plug together at the terminals to form the shorting plug.

A word of caution before continuing. This tester might well be constructed from assorted parts lying around the work bench.



4 SCHEMATIC

However, operating ratings for all components used in the model are 15 amps at 125 vac. Any random bench parts used should equal or exceed this rating. As an example, table lamp zip cord should *not* be used. For your own safety, be very sure to use the components that meet the ratings given above.

Using the Appliance Tester. It is only necessary to assume or measure the approximate value of the ac line voltage applied to the tester. That is, you must decide that input voltage is nearest to 100 volt, 113 volt, or 125 volt. When the appliance is turned on, the 0-15 ac ammeter will indicate a current flow.

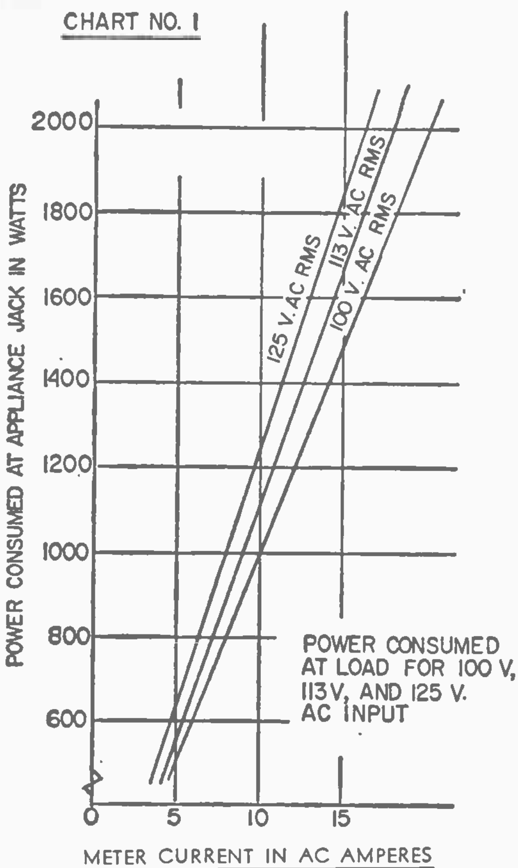
Chart No. 1 shows the power consumed for a choice of one of the three approximate line voltages. This chart plots meter current in amperes versus power consumed at the appliance jack in watts.

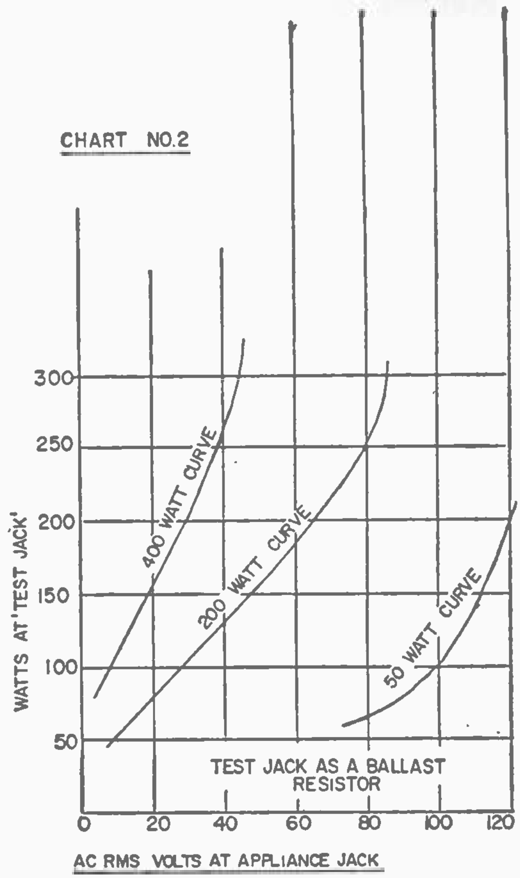
As an example, assume you have selected the 113-vac house voltage as being the closest to your own voltage. With the appliance plugged into the tester, you then read 10 amps on the meter. By sliding your finger up to the 10-amp line on the chart to the point where it crosses the 113-vac curve, you have found the power consumed by the appliance. It is indicated to the left of the chart on the horizontal line which also crosses the 113-vac curve. The *Shurite* ammeter movement is accurate to within 5% and is close enough for all measurements used here.

Plug the appliance to be tested into the ac receptacle marked appliance jack. Be certain that a shorted ac plug is plugged into the receptacle marked test jack. The SPDT switch mounted under the meter is the on-off meter selector switch. In meter bypass position, the meter is not in the ac circuit. In the meter position, all appliance current will flow through the meter. The meter bypass is used to prevent damage to the meter when appliances that may have a short are tested. It has another use to be mentioned in a moment.

Safety Features. Additional trust may be placed in the tester because of many safety features built into the unit. Both sides of the ac line are fused. This prevents excessive current in the event one side of the line is shorted to a good ground such as a water pipe. The fuses are 3AB medium time lag, steatite-case, heavy-duty fuses. They offer more protection in the event of direct shorts to fuse holders in the ac plug. Fuses are removed from the double fuse plug by pushing them out through a small hole to the rear of the plug.

With the meter selector switch in either





meter bypass or meter in position, the NE2E glows brightly. The Shurite model 850 plastic meter case enables the operator to see the neon glow from many angles. When working in dark corners, the neon provides enough light to illuminate the meter face. The test jack shorting plug need not be in its socket for the neon power on light to warn of ac voltage on. The tester can be used either horizontally or vertically as it is convenient. The power cord is No. 16 heavy duty 15 amp. 125-volt cord, so it should not heat under these maximum load conditions.

To measure appliance currents less than 3 ac amps with more accuracy than possible with the 0-15 amp meter movement, the test jack is used. Simply throw the meter selector switch to meter bypass, remove the male shorting plug, and plug an ac ammeter of your choice in the test jack. With an 0 to 3 ac ammeter plugged in, all appliances drawing more than 350 watts should not be checked. Line voltages supplied by the power company vary during the day and night. Often the complaint that an appliance does not get hot enough for the evening meal, a fry pan for example, may be traced to a lower ac line voltage to the appliance during this peak load time. The tester has provisions to test appliances under these reduced voltage conditions. Again, the shorting plug is removed and an ordinary table lamp plugged in the test jack.

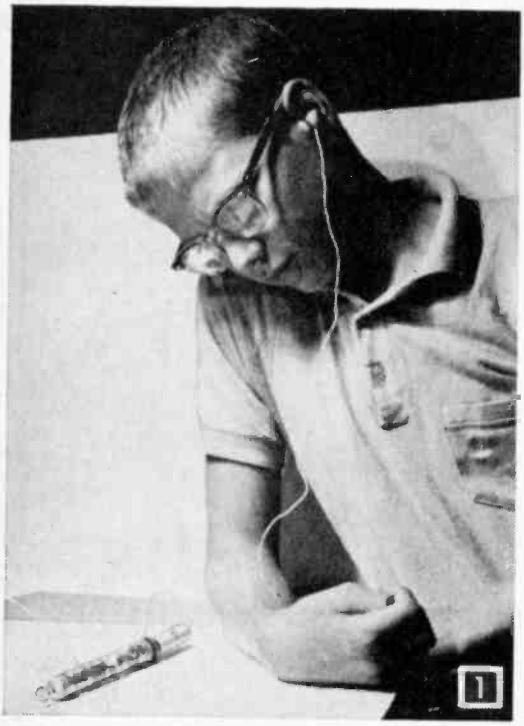
Chart No. 2 gives the reduced voltage at the appliance jack when using the various wattage bulbs in the lamp socket. The values given are approximate and are only for reference. The range of possible loads is wide and actual ac *rms.* voltage at the appliance jack should be found by experimentation. The chart shows that the reduced-voltage feature is most useful for small loads in the 50- to 150-watt range. This includes radios, hi fi's, amplifiers, small industrial systems, and P.A. systems.

Chart No. 2 also shows that for very large loads, 400 watts or greater, the ac voltage at the appliance jack will be very small, on the order of 20 volts or less. Electrical devices using timers such as toasters require careful checks to assure that all components are working.

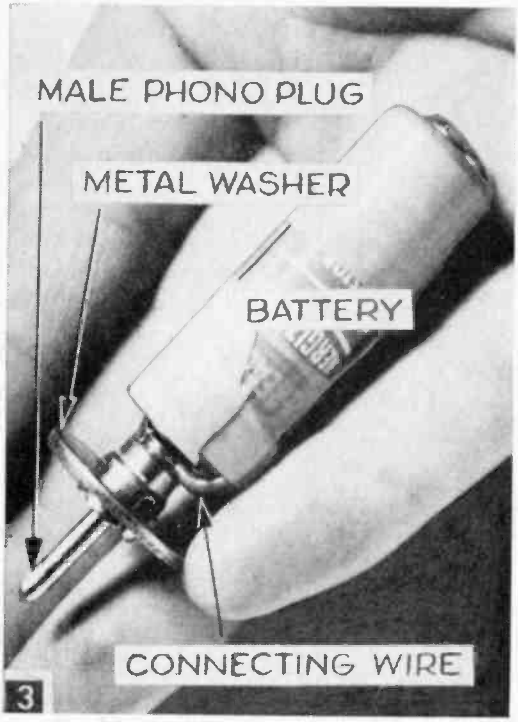
In conclusion, it cannot be stated too often: *Currents and voltages used in this appliance tester are lethal, and caution is the byword at all times.*

The Torpedo

A portable capsule radio the young experimenter can build



A young experimenter listens intently to the World Series on his newly built Torpedo radio.



The battery and plug fit together and comprise the switch that energizes the radio.

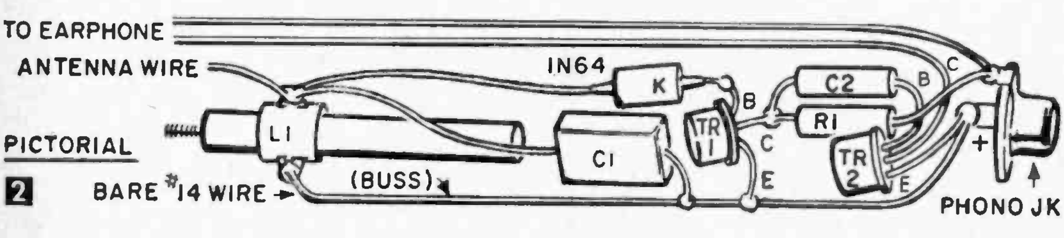
By HOMER L. DAVIDSON

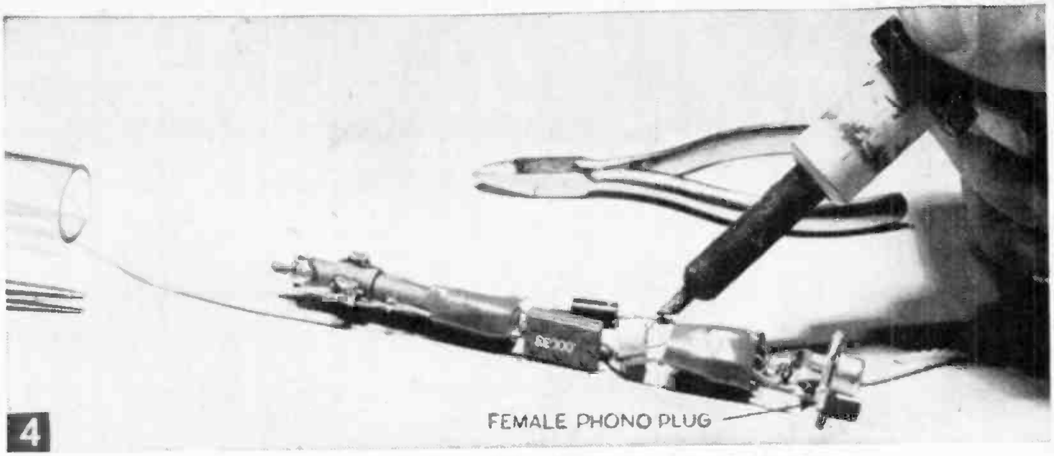
THE Torpedo consists of just 10 small components soldered together and sealed in plastic. Local broadcast stations are heard across the band with plenty of volume. A phono male and female plug combination forms a simple on-off switch. Simply clip the capsule radio to a metal object and you're in business. The cost is less than $5, including the earphone.

The antenna coil is a ferrite-core type with a .000330 mfd fixed capacitor to tune the broadcast band. By removing the threads from the core shaft, the coil can be pushed in and out, selecting your favorite station.

A fixed crystal rectifies the RF signal and also couples the signal to the base of the first transistor. The emitter terminal of TR1 is grounded. Capacitor C2 couples the audio signal to the base of TR2 for greater amplification. R1 serves as the plate load for the collector circuit of TR1. Any 1000- to 3000-ohm earphone can be used in the collector circuit of TR2. SW1 is a female phone socket with the male jack fastened to the small battery.

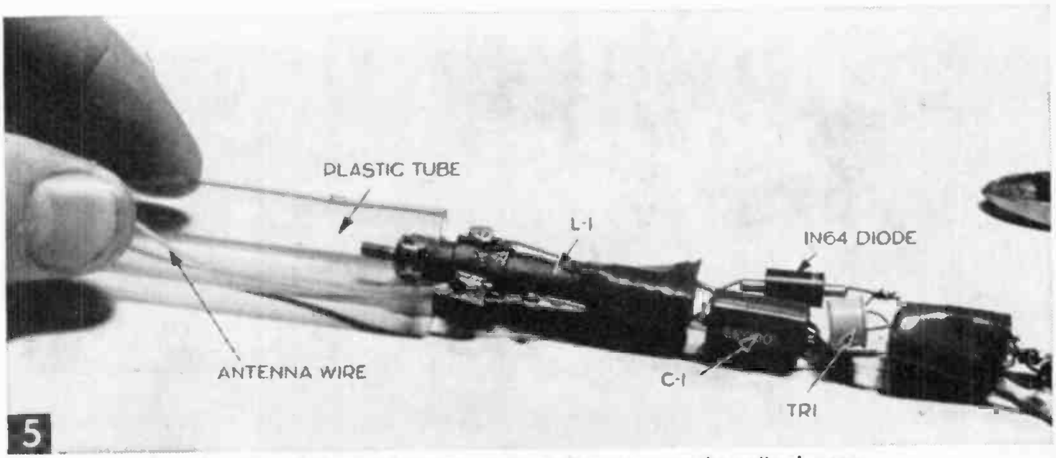
Construction. Take a solid piece of No. 14





4

Be careful not to let the heat of the soldering iron damage a transistor.



5

A section of plastic tubing acts as the shell that encases the radio elements.

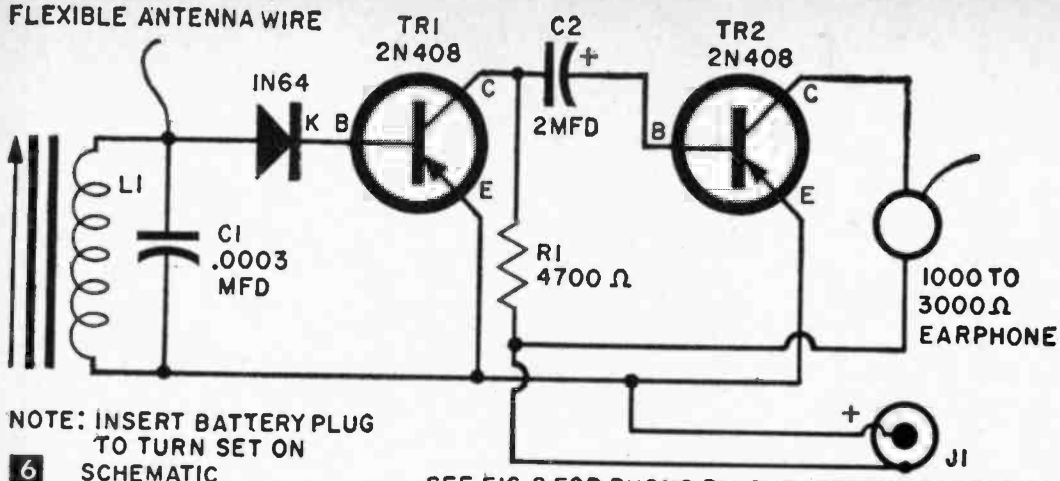
"buss" wire and cut it to 4 in. in length. This wire serves as a common ground and can be picked up from a local supplier. First scrape off the rubber insulation and clean for good bonding. Run the solid wire to one side of the connecting lug on L1. Place L1 parallel to the ground wire. Fasten the silver mica capacitor to the grounded side and also to the antenna side of L1. All of these components are mounted in a straight and narrow line so they will go inside a ¾-in. plastic tube. Use of a pencil soldering iron is suggested, as the small components are mounted very close together.

Solder the crystal detector to the antenna lug on L1 and to the base of the first transistor. Use longnose pliers to dissipate the heat when soldering the crystal and transistors into the circuit. It is best to start at the front of the circuit, mounting and then soldering each component into place. Solder C2 and R1 together first before soldering them to the collector terminal of TR1. A good soldering joint is made and less heat applied to the transistor all at once. Connect the other end of the coupling capacitor to the base of TR2. Ground the emitter terminal to the base wire. Remove the plug from the earphone and solder one wire to the R1 and SW1 junction. Refer to pictorial diagram, Fig. 2, for ease in wiring. Use spaghetti and plastic tape where needed.

The battery is a 4.5-volt Eveready miniature type with a male phono plug soldered

MATERIALS LIST—THE TORPEDO

Desig.	Description
L1	ferrite antenna coil, micrometer adjustment (Lafayette MS299)
C1	.000330-mfd silver mica capacitor
C2	2-mfd, 6-v. electrolytic miniature capacitor (Lafayette CF100)
R1	4700-ohm, ½-w. resistor (Lafayette RS10)
TR1, TR2	2N408 transistor, RCA or equivalent
XTAL	1N64 diode
1	1000- to 3000-ohm earphone (Lafayette AR50)
1	switch, male and female phono jack, and plug (Lafayette MS167, MS168)
1	4.5-v. Eveready battery
Misc.	plastic tubing, wire, and Epoxy Cement bonding kit (G. C. Electronics Co., Rockford, Ill.)
	Above parts available from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.



NOTE: INSERT BATTERY PLUG TO TURN SET ON

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SEE FIG 2 FOR PHONO PLUG-BATTERY ADAPTATION

to one end. File a V-notch in the wire end of the male plug, run a small flexible wire to the prong end, and solder into place. Place a piece of spaghetti over the wire where it comes out of the V-notch so the wire will not short out. Solder a small washer to the male plug and in turn solder to the negative terminal of the battery. Take the wire lead and solder to the positive terminal of the 4.5-volt battery.

Slip the metal clip off the coil end, and the ferrite rod will come out with it. Unscrew the threaded slug and file or grind off threads.

This will let the slug move in and out of the coil, tuning in the broadcast stations. Solder a metal washer to the rod after placing it in the coil assembly. This washer will serve as a tuning knob.

Testing Your Torpedo. Clip the antenna wire to an outside antenna or metal object and plug in the battery. Move the ferrite rod in or out until a station is heard. When the slug is pushed all the way in, you are selecting the lower part of the broadcast band. When it is pulled all the way out, you are selecting the higher end of the band.

In case the receiver does not work, first check the wiring carefully to be sure that no soldering mistakes were made. If a milliammeter is handy, insert the meter in series with one lead of the battery and check the circuit drain. The capsule radio pulls only 1 *ma* of current. Place the soldering iron tip on the base of TR2 when the iron is plugged in, and a 60-cycle hum should be heard. Go to the base of TR1 and do the same thing. A louder hum should be heard.

Check to see if the connection from the crystal diode cathode is made to the base of TR1. Most of these crystal diodes are marked either with a line or a K at the cathode end. Also, a loud click or scratchy noise should be heard when the antenna lead is hooked to a metal object.

Final Assembly and Sealing. The radio is now ready to be mounted in the plastic container. Cut a piece of ¾-in. plastic tubing about 5 in. long. File the ends down smooth. Slip the small chassis into the tube from the ferrite coil end. Let the coil stick out about ½ in. and the female phono plug about ¼ in. Now wrap two layers of masking tape around the coil end and let the tape stick up from the plastic tube about ½ in.

The unit is now ready to be sealed with fiber glass plastic which comes in two separate tubes. Mix a small amount at a time on a piece of board. Take a knife blade or a screw-driver blade and place the mixture inside the masking tape. Push it down tight so that a good solid bond is made. Do not let the fiber glass get in the hole in the female phono plug or the antenna coil. When the plastic sets and becomes hard, the components will not pull apart. Do one end at a time. Let the mixture set overnight or for at least eight hours. Follow the directions for correct method of mixing. They will be found on the tube container.

There are several types of fiber glass plastic available. They can be purchased at hardware stores, boat supply stores, or radio wholesale houses. After the plastic sets, pull off the masking tape. If there are a few drips or dents in it, run a small amount into the crevices and let that set. Plastic fiber glass does not need heating to harden. Both ends of The Torpedo are sealed in the same way.

After the ends are sealed and formed, use a file to smooth them. Round off the rough corners. To make the plastic capsule look like a professional job, place several rings of masking tape around the container. Then from a spray can apply the desired color of paint. Remove the masking tape when dry, and The Torpedo is ready for hard use.

Neon Flicker Lamp

Here's a decorative night light that doubles as a conversation piece

1

Young Jack contemplates the flickering candlestick he intends to jump over.

THIS flickering neon lamp can be an assuring nighttime companion in your child's bedroom, a gift for the man who has everything, or a piece for milady's dressing table. It costs only a few dollars to build, requires very little power, and will operate for a few cents a year.

The novelty of this lamp is its flicker. As rectifier D1 (see Fig. 2) converts ac line voltage into pulsating direct current, capacitor C1 charges to a steady dc value approaching peak voltage. This is the dc voltage required for the operation of the neon glow lamp multivibrator, which consists of resistors R1 and R2, capacitor C2, and neon lamps X1 and X2.

When dc voltage is applied to the glow lamp multivibrator, one of the lamps fires the one with the lowest starting potential. Since the terminal of capacitor C2, which is connected to the glowing lamp, has a lower potential than the other capacitor terminal, the capacitor will charge up until the voltage on its terminal reaches the firing potential of the non-conducting neon lamp. At that point, the second lamp fires and the other lamp extinguishes. Now the process repeats itself with C2 charging in the opposite direction, and the operation is repetitive.

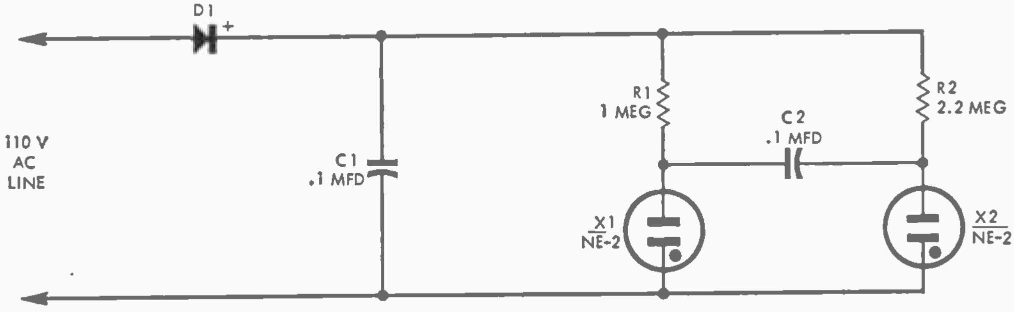
Construction Details. The housing for the lamp, a miniature kerosene lamp, can be bought at five-and-dime stores or at variety import stores. I obtained mine at an import store for 47¢.

Punch a small hole in the bottom of lamp's fuel reservoir with an ice pick, and enlarge it to about 3/8-in. with a taper reamer or by using successively larger drills. Insert a rubber grommet in this hole.

Pass the line cord through the grommet, and bring it out through the filling hole at the top of the reservoir. Strip the insulation from the ends of the cord, and expose about 3/8-in. of bare copper wire.

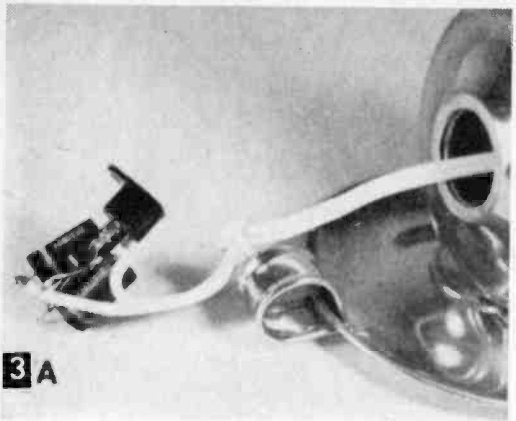
Use the sequence of pictures in Fig. 3 to guide you with the wiring. Keep the leads of the capacitors and resistors as short as possible to minimize the possibility of short circuits, and be sure to use rosin core solder and a clean, well-tinned iron.

Remove the wick from its holder by removing the wick screw. Then assemble the two neon lamps and insert the insulated hookup wires through the wick holder. Connect these to the base circuit.



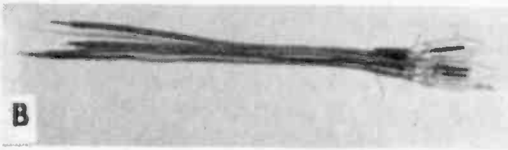
2 SCHEMATIC

Wiring and Construction Sequence.



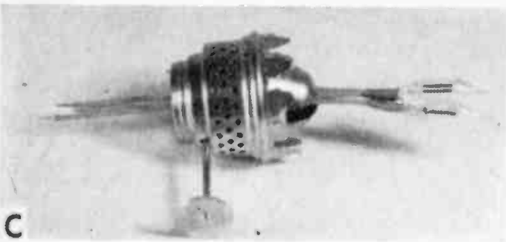
3A

Wire base circuit.



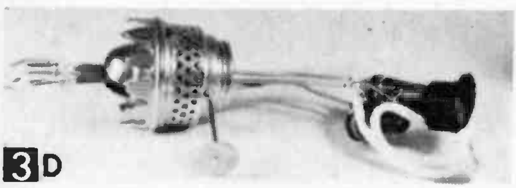
B

Assemble the two neon lamps.



C

Replace the wick with the neon lamps.

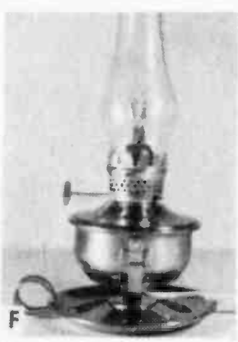


3D

Connect lamps to base circuit.

E

Put base circuit in reservoir and wick holder on top.



F

Replace the chimney and it's ready to flicker.

MATERIALS LIST—NEON FLICKER LAMP

Desig.	Description
C1, C2	.1 mfd, 200-volt metalized paper capacitors (Lafayette 3CG-804)
D1	selenium rectifier (Lafayette MS-887)
R1	1 meg, ½-watt carbon resistor
R2	2.2 meg, ½-watt carbon resistor
X1, X2	NE-2 neon lamps (GE)
Misc.	ac line cord and plug, miniature kerosene lamp (available at variety stores)
	The above parts, except for the kerosene lamp, can be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.

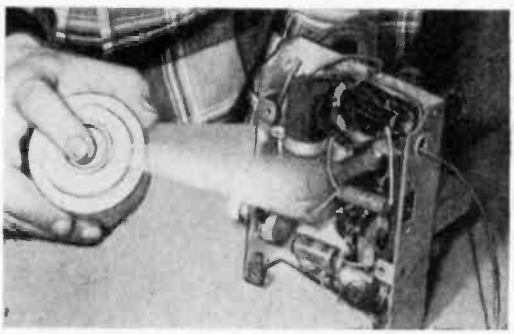
Plug the unit into ac line voltage to check operation. If the circuit has been wired properly, the glow will shift from one lamp to the other continuously. In order to alter the speed of the flicker, you will have to change the value of capacitor C2. By making C2 smaller, the lamp will flicker faster. Make C2 larger, and the lamp will flicker slower. After you have checked out the operation, unplug the circuit. Then fasten the lamp leads to the wick holder with Duco cement.

Insulate all exposed metal parts of the base circuit with electrical tape, and cram the base circuit into the lamp reservoir. Put two turns of reverse twist in the lamp leads to the base, and screw the wick holder on the reservoir base.

Finally, adjust the lamp positions, put the chimney in place, and you've completed the job.—FRANK WOODS, JR.

Fire Extinguisher Chases Radio Bugs

• The chilling effect of a carbon dioxide fire extinguisher will help you locate a defective part in a radio circuit that plays erratically. Often a set works fine for a few minutes after you turn it on, and then suddenly misbe-



haves or goes dead. The trouble may be a part that expands with heat after current has been flowing through for a few moments. Spray suspicious parts with CO_2 gas one at a time. The intense cold will contract a defective component so it can work normally.

You can also use Charg-A-Can Freon #12 with a suitable adapter (sold by refrigeration supply houses). However do not use carbon tetrachloride fire extinguishers since the fumes are highly toxic.—T. A. BLANCHARD.

Thermistor Thermometer

Conduct experiments in changing temperature with a compact lab instrument you can build for less than $10

By FORREST H. FRANTZ Sr.

Energy changes are clearly indicated on the meter.

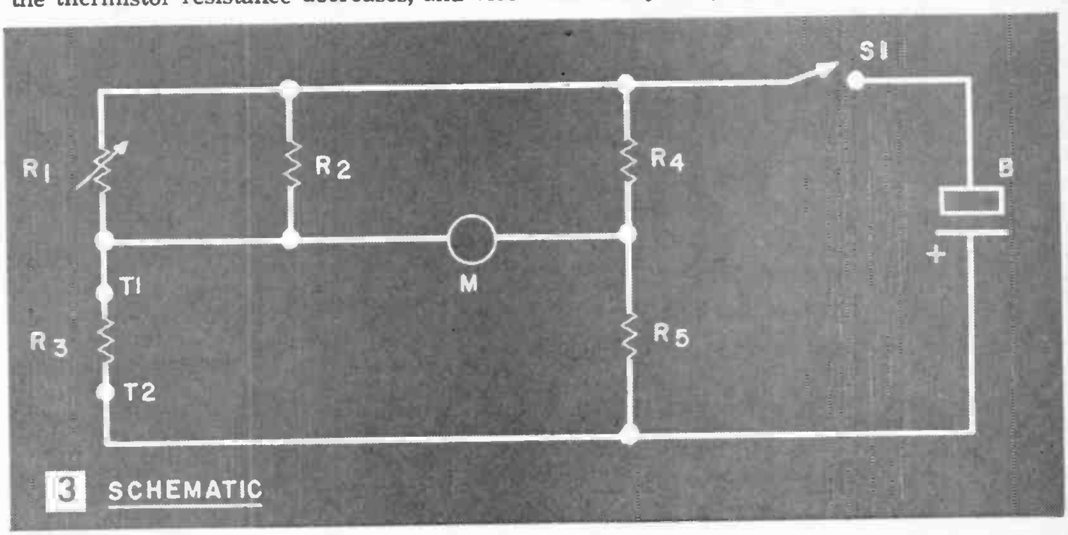
TRANSDUCERS are devices that sense energy in one form and convert it to another form. The thermistor senses changes in temperature and responds with changes in resistance. The changes in resistance can be converted to changes in electrical current in a circuit.

The unit described in this article demonstrates the operation of a thermistor; change in temperature is indicated by a change in electrical meter reading. It was originally designed as a demonstration unit and a conversation piece, but some simple experiments are described here, as well as a method of calibration, which will suit it for use as a laboratory thermometer.

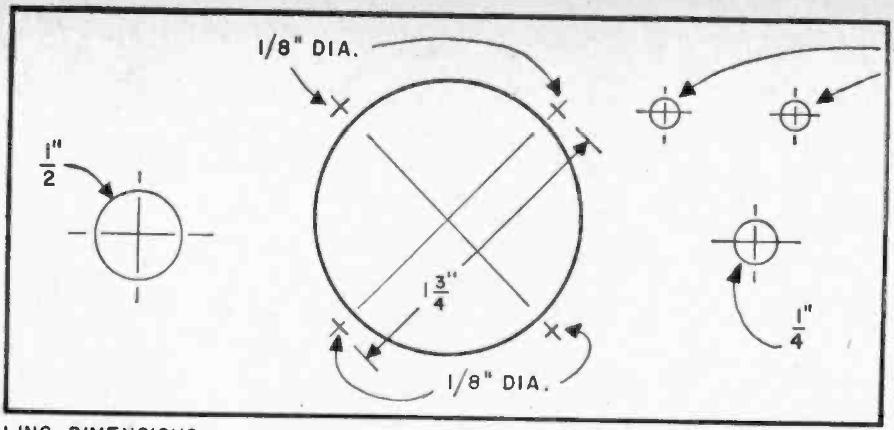
The circuit is shown in Fig. 3. R3, the thermistor, is one of the arms of a Wheatstone bridge; R1 in parallel with R2 is another arm, and R4 and R5 are the other arms. The 50-microamp meter M is the bridge null and small temperature change indicator.

The thermistor's resistance is a function of temperature. When temperature increases, the thermistor resistance decreases, and vice versa. A bridge circuit with a sensitive meter will detect smaller temperature changes than a less sensitive one, as the change in resistance for each degree of change in temperature is small.

Construction. Drill the metal case as shown in the layout (Fig. 4). Saw the shaft of R1 to



3 SCHEMATIC



4 DRILLING DIMENSIONS FRONT VIEW

a length of ⅜ in. Mount the switch S1, the potentiometer R1, the terminals T1 and T2, and the meter M on the front panel of the case (see Fig. 5A). T1 and T2 must be insulated from the panel.

Mount the battery holder on the back panel (see Fig. 5B). Wire the instrument with the help of Figs. 3 and 5.

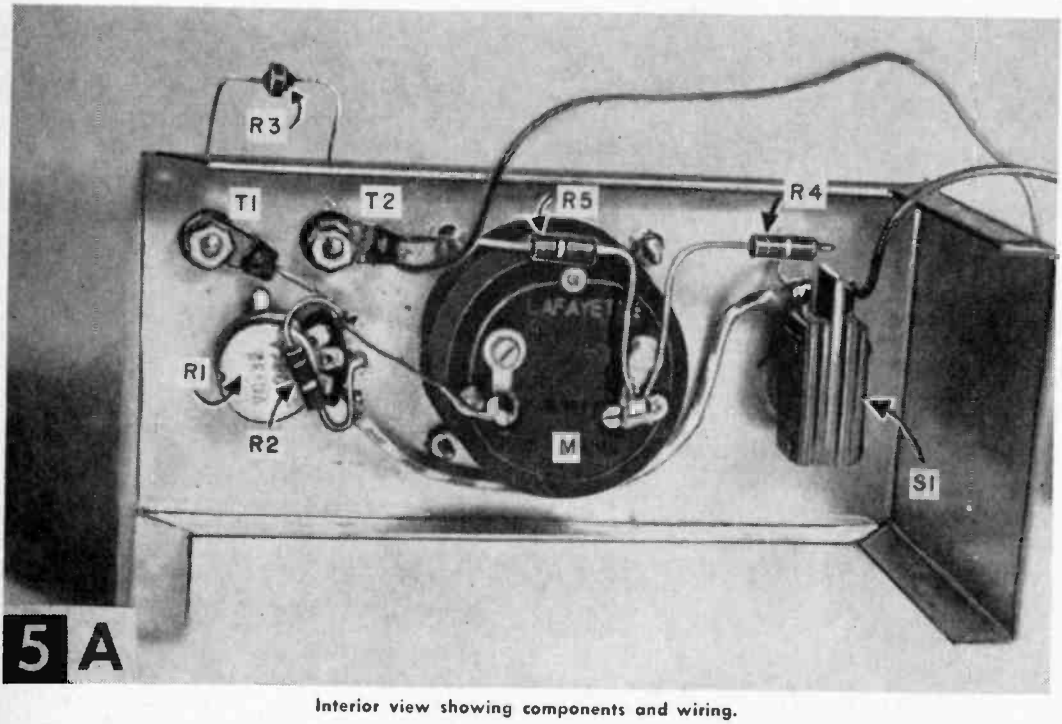
Use. Fasten the thermistor R3 in the terminals T1 and T2. Turn the instrument on and adjust R1 for mid-scale meter deflection.

Now, touch the thermistor: the meter reading should increase. If the meter reading decreases, reverse the meter connections. In other words, the meter deflection should be in the direction of temperature change.

The terminals T1 and T2 have been provided so the thermistor can be used for remote temperature reading. Attach wire leads of the required lengths for the desired application.

One experimental demonstration is to show the change in meter reading when the thermometer is touched with the hand or an ice cube; another is to place a drop of cigarette lighter fluid on the thermistor, and note the cooling effect as the fluid evaporates. If the thermistor is placed at the focus of a parabolic reflector, the instrument may be used as an infrared detector. The sensitivity is limited, however.

If you care to calibrate the thermometer,



5A Interior view showing components and wiring.

MATERIALS LIST—THERMISTOR THERMOMETER

Desig.	Description
R1	1K miniature potentiometer (Lafayette VC-32)
R2	2.7K, 1/2-w. carbon resistor, 10%
R3	400 ohm thermistor (VECO 23E3) or 500 ohm thermistor (Glennite 25TD2)
R4, R5	100 ohm, 1/2-w. carbon resistor, 10%
M	0-50 microamp. square meter (Lafayette TM-200)
S1	SPST toggle switch (Lafayette SW-21)
T1, T2	5-way binding posts (Lafayette MS-565, kit of 10)
B1	2 1.5-v. penlite cells connected in series (Eveready 915)
Misc.	2-cell battery holder (Lafayette MS-181) 2 1/4 x 2 1/4 x 5" aluminum minibox (Premier MC-379) miniature knob (Lafayette MS-185)

Parts for this project are available from Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., N. Y.

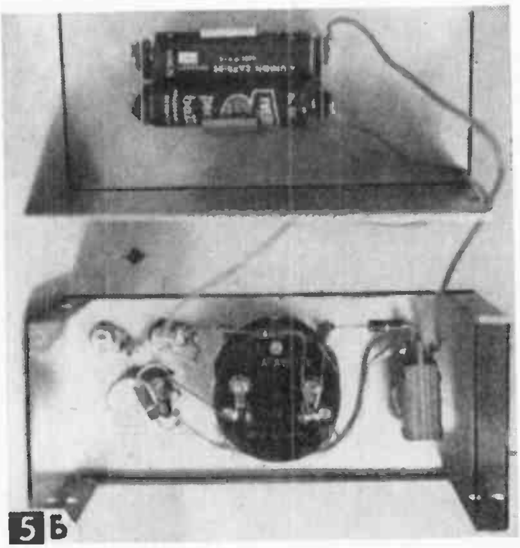
you can use it as an experimental quantitative instrument.

Calibration. This requires calibration of R1. With a triangular file, make a groove in the edge of the knob. Fill the groove with contrasting India ink to provide an index. Prepare a paper scale with a 1-in. diameter circle marked on it, and fasten it to the case with *Carter's* rubber cement.

Place the thermistor (equipped with extension leads connected to T1 and T2) in ice water (Fig. 6). Adjust R1 for zero meter reading, and place a calibration mark on the paper scale and mark it 0 (for zero degrees Centigrade).

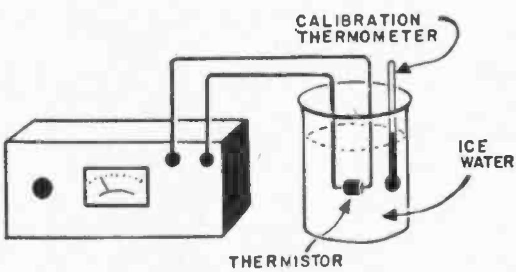
Heat the water gradually, stirring constantly, until the meter deflects full scale. Adjust R1 for zero meter reading, note the calibration thermometer reading, and enter it beside the calibration mark for the new R1 setting. Repeat this process up to boiling point of the water, and R1 will be calibrated in steps.

Reading the R1 setting plus the interpolated value of the meter reading to the next higher R1 calibration will give you the temperature. The precision of the instrument will approach that of the calibration thermometer used.



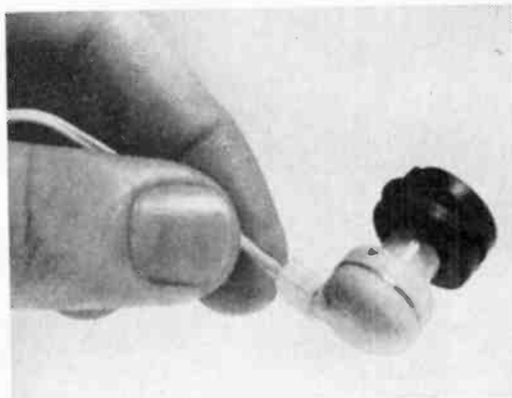
5B

Mount batteries on the back of the case.

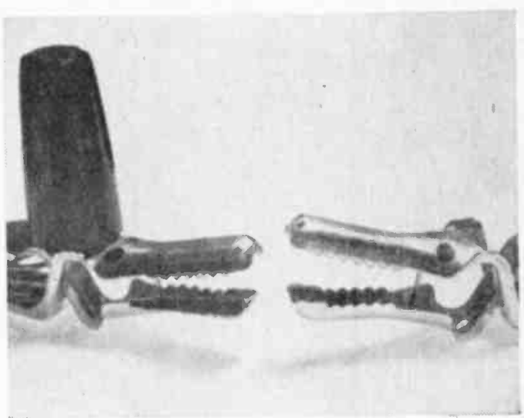


6 THERMISTOR THERMOMETER BRIDGE

Earphone Volume Reducer

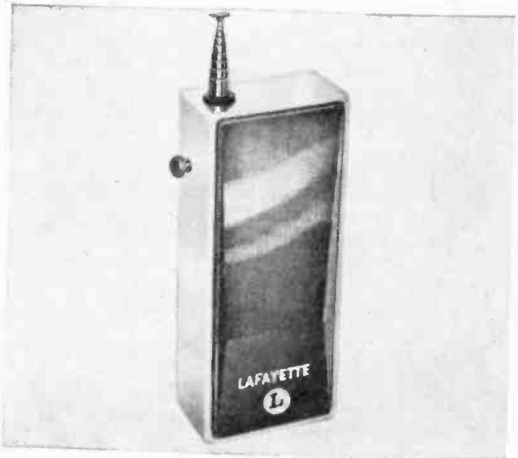


• To reduce the volume of an earphone of the "earplug" type when using the phone in conjunction with a set that has insufficient volume reduction at its lowest setting (this happens often near stations) slip a soft rubber grommet over the phone. This keeps it from fitting into your ear so far, yet still allows it to fit firmly. The lengthened distance between phone diaphragm and ear drum lowers the volume several db's.—JOHN A. COMSTOCK.



"Clara, you've been shopping again!"

LOOKING OVER NEW PRODUCTS



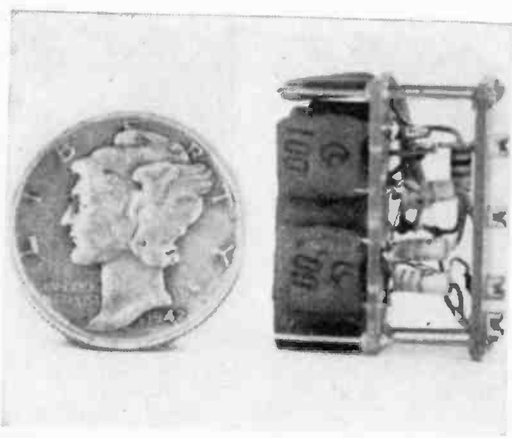
C-B Walkie Talkie

A super het transceiver with exact crystal control for both receive and transmit channels on the 27-mg citizens band. Using four transistors and a diode, we feed 80 milliwatts of power to the 10-section telescoping antenna.

No license is required and the unit can be operated by anybody. The range is one mile under normal conditions, increased when conditions are optimum, such as over water. The finger tip push to talk switch provides high speed break-in operation. Comes complete with blue and black metal case with leather carrying case, crystals, and six penlight cells. Priced at $19.95 each or two for $38.95 from Lafayette Radio Electronics Corp., Dept. RTE, 111 Jericho Turnpike, Syosset, N. Y.

Tube Tester Kit

Called the Grid Circuit Analyser Tube Tester, this kit will test 10- and 9-pin miniatures, 12-pin compactrons, 7- and 5-pin nuvistors, 9-pin novals, novars, octals and loctals, plus many industrial and European types. It checks for inter element shorts, cathode emission at optimum pre-selected plate loads, gas content and grid emission, as well as picture tubes by means of cathode emission. The new kit sells for $49.95, or wired and tested, for $67.95. Paco Electronics, Dept. RTE, 70-31 84th St., Glendale 27, N. Y.

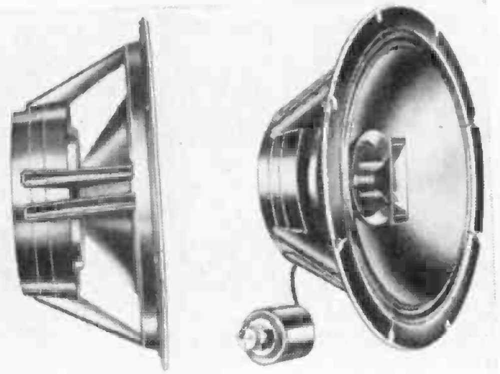


Tiny Transceiver

Designed for use by missile refueling teams, fire fighting crews or warehouse operations, this unit provides hands-free communications for people working in noisy or hazardous areas.

The radio consists of a single package, no larger than a package of cigarettes. It contains a crystal controlled transmitter and a receiver, powered by two rechargeable batteries. The unit is attached to the user by a clip, light belt or nylon cord. A voice operated switch turns the unit to transmit only when the user talks. It operates in the 25-50-mg range. ITT Kellogg, Dept. RTE, 320 Park Ave., New York 22, N. Y.

LOOKING OVER NEW PRODUCTS



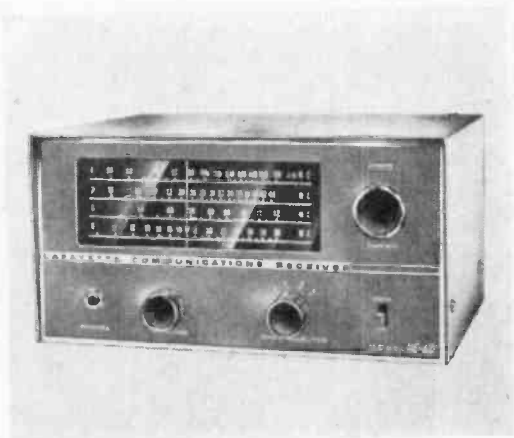
15-In. Speaker

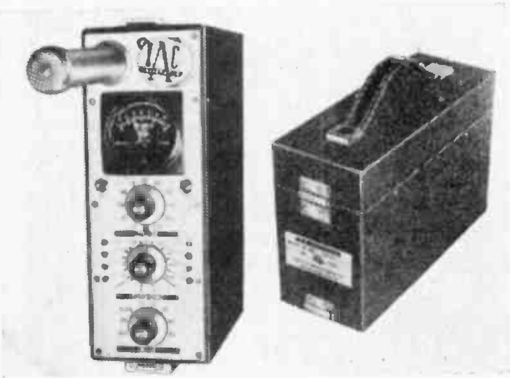
This three-way hi-fi speaker features a 5 lb. ceramic magnet. It is custom built in England. The three elements are axially mounted and the woofer section is vacuum constructed. It is plastic terminated with free edge cone suspension to eliminate standing waves and surround resonances. The woofer cone resonance is 25 cycles.

The overall frequency response is 20 to 20,000 *cps* with a power capacity of 50 watts. The impedance is 16 ohms. $64.50 from Lafayette Radio Electronics Corp., Dept. RTE, 111 Jericho Turnpike, Syosset, N. Y.

Amateur Receiver

The frequencies from 550 kilocycles to 30 megacycles are covered in four bands by this new communications receiver. Front panel controls consist of on/off volume, main tuning, band selector and phone-CW switch. A front panel headphone jack permits quiet listening. Plugging in the low impedance phones automatically disconnects the built-in 4-in. speaker. The unit uses three tubes and a silicon diode for five-tube performance. The slide rule dial and wrinkle finish cabinet make for a professional appearing receiver. Operates on 105-125 volts, 50/60 cycles. $39.95. Lafayette Radio Electronics Corp., Dept. RTE, 111 Jericho Turnpike, Syosset, N. Y.





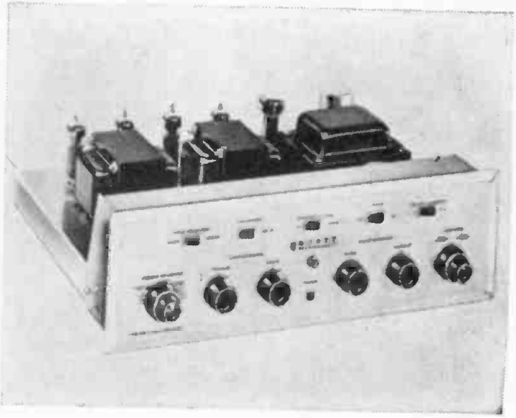
Sound Spectrometer

This acoustical device helps isolate sounds and their levels. It not only tells you how loud sounds are, measured in decibels, but also in what frequency range they fall. The new model has been modified to meet ASA specifications which require a low frequency cut-off at 45 cycles. It was originally designed with conventional octave bands, the first band having a cut-off sharply at 37.5 cycles.

The unit is finding great acceptance in industry because of its convenient weight, size and simplicity of operation. Industrial Acoustics Co., Dept. RTE, 341 Jackson Ave., New York 54, N. Y.

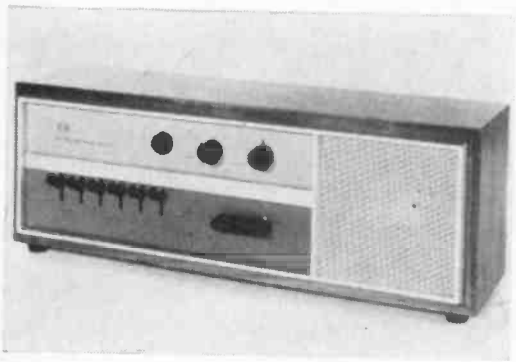
LOOKING OVER NEW PRODUCTS

Stereo Amplifier



A headphone output on the front panel of this new amplifier permits constant monitoring of all program sources. A tape monitor switch and special inputs and outputs are included for the tape recording enthusiast. A derived third channel output is provided to drive a power amplifier for extension speakers.

Amplifier provides 15 watts per channel, hum and noise are 70 *db* down. Intermodulation distortion is 0.5%, harmonic distortion is 0.8%. Unit measures 15½ wide, 5¼ high, 13¼ deep. Accessory case available in walnut, mahogany or leatherette covered metal. Model 200 stereo amplifier is available from H. H. Scott, Inc., Dept. RTE, 111 Powder Mill Rd., Maynard, Mass.

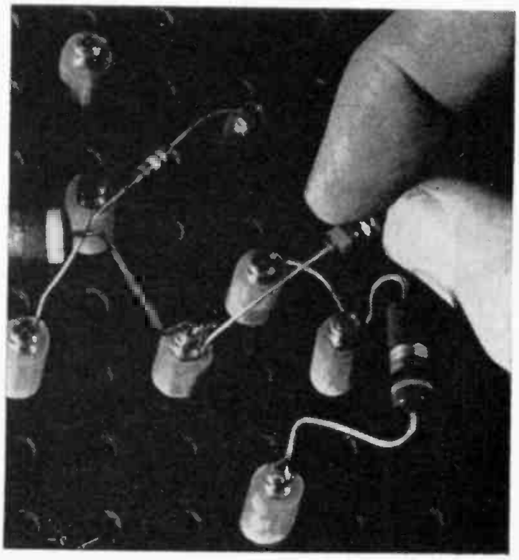


Page-Reply And Music

In addition to providing music as a background for employees, this unit also permits selective paging and reply facilities. The music can be programmed to start and stop at the time sequences chosen by the user. Music sources are available either from tapes or FM tuners.

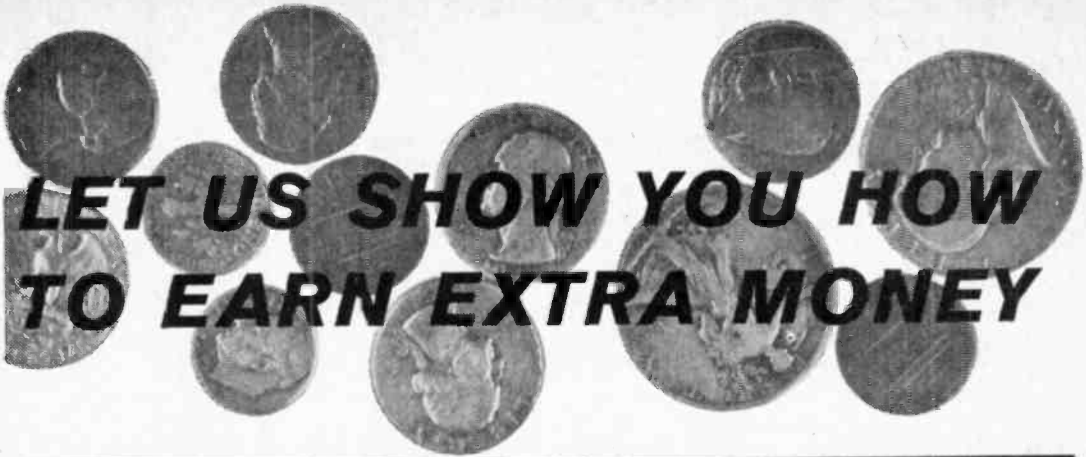
An additional feature of the system is a tone generator which signals various increments in the working day, such as coffee breaks and lunch periods. Fisher Berkeley Corp., Dept. RTE, 1475 Powell St., Emeryville 8, Calif.

Pegboard Kit



The secret of this kit is the peg itself which may be inserted wherever two leads are to be connected. When a project is in development, the leads are inserted between the brass peg and the flexible sleeve surrounding it. Also the design becomes more firm, temporary connections are replaced by soldering the leads to the brass tips. Virtually no components are lost as no soldering is done until the design is well organized.

The kits are ideally suited to classroom instruction, as well as electronic development laboratories. The kits are available in three standard sizes, 5x8, 8½x11, and 11x14 in. Accessories include buss strips and anchor inserts for holding sockets and bulky components. Priced from $2.50 to $9. Laguna Labs, Dept. RTE, 2319 S. Coast Blvd., Laguna Beach, Calif.



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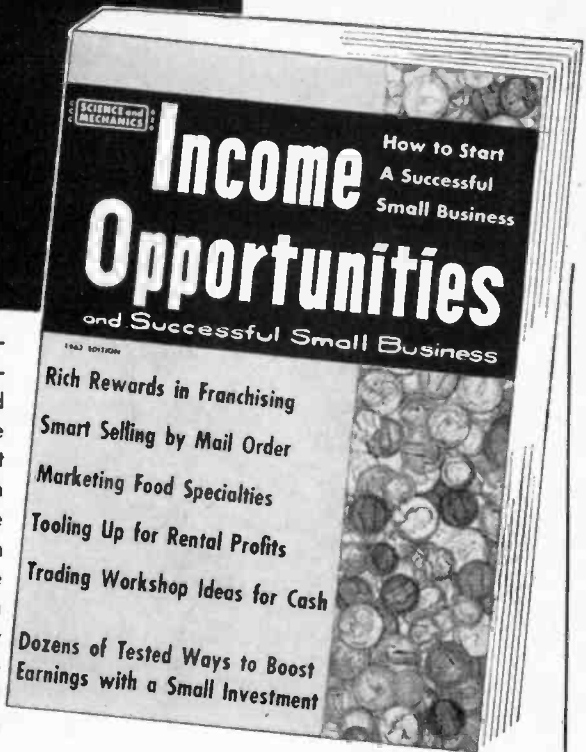

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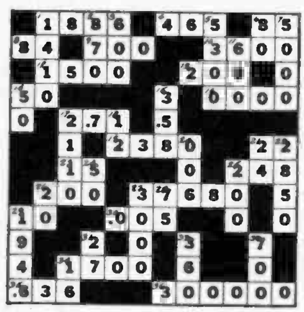
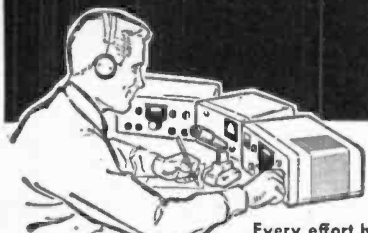


Ham Radio Anagram, page 137



WHITE'S RADIO LOG

An up-to-date broadcasting directory
AM, FM, TV and Short Wave Stations

Vol. 40 No. 1

QUICK REFERENCE INDEX

U. S. and Canadian AM Stations by Frequency

U.S. stations listed alphabetically by states within groups, Canadian stations precede U.S.

Abbreviations: Kc., frequency in kilocycles; W.P., watt power; d—operates daytime only. Wave length is given in meters

Kc. — Wave Length — W.P.

540—555.5

CBT	Grand Falls, N.F.	10000
CBK	Regina, Sask.	50000
KVIP	Redding, Calif.	5000d
KFMB	San Diego, Calif.	5000
WGTO	Cypress Gardens, Florida	50000d
WDAK	Columbus, Ga.	5000
KBRV	Soda Springs, Idaho	500d
KWMT	Ft. Dodge, Iowa	5000d
WDMV	Pocomoke City, Md.	500d
WBIC	Islip, N.Y.	250d
WETC	Wendell-Zebulon, N.C.	250d
WARD	Canonsburg, Pa.	250d
WYNN	Florence, S.C.	250d
WDXN	Clarksville, Tenn.	1000d
WRIC	Richlands, Va.	1000d

550—545.1

CFNB	Fredericton, N.B.	50000
CFBR	Sudbury, Ont.	1000d
CHLN	Three Rivers, Que.	10000
CKPG	Prince George, B.C.	250
KENI	Anchorage, Alaska	5000
KOY	Phoenix, Ariz.	5000
KAFY	Bakersfield, Calif.	1000
KRAI	Craig, Colo.	1000
WAYR	Orange Park, Fla.	1000d
WGGA	Gainesville, Ga.	5000
KMVI	Wailuku, Hawaii	1000
KFRM	Concordia, Kansas	5000d
WCBI	Columbus, Miss.	1000
KSD	St. Louis, Mo.	5000
KOPR	Butte, Mont.	1000
WGR	Buffalo, N.Y.	5000
WDBM	Statesville, N.C.	500d
KFYR	Bismarck, N.Dak.	5000
WKRC	Cincinnati, Ohio	5000
KOAC	Corvallis, Oreg.	5000
WHLM	Bloomsburg, Pa.	1000
WPAB	Ponce, P.R.	5000
WXTR	Pawtucket, R.I.	1000
KCRS	Midland, Tex.	5000
KTSA	San Antonio, Tex.	5000
WDEV	Waterbury, Vt.	5000
WSVA	Harrisonburg, Va.	5000
KARI	Blaine, Wash.	500d
WSAU	Wausau, Wis.	5000

560—535.4

CJDC	Dawson Creek, B.C.	1000
CHCN	Marystown, Nfld., Can.	1kw
CJKL	Kirkland Lake, Ont.	5000
CFOS	Owen Sound, Ont.	5000
CKCN	Seven Iles, Que.	5000
WOOF	Dothan, Ala.	5000d
KYUM	Yuma, Ariz.	1000
KSFO	San Fran., Calif.	5000
KLZ	Denver, Colo.	5000
WQAM	Miami, Fla.	5000
WIND	Chicago, Ill.	5000
WMIK	Middlesboro, Ky.	500d
WGAN	Portland, Maine	5000
WFRB	Frostburg, Md.	1000d
WHYN	Springfield, Mass.	1000
WQTE	Monroe, Mich.	500d
WEBC	Duluth, Minn.	5000
KWTO	Springfield, Mo.	5000
KMON	Great Falls, Mont.	5000
WGAI	Elizabeth City, N.C.	1000
WFIL	Philadelphia, Pa.	5000
WIS	Columbia, S.C.	5000
WHBQ	Memphis, Tenn.	5000
KFDM	Beaumont, Tex.	5000
KPQ	Wenatchee, Wash.	5000
WJLS	Beckley, W.Va.	5000

570—526.0

CKEK	Cranbrook, B.C.	1000
CKCQ	Quesnel, B.C.	1000
CFCB	Corner Brook, N.F.	1000
CJEM	Edmundston, N.B.	5000
CFWH	Whitehorse, Y.T.	1000
WAAX	Gadsden, Ala.	5000
KCNO	Alturas, Calif.	5000
KLAC	Los Angeles, Calif.	5000
WGMS	Washington, D.C.	5000
WACL	Waycross, Ga.	5000
WKYB	Paducah, Ky.	1000
WVMI	Biloxi, Miss.	1000d
KGRT	Las Cruces, N.Mex.	5000d
WMCA	New York, N.Y.	5000
WSYR	Syracuse, N.Y.	5000
WWNC	Asheville, N.C.	5000
WLLE	Raleigh, N.C.	500d
WKBN	Youngstown, Ohio	5000
WNAX	Yankton, S.Dak.	5000
WFAA	Dallas, Tex.	5000
WBAP	Ft. Worth, Tex.	5000
KLUB	Salt Lake City, Utah	5000
KVI	Seattle, Wash.	5000
WMAM	Marinette, Wis.	5000

580—516.9

CJFX	Antigonish, N.S.	5000
CFRA	Ottawa, Ont.	50000
CKEY	Toronto, Ont.	5000
CKPR	Ft. William, Ont.	5000
CKUA	Edmonton, Alta.	10000d
CKY	Winnipeg, Man.	50000
WABT	Tuskegee, Ala.	500d
KTAN	Tucson, Ariz.	5000
KMJ	Fresno, Calif.	5000
KUBC	Montrose, Colo.	5000
WDBO	Orlando, Fla.	5000
WGAC	Augusta, Ga.	5000
KFXD	Nampa, Idaho	5000
WILL	Urbana, Ill.	5000d
KSAC	Manhattan, Kans.	5000
WIBW	Topeka, Kans.	5000
KALB	Alexandria, La.	5000
WTAG	Worcester, Mass.	5000
WELO	Tupelo, Miss.	1000
KANA	Anaconda, Mont.	1000
WAGR	Lumberton, N.C.	500
KWIN	Ashland, Oreg.	1000
WHP	Harrisburg, Pa.	5000
WKAQ	San Juan, P.R.	5000
KOBH	Hot Springs, S.Dak.	500d
WRKH	Rockwood, Tenn.	1000d
KDAV	Lubbock, Tex.	500d
WLES	Lawrenceville, Va.	500d
WCHS	Charleston, W.Va.	5000
WKTY	LaCrosse, Wis.	5000

590—508.2

CFAR	FlinFlon, Man.	1000
CKRS	Jonquiere, Que.	1000
VOCM	St. Johns, N.F.	10000
KHAR	Anchorage, Alaska	5000
WRAG	Carrollton, Ala.	1000d
KBHS	Hot Springs, Ark.	5000d
KFXM	San Bernardino, Cal.	1000
KTHO	Tahoe Valley, Calif.	1000d
KCSJ	Pueblo, Colo.	1000
WDLP	Panama City, Fla.	1000
WPLO	Atlanta, Ga.	5000
KGMB	Honolulu, Hawaii	5000
KID	Idaho Falls, Idaho	5000
WBBY	Wood River, Ill.	500d
WVLK	Lexington, Ky.	5000
WEEI	Boston, Mass.	5000
WKZO	Kalamazoo, Mich.	5000
KGLE	Glendive, Mont.	500d
WOW	Omaha, Nebr.	5000
WROW	Albany, N.Y.	5000
WGTM	Wilson, N.C.	5000
KUGN	Eugene, Oreg.	5000
WARM	Scranton, Pa.	5000
WMBS	Uniontown, Pa.	1000
KTBC	Austin, Tex.	5000
KSUB	Cedar City, Utah	1000
WLVA	Lynchburg, Va.	1000
KHQ	Spokane, Wash.	5000

600—499.7

CFCF	Montreal, Que.	5000
CFCH	North Bay, Ont.	10000
CFQC	Saskatoon, Sask.	5000
CJOR	Vancouver, B.C.	10000
CKCL	Truro, N.S.	1000
WIRB	Enterprise, Ala.	1000
KCLS	Flagstaff, Ariz.	5000
KVCV	Redding, Calif.	1000
KOGO	San Diego, Calif.	5000
KZIX	Ft. Collins, Colo.	1000d
WICC	Bridgeport, Conn.	5000
WPOQ	Jacksonville, Fla.	5000
WMT	Cedar Rapids, Iowa	5000
WWOM	New Orleans, La.	1000d
WFST	Caribou, Maine	5000d
WCAO	Baltimore, Md.	5000
WLST	Escanaba, Mich.	1000d
WTAC	Flint, Mich.	1000
KGEZ	Kalispell, Mont.	2000
WCVP	Murphy, N.C.	1000d
WSJS	Winston-Salem, N.C.	5000
KSJB	Jamestown, N.D.	5000
WFRM	Coudersport, Pa.	1000d
WAEL	Mayaguez, P.R.	1000
WREC	Memphis, Tenn.	5000
KROD	El Paso, Tex.	5000
KERB	Kermit, Tex.	1000d
KTBB	Tyler, Tex.	1000

610—491.5

CHML	Mont Laurier, Que.	1000
CHNC	New Carlisle, Que.	5000
CJAT	Trail, B.C.	1000
CKKL	Thompson, Man.	1000
CKTB	St. Catharines, Ont.	10000
WSGN	Birmingham, Ala.	5000
KFAR	Fairbanks, Alaska	5000
KAVL	Lancaster, Calif.	1000
KFRC	San Francisco, Calif.	5000
WCKR	Miami, Fla.	5000
WDEB	Pensacola, Fla.	500d
WCEH	Hawkinsville, Ga.	500d
WRUS	Russellville, Ky.	500d
KDAL	Duluth, Minn.	5000
WDAF	Kansas City, Mo.	5000
KOJM	Havre, Mont.	1000
WGIR	Manchester, N.H.	5000
KGGM	Albuquerque, N.Mex.	5000
WAYS	Charlotte, N.C.	5000
WTVN	Columbus, Ohio	5000
WIP	Philadelphia, Pa.	5000
KILT	Houston, Tex.	5000
KVNU	Logan, Utah	5000
WSLS	Roanoke, Va.	5000
WHPL	Winchester, Va.	500d
KEPR	Kennewick, Wash.	5000

620—483.6

CFCL	Timmins, Ont.	10000
CKCK	Regina, Sask.	5000
KTAR	Phoenix, Ariz.	5000
KNGS	Hanford, Calif.	1000
KWSD	Mt. Shasta, Calif.	1000d
KSTR	Grand Junction, Colo.	5000d
WSUN	St. Petersburg, Fla.	5000
WTRP	LaGrange, Ga.	1000d
KWAL	Wallace, Idaho	1000
KMNS	Sioux City, Iowa	1000
WTMT	Louisville, Ky.	500d
WLBZ	Bangor, Maine	5000
WJOX	Jackson, Miss.	5000
WVNJ	Newark, N.J.	5000
WHEN	Syracuse, N.Y.	5000
WDNC	Durham, N.C.	5000
KGW	Portland, Oreg.	5000
WHJB	Greensburg, Pa.	1000
WCAY	Cayce, S.C.	500d
WATE	Knoxville, Tenn.	5000
KWFT	Wichita Falls, Tex.	5000
WCAX	Burlington, Vt.	5000
WWNR	Beckley, W.Va.	1000
WTMJ	Milwaukee, Wis.	5000

630—475.9

CFCO	Chatham, Ont.	1000
CKAR	Huntsville, Ont.	1000
CHLT	Sherbrooke, Que.	5000
CFCY	Charlottetown, P.E.I.	5000
CJET	Smith Falls, Ont.	1000
CKRC	Winnipeg, Man.	5000
CKOV	Kelowna, B.C.	1000
CKYL	Peace River, Alta.	1000
WAVU	Albertville, Ala.	1000d
CHED	Edmonton, Alta.	10000
WJDB	Thomasville, Ala.	1000d
KJNO	Juneau, Alaska	1000

Kc.	Wave Length	W.P.
KVMA	Magnolia, Ark.	1000d
KIDD	Monterey, Calif.	1000
KHOW	Denver, Colo.	5000
WMAL	Washington, D.C.	5000
WSAV	Savannah, Ga.	5000
WNEG	Toccoa, Ga.	500d
KIDO	Boise, Idaho	5000
WLAP	Lexington, Ky.	5000
KTIB	Thibodaux, La.	500d
WJMS	Ironwood, Mich.	1000
KDWB	So. St. Paul, Minn.	5000
KXOK	St. Louis, Mo.	5000
KGVW	Belgrade, Mont.	1000d
KOH	Reno, Nev.	5000
KLEA	Lovington, N.Mex.	500d
WIRC	Hickory, N.C.	1000d
WMFD	Wilmington, N.C.	1000
KWRD	Coquille, Oreg.	5000d
WEJL	Scranton, Pa.	500d
WKYN	San Juan, P.R.	5000
WPRO	Providence, R.I.	5000
KGFX	Pierre, S.Dak.	250
KMAC	San Antonio Tex.	5000
KSXX	Salt Lake City, Utah	1000d
KGDN	Edmunds, Wash.	5000d
KZUN	Opportunity, Wash.	500d

640—468.5

CBN	St. John's, N.F.	10000
KFI	Los Angeles, Calif.	50000
WOI	Ames, Iowa	5000
WHLO	Akron, Ohio	1000
WNAD	Norman, Okla.	1000d

650—461.3

KORL	Honolulu, Hawaii	10000
WSM	Nashville, Tenn.	50000
KIKK	Pasadena, Texas	250d

660—454.3

KMEO	Omaha, Nebr.	500d
WNBC	New York, N.Y.	50000
WESC	Greenville, S.C.	10000d
KSKY	Dallas, Tex.	1000

670—447.5

WMAQ	Chicago, Ill.	50000

680—440.9

CHFA	Edmonton, Alta.	5000d
CHLO	St. Thomas, Ont.	1000
CJOB	Winnipeg, Man.	10000
CKGB	Timmins, Ont.	10000
KNBC	San Fran., Calif.	50000
WPIN	St. Petersburg, Fla.	1000d
WCTT	Corbin, Ky.	1000
WCBM	Baltimore, Md.	10000
WNAC	Boston, Mass.	50000
WDBC	Escanaba, Mich.	10000
KFEQ	St. Joseph, Mo.	5000
WINR	Binghamton, N.Y.	1000
WRVM	Rochester, N.Y.	250d
WPTF	Raleigh, N.C.	50000
WISR	Butler, Pa.	250d
WAPA	San Juan, P.Rico	10000
WMPS	Memphis, Tenn.	10000
KENS	San Antonio, Tex.	50000
KOMW	Omak, Wash.	1000d
WCAW	Charleston, W.Va.	250

690—434.5

CBU	Vancouver, B.C.	10000
CBF	Montreal, Que.	50000
WVOK	Birmingham, Ala.	50000d
KVNA	Flagstaff, Ariz.	1000
KEVT	Tucson, Ariz.	250d
KBBA	Benton, Ark.	250d
KAPI	Pueblo, Colo.	250d
WADS	Ansonia, Conn.	500d
WAPE	Jacksonville, Fla.	25000d
KULA	Honolulu, Hawaii	10000
KBLI	Blackfoot, Idaho	1000d
KGGF	Coffeyville, Kans.	10000
WTIX	New Orleans, La.	5000
KTCR	Minneapolis, Minn.	500d
KSTL	St. Louis, Mo.	1000d
KEYR	Terrytown, Nebr.	1000d
KRCO	Prineville, Oreg.	1000d
WXUR	Media, Pa.	500
KUSD	Vermillion, S.Dak.	1000d
KHEY	El Paso, Tex.	10000
KPET	Lamesa, Tex.	250
KZEY	Tyler, Tex.	250d
WCYB	Bristol, Va.	10000d
WNNT	Warsaw, Va.	250d
WELD	Fisher, W.Va.	500d

700—428.3

WLW	Cincinnati, Ohio	50000

710—422.3

CJSP	Leamington, Ont.	1000d
CFRG	Gravelbourg, Sask.	5000d
CKVM	Ville Marie, Que.	10000
WKRG	Mobile, Ala.	1000
KMPC	Los Angeles, Calif.	50000
KBTR	Denver, Colo.	5000
WGBS	Miami, Fla.	50000
WROM	Rome, Ga.	1000d
KEEL	Shreveport, La.	50000
WHB	Kansas City, Mo.	10000
WOR	New York, N.Y.	50000

Kc.	Wave Length	W.P.
DZRH	Manila, P.I.	10000
WKJB	Mayaguez, P.Rico	1000
WTPR	Paris, Tenn.	250d
KGNC	Amarillo, Tex.	10000
KURV	Edinburg, Tex.	250
KIRO	Seattle, Wash.	50000
WDSM	Superior, Wis.	5000

720—416.4

WGN	Chicago, Ill.	50000

730—410.7

CJNR	Blind River, Ont.	1000
CKAC	Montreal, Que.	50000
CKDM	Dauphin, Man.	10000
CKLG	No. Vancouver, B.C.	10000
WJMW	Athens, Ala.	1000
KFQD	Anchorage, Alaska	10000
KSUD	W. Memphis, Ark.	250d
WKTG	Thomasville, Ga.	1000d
KLOE	Goodland, Kans.	1000d
WFMW	Madisonville, Ky.	500d
WMTC	Van Cleve, Ky.	1000d
KTRY	Bastrop, La.	250d
WARB	Covington, La.	250d
WMMS	Bath, Maine	1000d
WACE	Chicopee, Mass.	5000d
KWRE	Warrenton, Mo.	1000d
KWOA	Worthington, Minn.	1000d
KURL	Billings, Mont.	500d
KMGM	Albuquerque, N. Mex.	1000d
WDOS	Oneonta, N.Y.	1000d
WFMC	Goldsboro, N.C.	1000d
WOHS	Shelby, N.C.	1000d
WMGS	Bowling Green, Ohio	1000d
KBOY	Medford, Oreg.	1000d
WNAK	Nanticoke, Pa.	1000d
WPIT	Pittsburgh, Pa.	5000d
WPAL	Charleston, S.C.	1000d
WLIL	Lenoir, Tenn.	1000d
KPCN	Grand Prairie, Tex.	500d
KSVN	Ogden, Utah	1000d
WPIK	Alexandria, Va.	5000d
WMNA	Gretna, Va.	1000d
KULE	Ephrata, Wash.	1000d
WXMT	Merrill, Wis.	1000d

740—405.2

CBXA	Edmonton, Alta.	50000
CBL	Toronto, Ont.	50000
WBAM	Montgomery, Ala.	50000d
KUEQ	Phoenix, Ariz.	1000d
KBIG	Avalon, Calif.	10000d
KCBS	San Francisco, Calif.	50000
KSSS	Colo. Springs, Colo.	1000
KVFC	Cortez, Colo.	1000d
WKIS	Orlando, Fla.	5000
KYME	Boise, Idaho	500d
WVLN	Olney, Ill.	250d
KBOE	Oskaloosa, Iowa	250d
WNOP	Newport, Ky.	1000d
WTAO	Cambridge, Mass.	250d
KPBM	Carlsbad, N.Mex.	1000d
WGSM	Huntington, N.Y.	1000d
WMBL	Morehead City, N.C.	1000d
WPAQ	Mount Airy, N.C.	10000d
KRMG	Tulsa, Okla.	50000
WVCH	Chester, Pa.	1000d
WIAC	San Juan, P.Rico	10000
WBAW	Barnwell, S.C.	1000d
WIRJ	Humboldt, Tenn.	250d
WJIG	Tullahoma, Tenn.	250d
KTRH	Houston, Tex.	50000
KCMC	Texarkana, Tex.	1000
WBCI	Williamsburg, Va.	500d

750—399.8

WSB	Atlanta, Ga.	50000
WBMD	Baltimore, Md.	1000d
KMMJ	Grand Island, Neb.	10000d
WHEB	Portsmouth, N.H.	1000d
KSEO	Durant, Okla.	250d
KXL	Portland, Oreg.	50000
WPDX	Clarksburg, W.Va.	1000d

760—394.5

KGU	Honolulu, Hawaii	10000
WJR	Detroit, Mich.	50000
WCPS	Tarboro, N.C.	1000d
WORA	Mayaguez, P.R.	5000

770—389.4

KUOM	Minneapolis, Minn.	5000d
WCAL	Northfield, Minn.	5000d
WEW	St. Louis, Mo.	1000d
KOB	Albuquerque, N.Mex.	50000
WABC	New York, N.Y.	50000
KXA	Seattle, Wash.	1000d

780—384.4

WBBM	Chicago, Ill.	50000
WJAG	Norfolk, Neb.	1000d
WCKB	Dunn, N.C.	1000d
WBBO	Forest City, N.C.	1000d
KSPI	Stillwater, Okla.	250d
WAVA	Arlington, Va.	1000d

790—379.5

CKMR	Newcastle, N.B.	1000
CHB	Halifax, N.S.	10000
CKSO	Sudbury, Ont.	10000
WTUG	Tuscaloosa, Ala.	500d
KCEE	Tucson, Ariz.	5000d
KOSY	Texarkana, Ark.	1000

Kc.	Wave Length	W.P.
KDAN	Eureka, Calif.	5000d
KABC	Los Angeles, Calif.	5000
WLBE	Leesburg, Fla.	5000
WFUN	Miami Beach, Fla.	5000
WPFA	Pensacola, Fla.	1000d
WQXI	Atlanta, Ga.	5000
WGRA	Cairo, Ga.	1000d
KEST	Boise, Idaho	1000d
WRMS	Beardstown, Ill.	500d
KXXX	Colby, Kans.	5000d
WAKY	Louisville, Ky.	5000
WRUM	Rumford, Me.	1000d
WSGW	Saginaw, Mich.	5000
WSJC	Magee, Miss.	1000d
KGHL	Billings, Mont.	5000
WWNY	Watertown, N.Y.	1000
WLSV	Wellsville, N.Y.	1000d
WTNC	Thomasville, N.C.	1000d
KFGO	Fargo, N.Dak.	5000
KWIL	Albany, Oreg.	1000
WAEB	Allentown, Pa.	500
WPIC	Sharon, Pa.	1000d
WEAN	Providence, R.I.	5000
WWBD	Bamberg, S.C.	1000d
WETB	Johnson City, Tenn.	1000d
WMC	Memphis, Tenn.	5000
KTHT	Houston, Tex.	5000
KFYO	Lubbock, Tex.	5000
KUTA	Blanding, Utah	1000d
WSIG	Mount Jackson, Va.	1000d
WTAR	Norfolk, Va.	5000
KGMI	Bellingham, Wash.	5000
KNEW	Spokane, Wash.	5000
WEAQ	Eau Claire, Wis.	5000

800—374.8

CHAB	Moose Jaw, Sask.	10000
CKOK	Penticton, B.C.	10000
CFOB	Ft. Frances, Ont.	1000
CJLX	Ft. William, Ont.	5000
CJBQ	Belleville, Ont.	1000
CKLW	Windsor, Ont.	50000
CHRC	Quebec, Que.	10000
CJAD	Montreal, Que.	10000
VOWR	St. Johns, N.F.	1000
WHOS	Decatur, Ala.	1000d
WMGY	Montgomery, Ala.	1000d
KINY	Juneau, Alaska	5000
KAGH	Crossett, Ark.	250d
KVOM	Morrilton, Ark.	250d
KUZZ	Bakersfield, Calif.	250d
KDAD	Weed, Calif.	1000d
KBRN	Brighton, Colo.	500d
WLAD	Danbury, Conn.	250d
WSUZ	Palatka, Fla.	1000d
WJAT	Swainsboro, Ga.	1000d
KXIC	Iowa City, Iowa	1000d
WBOK	New Orleans, La.	1000d
WCCM	Lawrence, Mass.	1000d
KREI	Farmington, Mo.	1000d
KDBM	Dillon, Mont.	1000d
WKDN	Camden, N.J.	1000d
KJEM	Okla City, Okla.	250d
KPDQ	Portland, Oreg.	1000d
WCHA	Chambersburg, Pa.	1000d
WDSC	Dillon, S.C.	1000d
WEAB	Greer, S.C.	250d
WDEH	Sweetwater, Tenn.	1000d
KDDD	Dumas, Tex.	250d
KBUH	Brigham City, Utah	250d
WSVS	Crewe, Va.	5000d
WKEE	Huntington, W.Va.	1000d
WDUX	Waupaca, Wis.	1000d

810—370.2

KGO	San Francisco, Calif.	50000
WABW	Annapolis, Md.	250d
KCMO	Kansas City, Mo.	50000
WGY	Schenectady, N.Y.	50000
WKBC	N.Wilkesboro, N.C.	1000d
WCEC	Rocky Mount, N.C.	1000d
WEDO	McKeesport, Pa.	1000d
WKVM	San Juan, P.R.	25000

820—365.6

WAIT	Chicago, Ill.	5000d
WIKY	Evansville, Ind.	250d
WOSU	Columbus, Ohio	5000d
WFAA	Dallas, Tex.	50000
WBAP	Ft. Worth, Tex.	50000

830—361.2

KIKI	Honolulu, Hawaii	250
WCCO	Minneapolis, Minn.	50000
KBOA	Kennett, Mo.	1000d
WNYC	New York, N.Y.	1000

840—356.9

WTUF	Mobile, Ala.	1000d
WRYM	New Britain, Conn.	1000d
WHAS	Louisville, Ky.	50000
WVPO	Stroudsburg, Pa.	250d

850—352.7

CKVL	Verdun, Que.	50000
CKRD	Red Deer, Alta.	10000
CJJC	Langley Prairie, B.C.	1000
WYDE	Birmingham, Ala.	10000
KICY	Nome, Alaska	5000
KOA	Denver, Colo.	50000
WRUF	Gainesville, Fla.	5000
WEAT	W. Palm Beach, Fla.	1000
KIMO	Hilo, Hawaii	1000
WHDH	Boston, Mass.	50000
WKBZ	Muskegon, Mich.	1000

Kc.	Wave Length	W.P.
KFUO	St. Louis, Mo.	5000d
WKIX	Raleigh, N.C.	10000
WJW	Cleveland, Ohio	10000
WJAC	Johnstown, Pa.	250
WEEU	Reading, Pa.	1000
WABA	Aquadilla, P.R.	500
WRAP	Norfolk, Va.	5000
KTAC	Tacoma, Wash.	1000

860—348.6

CHAK	Inuvik, N.W.T.	1000
CJBC	Toronto, Ont.	50000
WHRT	Hartselle, Ala.	250d
WAMI	Opp, Ala.	1000d
KIFN	Phoenix, Ariz.	1000d
KOSE	Osceola, Ark.	1000d
KWRF	Warren, Ark.	250d
KTRB	Modesto, Calif.	10000
WDWW	Naugatuck, Conn.	250d
WAZE	Clearwater, Fla.	500d
WKKO	Cocoa, Fla.	1000d
WERD	Atlanta, Ga.	1000
WDMG	Douglas, Ga.	5000d
WMRI	Marion, Ind.	250d
KWPC	Muscatine, Iowa	250d
KOAM	Pittsburg, Kans.	10000
WSON	Henderson, Ky.	500d
WAYE	Dundalk, Md.	500d
WSBS	Gt. Barrington, Mass.	250d
KNUJ	New Ulm, Minn.	1000d
WMAG	Forest, Miss.	500d
KARS	Belen, N. Mex.	250d
WFMO	Fairmont, N.C.	1000d
KMFR	Medford, Oreg.	1000d
WAMO	Pittsburgh, Pa.	1000d
WTEL	Philadelphia, Pa.	250d
WLBG	Laurens, S.C.	1000d
WIVK	Knoxville, Tenn.	1000d
WMTS	Murfreesboro, Tenn.	250d
KFST	Ft. Stockton, Tex.	250d
KPAN	Hereford, Tex.	250d
KSFA	Nacogdoches, Tex.	1000d
KONO	San Antonio, Tex.	5000
KWHO	Salt Lake City, Utah	1000d
WEVA	Emporia, Va.	1000d
WOAY	Oak Hill, W.Va.	10000d
WFOX	Milwaukee, Wis.	250d

870—344.6

KIEV	Glendale, Calif.	250d
KAIM	Kaimuki, Hawaii	5000
WWL	New Orleans, La.	50000
WKAR	E. Lansing, Mich.	5000d
WHCU	Ithaca, N.Y.	1000d
WGTL	Kannapolis, N.C.	1000d
WHOA	San Juan, P.R.	5000
KJIM	Ft. Worth, Tex.	250d
WFLO	Farmville, Va.	1000d

880—340.7

WCBS	New York, N.Y.	50000
WRRZ	Clinton, N.C.	1000d
WRFD	Worthington, Ohio	5000d

890—336.9

WLS	Chicago, Ill.	50000
WHNC	Henderson, N.C.	1000d
KBYE	Okla. City, Okla.	1000d

900—333.1

CKTS	Sherbrooke, Que.	1000
CHML	Hamilton, Ont.	5000
CHNO	Sudbury, Ont.	10000
CJBR	Rimouski, Que.	10000
CKJL	St. Jerome, Que.	1000
CJVI	Victoria, B.C.	10000
CKBI	Prince Albert, Sask.	10000
WATV	Birmingham, Ala.	1000d
WGOK	Mobile, Ala.	1000d
WOZK	Ozark, Ala.	1000d
KPRB	Fairbanks, Alaska	10000
KHOZ	Harrison, Ark.	1000d
KBIF	Fresno, Calif.	1000d
KGRB	West Covina, Calif.	250d
WJWL	Georgetown, Del.	5000d
WSWN	Belle Glade, Fla.	1000d
WMOP	Ocala, Fla.	1000d
WCGA	Calhoun, Ga.	1000d
WCRY	Macon, Ga.	250d
WEAS	Savannah, Ga.	5000d
KTEE	Idaho Falls, Ida.	1000d
KSIR	Wichita, Kan.	250d
WKYW	Louisville, Ky.	1000d
WLSI	Pikeville, Ky.	5000d
KREH	Oakdale, La.	250d
WCME	Brunswick, Maine	1000d
WATC	Gaylord, Mich.	1000d
KTIS	Minneapolis, Minn.	1000d
WDDT	Greenville, Miss.	1000d
KFAL	Fulton, Mo.	1000d
KJSK	Columbus, Nebr.	1000d
WOTW	Nashua, N.H.	1000d
WBRV	Boonville, N.Y.	1000d
WSPN	Saratoga Sprgs., N.Y.	250d
WAYN	Rockingham, N.C.	1000d
WIAM	Williamston, N.C.	1000d
KFNW	Fargo, N.Dak.	1000d
WCNS	Canton, Ohio	500d
WFRO	Fremont, Ohio	500d
WCPA	Clearfield, Pa.	1000d
WFLN	Philadelphia, Pa.	1000d
WKXV	Knoxville, Tenn.	1000d
WCOR	Lebanon, Tenn.	500d
KALT	Atlanta, Tex.	1000d

Kc.	Wave Length	W.P.
KMCO	Conroe, Tex.	500d
KFLD	Floydada, Tex.	250d
KCLW	Hamilton, Tex.	250d
WODY	Bassett, Va.	500d
WAFC	Staunton, Va.	1000d
KUEN	Wenatchee, Wash.	1000d
WATK	Antigo, Wis.	250d

910—329.5

CJDV	Drumheller, Alta.	5000
CKLY	Lindsay, Ont.	1000
CBO	Ottawa, Ont.	5000
CFJC	Kamloops, B.C.	10000
CHRL	Roberval, Que.	1000
WDVC	Dadeville, Ala.	500d
KPHO	Phoenix, Ariz.	5000
KLCN	Blytheville, Ark.	5000d
KAMD	Camden, Ark.	1000
KDEO	El Cajon, Calif.	1000
KEWB	Oakland, Calif.	5000
KOXR	Oxnard, Calif.	1000d
KPOF	nr. Denver, Colo.	5000
WHAY	New Britain, Conn.	5000
WPLA	Plant City, Fla.	1000d
WGAF	Valdosta, Ga.	5000
KBGN	Caldwell, Ida.	1000d
WAKO	Lawrenceville, Ill.	500d
WSUI	Iowa City, Iowa	5000
WLCS	Baton Rouge, La.	1000
WABI	Bangor, Maine	5000
WFDF	Flint, Mich.	5000
WCOC	Meridian, Miss.	5000
KOYN	Billings, Mont.	1000d
KYSS	Missoula, Mont.	1000d
KBIM	Roswell, N.Mex.	5000d
WLAS	Jacksonville, N.C.	5000d
KCJB	Minot, N.Dak.	1000
WPFB	Middletown, Ohio	1000
KGLC	Miami, Okla.	1000
KURY	Brookings, Oreg.	1000d
KISN	Portland, Ore.	1000
WAVL	Apollo, Pa.	1000d
WGBI	Scranton, Pa.	1000
WSBA	York, Pa.	5000
WPRP	Ponce, P.R.	5000
WNCG	North Charleston, S.C.	500d
WORD	Spartanburg, S.C.	5000d
WJCW	Johnson City, Tenn.	5000
WEPG	S. Pittsburgh, Tenn.	500d
KNAF	Fredericksburg, Tex.	1000d
KRIO	McAllen, Tex.	5000
KRRV	Sherman, Tex.	1000
KALL	Salt Lake City, Utah	5000
WWRJ	White River Junction, Vermont	1000d
WRNL	Richmond, Va.	5000
WHYE	Roanoke, Va.	1000d
KORD	Pasco, Wash.	1000d
KUDY	Seattle, Wash.	1000
WHSM	Hayward, Wis.	5000d
WDOR	Sturgeon Bay, Wis.	1000d

920—325.9

CFRY	Portage La Prairie, Man.	1000
CJCH	Halifax, N.S.	10000
CJCJ	Woodstock, N.B.	1000
CKCY	Sault St. Marie, Ont.	10000
CKNX	Wingham, Ont.	2500
WCTA	Adalusia, Ala.	5000
WWWR	Russellville, Ala.	1000d
KARK	Little Rock, Ark.	5000
KDES	Palm Springs, Calif.	1000d
KVEC	San Luis Obispo, Cal.	1000
KREX	Grd. Junction, Colo.	5000
KLMR	Lamar, Colo.	1000
WMEG	Eau Gallie, Fla.	1000d
WGST	Atlanta, Ga.	5000
WVOH	Hazelhurst, Ga.	500wd
KAHU	Waiphau, Hawaii	1000
WGNU	Granite City, Ill.	500d
WMOK	Metropolis, Ill.	1000d
WBAA	W. Lafayette, Ind.	5000
KFNF	Shenandoah, Iowa	1000
WTCW	Whitesburg, Ky.	1000d
WBOX	Bogalusa, La.	1000d
KTOC	Jonesboro, La.	1000d
WPTX	Lexington Pk., Md.	500d
WMPL	Hancock, Mich.	1000d
KDHL	Faribault, Minn.	1000
KWAD	Wadena, Minn.	1000
KRAM	Las Vegas, Nev.	1000
KOLO	Reno, Nev.	1000
KQEO	Albuquerque, N.Mex.	1000
WTTM	Trenton, N.J.	1000
WKRT	Cortland, N.Y.	1000
WGHQ	Kingston, N.Y.	5000d
WIRD	Lake Placid, N.Y.	1000
WBBB	Burlington, N.C.	5000d
WMNI	Columbus, Ohio	500
KGAL	Lebanon, Oreg.	1000
WKVA	Lewistown, Pa.	1000
WJAR	Providence, R.I.	5000
WTND	Orangeburg, S.C.	1000d
KEZU	Rapid City, S.Dak.	1000d
WLIV	Livingston, Tenn.	1000d
KELP	El Paso, Tex.	1000
KECK	Odessa, Tex.	1000
KTLW	Texas City, Tex.	1000d
KITN	Olympia, Wash.	1000d
KXLY	Spokane, Wash.	5000
WMMN	Fairmont, W.Va.	5000
WOKY	Milwaukee, Wis.	1000

930—322.4

CFBC	Saint John, N.B.	10000
CJCA	Edmonton, Alta.	10000
CJON	St. John's, N.F.	10000
WETO	Gadsden, Ala.	1000d
KTKN	Ketchikan, Alaska	1000
KAPR	Douglas, Ariz.	1000d
KFGT	Flagstaff, Ariz.	1000
KHJ	Los Angeles, Calif.	5000
KMET	Paradise, Calif.	500d
KIUP	Durango, Colo.	5000
WKSB	Milford, Del.	500d
WHAN	Haines City, Fla.	1000
WJAX	Jacksonville, Fla.	5000
WKXY	Sarasota, Fla.	1000
WMGR	Bainbridge, Ga.	5000
WGTA	Summerville, Ga.	5000
KSEI	Pocatello, Idaho	5000
WTAD	Quincy, Ill.	5000
WKCT	Bowling Green, Ky.	1000
WFMD	Frederick, Md.	5000
WREB	Holyoke, Mass.	500d
WBCK	Battle Creek, Mich.	5000
KKIN	Aitkin, Minn.	1000d
WSLI	Jackson, Miss.	5000
KWOC	Poplar Bluff, Mo.	1000
KOFI	Kalispell, Mont.	5000d
KOGA	Ogallala, Nebr.	500d
WWNH	Rochester, N.H.	5000d
WPAT	Paterson, N.J.	5000
WBEN	Buffalo, N.Y.	5000
WIZR	Johnstown, N.Y.	1000d
WSOC	Charlotte, N.C.	5000
WITN	Washington, N.C.	5000
WEOL	Elyria, Ohio	1000
WKY	Oklahoma City, Okla.	5000
KAGI	Grants Pass, Oreg.	5000
WCNR	Bloomsburg, Pa.	1000d
KSDN	Aberdeen, S.D.	1000
WSEV	Sevierville, Tenn.	5000d
KDET	Center, Tex.	1000d
KITE	San Antonio, Tex.	5000
KENY	Bellingham-Ferndale, Wash.	1000d
WSAZ	Huntington, W.Va.	5000
KROE	Sheridan, Wyo.	1000d
WLBL	Auburndale, Wis.	5000d

940—319.0

CBM	Montreal, Que.	50000
CJGX	Yorkton, Sask.	10000
CJIB	Vernon, B.C.	1000
KOBY	Tucson, Ariz.	250
KFRE	Fresno, Calif.	50000
WINZ	Miami, Fla.	50000
WMAZ	Macon, Ga.	50000
WMIX	Mt. Vernon, Ill.	5000d
KIOA	Des Moines, Iowa	10000
WYLD	New Orleans, La.	1000
WJOR	South Haven, Mich.	1000d
KSWM	Aurora, Mo.	500d
KVSH	Valentine, Nebr.	5000d
WFNC	Fayetteville, N.C.	10000
KGRL	Bend, Oreg.	1000d
WESA	Charleroi, Pa.	250d
WGRP	Greenville, Pa.	1000d
WIPR	San Juan, P.R.	10000
KIXZ	Amarillo, Tex.	5000
KTON	Belton, Tex.	1000d
KATQ	Texarkana, Tex.	1000d

950—315.6

CKNB	Campbellton, N.B.	10000
CKBB	Barrie, Ont.	10000
WRMA	Montgomery, Ala.	1000d
KXJK	Forrest City, Ark.	5000d
KFSA	Ft. Smith, Ark.	1000
KAHI	Auburn, Calif.	1000d
KIMN	Denver, Colo.	5000
WNUE	Ft. Walton Sch., Fla.	1000d
WLOF	Orlando, Fla.	5000
WGTA	Summerville, Ga.	5000d
WGOV	Valdosta, Ga.	5000
KBOI	Boise, Idaho	5000
KLER	Orofino, Idaho	1000d
WAAF	Chicago, Ill.	1000d
WXLW	Indianapolis, Ind.	5000d
KOEL	Oelwein, Iowa	1000
KJRG	Newton, Kans.	500d
WBVL	Barbourville, Ky.	1000d
WAGM	Presque Isle, Maine	5000
WORL	Boston, Mass.	5000d
WWJ	Detroit, Mich.	5000
KRSI	St. Louis Park, Minn.	1000d
WBKH	Hattiesburg, Miss.	5000d
KLIK	Jefferson City, Mo.	5000d
WBER	Moncks Corner, N.C.	500d
KLHS	Lordsburg, N. Mex.	1000d
WBBF	Rochester, N.Y.	1000
WIBX	Utica, N.Y.	5000
WPET	Greensboro, N.C.	5000d
KYES	Roseburg, Oreg.	1000d
WNCC	Barnesboro, Pa.	500d
WPEN	Philadelphia, Pa.	5000
WSPA	Spartanburg, S.C.	5000
KWAT	Watertown, S.Dak.	1000
WAGG	Franklin, Tenn.	1000d
KDSX	Denison, Tex.	500
KPRC	Houston, Tex.	50000
KSEL	Lubbock, Tex.	5000
WXGI	Richmond, Va.	5000d
KJR	Seattle, Wash.	5000
WERL	Eagle River, Wis.	1000d
WKAZ	Charleston, W.Va.	5000
WKTS	Sheboygan, Wis.	500d

960—312.3

CFAC	Calgary, Alta.	10000
CKNL	Fort St. John, B.C.	1000
CHNS	Halifax, N.S.	10000
CKWS	Kingston, Ont.	5000
WBRC	Birmingham, Ala.	5000
WMOZ	Mobile, Ala.	1000
WCVQ	Kodiak, Alaska	250
KOOL	Phoenix, Ariz.	5000
KAVR	Apple Valley, Calif.	5000d
KNEZ	Lompoc, Calif.	500
KABL	Oakland, Calif.	5000
WELI	New Haven, Conn.	5000
WGRO	Lake City, Fla.	500d
WJCM	Sebring, Fla.	1000d
WJAZ	Albany, Ga.	5000d
WRFC	Athens, Ga.	5000
KSRA	Salmon, Idaho	1000d
WDLM	E. Moline, Ill.	1000d
WSBT	South Bend, Ind.	5000
KMA	Shenandoah, Iowa	5000
WPRT	Prestonsburg, Ky.	5000d
KROF	Abbeville, La.	1000d
WBOC	Salisbury, Md.	5000
WFGM	Fitchburg, Mass.	1000
WHAK	Rogers City, Mich.	5000d
KLTF	Little Falls, Minn.	500d
WABG	Greenwood, Miss.	1000
KFVS	Cape Girardeau, Mo.	5000
KNEB	Scottsbluff, Nebr.	1000
KWYK	Farmington, N.Mex.	1000d
WEAV	Plattsburg, N.Y.	5000
WAAK	Dallas, N.C.	1000d
WFTC	Kinston, N.C.	5000
WWST	Wooster, Ohio	1000d
KGWA	Enid, Okla.	1000
KLAD	Klamath Falls, Oreg.	5000d
WHYL	Carlisle, Pa.	5000d
WADP	Kane, Pa.	1000d
WATS	Sayre, Pa.	1000d
WBEU	Beaufort, S.C.	1000d
WBMC	McMinnville, Tenn.	500d
KIMP	Mt. Pleasant, Tex.	1000d
KGKL	San Angelo, Tex.	5000
KOVO	Provo, Utah	5000
WDBJ	Roanoke, Va.	5000
KALE	Richland, Wash.	1000
WTCH	Shawano, Wis.	1000

970—309.1

CKCH	Hull, Que.	5000
WERH	Hamilton, Ala.	5000d
WTBF	Troy, Ala.	5000
KNEA	Jonesboro, Ark.	1000d
KBIS	Bakersfield, Calif.	1000
KCHV	Coachella, Calif.	5000
KBEE	Modesto, Calif.	1000
KFEL	Pueblo, Colo.	1000d
WFLA	Tampa, Fla.	5000
WIIN	Atlanta, Ga.	5000d
WVOP	Vidalia, Ga.	5000d
KHBC	Hilo, Hawaii	1000
KAYT	Rupert, Idaho	1000d
WMAY	Springfield, Ill.	1000
WAVE	Louisville, Ky.	5000
KSYL	Alexandria, La.	1000
WCSH	Portland, Maine	5000
WAMD	Aberdeen, Md.	500
WESO	Southbridge, Mass.	1000d
WJAN	Ishpeming, Mich.	5000d
WKHM	Jackson, Mich.	1000
KQAQ	Austin, Minn.	5000d
KOOK	Billings, Mont.	5000
KJLT	No. Platte, Nebr.	5000d
KVEG	Las Vegas, Nev.	500d
WJRZ	Newark, N.J.	5000
WEBR	Buffalo, N.Y.	5000
WCHN	Norwich, N.Y.	500d
WRCS	Ahoskie, N.C.	1000d
WWIT	Canton, N.C.	1000d
WDAY	Fargo, N.Dak.	5000
WREO	Ashtabula, Ohio	5000
WATH	Athens, Ohio	1000d
KAKC	Tulsa, Okla.	1000
KOIN	Portland, Oreg.	5000
WWSW	Pittsburgh, Pa.	5000
WJMX	Florence, S.C.	5000
KASE	Austin, Tex.	1000d
KNOK	Ft. Worth, Tex.	1000d
WIVI	Christiansted, V.I.	1000
WYPR	Danville, Va.	1000d
WBVA	Waynesboro, Va.	500d
KREM	Spokane, Wash.	5000
WWYO	Pineville, W.Va.	1000d
WHA	Madison, Wis.	5000d
WIGL	Superior, Wis.	500d

980—305.9

CKNW	New Westminster, Brit. Columbia	10000
CFPL	London, Ont.	10000
CKGM	Montreal, Que.	10000
CBV	Quebec, Que.	5000
CHEX	Peterboro, Ont.	5000
CKRM	Regina, Sask.	10000
WKLF	Clanton, Ala.	1000d
WXLL	Big Delta, Alaska	100
KINS	Eureka, Calif.	5000
KEAP	Fresno, Calif.	500d
KFWB	Los Angeles, Calif.	5000
KGLN	GlenwoodSprgs., Colo.	1000d
WSUB	Groton, Conn.	1000d
WRC	Washington, D.C.	5000
WDVH	Gainesville, Fla.	5000d
WTOT	Marianna, Fla.	1000d
WBOP	Pensacola, Fla.	1000d
WLOD	Pompano Beach, Fla.	1000d
WKLY	Hartwell, Ga.	1000d
WPGA	Perry, Ga.	500d
WRIP	Rossville, Ga.	500d
KUPI	Idaho Falls, Idaho	1000d
KSGM	Chester, Ill.	500
WITY	Danville, Ill.	1000
KREB	Shreveport, La.	5000d
WCAP	Lowell, Mass.	1000d
WDMC	Otsego, Mich.	500
WPBC	Minneapolis, Minn.	1000d
WAPF	McComb, Miss.	1000d
KMBC	Kansas City, Mo.	5000
KLYQ	Hamilton, Mont.	1000d
KVLV	Fallon, Nev.	5000d
KICA	Clovis, N. Mex.	1000
KMIN	Grants, N. Mex.	1000d
WTRY	Troy, N.Y.	5000
WKLM	Wilmington, N.C.	5000d
WAAA	Win.-Salem, N.C.	1000d
WONE	Dayton, Ohio	5000
WILK	Wilkes-Barre, Pa.	5000
WAZS	Summerville, S.C.	500d
WRBI	Winnsboro, S.C.	500d
KDSJ	Deadwood, S.Dak.	1000
WSIX	Nashville, Tenn.	5000
KFRD	Rosenberg, Tex.	1000d
KSVC	Richfield, Utah	5000
WFHG	Bristol, Va.	5000
WMEK	Chase City, Va.	500d
KUTI	Yakima, Wash.	5000d
WHAW	Weston, W.Va.	1000d
WCUB	Manitowoc, Wis.	1000d
WPRE	Prairie du Chien, Wis.	1000

990—302.8

CBW	Winnipeg, Man.	50000
CBY	Corner Brook, Nfld.	10000
WEIS	Center, Ala.	250
WWWF	Fayette, Ala.	1000d
WTCB	Flomaton, Ala.	500d
KTKT	Tucson, Ariz.	10000
KKIS	Pittsburg, Calif.	5000
KGUO	Santa Barbara, Calif.	1000d
KLIR	Denver, Colo.	1000d
WBZY	Torrington, Conn.	1000d
WFAB	Miami, Fla.	5000
WHOO	Orlando, Fla.	10000
WDWD	Dawson, Ga.	1000d
WGML	Hinesville, Ga.	250d
KTRG	Honolulu, Hawaii	5000
WCAZ	Carthage, Ill.	1000d
WITZ	Jasper, Ind.	1000d
KAYL	Storm Lake, Iowa	250d
KRSL	Russell, Kans.	250d
WJMR	New Orleans, La.	250d
KRIH	Rayville, La.	250d
WCRM	Clare, Mich.	250d
WABO	Waynesboro, Miss.	250d
KRMO	Monett, Mo.	250d
KSVP	Artesia, N.Mex.	1000
WEEB	Southern Pines, N.C.	5000d
WJEH	Gallipolis, Ohio	1000d
WTIG	Massillon, Ohio	250d
KRKT	Albany, Oreg.	250d
WIBG	Philadelphia, Pa.	50000
WVSC	Somerset, Pa.	250d
WPRA	Mayaguez, P.R.	10000
WLKW	Providence, R.I.	50000
WAKN	Aiken, S.C.	1000d
WNOX	Knoxville, Tenn.	10000
KWAM	Memphis, Tenn.	1000d
KTRM	Beaumont, Tex.	1000
KAML	Kenedy, Tex.	250d
KNIN	Wichita Falls, Tex.	1000d
KDYL	Tooele, Utah	1000d
WNRV	Narrows, Va.	1000d
WANT	Richmond, Va.	1000d
WKLJ	Sparta, Wis.	250

1000—299.8

CKBW	Bridgewater, N.S.	10000
WCFL	Chicago, Ill.	50000
KTOK	Okla. City, Okla.	5000
KSTA	Coleman, Tex.	250d
KGRI	Henderson, Tex.	250d
WHWB	Rutland, Vt.	1000d
WBNB	Charlotte Amalie, Virgin Islands	1000
KOMO	Seattle, Wash.	50000

1010—296.9

CBX	Calgary, Alta.	50000d
CFRB	Toronto, Ont.	50000
KCAC	Phoenix, Ariz.	500d
KVNC	Winslow, Ariz.	1000
KLRA	Little Rock, Ark.	10000
KCHJ	Delano, Calif.	5000
KCMJ	Palm Sprgs., Calif.	1000
KSAY	San Fran., Calif.	10000d
WCNU	Crestview, Fla.	1000d
WZRO	Jacksonville Beach, Florida	2500d
WINQ	Tampa, Fla.	50000d
WGUN	Decatur, Ga.	50000d
KATN	Boise, Idaho	1000d
WCSI	Columbus, Ind.	500d
KSMN	Mason City, Iowa	1000d
KIND	Independence, Kans.	250d
KDLA	DeRidder, La.	1000d
WSID	Baltimore, Md.	1000d
WMRT	Lansing, Mich.	500d
WMOX	Meridian, Miss.	10000
KCHI	Chillicothe, Mo.	250d
KXEN	Festus, Mo.	50000d
KRVN	Lexington, Nebr.	25000d
WCNL	Newport, N.H.	250d
WINS	New York, N.Y.	50000

Kc.	Wave Length	W.P.
WABZ	Albermarle, N.C.	1000d
WFGW	Black Mountain, N.C.	10000d
WELS	Kinston, N.C.	1000d
WJOI	New Boston, Ohio	1000d
KBEV	Portland, Oreg.	1000d
WUNS	Lewisburg, Pa.	250d
WHIN	Gallatin, Tenn.	1000d
WORM	Savannah, Tenn.	250d
KBUY	Amarillo, Tex.	5000
KODA	Houston, Tex.	1000d
KAWA	Waco, Tex.	10000d
WELK	Charlottesville, Va.	1000d
WMEV	Marion, Va.	1000d
WPMH	Portsmouth, Va.	5000d
WCST	Berkeley Sprgs., W.Va.	250d
WSPT	Stevens Pt., Wis.	1000d

1020—293.9

KGBS	Los Angeles, Calif.	50000
WCIL	Carbondale, Ill.	1000d
WPEO	Peoria, Ill.	1000d
KDKA	Pittsburgh, Pa.	50000

1030—291.1

WBZ	Boston, Mass.	50000
WBZA	Springfield, Mass.	1000
KCTA	Corpus Christi, Tex.	50000d

1040—288.3

KHVH	Honolulu, Hawaii	5000
WHO	Des Moines, Iowa	50000
KIXL	Dallas, Tex.	1000d

1050—285.5

CFGP	Grande Prairie, Alta.	10000
CKSB	St. Boniface, Man.	10000
CJIC	Sault Ste. Marie, Ont.	10000
CHUM	Toronto, Ont.	5000
WRFS	Alexander City, Ala.	1000d
WCRI	Scottsboro, Ala.	250d
KVWM	Show Low, Ariz.	250d
KVLC	Little Rock, Ark.	1000d
KOFY	San Mateo, Calif.	1000d
KWSO	Wasco, Calif.	1000d
KLMO	Longmont, Colo.	250d
WJSB	Crestview, Fla.	1000d
WIVY	Jacksonville, Fla.	1000d
WHBO	Tampa, Fla.	250d
WRMF	Titusville, Fla.	500d
WAUG	Augusta, Ga.	5000d
WBIE	Marietta, Ga.	500d
WMNZ	Montezuma, Ga.	250d
WDZ	Decatur, Ill.	1000d
KNCO	Garden City, Kans.	1000d
WNES	Central City, Ky.	500d
KLPL	Lake Providence, La.	250d
KCIJ	Shreveport, La.	250d
KVPI	Villa Platte, La.	250d
WQMR	Silver Sprg., Md.	1000d
WPAG	Ann Arbor, Mich.	5000d
KLOH	Pipestone, Minn.	1000d
WACR	Columbus, Miss.	1000d
KMIS	Portageville, Mo.	250d
KSIS	Sedalia, Mo.	1000d
KLVC	Las Vegas, Nev.	500d
WBNC	Conway, N.H.	1000d
WSEN	Baldwinsville, N.Y.	250d
WSTS	Massena, N.Y.	1000d
WHN	New York, N.Y.	50000
WFSC	Franklin, N.C.	1000d
WLON	Lincolnton, N.C.	1000d
WWGP	Sanford, N.C.	1000d
KCCO	Lawton, Okla.	250d
KFMJ	Tulsa, Okla.	1000d
KUBE	Pendleton, Oreg.	1000d
KEED	Springfield, Oreg.	1000d
WBUT	Butler, Pa.	1000d
WLYC	Williamsport, Pa.	1000d
WSMT	Sparta, Tenn.	1000d
KLEN	Killeen, Tex.	250d
KWLD	Liberty, Tex.	250d
KPLA	Plainview, Tex.	1000d
KCAS	Slaton, Tex.	250d
WGAT	Gate City, Va.	250d
WBRG	Lynchburg, Va.	1000d
WCMS	Norfolk, Va.	1000d
KNBX	Kirkland, Wash.	1000d
WCEF	Parkersburg, W.Va.	1000d
WECL	Eau Claire, Wis.	1000d
WLIP	Kenosha, Wis.	250d
KWIV	Douglas, Wyo.	250d

1060—282.8

CFCN	Calgary, Alta.	10000
CJLR	Quebec, Que.	10000
KUPD	Tempe, Ariz.	500
KPAY	Chico, Calif.	10000
WNOE	New Orleans, La.	50000
WHFB	Benton Harbor, Mich.	1000d
WMAP	Monroe, N.C.	250d
WHOF	Canton, Ohio	1000d
WRCV	Philadelphia, Pa.	50000

1070—280.2

CFAX	Victoria, B.C.	10000
CBA	Sackville, N.B.	50000
CHOK	Sarnia, Ont.	5000
WAPI	Birmingham, Ala.	50000
KNX	Los Angeles, Calif.	50000
WVCG	Coral Gables, Fla.	1000d
WIBC	Indianapolis, Ind.	50000
KFDI	Wichita, Kans.	10000
KHMO	Hannibal, Mo.	5000
WHPE	High Point, N.C.	1000d
WMIA	Arecibo, P.R.	500
WFLI	Lookout Mtn., Tenn.	10000
WDIA	Memphis, Tenn.	50000
KOPY	Alice, Tex.	1000
WKOW	Madison, Wis.	10000

1080—277.6

KSCO	Santa Cruz, Calif.	10000
WTIC	Hartford, Conn.	50000
WKLO	Louisville, Ky.	5000
WOAP	Owosso, Mich.	250d
WUFO	Amherst, N.Y.	1000
WEWO	Laurinburg, N.C.	1000d
KWJJ	Portland, Oreg.	10000
WYRE	Pittsburgh, Pa.	1000d
KRLD	Dallas, Tex.	50000

1090—275.1

CHEC	Lethbridge, Alta.	5000
CHIC	Brampton, Ont.	250
CHRS	St. Jean, Que.	1000
KAAY	Little Rock, Ark.	50000
WCRA	Effingham, Ill.	250d
KHAI	Honolulu, Hawaii	5000
KNWS	Waterloo, Iowa	1000d
WBAL	Baltimore, Md.	50000
WILD	Boston, Mass.	1000d
WMUS	Muskegon, Mich.	1000d
WAJS	San German P.R.	250
KING	Seattle, Wash.	50000

1100—272.6

KFAX	San Francisco, Calif.	50000
WLBB	Carrollton, Ga.	250d
WHLI	Hempstead, N.Y.	10000d
KYW	Cleveland, Ohio	50000
WGPA	Bethlehem, Pa.	250d

1110—270.1

CFML	Cornwall, Ont.	1000
CFTJ	Galt, Ont.	250
WALT	Tampa, Fla.	50000d
KIPA	Hilo, Hawaii	1000
WMBI	Chicago, Ill.	5000d
KFAB	Omaha, Nebr.	50000
WBT	Charlotte, N.C.	50000
KBND	Bend, Oreg.	5000
WNAR	Norristown, Pa.	500d
WVJP	Caguas, P.R.	250
WHIM	Providence, R.I.	1000d

1120—267.7

WUST	Bethesda, Md.	250d
KMOX	St. Louis, Mo.	50000
WWOL	Buffalo, N.Y.	1000d
KCLE	Cleburne, Tex.	250d

1130—265.3

CKWX	Vancouver, B.C.	50000
KROU	Dinuba, Calif.	1000
KSDO	San Diego, Calif.	5000
KLEI	Kailua, Hawaii	1000
KWKH	Shreveport, La.	50000
WCAR	Detroit, Mich.	50000
WDGY	Minneapolis, Minn.	50000
WNEW	New York, N.Y.	50000

1140—263.0

CFTK	Terrace, B.C.	1000
CKXL	Calgary, Alta.	10000
CBI	Sydney, N.S.	5000
KRAK	Sacramento, Calif.	50000
WMIE	Miami, Fla.	10000
KGEM	Boise, Idaho	10000
WSIV	Pekin, Ill.	1000d
KLPR	Oklahoma City, Okla.	1000d
WITA	San Juan, P.R.	500
KSOO	Sioux Falls, S.Dak.	10000
KORC	Mineral Wells, Tex.	250d
WRVA	Richmond, Va.	50000

1150—260.7

CKSA	Lloydminister, Alta.	10000
CHSJ	Saint John, N.B.	10000
CKOC	Hamilton, Ont.	10000
CKX	Brandon, Man.	10000
CKTR	Three Rivers, Que.	10000
WBCA	Bay Minette, Ala.	1000d
WGEA	Geneva, Ala.	1000d
WJRD	Tuscaloosa, Ala.	5000
KCKY	Coolidge, Ariz.	1000
KXLR	No. Little Rock, Ark.	5000
KFSG	Los Angeles, Calif.	2500
KRKD	Los Angeles, Calif.	5000
KJAX	Santa Rosa, Calif.	5000
KGMC	Englewood, Colo.	1000d
WCNX	Middletown, Conn.	500d
WDEL	Wilmington, Del.	5000
WNDB	Daytona Bch., Fla.	1000
WTMP	Tampa, Fla.	5000d
WFPM	Fort Valley, Ga.	1000d
WJEM	Valdosta, Ga.	1000d
WGGH	Marion, Ill.	5000d
WJRL	Rockford, Ill.	500d
KWKY	Des Moines, Iowa	1000
KSAL	Salina, Kans.	5000
WMST	Mt. Sterling, Ky.	500d
WLOC	Mumfordville, Ky.	1000d
WJBO	Baton Rouge, La.	5000
WGHM	Skowhegan, Maine	5000d
WHMC	Gaithersburg, Md.	1000
WCOP	Boston, Mass.	5000
WCEN	Mt. Pleasant, Mich.	1000
KASM	Albany, Minn.	1000d
WXTN	Lexington, Miss.	500d
KRMS	Osage Beach, Mo.	1000d
KSEN	Shelby, Mont.	1000
KDEF	Albuquerque, N.Mex.	1000
WRUN	Utica, N.Y.	5000
WBAG	Burlington, N.C.	1000d
WGBR	Goldsboro, N.C.	5000
WCUE	Cuyahoga Falls, Ohio	1000d
WIMA	Lima, Ohio	1000
KNED	McAlester, Okla.	1000
KAGO	Klamath Falls, Oreg.	5000
WHUN	Huntingdon, Pa.	5000d
WYNS	Lehighton, Pa.	1000d
WKPA	New Kensington, Pa.	1000d
WDIX	Orangeburg, S.C.	5000
WTYC	Rock Hill, S.C.	1000d
WSNW	Seneca Township, South Carolina	1000d
KIMM	Rapid City, S.Dak.	5000d
WAPO	Chattanooga, Tenn.	5000
WCRK	Morristown, Tenn.	1000
WTAW	Bryan, Tex.	1000d
KCCT	Corpus Christi, Tex.	1000d
KIZZ	El Paso, Tex.	1000d
KVIL	Highland Park, Tex.	1000d
KJBC	Midland, Tex.	1000d
KPNG	Port Neches, Tex.	500d
KOLJ	Quanah, Tex.	500d
KBER	San Antonio, Tex.	1000d
KOFE	Pullman, Wash.	1000d
KAYO	Seattle, Wash.	5000
KKEY	Vancouver, Wash.	1000d
WABH	Deerfield, Va.	1000d
WELC	Welch, W.Va.	1000d
WAXX	Chippewa Falls, Wis.	5000d
WISN	Milwaukee, Wis.	5000

1160—258.5

WJJD	Chicago, Ill.	50000
KSL	Salt Lake City, Utah	50000

1170—256.3

CFNS	Saskatoon, Sask.	1000
WCOV	Montgomery, Ala.	10000
KCBQ	San Diego, Calif	50000
KLOK	San Jose, Calif.	10000
KOHO	Honolulu, Hawaii	1000
WLBH	Mattoon, Ill.	250d
KSTT	Davenport, Iowa	1000
KVOO	Tulsa, Okla.	50000
WLEO	Ponce, P.R.	250
KPUG	Bellingham, Wash.	1000
WWVA	Wheeling, W.Va.	50000

1180—254.1

WLDS	Jacksonville, Ill.	1000d
WHAM	Rochester, N.Y.	50000

1190—252.0

KZON	Tolleson, Ariz.	250
KEZY	Anaheim, Calif.	1000
KNBA	Vallejo, Calif.	250d
WOWO	Ft. Wayne, Ind.	50000
WANN	Annapolis, Md.	10000d
WKOX	Fram'gham, Mass.	1000d
WLIB	New York, N.Y.	1000d
KEX	Portland, Oreg.	50000
KLIF	Dallas, Tex.	50000

1200—249.9

WOAI	San Antonio, Tex.	50000

1210—247.8

KZOO	Honolulu, Hawaii	1000
WCNT	Centralia, Ill.	1000d
WKNX	Saginaw, Mich.	10000d
WADE	Wadesboro, N.C.	1000d
WAVI	Dayton, Ohio	250d
WCAU	Philadelphia, Pa.	50000

1220—245.8

CJOC	Lethbridge, Alta.	10000
CKDA	Victoria, B.C.	10000
CJRL	Kenora, Ont.	1000
CKCW	Moncton, N.B.	10000
CJSS	Cornwall, Ont.	10000
CKSM	Shawinigan, Quebec	1000
WEZB	Birmingham, Ala.	1000d
WPRN	Butler, Ala.	1000d
WABF	Fairhope, Ala.	1000
KVSA	McGehee, Ark.	1000d
KLIP	Fowler, Calif.	250d
KIBE	Palo Alto, Calif.	1000d
KKAR	Pomona, Calif.	250d
KFSC	Denver, Colo.	1000d
WDEE	Hamden, Conn.	1000d
WQTY	Arlington, Fla.	1000d
WKBX	Kissimmee, Fla.	1000d
WMET	Miami, Fla.	250d
WSAF	Sarasota, Fla.	1000d
WCLB	Camilla, Ga.	1000d
WPLK	Rockmart, Ga.	500d
WSFT	Thomaston, Ga.	250d
WLPO	LaSalle, Ill.	1000d
WKRS	Waukegan, Ill.	1000d
WSLM	Salem, Ind.	1000d
KJAN	Atlantic, Iowa	250d
KOUR	Independence, Iowa	250d
KOFO	Ottawa, Kans.	250d
WFKN	Franklin, Ky.	250d
KBCL	Shreveport, La.	250d
WLBI	Denham Springs, La.	250d
WSME	Sanford, Maine	1000d
WBCH	Hastings, Mich.	250d
WAVN	Stillwater, Minn.	5000d
WMDC	Hazlehurst, Miss.	250d
KBHM	Branson, Mo.	1000d
KLPW	Union, Mo.	1000d
WKBK	Keene, N.H.	1000d
WGNY	Newburgh, N.Y.	5000d
WSOQ	N. Syracuse, N.Y.	1000d
WKMT	Kings Mtn., N.C.	1000d
WREV	Reidsville, N.C.	1000d
WENC	Whiteville, N.C.	1000d
KEYD	Oakes, N.Dak.	1000d
WGAR	Cleveland, Ohio	50000
WERT	Van Wert, Ohio	250d
KGYN	Guymon, Okla.	1000d
KBLY	Goldbeach, Oreg.	1000d
KAPT	Salem, Ore.	1000
WJUN	Mexico, Pa.	1000d
WRIB	Providence, R.I.	1000d
WALD	Walterboro, S.C.	1000d
WFWL	Camden, Tenn.	250d
WCPH	Etowah, Tenn.	1000d
WHEY	Millington, Tenn.	250d
KVLL	Livingston, Tex.	250d
KZEE	Weatherford, Tex.	250d
WLSD	Big Stone Gap, Va.	1000d
WFAX	Falls Church, Va.	5000d
KASY	Auburn, Wash.	250d
KOZI	Chelan, Wash.	1000d
WRNE	Wis. Rapids, Wis.	500d

1230—243.8

CFCW	Camrose, Alta.	10000
CHFC	Churchill, Man.	250
CFKL	Schefferville, Que.	250
CFGR	Gravelbourg, Sask.	250
CFHR	Hay River, Nwt.	100
CFYT	Dawson City, Yukon T.	100
CFPA	Port Arthur, Ont.	1000
CKLD	Thetford Mines, Que.	250
CKMP	Midland, Ont.	250
VOAR	St. John's, Nfld.	100
CKVD	Val D'Or, Que.	1000
WAUD	Auburn, Ala.	1000
WJBB	Haleyville, Ala.	1000
WBHP	Huntsville, Ala.	1000
WOLS	Florence, Ala.	1000
WNUZ	Talledega, Ala.	250
WTBC	Tuscaloosa, Ala.	250
KIFW	Sitka, Alaska	250
KSUN	Bisbee, Ariz.	250
KAAA	Kingman, Ariz.	250
KRIZ	Phoenix, Ariz.	250
KATO	Safford, Ariz.	250
KCON	Conway, Ark.	250
KFPW	Ft. Smith, Ark.	1000
KBTM	Jonesboro, Ark.	250
KGEE	Bakersfield, Calif.	500
KWTC	Barstow, Calif.	1000
KIBS	Bishop, Calif.	1000
KXO	El Centro, Calif.	250
KDAC	Ft. Bragg, Calif.	250
KGFJ	Los Angeles, Calif.	250
KPRL	Paso Robles, Calif.	1000
KRDG	Redding, Calif.	250
KWG	Stockton, Calif	1000
KEXO	Grand Junc., Colo.	250
KBRR	Leadville, Colo.	250
KDZA	Pueblo, Colo.	250
KGEK	Sterling, Colo.	250
WINF	Manchester, Conn.	1000
WGGG	Gainesville, Fla.	1000
WONN	Lakeland, Fla.	250
WMAF	Madison, Fla.	1000
WSBB	New Smyrna Bch., Florida	1000
WNVY	Pensacola, Fla.	250
WCNH	Quincy, Fla.	1000
WJNO	W. Palm Beach, Fla.	250
WBIA	Augusta, Ga.	1000d
WBLJ	Dalton, Ga.	1000
WXLI	Dublin, Ga.	250d
WFOM	Marietta, Ga.	1000
WSOK	Savannah, Ga.	250
WAYX	Waycross, Ga.	1000
KBAR	Burley, Idaho	250
KORT	Grangeville, Idaho	250
KRXK	Rexburg, Idaho	1000
WJBC	Bloomington, Ill.	1000
WQUA	Moline, Ill.	1000
WHCO	Sparta, Ill.	250
WJOB	Hammond, Ind.	1000
WSAL	Logansport, Ind.	1000
WTCJ	Tell City, Ind.	1000
WBOW	Terre Haute, Ind.	1000d
KFJB	Marshalltown, Iowa	1000
WHIR	Danville, Ky.	1000d
WHOP	Hopkinsville, Ky.	1000
WMLF	Pineville, Ky.	1000d
KLIC	Monroe, La.	250
WSHO	New Orleans, La.	1000
KSLO	Opelousas, La.	250
WQDY	Calais, Maine	250
WITH	Baltimore, Md.	1000
WCUM	Cumberland, Md.	1000
WMNB	No. Adams, Mass.	250
WESX	Salem, Mass.	1000
WNEB	Worcester, Mass.	1000
WJEF	Grand Rapids, Mich.	1000
WIKB	Iron River, Mich.	1000
WMPC	Lapeer, Mich.	250
WSOO	Slt. Ste. Marie, Mich.	1000
WSTR	Sturgis, Mich.	1000d
WKLK	Cloquet, Minn.	1000
KGHS	Internat'l Falls, Minn.	100
KYSM	Mankato, Minn.	250
KMRS	Morris, Minn.	250
KTRF	Thief Riv. Flls., Minn.	250
KWNO	Winona, Minn.	1000
WCMA	Corinth, Miss.	1000

Kc.	Wave Length	W.P.
WHSY	Hattiesburg, Miss.	1000
WSSO	Starkville, Miss.	250
WAZF	Yazoo City, Miss.	250
KODE	Joplin, Mo.	1000
KLWT	Lebanon, Mo.	250
KNCM	Moberly, Mo.	1000
KBMN	Bozeman, Mont.	1000d
KXLO	Lewiston, Mont.	1000
KLCB	Libby, Mont.	250
KTNC	Falls City, Nebr.	100
KHAS	Hastings, Nebr.	250
KELY	Ely, Nev.	250
KLAS	Las Vegas, Nev.	250
KDOT	Reno, Nev.	250
WMOU	Berlin, N.H.	250
WTSV	Claremont, N.H.	1000
WCMC	Wildwood, N.J.	100
KALG	Alamogordo, N.Mex.	250
KOTS	Deming, N.Mex.	250
KYVA	Gallup, N.Mex.	250
KFUN	Las Vegas, N.Mex.	250
KRSY	Roswell, N.Mex.	250
WNIA	Cheektowaga, N.Y.	500
WENY	Elmira, N.Y.	1000
WHUC	Hudson, N.Y.	250
WLFH	Little Falls, N.Y.	250
WFAS	White Plains, N.Y.	250
WSKY	Asheville, N.C.	1000
WFAI	Fayetteville, N.C.	1000d
WMFR	High Point, N.C.	1000
WISP	Kinston, N.C.	1000d
WNNC	Newton, N.C.	250
WCBT	Roanoke Rap., N.C.	250
KDIX	Dickinson, N.Dak.	250
WCPO	Cincinnati, Ohio	250
WCOL	Columbus, Ohio	250
WIRO	Ironton, Ohio	250
WTOL	Toledo, Ohio	1000d
KADA	N. of Ada, Okla.	250
WBBZ	Ponca City, Okla.	250
KIAL	Astoria, Oreg.	250
KRNS	Burns, Oreg.	250
KOOS	Coos Bay, Oreg.	250
KGRO	Gresham, Oreg.	1000
KYJC	Medford, Oreg.	1000
KQIK	Lakeview, Oreg.	250
KTDO	Toledo, Oreg.	250
WBVP	Beaver Falls, Pa.	1000
WEEX	Easton, Pa.	250
WKBO	Harrisburg, Pa.	1000
WCRO	Johnstown, Pa.	1000
WBPZ	Lock Haven, Pa.	250
WTIV	Titusville, Pa.	1000
WNIK	Arecibo, P.R.	250
WERI	Westerly, R.I.	1000
WAIM	Anderson, S.C.	1000
WNOK	Columbia, S.C.	1000d
WOLS	Florence, S.C.	1000
KISD	Sioux Falls, S.Dak.	1000d
WAKI	McMinnville, Tenn.	1000
KSIX	Corpus Christi, Tex.	250
KDLK	Del Rio, Tex.	250
KNUZ	Houston, Tex.	1000
KERV	Kerrville, Tex.	250
KLVT	Levelland, Tex.	250
KEEE	Nacogdoches, Tex.	1000
KOSA	Odessa, Tex.	250
KHHH	Pampa, Tex.	250
KSEY	Seymour, Tex.	1000
KSST	Sulphur Sprgs., Tex.	250
KWTX	Waco, Tex.	250
KMUR	Murray, Utah	250
KOAL	Price, Utah	250
WJOY	Burlington, Vt.	1000
WBBI	Abingdon, Va.	1000d
WCFV	Clifton Forge, Va.	1000
WFVA	Fredericksburg, Va.	1000
WNOR	Norfolk, Va.	1000
KWYZ	Everett, Wash.	1000
KLYK	Spokane, Wash.	250
KREW	Sunnyside, Wash.	1000
WLOG	Logan, W.Va.	1000
WTAP	Parkersburg, W.Va.	1000
WHBY	Appleton, Wis.	250
WCLO	Janesville, Wis.	1000
WHVF	Wausau, Wis.	250
KVOC	Casper, Wyo.	1000

1240—241.8

Kc.	Wave Length	W.P.
CFLM	La Tuque, Que.	1000
CFNW	Norman Wells, Northwest Terr.	100
CFPR	Prince Rupert, B.C.	250
CJAV	Port Alberni, B.C.	250
CJCS	Stratford, Ont.	1000
CJRW	Summerside, P.E.I.	250
CKBS	St. Hyacinthe, Que.	250
CKCQ-1	Williams Lake, B.C.	250
CKLS	LaSarre, Que.	250
WEBJ	Brewton, Ala.	250
WULA	Eufaula, Ala.	250
WOWL	Florence, Ala.	1000
WARF	Jasper, Ala.	1000
KVRD	Cottonwood, Ariz.	250
KZOW	So. of Globe, Ariz.	1000
KOFA	Yuma, Ariz.	250
KVRC	Arkadelphia, Ark.	250
KWAK	Stuttgart, Ark.	250
KPLY	Crescent City, Calif.	250
KMBY	Monterey, Calif.	1000
KPPC	Pasadena, Calif.	100
KLOA	Ridgecrest, Calif.	250
KROY	Sacramento, Calif.	1000
KRNO	San Bernardino, California	1000d
KSON	San Diego, Calif.	250
KSMA	Santa Maria, Calif.	250
KSUE	Susanville, Calif.	1000

Kc.	Wave Length	W.P.
KRDO	Colo. Sprgs., Colo.	250
KDGO	Durango, Colo.	250
KSLV	Monte Vista, Colo.	1000
KCRT	Trinidad, Colo.	250
WWCO	Waterbury, Conn.	1000
WBGC	Chipley, Fla.	250
WLCO	Eustis, Fla.	250
WINK	Fort Myers, Fla.	250
WMMB	Melbourne, Fla.	1000
WFOY	St. Augustine, Fla.	1000
WBHB	Fitzgerald, Ga.	250
WDUN	Gainesville, Ga.	1000
WLAG	LaGrange, Ga.	1000
WBML	Macon, Ga.	1000
WWNS	Statesboro, Ga.	1000
WPAX	Thomasville, Ga.	250
WTWA	Thomson, Ga.	250
KLEI	Kailua, Hawaii	250
KVNI	Coeur d'Alene, Idaho	250
KFLT	Mountain Home, Idaho	250
KWIK	Pocatello, Idaho	250
WCRW	Chicago, Ill.	1000
WEDC	Chicago, Ill	1000d
WSBC	Chicago, Ill.	1000
WEBQ	Harrisburg, Ill.	250
WTAX	Springfield, Ill.	1000
WSDR	Sterling, Ill.	100
WHBU	Anderson, Ind.	250
KDEC	Decorah, Iowa	250
KWLC	Decorah, Iowa	250
KBIZ	Ottumwa, Iowa	1000
KICD	Spencer, Iowa	1000
KIUL	Garden City, Kans.	1000
KAKE	Wichita, Kans.	250
WINN	Louisville, Ky.	250
WFTM	Maysville, Ky.	1000
WPKE	Pikeville, Ky.	250
WSFC	Somerset, Ky.	1000
KASO	Minden, La.	250
KANE	New Iberia, La.	250
WCOU	Lewiston, Maine	1000
WCEM	Cambridge, Md.	250
WJEJ	Hagerstown, Md.	1000
WHAI	Greenfield, Mass.	250
WOCB	W. Yarmouth, Mass.	1000
WATT	Cadillac, Mich.	250
WCBY	Cheboygan, Mich.	250
WJPD	Ishpeming, Mich.	1000
WJIM	Lansing, Mich.	1000d
WMFG	Hibbing, Minn.	1000
WJON	St. Cloud, Minn.	1000
WMPA	Aberdeen, Miss.	250
WGRM	Greenwood, Miss.	250
WGCM	Gulfport, Miss.	250
WMIS	Natchez, Miss.	250
KFMO	Flat River, Mo.	250
KWOS	Jefferson City, Mo.	1000d
KODE	Joplin, Mo.	1000d
KNEM	Nevada, Mo.	250
KBMY	Billings, Mont.	1000
KLTZ	Glasgow, Mont.	250
KBLL	Helena, Mont.	250
KFOR	Lincoln, Nebr.	1000
KODY	North Platte, Nebr.	1000
KELK	Elko, Nev.	1000
WSNJ	Bridgeton, N.J.	250
KAVE	Carlsbad, N.Mex.	250
KCLV	Clovis, N.Mex.	1000
WGBB	Freeport, N.Y.	250
WGVA	Geneva, N.Y.	1000d
WJTN	Jamestown, N.Y.	1000
WVOS	Liberty, N.Y.	250
WNBZ	Saranac Lake, N.Y.	1000
WSNY	Schenectady, N.Y.	1000d
WATN	Watertown, N.Y.	250
WPNF	Brevard, N.C.	250
WIST	Charlotte, N.C.	1000
WCNC	Elizabeth City, N.C.	250
WJNC	Jacksonville, N.C.	1000
WRAL	Raleigh, N.C.	1000
KDLR	Devils Lake, N.Dak.	250
WBBW	Youngstown, Ohio	1000
WHIZ	Zanesville, Ohio	250
KVSO	Ardmore, Okla.	250
KBEK	Elk City, Okla.	250
KBEL	Idabel, Okla.	250
KOKL	Okmulgee, Okla.	250
KFLY	Corvallis, Oreg.	1000d
KKID	Pendleton, Oreg.	1000
KPRB	Redmond, Oreg.	250
WRTA	Altoona, Pa.	1000
WHUM	Reading, Pa.	250
WKOK	Sunbury, Pa.	250
WBAX	Wilkes-Barre, Pa.	250
WALO	Humacao, P.R.	1000
WWON	Woonsocket, R.I.	1000
WKDK	Newberry, S.C.	250
WDXY	Sumter, S.C.	250
WBEJ	Elizabethton, Tenn.	1000
WEKR	Fayetteville, Tenn.	1000
WBIR	Knoxville, Tenn.	1000
WKDA	Nashville, Tenn.	1000
WENK	Union City, Tenn.	1000
KVLF	Alpine, Tex.	1000
KEAN	Brownwood, Tex.	1000
KORA	Bryan, Tex.	250
KOCA	Kilgore, Tex.	250
KSOX	Raymondville, Tex.	250
KCKG	Snora, Tex.	250
KXOX	Sweetwater, Tex.	250
WSKI	Montpelier, Vt.	1000
WSSV	Petersburg, Va.	1000
WROV	Roanoke, Va.	1000
WTON	Staunton, Va.	1000
KXLE	Ellensburgh, Wash.	250
KGY	Olympia, Wash.	1000
WKOY	Bluefield, W.Va.	1000
WTIP	Charleston, W.Va.	1000

Kc.	Wave Length	W.P.
WDNE	Elkins, W.Va.	1000
WOMT	Manitowoc, Wis.	250
WIBU	Poynette, Wis.	250
WOBT	Rhinelander, Wis.	1000
WJMC	Rice Lake, Wis.	1000
KFBC	Cheyenne, Wyo.	1000
KLUK	Evanston, Wyo.	1000
KASL	Newcastle, Wyo.	250
KRAL	Rawlins, Wyo.	1000
KTHE	Thermopolis, Wyo.	1000

1250—239.9

Kc.	Wave Length	W.P.
CHWO	Oakville, Ont.	1000
CKBL	Matane, Que.	5000
CKOM	Saskatoon, Sask.	10000
WZOB	Ft. Payne, Ala.	1000d
WETU	Wetumpka, Ala.	5000d
KAKA	Wickenburg, Ariz.	500d
KWCX	Willcox, Ariz.	1000d
KFAY	Fayetteville, Ark.	1000d
KAJI	Little Rock, Ark.	1000
KHOT	Madera, Calif.	500d
KTMS	Santa Barbara, Calif.	1000
KDHI	Twenty-Nine Palms, California	1000d
KMSL	Ukiah, Calif.	500d
KICM	Golden, Colo.	1000d
WNER	Live Oak, Fla.	1000d
WRIM	Pahokee, Fla.	500d
WDAE	Tampa, Fla.	5000
WLYB	Albany, Ga.	1000d
WYTH	Madison, Ga.	1000d
WIZZ	Streator, Ill.	500d
WGL	Ft. Wayne, Ind.	1000
WRAY	Princeton, Ind.	1000d
KCFI	Cedar Falls, Iowa	500d
KFKU	Lawrence, Kans.	5000
WREN	Topeka, Kans.	5000
WNVL	Nicholasville, Ky.	500
WLCK	Scottsville, Ky.	500d
WGUY	Bangor, Maine	5000d
WARE	Ware, Mass.	1000
WWBC	Bay City, Mich.	1000d
KOTE	Fergus Falls, Minn.	1000
KCUE	Red Wing, Minn.	1000d
WHNY	McComb, Miss.	5000
KHTN	Houston, Mo.	500d
WKBR	Manchester, N.H.	5000
WMTR	Morristown, N.J.	5000d
WIPS	Ticonderoga, N.Y.	1000d
WFAG	Farmville, N.C.	500d
WBRM	Marion, N.C.	1000d
WCHO	Washington Court House, Ohio	500d
KQEN	Roseburg, Oreg.	5000d
WLEM	Emporium, Pa.	1000d
WPEL	Montrose, Pa.	1000d
WRYT	Pittsburgh, Pa.	5000
WNOW	York, Pa.	1000d
WTMA	Charleston, S.C.	5000
WCKM	Winnsboro, S.C.	500d
WKBL	Covington, Tenn.	1000d
WNTT	Tazewell, Tenn.	500d
KFTV	Paris, Tex.	500d
KPAC	Port Arthur, Tex.	5000
KUKA	San Antonio, Tex.	500d
KTFO	Seminole, Tex.	1000d
KANN	Ogden, Utah	1000d
KVEL	Vernal, Utah	5000d
WDVA	Danville, Va.	5000
WYSR	Franklin, Va.	1000d
WNRG	Grundy, Va.	1000d
KWSC	Pullman, Wash.	5000
KTW	Seattle, Wash.	1000
WEMP	Milwaukee, Wis.	5000

1260—238.0

Kc.	Wave Length	W.P.
CFRN	Edmonton, Alta.	50000
DYBU	Cebu, P.I.	1000
WCRT	Birmingham, Ala.	5000d
KPIN	Casa Grande, Ariz.	1000d
KCCB	Corning, Ark.	500d
KBHC	Nashville, Ark.	500d
KGIL	San Fernando, Calif.	5000
KYA	San Francisco, Calif.	5000
KSNO	Aspen, Colo.	5000d
WMMM	Westport, Conn.	1000d
WNRK	Newark, Del.	500d
WWDC	Washington, D.C.	5000
WFTW	Fort Walton Beach, Florida	1000d
WAME	Miami, Fla.	5000d
WWPF	Palatka, Fla.	1000
WHAB	Baxley, Ga.	5000d
WBBK	Blakely, Ga.	1000d
WTJH	East Point, Ga.	5000d
KIFI	Idaho Falls, Idaho	5000
KWEI	Weiser, Ida.	1000d
WIBV	Belleville, Ill.	1000d
WFBM	Indianapolis, Ind.	5000
KFGQ	Boone, Iowa	250d
KWHK	Hutchinson, Kans.	1000
WXOK	Baton Rouge, La.	1000d
WEZE	Boston, Mass.	5000
WALM	Albion, Mich.	1000
WJBL	Holland, Mich.	5000d
KROX	Crookston, Minn.	1000
KDUZ	Hutchinson, Minn.	1000d
WGVM	Greenville, Miss.	5000d
WNSL	Laurel, Miss.	5000d
KGBX	Springfield, Mo.	5000
KIMB	Kimball, Nebr.	1000d
WBUD	Trenton, N.J.	5000
KVSF	Santa Fe, N.Mex.	1000
WBNR	Beacon, N.Y.	1000d
WNDR	Syracuse, N.Y.	5000
WGWR	Asheboro, N.C.	5000d
WCDJ	Edenton, N.C.	1000d

Kc.	Wave Length	W.P.
WDOK	Cleveland, Ohio	5000
WNXT	Portsmouth, Ohio	5000
KWSH	Wewoka-Seminole, Oklahoma	1000
KMCM	McMinnville, Oreg.	1000
WWYN	Erie, Pa.	5000
WPHB	Philipsburg, Pa.	5000d
WISO	Ponce, P.R.	1000
WMUU	Greenville, S.C.	5000d
WJOT	Lake City, S.C.	1000d
KWYR	Winner, S.Dak.	5000d
WNOO	Chattanooga, Tenn.	1000d
WMCH	Church Hill, Tenn.	1000d
WDKN	Dickson, Tenn.	1000d
WCLC	Jamestown, Tenn.	1000d
KSPL	Diboll, Tex.	1000d
KPSO	Falfurrias, Tex.	500d
KWFR	San Angelo, Tex.	1000d
KTUE	Tulia, Tex.	1000d
KTAE	Taylor, Tex.	1000d
WCHV	Charlottesville, Va.	5000
WBCR	Christiansburg, Va.	1000d
KWIQ	Moses Lake, Wash.	1000d
WVVW	Grafton, W.Va.	500d
WWIS	Black River Falls, Wis.	1000d
WEKZ	Monroe, Wis.	1000d
KPOW	Powell, Wyo.	5000

1270—236.1

Kc.	Wave Length	W.P.
CHAT	Medicine Hat, Alta.	10000
CHWK	Chilliwack, B.C.	10000
CJCB	Sydney, N.S.	5000
CFGT	St. Joseph d'Alma, Quebec	1000
WGSV	Guntersville, Ala.	1000d
WSIM	Prichard, Ala.	1000d
KBYR	Anchorage, Alaska	1000
KDJI	Holbrook, Ariz.	1000d
KADL	Pine Bluff, Ark.	5000d
KCOK	Tulare, Calif.	5000d
WNOG	Naples, Fla.	500d
WHIY	Orlando, Fla.	5000d
WTAL	Tallahassee, Fla.	5000
WKRW	Cartersville, Ga.	500d
WGBA	Columbus, Ga.	5000d
WJJC	Commerce, Ga.	1000d
KNDI	Honolulu, Hawaii	5000
KTFI	Twin Falls, Idaho	5000
WEIC	Charleston, Ill.	1000d
WHBF	Rock Island, Ill.	5000
WCMR	Elkhart, Ind.	5000
WWCA	Gary, Ind.	1000
WORX	Madison, Ind.	1000d
KSCB	Liberal, Kans.	1000
WAIN	Columbia, Ky.	1000d
WFUL	Fulton, Ky.	1000d
KVCL	Winnfield, La.	1000d
WSPR	Springfield, Mass.	5000
WXYZ	Detroit, Mich.	5000
KWEB	Rochester, Minn.	500d
WVOM	Ioka, Miss.	1000d
WLSM	Louisville, Miss.	1000d
KUSN	St. Joseph, Mo.	1000d
KBUB	Sparks, Nev.	1000d
WTSN	Dover, N.H.	5000
WDVL	Vineland, N.J.	500d
KRAC	Alamogordo, N.Mex.	1000d
WHLD	Niagara Falls, N.Y.	5000d
WDLA	Walton, N.Y.	1000d
WCGC	Belmont, N.C.	1000
WMPM	Smithfield, N.C.	5000d
KBOM	Mandan, N.Dak.	1000
WILE	Cambridge, Ohio	1000d
KWPR	Claremore, Okla.	500d
KAJO	Grants Pass, Oreg.	5000d
WLBR	Lebanon, Pa.	1000
WBHC	Hampton, S.C.	1000d
KNWC	Sioux Falls, S.Dak.	1000
WLIK	Newport, Tenn.	5000d
KIOX	Bay City, Tex.	1000
KHEM	Big Spring, Tex.	1000d
KEPS	Eagle Pass, Tex.	1000d
KFJZ	Fort Worth, Tex.	5000
WTID	Newport News, Va.	1000d
WHEO	Stuart, Va.	1000d
KCVL	Colville, Wash.	1000d
KBAM	Longview, Wash.	5000d
WKYR	Keyser, W.Va.	5000d
WRJC	Mauston, Wis.	500d

1280—234.2

Kc.	Wave Length	W.P.
CHIQ	Hamilton, Ont.	5000
CJMS	Montreal, Que.	10000
CKCV	Quebec, Que.	10000
CJSL	Estevan, Sask.	1000
WPID	Piedmont, Ala.	1000d
WNPT	Tuscaloosa, Ala.	5000
KHEP	Phoenix, Ariz.	1000d
KNBY	Newport, Ark.	1000d
KFOX	Long Beach, Calif.	1000
KCJH	San Luis Obispo, Cal.	500d
KJOY	Stockton, Calif.	1000
KTLN	Denver, Colo.	5000
WSUX	Seaford, Del.	1000d
WDSP	DeFuniak Springs, Florida	5000d
WQIK	Jacksonville, Fla.	5000d
WIPC	Lake Wales, Fla.	1000d
WYND	Sarasota, Fla.	500d
WIBB	Macon, Ga.	5000d
WMRO	Aurora, Ill.	1000d
WGBF	Evansville, Ind.	5000
KCOB	Newton, Iowa	1000d
KSOK	Arkansas City, Kans.	1000

Kc. Wave Length W.P.

WCPM Cumberland, Ky. 1000d
WDSU New Orleans, La. 5000
KWCL Oak Grove, La. 500d
WEIM Fitchburg, Mass. 5000
WFYC Alma, Mich. 1000d
WTCN Minneapolis, Minn. 5000
KVOX Moorhead, Minn. 1000
KDKD Clinton, Mo. 1000d
KYRO Potosi, Mo. 500d
KCNI Broken Bow, Nebr. 1000d
KTOO Henderson, Nev. 5000d
KRZE Farmington, N.Mex. 5000d
WADO New York, N.Y. 5000
WROC Rochester, N.Y. 5000d
WSAT Salisbury, N.C. 1000
WYAL Scotland Neck, N.C. 5000d
WONW Defiance, Ohio 1000
WLMJ Jackson, Ohio 1000d
KLCO Poteau, Okla. 1000d
KERG Eugene, Oreg. 5000
WBRX Berwick, Pa. 500d
WHVR Hanover, Pa. 5000
WKST New Castle, Pa. 1000
WCMN Arecibo, P.R. 5000
WANS Anderson, S.C. 5000
WJAY Mullins, S.C. 5000d
WMCP Columbia, Tenn. 1000d
WDNT Dayton, Tenn. 1000d
KNIT Abilene, Tex. 500d
KWHI Brenham, Tex. 1000d
KLUE Longview, Tex. 1000d
KRAN Morton, Tex. 500
KVWG Pearsall, Tex. 500d
KNAK Salt Lake City, Utah 5000
WKOE Altavista, Va. 500d
WYVE Wytheville, Va. 1000d
KUDY Spokane, Wash. 5000d
KIT Yakima, Wash. 5000
WVAR Richwood, W.Va. 1000d
WNAM Neenah, Wis. 5000

1290—232.4

CFAM Altona, Man. 10000
CKSL London, Ont. 5000
WTHG Jackson, Ala. 1000d
WSHF Sheffield, Ala. 1000d
WMLS Sylacauga, Ala. 1000d
KEOS Flagstaff, Ariz. 1000
KCUB Tucson, Ariz. 1000
KDMS El Dorado, Ark. 5000d
KUOA Siloam Sprgs., Ark. 5000d
KHSL Chico, Calif. 5000
KPER Gilroy, Calif. 5000d
KMEN San Bernardino, California 5000
KACL Santa Barbara, Calif. 5000d
WCCC Hartford, Conn. 500d
WTUX Wilmington, Del. 1000d
WTMC Ocala, Fla. 5000
WSCM Panama City Beach, Florida 500d
WIRK W. Palm Bch., Fla. 5000
WDEC Americus, Ga. 1000d
WCHK Canton, Ga. 1000d
WOKA Douglas, Ga. 1000d
WTOC Savannah, Ga. 5000
KSNN Pocatello, Idaho 1000d
WIRL Peoria, Ill. 5000
KPRT Pratt, Kansas 5000
WCBL Benton, Ky. 5000d
KJEF Jennings, La. 1000d
WHGR Houghton Lake, Mich. 5000
WNIL Niles, Mich. 500d
WOIA Saline, Mich. 500d
KBMO Benson, Minn. 500d
WBLE Batesville, Miss. 1000d
KALM Thayer, Mo. 1000d
KGVO Missoula, Mont. 5000
KOIL Omaha, Nebr. 5000
WKNE Keene, N.H. 5000
KSRC Socorro, N.M. 1000d
WGLI Babylon, N.Y. 1000
WNBF Binghamton, N.Y. 5000
WHKY Hickory, N.C. 5000
WEYE Sanford, N.C. 1000d
WOMP Bellaire, Ohio 1000d
WHIO Dayton, Ohio 5000
KUMA Pendleton, Oreg. 5000
KLIQ Portland, Oreg. 5000d
WFBG Altoona, Pa. 5000
WICE Providence, R.I. 5000
WFIG Sumter, S.C. 1000
WATO Oak Ridge, Tenn. 5kw
KBLT Big Lake, Tex. 1000d
KIVY Crockett, Tex. 500d
KRGV Weslaco, Tex. 5000
KTRN Wichita Falls, Tex. 5000
WPVA Colonial Hgts., Va. 5000d
WAGE Leesburg, Va. 1000d
WKWS Rocky Mount, Va. 1000d
WVOW Logan, W.Va. 5000
KAPY Port Angeles, Wash. 1000d
WMIL Milwaukee, Wis. 1000d
WCOW Sparta, Wis. 5000d
KOWB Laramie, Wyo. 5000

1300—230.6

CBAF Moncton, N.B. 5000
CJME Regina, Sask. 10000
WBSA Boaz, Ala. 500d
WTLS Tallassee, Ala. 1000d
KWCB Searcy, Ark. 1000d
KROP Brawley, Calif. 1000
KYNO Fresno, Calif. 5000

Kc. Wave Length W.P.

KWKW Pasadena, Calif. 1000
KVOR Colo. Sprgs., Colo. 1000
WAVZ New Haven, Conn. 1000
WRKT Cocoa Beach, Fla. 500d
WFFG Marathon, Fla. 500d
WSOL Tampa, Fla. 5000d
WMTM Moultrie, Ga. 5000d
WNEA Newman, Ga. 500
WIMO Winder, Ga. 1000d
KOZE Lewiston, Idaho 5000
WTAQ LaGrange, Ill. 1000
WFRX W. Frankfort, Ill. 1000d
WHLT Huntington, Ind. 500d
WMFT Terre Haute, Ind. 500d
KGLO Mason City, Iowa 5000
WBLG Lexington, Ky. 1000
WIBR Baton Rouge, La. 1000
KANB Shreveport, La. 1000d
WFBR Baltimore, Md. 5000
WJDA Quincy, Mass. 1000d
WODD Grand Rapids, Mich. 5000
WRBC Jackson, Miss. 5000
KMMO Marshall, Mo. 1000d
KBRL McCook, Nebr. 1000d
KPTL Carson City, Nev. 5000
WAAT Trenton, N.J. 250d
WOSC Fulton, N.Y. 1000d
WEEE Rensselaer, N.Y. 5000d
WGOL Goldsboro, N.C. 1000d
WLNC Laurensburg, N.C. 500
WSYD Mt. Airy, N.C. 5000
WERE Cleveland, Ohio 5000
WMVO Mt. Vernon, Ohio 500
KOME Tulsa, Okla. 5000
KDOV Medford, Oreg. 5000d
KACI The Dalles, Oreg. 1000d
WWCH Clarion, Pa. 500d
WTHT Hazleton, Pa. 1000d
WTIL Mayaguez, P.R. 1000
WLOW Aiken, S.C. 500wd
WCKI Greer, S.C. 1000d
WKSC Kershaw, S.C. 500d
KOLY Mobridge, S.Dak. 1000d
WMTN Morristown, Tenn. 5000d
WMAK Nashville, Tenn. 5000
KVET Austin, Tex. 1000
KTFY Brownfield, Tex. 1000d
KGNS Laredo, Tex. 500d
KKAS Silsbee, Tex. 500d
KSTU Logan, Utah 1000
KOL Seattle, Wash. 5000
WCLG Morgantown, W.Va. 1000d
WKLC St. Albans, W.Va. 1000d

1310—228.9

CKOY Ottawa, Ont. 50000
CFGM Richmond Hill, Ont. 10000
WHEP Foley, Ala. 1000d
CHGB St. Anne-de-la-Pocatiere, Quebec 5000d
WJAM Marion, Ala. 5000d
KBUZ Mesa, Ariz. 5000
KBOK Malvern, Ark. 1000d
KIOT Barstow, Calif. 500d
KPOD Crescent City, Calif. 1000d
KDIA Oakland, Calif. 1000
KTKR Taft, Calif. 1000d
KFKA Greeley, Colo. 1000
WICH Norwich, Conn. 5000
WOOO Deland, Fla. 5000d
WAUC Wauchula, Fla. 500d
WBRO Waynesboro, Ga. 1000d
WBMK West Point, Ga. 1000d
KNUI Makawao, Hawaii 1000
KLIX Twin Falls, Idaho 5000
WISH Indianapolis, Ind. 5000
KDLS Perry, Iowa 500d
KOKX Keokuk, Iowa 5000
WTTL Madisonville, Ky. 500d
WDOC Prestonsburg, Ky. 5000d
KIKS Sulphur, La. 500d
KUZN W. Monroe, La. 1000d
WLOB Portland, Maine 1000d
WORC Worcester, Mass. 5000
WKMH Dearborn, Mich. 5000
WCCW Traverse City, Mich. 1000d
KRBI St. Peter, Minn. 1000d
WXXX Hattiesburg, Miss. 1000d
KFSB Joplin, Mo. 5000
KFBB Great Falls, Mont. 5000
KGMT Fairbury, Nebr. 500d
WJLK Asbury Park, N.J. 250
WCAM Camden, N.J. 250
KARA Albuquerque, N.M. 1000d
WVIP Mt. Kisco, N.Y. 5000d
WTLB Utica, N.Y. 1000
WISE Asheville, N.C. 5000
WKTC Charlotte, N.C. 1000
WTIK Durham, N.C. 5000
KNOX Grand Forks, N.Dak. 5000
WFAH Alliance, Ohio 1000d
KNPT Newport, Oreg. 5000
WBFD Bedford, Pa. 5000d
WGSA Ephrata, Pa. 5000d
WNAE Warren, Pa. 5000d
WOKO Kingstree, S.C. 5000d
WDOD Chattanooga, Tenn. 5000
WDXI Jackson, Tenn. 5000
WBNT Oneida, Tenn. 1000d
KZIP Amarillo, Tex. 1000d
WRR Dallas, Tex. 5000
KOYL Odessa, Tex. 1000d
KUBO San Antonio, Tex. 5000d
WEEL Fairfax, Va. 1000
WGH Newport News, Va. 5000
KARY Prosser, Wash. 1000d
WIBA Madison, Wis. 5000

Kc. Wave Length W.P.

1320—227.1

CHQM Vancouver, B.C. 10000
CKEC New Glasgow, N.S. 5000
CJSO Sorel, P.Q. 1000
CKKW Kitchener, Ont. 1000
WAGF Dothan, Ala. 1000
WENN Birmingham, Ala. 5000d
KBLU Yuma, Ariz. 500d
KWHN Fort Smith, Ark. 5000
KRLW Walnut Ridge, Ark. 1000d
KHSJ Hemet, Calif. 500d
KLAN Lemoore, Calif. 1000d
KUDE Oceanside, Calif. 500
KCRA Sacramento, Calif. 5000
KAVI Rocky Ford, Colo. 1000d
WATR Waterbury, Conn. 5000
WGMA Hollywood, Fla. 1000d
WZOK Jacksonville, Fla. 5000
WAMR Venice, Fla. 500d
WHIE Griffin, Ga. 5000d
WKAN Kankakee, Ill. 1000
KNIA Knoxville, Iowa 500d
KMAQ Maquoketa, Iowa 500d
KLWN Lawrence, Kans. 500d
WBRT Bardstown, Ky. 1000d
WNGO Mayfield, Ky. 1000d
KHAL Homer, La. 1000d
WICO Salisbury, Md. 1000d
WARA Attleboro, Mass. 1000
WILS Lansing, Mich. 5000
WOMJ Marquette, Mich. 1000
WRJW Picayune, Miss. 5000d
KXLW Clayton, Mo. 1000d
KOLT Scottsbluff, Nebr. 5000
WWHG Hornell, N.Y. 5000d
WQSR Solvay, N.Y. 500d
WAGY Forest City, N.C. 1000
WCOG Greensboro, N.C. 5000
WEEW Washington, N.C. 500d
KQDY Minot, N.Dak. 1000d
WHOK Lancaster, Ohio 1000d
KWOE Clinton, Okla. 1000d
KATR Eugene, Ore. 1000d
WKAP Allentown, Pa. 5000
WGET Gettysburg, Pa. 1000
WJAS Pittsburgh, Pa. 5000
WSCR Scranton, Pa. 1000
WUNO Rio Piedras, P.R. 5000
WOIC Columbia, S.C. 1000
KELO Sioux Falls, S.Dak. 5000
WKIN Kingsport, Tenn. 5000d
WMSR Manchester, Tenn. 1000d
KVMC Colo. City, Tex. 1000d
KXYZ Houston, Tex. 5000
KCPX Salt Lake City, Utah 5000
WDMS Lynchburg, Va. 1000
WEET Richmond, Va. 1000d
KXRO Aberdeen, Wash. 5000
KHIT Walla Walla, Wash. 1000d
WQMN Superior, Wis. 1000d
WFHR Wisconsin Rapids, Wis. 5000

1330—225.4

WROS Scottsboro, Ala. 1000d
KMOP Tucson, Ariz. 500d
KVEE Conway, Ark. 500d
KLPC Lompoc, Calif. 1kd
KFAC Los Angeles, Calif. 5000
KLBS Los Banos, Calif. 500d
KAHR Redding, Calif. 5000d
WARN Ft. Pierce, Fla. 1000
WYSE Lakeland, Fla. 1000d
WEBY Milton, Fla. 5000d
WMEN Tallahassee, Fla. 5000d
WMLT Dublin, Ga. 5000d
WEAW Evanston, Ill. 5000d
WRAM Monmouth, Ill. 1000d
WRRR Rockford, Ill. 1000d
WJPS Evansville, Ind. 5000
KWWL Waterloo, Iowa 5000
KFH Wichita, Kans. 5000
WYGO Corbin, Ky. 5000d
WMOR Morehead, Ky. 1000d
KVOL Lafayette, La. 1000
WASA Harve deGrace, Md. 1000d
WCRB Waltham, Mass. 5000
WTRX Flint, Mich. 5000
WLOL Minneapolis, Minn. 5000
WJPR Greenville, Miss. 1000
WDAL Meridian, Miss. 1000d
KUKU Willow Springs, Mo. 1000d
KGAK Gallup, N.Mex. 5000
WEVD New York, N.Y. 5000
WPOW New York, N.Y. 5000
WEBO Owego, N.Y. 1000d
WHAZ Troy, N.Y. 1000
WUSM Havelock, N.C. 1000d
WHOT Campbell, Ohio 500
WFIN Findlay, Ohio 1000d
WKOV Wellston, Ohio 500d
WELW Willoughby, O. 500wd
KPOJ Portland, Oreg. 5000
WBLF Bellefonte, Pa. 500
WICU Erie, Pa. 5000
WLAT Conway, S.C. 5000d
WFBC Greenville, S.C. 5000
WAEW Crossville, Tenn. 1000d
WTRO Dyersburg, Tenn. 500d
KMIL Cameron, Tex. 500d
KSWA Graham, Tex. 500d
KINE Kingsville, Tex. 1000d
KVKM Monahans, Tex. 5000
KDOK Tyler, Tex. 1000d
WBTM Danville, Va. 5000
WRAA Luray, Va. 1000d

Kc. Wave Length W.P.

WOLD Marion, Va. 1000d
WESR Tasley, Va. 1000d
KFKF Bellevue, Wash. 5000d
KCFA Spokane, Wash. 5000d
WETZ New Martinsville, W.Va. 1000d
WHBL Sheboygan, Wis. 1000
KOVE Lander, Wyo. 5000

1340—223.7

CFGB Goose Bay, Nfld. 1000
CJAF Cabano, Que. 250
CFSL Weyburn, Sask. 1000
CFYK Yellow Knife, N.W.T. 250
CHAD Amos, Que. 250
CJLS Yarmouth, N.S. 250
CHRD Drummondville, Que. 250
CJQC Quebec, Que. 250
CKAR-1 Parry Sound, Ont. 250
CKOX Woodstock, Ont. 250
WKUL Cullman, Ala. 250
WJOI Florence, Ala. 1000
WGWC Selma, Ala. 250
WFEB Sylacauga, Ala. 250
KIBH Seward, Alaska 250
KIKO Miami, Ariz. 250
KNOG Nogales, Ariz. 250
KPGE Page, Ariz. 250
KENT Prescott, Ariz. 250
KBTA Batesville, Ark. 1000
KAAB Hot Springs, Ark. 500
KBRS Springdale, Ark. 250
KENL Arcata, Calif. 250
KMAK Fresno, Calif 1000
KDOL Mojave, Calif. 100
KSFE Needles, Calif. 250
KAUR Oroville, Calif. 250
KATY San Luis Obispo, California 1000
KIST Santa Barbara, Calif. 1000
KOMY Watsonville, Calif. 1000
KDEN Denver, Colo. 250
KWSL Grand Junction, Colo. 250
KVRH Salida, Colo. 250
WNHC New Haven, Conn. 1000
WOOK Washington, D.C. 250
WSLG Clermont, Fla. 250
WTAN Clearwater, Fla. 250
WROD Daytona Bch., Fla. 1000
WDSR Lake City, Fla. 1000
WTYS Marianna, Fla. 1000
WQXT Palm Beach, Fla. 250
WSEB Sebring, Fla. 250
WNSM Valparaiso-Niceville, Fla. 250
WAKE Atlanta, Ga. 1000
WGAU Athens, Ga. 1000
WBBQ Augusta, Ga. 1000
WGAA Cedartown, Ga. 1000
WOKS Columbus, Ga. 1000
WBBT Lyons, Ga. 250
WTIF Tifton, Ga. 1000
KWLW Wampa, Idaho 1000
KPST Preston, Idaho 250
KSKI Sun Valley, Idaho 1000
WSOY Decatur, Ill. 1000
WJPF Herrin, Ill. 250
WJOL Joliet, Ill. 250
WBIW Bedford, Ind. 1000
WTRC Elkhart, Ind. 1000
WLBC Muncie, Ind. 1000
KROS Clinton, Iowa 250
KLIL Estherville, Iowa 100
KCKN Kansas City, Kans. 250
KSEK Pittsburg, Kans. 250
WCMI Ashland, Ky. 250
WBGN Bowling Green, Ky. 250
WNBS Murray, Ky. 250
WEKY Richmond, Ky. 250
KVOB Bastrop, La. 250
KRMO Shreveport, La. 250
WFAU Augusta, Maine 1000
WHOU Houlton, Maine 1000
WGAW Gardner, Mass. 1000
WNBH New Bedford, Mass. 1000
WBRK Pittsfield, Mass. 1000
WLEW Bad Axe, Mich. 250
WLAV Grand Rap., Mich. 1000
WCSR Hillsdale, Mich. 1000
WMTE Manistee, Mich. 1000
WAGN Menominee, Mich. 250
WMBN Petoskey, Mich. 1000
WEXL Royal Oak, Mich. 250
KDLM Detroit Lakes, Minn. 1000
WEVE Eveleth, Minn. 1000
KROC Rochester, Minn. 1000
KWLM Willmar, Minn. 1000
WJMB Brookhaven, Miss. 250
WAML Laurel, Miss. 250
KXEO Mexico, Mo. 250
KLID Poplar Bluff, Mo. 250
KSMO Salem, Mo. 250
KICK Springfield, Mo. 250
KCAP Helena, Mont. 250
KPRK Livingston, Mont. 250
KATL Miles City, Mont. 1000
KQTE Missoula, Mont. 250
KHUB Fremont, Nebr. 500
KGFW Kearney, Nebr. 1000
KSID Sidney, Nebr. 1000
KORK Las Vegas, Nev. 250
KBET Reno, Nev. 1000
WDCR Hanover, N.H. 1000
WMID Atlantic City, N.J. 1000
KNDE Aztec, N.Mex. 1000
KRRR Ruidoso, N.Mex. 250
KKIT Taos, N.Mex. 250
KSIL Silver City, N.Mex. 1000

Kc.	Wave Length	W.P.
WMBD	Auburn, N.Y.	1000
WENT	Gloversville, N.Y.	1000
WXYJ	Jamestown, N.Y.	250
WUSJ	Lockport, N.Y.	250
WMSA	Massena, N.Y.	1000
WALL	Middletown, N.Y.	1000
WIRY	Plattsburgh, N.Y.	1000
WJRI	Lenoir, N.C.	1000
WTSB	Lumberton, N.C.	1000
WOXF	Oxford, N.C.	1000
WOOW	Greenville, N.C.	1000
WGNI	Wilmington, N.C.	1000
WAIR	Winston-Salem, N.C.	250
KGPC	Grafton, N.Dak.	1000
WNCO	Ashland, Ohio	250
WOUB	Athens, Ohio	250
WIZE	Springfield, Ohio	250
WSTV	Steubenville, Ohio	1000
KIHN	Hugo, Okla.	250
KDCY	Okla. City, Okla.	250
KTOW	Sand Springs, Okla.	250
KWVR	Enterprise, Oreg.	250
KIHR	Hood River, Oreg.	250
KFIR	North Bend, Oreg.	1000
WCVI	Connellsville, Pa.	250
WSAJ	Grove City, Pa.	100
WKRZ	Oil City, Pa.	1000
WHAT	Philadelphia, Pa.	1000
WRAW	Reading, Pa.	1000
WTRN	Tyrone, Pa.	250
WBRE	Wilkes-Barre, Pa.	1000
WWPA	Williamsport, Pa.	250
WGRF	Aguadilla, P.R.	250
WOKE	Charleston, S.C.	1000
WRHI	Rock Hill, S.C.	1000
WSSC	Sumter, S.C.	1000
KIJV	Huron, S.D.	250
KRSD	Rapid City, S.Dak.	1000
WBAC	Cleveland, Tenn.	250
WKRM	Columbia, Tenn.	1000
WGRV	Greeneville, Tenn.	250
WKGN	Knoxville, Tenn.	1000
WHHM	Memphis, Tenn.	250
WCDT	Winchester, Tenn.	1000
KWKC	Abilene, Tex.	250
KTSL	Burnett, Tex.	250
KAND	Corsicana, Tex.	250
KSET	El Paso, Tex.	250
KLBK	Lubbock, Tex.	250
KRBA	Lufkin, Tex.	250
KPDN	Pampa, Tex.	250
KOLE	Port Arthur, Tex.	250
KTEO	San Angelo, Tex.	250
WTWN	St. Johnsbury, Vt.	1000
WSTA	Charlotte Amalie, V.I.	250
WKEY	Covington, Va.	1000
WHAP	Hopewell, Va.	1000
WJMA	Orange, Va.	1000
KAGT	Anacortes, Wash.	250
KPKW	Pasco, Wash.	250
KAPA	Raymond, Wash.	250
KMEL	Wenatchee, Wash.	250
WHAR	Clarksburg, W.Va.	250
WEPM	Martinsburg, W.Va.	250
WMON	Montgomery, W.Va.	250
WOVE	Welch, W.Va.	1000
WLDY	Ladysmith, Wis.	1000
WRIT	Milwaukee, Wis.	250
KYCN	Wheatland, Wyo.	250
KWDR	Worland, Wyo.	250

1350—222.1

CHOV	Pembroke, Ont.	1000
CJLM	Joliette, Que.	1000
CKLB	Oshawa, Ont.	10000
CKEN	Kentville, N.S.	1000
WJWT	Demopolis, Ala.	5000d
WELB	Elba, Ala.	1000d
WGAD	Gadsden, Ala.	5000
KLYD	Bakersfield, Calif.	1000d
KCKC	San Bernardino, Calif.	500
KSRO	Santa Rosa, Calif.	5000
KGHF	Pueblo, Colo.	5000
WNLK	Norwalk, Conn.	1000
WINY	Putnam, Conn.	1000d
WEZY	Cocoa, Fla.	1000
WDCF	Dade City, Fla.	1000d
WBSG	Blackshear, Ga.	500d
WRWH	Cleveland, Ga.	1000d
WRPB	Warner Robins, Ga.	5000d
KRLC	Lewiston, Idaho	5000
WAAP	Peoria, Ill.	1000
WJBD	Salem, Ill.	500d
WIOU	Kokomo, Ind.	5000
KRNT	Des Moines, Iowa	5000
KMAN	Manhattan, Kans.	500d
WLOU	Louisville, Ky.	5000d
WSMB	New Orleans, La.	5000
WDEA	Ellsworth, Me.	1000d
WHMI	Howell, Mich.	500
KDIO	Ortonville, Minn.	1000d
WCMP	Pine City, Minn.	1000d
WKOZ	Kosciusko, Miss.	5000d
KCHR	Charleston, Mo.	1000d
KBRX	O'Neill, Nebr.	1000d
WLNH	Laconia, N.H.	5000d
WHWH	Princeton, N.J.	5000
KABQ	Albuquerque, N.M.	5000
WCBA	Corning, N.Y.	1000d
WRNY	Rome, N.Y.	500d
WBMT	Black Mountain, N.C.	500d
WHIP	Mooresville, N.C.	1000d
WLLY	Wilson, N.C.	1000d
KQDI	Bismarck, N.D.	500d
WADC	Akron, Ohio	5000
WCSM	Celina, Ohio	500d
WCHI	Chillicothe, Ohio	500d
KRHD	Duncan, Okla.	250
KTLQ	Tahlequah, Okla.	1000d
KRVC	Ashland, Oreg.	1000d
KLOO	Corvallis, Oreg.	1000d
WORK	York, Pa.	5000
WDAR	Darlington, S.C.	1000d
WGSW	Greenwood, S.C.	1000d
WRKM	Carthage, Tenn.	1000d
KCAR	Clarksville, Tex.	500d
KTXJ	Jasper, Tex.	1000d
KCOR	San Antonio, Tex.	5000
WBLT	Bedford, Va.	1000d
WFLS	Fredericksburg, Va.	500d
WNVA	Norton, Va.	5000d
WAVY	Portsmouth, Va.	5000
WPDR	Portage, Wis.	5000d

1360—220.4

WWWB	Jasper, Ala.	1000d
WLIQ	Mobile, Ala.	5000d
WMFC	Monroeville, Ala.	1000d
WELR	Roanoke, Ala.	1000d
KRUX	Glendale, Ariz.	5000
KLYR	Clarksville, Ark.	500d
KFFA	Helena, Ark.	1000
KFIV	Modesto, Calif.	1000
KRCK	Ridgecrest, Calif.	1000d
KGB	San Diego, Calif.	5000
KDEY	Boulder, Colo.	5000d
WDRC	Hartford, Conn.	5000
WDBS	Jacksonville, Fla.	5000d
WKAT	Miami Beach, Fla.	5000
WSFR	Sanford, Fla.	500d
WINT	Winter Haven, Fla.	1000d
WAZA	Bainbridge, Ga.	1000d
WLAW	Lawrenceville, Ga.	1000d
WMAC	Metter, Ga.	500d
WIYN	Rome, Ga.	500d
WLBK	DeKalb, Ill.	1000d
WVMC	Mt. Carmel, Ill.	500d
WGFA	Watseka, Ill.	1000d
KXGI	Ft. Madison, Iowa	1000d
KSCJ	Sioux City, Iowa	5000
KBTO	El Dorado, Kans.	500d
WFLW	Monticello, Ky.	1000d
KDBC	Mansfield, La.	1000d
KVIM	New Iberia, La.	1000d
KTLD	Tallulah, La.	500d
WEBB	Dundalk, Md.	5000d
WLYN	Lynn, Mass.	1000d
WWRO	Caro, Mich.	5000
WKMI	Kalamazoo, Mich.	5000
KLRS	Mountain Grove, Mo.	1000d
KWRV	McCook, Nebr.	1000d
WNNJ	Newton, N.J.	1000d
WWBZ	Vineland, N.J.	1000
WKOP	Binghamton, N.Y.	5000
WMNS	Olean, N.Y.	1000d
WCHL	Chapel Hill, N.C.	1000d
KEYZ	Williston, N.D.	5000
WSAI	Cincinnati, Ohio	5000
WWOW	Conneaut, Ohio	500d
KUIK	Hillsboro, Oreg.	1000d
WPQR	McKeesport, Pa.	5000
WPPA	Pottsville, Pa.	1000
WELP	Easley, S.C.	1000d
WLCM	Lancaster, S.C.	1000d
WNAH	Nashville, Tenn.	1000d
KRAY	Amarillo, Tex.	500d
KACT	Andrews, Tex.	1000d
KWBA	Baytown, Tex.	1000
KRYS	Corpus Christi, Tex.	1000
KXOL	Ft. Worth, Tex.	5000
WBOB	Galax, Va.	1000d
WHBG	Harrisonburg, Va.	5000d
KFDR	Grand Coulee, Wash.	1000d
KMO	Tacoma, Wash.	5000
WHJC	Matawan, W.Va.	1000d
WMOV	Ravenswood, W.Va.	1000d
WBAY	Green Bay, Wis.	5000
WISV	Viroqua, Wis.	1000
WMNE	Menomonie, Wis.	1000d
KVRS	Rock Springs, Wyo.	1000

1370—218.8

WBYE	Calera, Ala.	1000d
CFLV	Valleyfield, P.Q.	1000
KTPA	Prescott, Ark.	500d
KBUC	Corona, Calif.	1000
KEEN	San Jose, Calif.	5000
KGEN	Tulare, Calif.	1000d
WKMK	Blountstown, Fla.	500d
WKOS	Ocala, Fla.	5000d
WCOA	Pensacola, Fla.	5000
WAXE	Vero Beach, Fla.	1000d
WBGR	Jesup, Ga.	5000
WFDR	Manchester, Ga.	1000d
WKLE	Washington, Ga.	1000d
WPRC	Lincoln, Ill.	1000d
WTTS	Bloomington, Ind.	5000
WGRY	Gary, Ind.	1000d
KDTH	Dubuque, Iowa	5000
KGNO	Dodge City, Kans.	5000
KALN	Iola, Kans.	500d
WGOH	Grayson, Ky.	5000d
WTKY	Tompkinsville, Ky.	1000d
KAPB	Marksville, La.	1000d
WMHI	Braddocks Hts., Md.	500d
WKIK	Leonardtown, Md.	1000d
WGHN	Grand Haven, Mich.	500d
KSUM	Fairmont, Minn.	1000
WDOB	Canton, Miss.	1000d
KWRT	Boonville, Mo.	1000d
KCRV	Caruthersville, Mo.	1000d
KXLF	Butte, Mont.	5000
KAWL	York, Nebr.	500d
WFEA	Manchester, N.H.	5000
WALK	Patchogue, N.Y.	500d
WSAY	Rochester, N.Y.	5000
WLTC	Gastonia, N.C.	1000d
WTAB	Tabor City, N.C.	5000d
KFJM	Grand Forks, N.D.	1000d
WSPD	Toledo, Ohio	5000
KAST	Astoria Oreg.	1000
WOTR	Corry, Pa.	1000
WPAZ	Pottstown, Pa.	1000d
WKMC	Roaring Sprgs., Pa.	1000d
WIVV	Vieques, P.R.	1000
WKFD	Wickford, R.I.	500d
WDEF	Chattanooga, Tenn.	5000
WDXE	Lawrenceburg, Tenn.	1000d
WRGS	Rogersville, Tenn.	1000d
KOKE	Austin, Tex.	1000d
KFRO	Longview, Tex.	1000
KUKD	Post, Tex.	500d
KSOP	Salt Lake City, Utah	1000d
WBTN	Bennington, Vt.	1000d
WHEE	Martinsville, Va.	5000d
WJWS	South Hill, Va.	5000d
KPOR	Quincy, Wash.	1000d
WMOD	Moundsville, W.Va.	1000d
WCCN	Neillsville, Wis.	5000d
KVWO	Cheyenne, Wyo.	1000

1380—217.3

CFDA	Victoriaville, Que.	1000
CKPC	Brantford, Ont.	10000
CKLC	Kingston, Ont.	5000
WRAB	Arab, Ala.	1000d
WGYV	Greenville, Ala.	1000d
KDXE	N. Little Rock, Ark.	1000d
KBVM	Lancaster, Calif.	1000d
KGMS	Sacramento, Calif.	1000
KSBW	Salinas, Calif.	5000
KFLJ	Walsenburg, Colo.	1000d
WAMS	Wilmington, Del.	5000
WLIZ	Lake Worth, Fla.	500d
WQXQ	Ormond Bch., Fla.	1000d
WLCY	St. Petersburg, Fla.	5000
WAOK	Atlanta, Ga.	5000
WSIZ	Ocilla, Ga.	5000d
KPOI	Honolulu, Hawaii	5000
WBEL	South Beloit, Ill.	5000
WBZI	Brazil, Ind.	500d
WKJG	Ft. Wayne, Ind.	5000
KCIM	Carroll, Iowa	1000
KHAK	Cedar Rapids, Iowa	1000
KCII	Washington, Iowa	500d
WMTA	Central City, Ky.	500d
WWKY	Winchester, Ky.	1000d
WYNK	Baton Rouge, La.	500d
WKTJ	Farmington, Me.	1000d
WTTH	Port Huron, Mich.	1000
WPLB	Greenville, Mich.	500d
KLIZ	Brainerd, Minn.	1000d
KAGE	Winona, Minn.	1000
WDLT	Indianola, Miss.	500d
KUDL	Kansas City, Mo.	5000
KWK	St. Louis, Mo.	5000
KUVR	Holdrege, Nebr.	500
WBBX	Portsmouth, N.H.	1000
WAWZ	Zarephath, N.J.	5000
WFSR	Bath, N.Y.	500d
WBNX	New York, N.Y.	5000
WLOS	Asheville, N.C.	5000
WTOB	Winston-Salem, N.C.	5000
WWIZ	Lorain, Ohio	500d
WPKO	Waverly, Ohio	1000d
KSWO	Lawton, Okla.	1000
KMUS	Muskogee, Okla.	1000
KBCH	Ocean Lake, Oreg.	1000d
KSRV	Ontario, Oreg.	5000
WACB	Kittanning, Pa.	1000d
WMLP	Milton, Pa.	1000d
WAYZ	Waynesboro, Pa.	1000d
WNRI	Woonsocket, R.I.	1000d
WAGS	Bishopville, S.C.	1000d
WGUS	N. Augusta, S.C.	1000d
KOTA	Rapid City, S.Dak.	5000
KFCB	Redfield, S.Dak.	500d
WYSH	Clinton, Tenn.	1000d
WGMM	Millington, Tenn.	500d
KJET	Beaumont, Tex.	1000
KBWD	Brownwood, Tex.	1000
KCRM	Crane, Tex.	1000d
KTSM	El Paso, Tex.	5000
KMUL	Muleshoe, Tex.	1000d
KBOP	Pleasanton, Tex.	1000d
WSYB	Rutland, Vt.	5000
WMBG	Richmond, Va.	5000
KRKO	Everett, Wash.	5000
KPEG	Spokane, Wash.	5000d
WBEL	Beloit, Wis.	5000

1390—215.7

CKLN	Nelson, B.C.	1000
WHMA	Anniston, Ala.	5000
KDQN	DeQueen, Ark.	500d
KAMO	Rogers, Ark.	1000d
KGER	Long Beach, Calif.	5000
KCEY	Turlock, Calif.	5000
KFML	Denver, Colo.	1000d
WAVP	Avon Park, Fla.	1000d
WPUP	Gainesville, Fla.	5000d
WGES	Chicago, Ill.	5000
WYNR	Chicago, Ill.	5000
WFIW	Fairfield, Ill.	1000
WJCD	Seymour, Ind.	1000d
KCLN	Clinton, Iowa	1000d
KCBC	Des Moines, Iowa	1000
KNCK	Concordia, Kans.	500d
WANY	Albany, Ky.	1000d
WKIC	Hazard, Ky.	5000d
KFRA	Franklin, La.	500d
KNOE	Monroe, La.	5000
WEGP	Presque Isle, Me.	5000d
WCAT	Orange, Mass.	1000d
WPLM	Plymouth, Mass.	5000
WCER	Charlotte, Mich.	1000d
KAOH	Duluth, Minn.	500
KRFO	Owatonna, Minn.	500d
WROA	Gulfport, Miss.	1000d
WQIC	Meridian, Miss.	5000d
KJPW	Waynesville, Mo.	1000d
KENN	Farmington, N.Mex.	5000
KHOB	Hobbs, N.Mex.	5000d
WEOK	Poughkeepsie, N.Y.	5000d
WRIV	Riverhead, N.Y.	1000d
WFBL	Syracuse, N.Y.	5000
WKRK	Murphy, N.C.	1000d
WEED	Rocky Mount, N.C.	5000
WADA	Shelby, N.C.	500d
WJRM	Troy, N.C.	500d
KLPM	Minot, N.Dak.	5000
WOHP	Bellefontaine, Ohio	500d
WMPD	Middleport-Pomroy, Ohio	1000d
WFMJ	Youngstown, Ohio	5000
KCRC	Enid, Okla.	1000
KSLM	Salem, Oreg.	5000
WLAN	Lancaster, Pa.	5000
WRSC	State College, Pa.	1000d
WISA	Isabella, P.R.	1000
WHPB	Belton, S.C.	500d
WCSC	Charleston, S.C.	5000
KJAM	Madison, S.D.	5000d
WTJS	Jackson, Tenn.	5000
KULP	El Campo, Tex.	500d
KBEC	Waxahachie, Tex.	500d
KLGN	Logan, Utah	1000
WEAM	Arlington, Va.	5000
WWOD	Lynchburg, Va.	5000
KBBO	Yakima, Wash.	1000

1400—214.2

CKDH	Amherst, N.S.	250
CJFP	Riviere-du-Loup, Que.	1000
CKRN	Rouyn, Que.	250
CKSW	Swift Current, Sask.	1000
WMSL	Decatur, Ala.	250
WXAL	Demopolis, Ala.	250
WFPA	Ft. Payne, Ala.	250
WJLD	Homewood, Ala.	1000
WJHO	Opelika, Ala.	1000
KSEW	Sitka, Alaska	250
KCLF	Clifton, Ariz.	250
KJKJ	Flagstaff, Ariz.	250
KXIV	Phoenix, Ariz.	250
KTUC	Tucson, Ariz.	250
KVOY	Yuma, Ariz.	250
KELD	El Dorado, Ark.	1000
KCLA	Pine Bluff, Ark.	1000
KWYN	Wynne, Ark.	1000
KRE	Berkeley, Calif.	1000
KREO	Indio, Calif.	250
KQMS	Redding, Calif.	250
KSLY	San Luis Obispo, Cal.	250
KSPA	Santa Paula, Calif.	250
KHOE	Truckee, Calif.	1000
KUKI	Ukiah, Calif.	1000
KONG	Visalia, Calif.	250
KRLN	Canon City, Colo.	250
KDTA	Delta, Colo.	250
KFTM	Ft. Morgan, Colo.	250
KBZZ	La Junta, Colo.	250
WSTC	Stamford, Conn.	1000
WILI	Willimantic, Conn.	1000
WFTL	Ft. Lauderdale, Fla.	250
WIRA	Ft. Pierce, Fla.	250
WRHC	Jacksonville, Fla.	250
WPRY	Perry, Fla.	250
WTRR	Sanford, Fla.	1000
WZRH	Zephyr Hills, Fla.	250
WCQS	Alma, Ga.	1000
WSGC	Elberton, Ga.	1000
WNEX	Macon, Ga.	1000
WMGA	Moultrie, Ga.	1000
WCOH	Newnan, Ga.	1000
WGSA	Savannah, Ga.	1000
KART	Jerome, Idaho	250
KRPL	Moscow, Idaho	250
KSPT	Sandpoint, Idaho	250
WDWS	Champaign, Ill.	1000
WGIL	Galesburg, Ill.	1000
WROZ	Evansville, Ind.	1000
WBAT	Marion, Ind.	500
KCOG	Centerville, Iowa	100
KVFD	Fort Dodge, Iowa	250
KVOE	Emporia, Kans.	250
KAYS	Hays, Kans.	250
WCYN	Cynthiana, Ky.	250
WIEL	Elizabethtown, Ky.	1000
WFTG	London, Ky.	250
WFPR	Hammond, La.	250
KAOK	Lake Charles, La.	1000
WRDO	Augusta, Maine	250
WIDE	Biddeford, Maine	1000
WWIN	Baltimore, Md.	250
WALE	Fall River, Mass.	5000
WLLH	Lowell, Mass.	500
WHMP	Northampton, Mass.	1000
WELL	Battle Creek, Mich.	1000
WJLB	Detroit, Mich.	250
WHDF	Houghton, Mich.	250
WMAB	Munising, Mich.	250
WSAM	Saginaw, Mich.	250
WSJM	St. Joseph, Mich.	1000
WTCM	Traverse City, Mich.	250
KEYL	Long Prairie, Minn.	250

Kc.	Wave Length	W.P.
KMHL	Marshall, Minn.	250
WMIN	Mpls.-St. Paul, Minn.	1000
WHLB	Virginia, Minn.	1000
WBIP	Booneville, Miss.	250
WNAG	Grenada, Miss.	250
WFOR	Hattiesburg, Miss.	250
WJQS	Jackson, Miss.	250
WMBC	Macon, Miss.	250
KFRU	Columbia, Mo.	1000
KJCF	Festus, Mo.	250
KSIM	Sikeston, Mo.	250
KTTS	Springfield, Mo.	1000
KXGN	Glendive, Mont.	250
KARR	Great Falls, Mont.	1000
KCOW	Alliance, Nebr.	1000
KLIN	Lincoln, Nebr.	250
KBMI	Henderson, Nev.	250
KWNA	Winnemucca, Nev.	1000
WBRL	Berlin, N.H.	250
WTSL	Hanover, N.H.	1000
KTRC	Santa Fe, N.Mex.	250
KCHS	Truth or Consequences, New Mexico	250
KTNM	Tucumcari, N.Mex.	250
WOND	Pleasantville, N.J.	1000
WABY	Albany, N.Y.	1000
WYSL	Buffalo, N.Y.	250
WSLB	Ogdensburg, N.Y.	1000
WBMA	Beaufort, N.C.	250
WGBG	Greensboro, N.C.	1000
WSIC	Statesville, N.C.	1000
WLSE	Wallace, N.C.	250
WHCC	Waynesville, N.C.	1000
WCNF	Weldon, N.C.	250
KEYJ	Jamestown, N.Dak.	1000
WMAN	Mansfield, Ohio	250
WPAY	Portsmouth, Ohio	1000
KWON	Bartlesville, Okla.	250
KTMC	McAlester, Okla.	250
KNOR	Norman, Okla.	250
KNND	Cottage Grove, Oreg.	250
WEST	Easton, Pa.	1000
WJET	Erie, Pa.	250
WHGB	Harrisburg, Pa.	250
WKBI	St. Marys, Pa.	1000
WICK	Scranton, Pa.	250
WRAK	Williamsport, Pa.	1000
WCOS	Columbia, S.C.	1000
WGTN	Georgetown, S.C.	250
WZOO	Spartanburg, S.C.	250
WJZM	Clarksville, Tenn.	1000
WHUB	Cookeville, Tenn.	1000
WLSB	Copper Hill, Tenn.	250
WGAP	Maryville, Tenn.	1000
WHAL	Shelbyville, Tenn.	1000
KRUN	Ballinger, Tex.	250
KBYG	Big Spring, Tex.	250
KUNO	Corpus Christi, Tex.	250
KILE	nr. Galveston, Tex.	250
KGVL	Greenville, Tex.	250
KEBE	Jacksonville, Tex.	250
KIUN	Pecos, Tex.	1000
KEYE	Perryton, Tex.	250
KVOP	Plainview, Tex.	250
KDWT	Stamford, Tex.	250
KTEM	Temple, Tex.	250
KTFS	Texarkana, Tex.	250
KVOU	Uvalde, Tex.	250
KIXX	Provo, Utah	250
WDOT	Burlington, Vt.	250
WINA	Charlottesville, Va.	1000
WHHV	Hillsville, Va.	250
WHIH	Portsmouth, Va.	250
WHLF	So. Boston, Va.	1000
WINC	Winchester, Va.	1000
KEDO	Longview, Wash.	250
KRSC	Othello, Wash.	250
KTNT	Tacoma, Wash.	1000
WBOY	Clarkesburg, W.Va.	1000
WRON	Ronceverte, W.Va.	1000
WSPZ	Spencer, W.Va.	1000
WKWK	Wheeling, W.Va.	250
WBTH	Williamson, W.Va.	1000
WATW	Ashland, Wis.	1000
WBIZ	Eau Claire, Wis.	1000
WDUZ	Green Bay, Wis.	1000
WRJN	Racine, Wis.	1000
WRDB	Reedsburg, Wis.	1000
WRIG	Wausau, Wis.	1000
KATI	Caspar, Wyo.	1000
KODI	Cody, Wyo.	1000

1410—212.6

Kc.	Wave Length	W.P.
CFUN	Vancouver, B.C.	10000
CHLP	Montreal, Que.	10000
WALA	Mobile, Ala.	5000
WRCK	Tuscumbia, Ala.	500d
KTCS	Fort Smith, Ark.	1000
KERN	Bakersfield, Calif.	1000
KRML	Carmel, Calif.	500d
KKOK	Lompoc, Calif.	500d
KMYC	Marysville, Calif.	5000
KCAL	Redlands, Calif.	1000d
KCOL	Ft. Collins, Colo.	1000
WPOP	Hartford, Conn.	5000
WOOV	Dover, Del.	5000d
WMYR	Fort Myers, Fla.	5000
WBIL	Leesburg, Fla.	1000d
WRFB	Tallahassee, Fla.	5000d
WRIX	Griffin, Ga.	1000d
WSNE	Cummings, Ga.	1000d
WDAX	McRae, Ga.	1000d
WLAQ	Rome, Ga.	1000
WRMN	Elgin, Ill.	1000d
WTIM	Taylorville, Ill.	1000d
WAZY	Lafayette, Ind.	1000d
KGRN	Grinnell, Iowa	500d
KLEM	LeMars, Iowa	1000d
KCLO	Leavenworth, Kans.	5000d
KWBB	Wichita, Kans.	5000
WLBJ	Bowling Green, Ky.	5000
WHLN	Harlan, Ky.	5000d
KDBS	Alexandria, La.	1000d
WDDW	Halfway, Md.	1000d
WOKW	Brockton, Mass.	1000d
WGRD	Grand Rap., Mich.	1000d
KLFD	Litchfield, Minn.	500d
WDSK	Cleveland, Miss.	1000d
WBKN	Newton, Miss.	500d
KNOP	N. Platte, Nebr.	1000d
WHTG	Eatontown, N.J.	500d
WDOE	Dunkirk, N.Y.	1000
WELM	Elmira, N.Y.	1000
WSET	Glen Falls, N.Y.	1000d
WOTT	Watertown, N.Y.	5000
WEGO	Concord, N.C.	1000d
WSRC	Durham, N.C.	1000d
WING	Dayton, Ohio	5000
KPAM	Portland, Oreg.	5000d
WLSH	Lansford, Pa.	5000d
KQV	Pittsburgh, Pa.	5000
WPCC	Clinton, S.C.	1000d
WYMB	Manning, S.C.	1000d
WCMT	Martin, Tenn.	1000d
KBUD	Athens, Tex.	1000d
KBAN	Bowie, Tex.	500d
KVLB	Cleveland, Tex.	500
KXIT	Dalhart, Tex.	500d
KADO	Marshall, Tex.	500
KRIG	Odessa, Tex.	1000
KBAL	San Saba, Tex.	500d
KNAL	Victoria, Tex.	500
WRIS	Roanoke, Va.	5000d
WKBH	LaCrosse, Wis.	5000
KWYO	Sheridan, Wyo.	1000

1420—211.1

Kc.	Wave Length	W.P.
CKPT	Peterborough, Ont.	1000
CJMT	Chicoutimi, Que.	1000
WACT	Tuscaloosa, Ala.	5000d
KHFH	Sierra Vista, Ariz.	1000d
KPDC	Pocahontas, Ark.	1000d
KSTN	Stockton, Calif.	5000
WLIS	Old Saybrook, Conn.	500d
WBRD	Bradenton, Fla.	1000
WDBF	Delray Beach, Fla.	5000d
WETH	St. Augustine, Fla.	1000d
WRFB	Tallahassee, Fla.	5000d
WAVO	Avondale Estates, Ga.	1000d
WRBL	Columbus, Ga.	5000
WPEH	Louisville, Ga.	1000d
WLET	Toccoa, Ga.	5000d
WINI	Murphysboro, Ill.	500d
WIMS	Michigan City, Ind.	5000d
WOC	Davenport, Iowa	5000
KJCK	Junction City, Kans.	1000d
WTCR	Ashland, Ky.	5000d
WHBN	Harrodsburg, Ky.	1000d
WVJS	Owensboro, Ky.	5000
KPEL	Lafayette, La.	1000
WOKW	Brockton, Mass.	1000d
WBSM	New Bedford, Mass.	5000
WBEC	Pittsfield, Mass.	1000
WAMM	Flint, Mich.	1000d
WKPR	Kalamazoo, Mich.	1000d
KTOE	Mankato, Minn.	5000
WSUH	Oxford, Miss.	1000d
WQBC	Vicksburg, Miss.	1000
KBTN	Neosho, Mo.	500d
KOOO	Omaha, Nebr.	1000d
KSYX	Santa Rosa, N.Mex.	1000d
WALY	Herkimer, N.Y.	1000d
WACK	Newark, N.Y.	500
WLNA	Peekskill, N.Y.	1000d
WMYN	Mayodan, N.C.	500
WGAS	S. Gastonia, N.C.	500d
WVOT	Wilson, N.C.	1000
WHK	Cleveland, Ohio	5000
KTJS	Hobart, Okla.	1000d
KYNG	Coos Bay, Oreg.	1000d
WCOJ	Coatesville, Pa.	5000
WCED	DuBois, Pa.	5000
WEUC	Ponce, P.R.	1000
WCRE	Cheraw, S.C.	1000d
KABR	Aberdeen, S.D.	1000d
WEMB	Erwin, Tenn.	5000d
WKSR	Pulaski, Tenn.	1000
KFYN	Bonham, Tex.	250d
KTRE	Lufkin, Tex.	1000
KGNB	New Braunfels, Tex.	1000d
KPEP	San Angelo, Tex.	1000d
WWSR	St. Albans, Vt.	1000d
WDDY	Gloucester, Va.	1000d
WKCW	Warrenton, Va.	5000d
KITI	Chehalis, Wash.	1000d
KUJ	Walla Walla, Wash.	5000
WPLY	Plymouth, Wis.	500d

1430—209.7

Kc.	Wave Length	W.P.
CKFH	Toronto, Ont.	10000
WFHK	Pell City, Ala.	1000d
KHBM	Monticello, Ark.	1000d
KAMP	El Centro, Calif.	1000d
KARM	Fresno, Calif.	5000
KALI	Pasadena, Calif.	5000
KJAY	Sacramento, Calif.	500d
KOSI	Aurora, Colo.	5000
WSDB	Homestead, Fla.	500d
WLAK	Lakeland, Fla.	5000
WPCF	Panama City, Fla.	5000
WGFS	Covington, Ga.	1000d
WRCD	Dalton, Ga.	1000d
WWGS	Tifton, Ga.	5000
WNSH	Highland Park, Ill.	1000d
WCMY	Ottawa, Ill.	500d
WIRE	Indianapolis, Ind.	5000
KASI	Ames, Iowa	1000d
KMRC	Morgan City, La.	500d
WNAV	Annapolis, Md.	5000
WHIL	Medford, Mass.	5000d
WION	Ionia, Mich.	5000d
WBRB	Mt. Clemens, Mich.	500d
WLAU	Laurel, Miss.	5000d
KAOL	Carrollton, Mo.	500d
WIL	St. Louis, Mo.	5000
KRGI	Grand Island, Nebr.	1000
WNJR	Newark, N.J.	5000
KGFL	Roswell, N.M.	5000d
WENE	Endicott, N.Y.	5000
WMNC	Morganton, N.C.	5000d
WDJS	Mt. Olive, N.C.	1000d
WRXO	Roxboro, N.C.	1000d
WFOB	Fostoria, Ohio	1000
WCLT	Newark, Ohio	500d
KALV	Alva, Okla.	500
KELI	Tulsa, Okla.	5000
KGAY	Salem, Oreg.	5000d
WVAM	Altoona, Pa.	1000
WFRA	Franklin, Pa.	500d
WNEL	Caguas, P.R.	1000
WBLR	Batesburg, S.C.	5000d
WATP	Marion, S.C.	1000d
KBRK	Brookings, S. Dak.	1000d
WFCT	Fountain City, Tenn.	1000d
WENO	Madison, Tenn.	5000d
WHER	Memphis, Tenn.	1000
KSTB	Breckenridge, Tex.	1000d
KEES	Gladewater, Tex.	1000d
KCOH	Houston, Tex.	1000d
KLO	Ogden, Utah	5000
WIVE	Ashland, Va.	1000d
WDIC	Clincho, Va.	1000d
KBRC	Mt. Vernon, Wash.	5000
WEIR	Weirton, W.Va.	1000
WBEV	Beaver Dam, Wis.	1000d

1440—208.2

Kc.	Wave Length	W.P.
CFCP	Courtenay, B.C.	1000
WHHY	Montgomery, Ala.	5000
KWBY	Scottsdale, Ariz.	5000d
KHOG	Fayetteville, Ark.	1000d
KOKY	Little Rock, Ark.	5000d
KVON	Napa, Calif.	500
KPRO	Riverside, Calif.	1000
KCOY	Santa Maria, Calif.	1000
WBIS	Bristol, Conn.	500d
WABR	Winter Park, Fla.	5000
WWCC	Bremen, Ga.	1000d
WGIG	Brunswick, Ga.	5000
WRAJ	Anna, Ill.	500d
WIOK	Normal, Ill.	1000
WPRS	Paris, Ill.	1000d
WGEM	Quincy, Ill.	5000
WROK	Rockford, Ill.	5000
WPGW	Portland, Ind.	500d
KCHE	Cherokee, Iowa	500d
KEWI	Topeka, Kans.	5000
WCDS	Glasgow, Ky.	1kwd
WKLX	Paris, Ky.	1000d
WEZJ	Williamsburg, Ky.	1000d
KMLB	Monroe, La.	5000
WJAB	Westbrook, Me.	5000d
WAAB	Worcester, Mass.	5000
WBCM	Bay City, Mich.	1000
WDOW	Dowagiac, Mich.	1000d
WCHB	Inkster, Mich.	1000d
KEVE	Golden Valley, Minn.	5000
WHHT	Lucedale, Miss.	1000d
WSEL	Pontotoc, Miss.	1000d
WMVB	Millville, N.J.	1000d
WBAB	Babylon, N.Y.	1000d
WJJL	Niagara Falls, N.Y.	1000d
WSGO	Oswego, N.Y.	1000d
WBLA	Elizabethtown, N.C.	1000d
WBUY	Lexington, N.C.	5000d
KILO	Grand Forks, N.D.	1000
WHHH	Warren, Ohio	5000
KMED	Medford, Oreg.	5000
KODL	The Dalles, Oreg.	1000
WCDL	Carbondale, Pa.	5000d
WNPV	Lansdale, Pa.	500d
WGCB	Red Lion, Pa.	1000d
WQOK	Greenville, S.C.	5000
WHHL	Holly Hill, S.C.	1kwd
WZYX	Cowan, Tenn.	1000d
WHDM	McKenzie, Tenn.	500d
KFDA	Amarillo, Tex.	5000
KEYS	Corpus Christi, Tex.	1000
KDNT	Denton, Tex.	5000
KETX	Livingston, Tex.	5000d
WKLV	Blackstone, Va.	5000d
WHIS	Bluefield, W.Va.	5000
WAJR	Morgantown, W.Va.	5000
WJPG	Green Bay, Wis.	5000

1450—206.8

Kc.	Wave Length	W.P.
CFBM	Brochet, Man.	100
CBG	Gander, Nfld.	250
CFAB	Windsor, N.S.	250
CFJR	Brockville, Ont.	1000
CHEF	Granby, P.Q.	1000
WONG	Anniston, Ala.	1000
WYAM	Bessemer, Ala.	1000
WDIG	Dothan, Ala.	1000
WFIX	Huntsville, Ala.	1000
WLAY	Muscle Shoals City, Alabama	1000
KLAM	Cordova, Alaska	250
KAWT	Douglas, Ariz.	250
KNOT	Prescott, Ariz.	250
KOLD	Tucson, Ariz.	250
KENA	Mena, Ark.	250
KYOR	Blythe, Calif.	250
KOWN	Escondido, Calif.	250
KPAL	Palm Springs, Calif.	250
KTIP	Porterville, Calif.	1000
KSAN	San Francisco, Calif	1000
KVML	Sonora, Calif.	250
KVEN	Ventura, Calif.	1000
KAGR	Yuba City, Calif.	100
KGIW	Alamosa, Colo.	250
KYOU	Greeley, Colo.	1000
WNAB	Bridgeport, Conn.	250
WILM	Wilmington, Del.	250
WOL	Washington, D.C.	250
WWJB	Brooksville, Fla.	250
WMFJ	Daytona Beach, Fla.	1000
WSKP	Miami, Fla.	250
WBSR	Pensacola, Fla.	1000
WSPB	Sarasota, Fla.	1000
WSTU	Stuart, Fla.	250
WTNT	Tallahassee, Fla.	1000
WGPC	Albany, Ga.	250
WBHF	Cartersville, Ga.	1000
WCON	Cornelia, Ga.	250
WKEU	Griffin, Ga.	1000
WMVG	Milledgeville, Ga.	1000
WBYG	Savannah, Ga.	1000
WVLD	Valdosta, Ga.	1000
KEOK	Payette, Idaho	250
KEEP	Twin Falls, Idaho	250
WHFC	Cicero, Ill.	1000
WKEI	Kewanee, Ill.	100
WCVS	Springfield, Ill.	1000
WANE	Ft. Wayne, Ind.	500
WXVW	Jeffersonville, Ind.	250
WASK	Lafayette, Ind.	1000
WAOV	Vincennes, Ind.	250
KLWN	Cedar Rapids, Iowa	250
KWBW	Hutchinson, Kans.	1000
WTCO	Campbellsville, Ky.	1000
WWXL	Manchester, Ky.	1000
WPAD	Paducah, Ky.	1000
KSIG	Crowley, La.	1000
KNOC	Natchitoches, La.	1000
WNPS	New Orleans, La.	250
WRKD	Rockland, Maine	250
WKTQ	South Paris, Maine	250
WTBO	Cumberland, Md.	1000
WMAS	Springfield, Mass.	1000
WATZ	Alpena Township, Michigan	1000
WHTC	Holland, Mich.	1000
WMIQ	Iron Mtn., Mich.	250
WIBM	Jackson, Mich.	1000
WKLA	Ludington, Mich.	250
WHLS	Port Huron, Mich.	250
KATE	Albert Lea, Minn.	250
KBUN	Bemidji, Minn.	1000
KBMW	Breckenridge, Minn.	250
WELY	Ely, Minn.	1000
KFAM	St. Cloud, Minn.	1000
WROX	Clarksdale, Miss.	250
WCJU	Columbia, Miss.	250
WJXN	Jackson, Miss.	250
WOKK	Meridian, Miss.	1000
WNAT	Natchez, Miss.	250
WROB	West Point, Miss.	250
KFTW	Fredericktown, Mo.	250
WMBH	Joplin, Mo.	1000
KIRX	Kirksville, Mo.	1000
KOKO	Warrensburg, Mo.	250
KWPM	West Plains, Mo.	1000
KXXL	Bozeman, Mont.	1000
KUDI	Great Falls, Mont.	1000
KXLL	Missoula, Mont.	250
KRBN	Red Lodge, Mont.	1000
KVCK	Wolf Point, Mont.	1000
KWBE	Beatrice, Nebr.	250
KCSR	Chadron, Nebr.	250
KONE	Reno, Nev.	250
WKXL	Concord, N.H.	1000
WEMJ	Laconia, N.H.	250
WFPG	Atlantic City, N.J.	1000
WCTC	New Brunswick, N.J.	250
KLOS	Albuquerque, N.Mex.	250
KLMX	Clayton, N.Mex.	250
KOBE	Las Cruces, N.Mex.	250
KENM	Portales, N.Mex.	1000
WCLI	Corning, N.Y.	1000
WWSC	Glen Falls, N.Y.	1000
WHDL	Olean, N.Y.	1000
WKIP	Poughkeepsie, N.Y.	250
WKAL	Rome, N.Y.	250
WATA	Boone, N.C.	250
WGNC	Gastonia, N.C.	1000
WIZS	Henderson, N.C.	1000
WHKP	Hendersonville, N.C.	1000
WHIT	New Bern, N.C.	250
KGCA	Rugby, N.Dak.	250
WJER	Dover, Ohio	250
WMOH	Hamilton, Ohio	250
WLEC	Sandusky, Ohio	1000
KWHW	Altus, Okla.	250
KGFF	Shawnee, Okla.	1000
KSIW	Woodward, Okla.	1000
KORE	Eugene, Oreg.	1000
KFLW	Klamath Falls, Oreg.	250
KLBM	La Grande, Oreg.	1000
KBPS	Portland, Oreg.	250
WLEU	Erie, Pa.	250
WDAD	Indiana, Pa.	250
WPAM	Pottsville, Pa.	1000
WMPT	So. Williamsport, Pa.	250
WMAJ	State College, Pa.	250
WJPA	Washington, Pa.	250
WWRI	W. Warwick, R.I.	1000

Kc.	Wave Length	W.P.
WQSN	Charleston, S.C.	1000
WCRS	Greenwood, S.C.	1000
WMYB	Myrtle Beach, S.C.	1000
WHSC	Hartsville, S.C.	1000
KBFS	Belle Fourche, S.Dak.	250
KYNT	Yankton, S.Dak.	250
WLAR	Athens, Tenn.	250
WMOC	Chattanooga, Tenn.	250
WDSG	Dyersburg, Tenn.	250
WSMG	Greeneville, Tenn.	250
WLAF	LaFollette, Tenn.	100
WGNS	Murfreesboro, Tenn.	1000
KAYC	Beaumont, Tex.	1000
KBEN	Carrizo Sprgs., Tex.	250
KCTI	Gonzales, Tex.	250
KMBL	Junction, Tex.	250
KCYL	Lampasas, Tex.	250
KMHT	Marshall, Tex.	1000
KAMY	McCamey, Tex.	250
KNET	Palestine, Tex.	250
KSNY	Snyder, Tex.	1000
KURA	Moab, Utah	1000
KEYY	Provo, Utah	250
KDXU	St. George, Utah	250
WSNO	Barre, Vt.	1000
WTSA	Brattleboro, Vt.	1000
WFTR	Front Royal, Va.	250
WENZ	Highland Springs, Va.	250
WREL	Lexington, Va.	250
WMVA	Martinsville, Va.	1000
KBKW	Aberdeen, Wash.	1000
KCLX	Colfax, Wash.	1000
KONP	Port Angeles, Wash.	250
KAYE	Puyallup, Wash.	1000
WPAR	Parkersburg, W.Va.	250
KFIZ	Fond du Lac, Wis.	250
WDLB	Marshfield, Wis.	1000
WPFP	Park Falls, Wis.	1000
WRCO	Richland Center, Wis.	1000
KBBS	Buffalo, Wyo.	250
KVOW	Riverton, Wyo.	250

1460—205.4

Kc.	Wave Length	W.P.
CJOY	Guelph, Ont.	10000
CKRB	Ville St. Georges, Quebec	10000
CJNB	N. Battleford, Sask.	10000
WFMH	Cullman, Ala.	5000d
WPNX	Phenix City, Ala.	5000
KZOT	Marianna, Ark.	500
KCCL	Paris, Ark.	500d
KTYM	Inglewood, Calif.	5000d
KDON	Salinas, Calif.	5000
KVRE	Santa Rosa, Calif.	1000d
KYSN	Colo. Sprgs., Colo.	1000
WBAR	Bartow, Fla.	1000d
WZEP	DeFuniak Springs, Florida	1000d
WMBR	Jacksonville, Fla.	5000
WDMF	Buford, Ga.	1000d
WROY	Carmi, Ill.	1000d
WIXN	Dixon, Ill.	1000d
WRTL	Rantoul, Ill.	250d
WKAM	Goshen, Ind.	1000d
WDCH	North Vernon, Ind.	1000d
KSO	Des Moines, Iowa	5000
KCRB	Chanute, Kans.	1000d
WRVK	Mt. Vernon, Ky.	500d
WAIL	Baton Rouge, La.	5000
KBSF	Springhill, La.	1000d
WEMD	Easton, Md.	500d
WBET	Brockton, Mass.	5000
WBRN	Big Rapids, Mich.	1000d
WPON	Pontiac, Mich.	1000
KDMA	Montevideo, Minn.	1000
WELZ	Belzoni, Miss.	1000d
KADY	St. Charles, Mo.	5000d
KRNY	Kearney, Nebr.	5000d
KEND	Las Vegas, Nev.	1000
WOKO	Albany, N.Y.	5000
WVOX	New Rochelle, N.Y.	500d
WHEC	Rochester, N.Y.	5000
WFVG	Fuquay Sprgs., N.C.	1000d
WRKB	Kannapolis, N.C.	500d
WMMH	Marshall, N.C.	500d
WBNS	Columbus, Ohio	5000
WPVL	Painesville, Ohio	500d
KELR	El Reno, Okla.	500
KROW	Dallas, Oreg.	1000
WMBA	Ambridge, Pa.	500d
WCMB	Harrisburg, Pa.	5000
WBCU	Union, S.C.	1000
WGOG	Walhalla, S.C.	500d
WJAK	Jackson, Tenn.	5000d
WEEN	Lafayette, Tenn.	1000d
KBRZ	Freeport, Tex.	500d
KLLL	Lubbock, Tex.	1000d
WACO	Waco, Tex.	1000
WPRW	Manassas, Va.	500d
WRAD	Radford, Va.	5000
WLPM	Suffolk, Va.	1000
KCDI	Kirkland, Wash.	5000d
KIMA	Yakima, Wash.	5000
WBUC	Buckhannon, W.Va.	5000d
WRAC	Racine, Wis.	500d
WTMB	Tomah, Wis.	1000d

1470—204.0

Kc.	Wave Length	W.P.
CHOW	Welland, Ontario	1000
CFOX	Pointe Claire, Que.	10000
WBLO	Evergreen, Ala.	1000d
KZNG	Hot Springs, Ark.	1000d
KBMX	Coalinga, Calif.	500d
KUTY	Palmdale, Calif.	5000
KXOA	Sacramento, Calif.	5000
WMMW	Meriden, Conn.	1000d
WPOM	Pompano Beach, Fla.	5000
WRBB	Tarpon Sprgs., Fla.	5000d
WAAG	Adel, Ga.	1000d
WDOL	Athens, Ga.	1000d
WCLA	Claxton, Ga.	1000
WRGA	Rome, Ga.	5000
WMPP	Chicago Heights, Ill.	1000d
WMBD	Peoria, Ill.	5000
WHUT	Anderson, Ind.	1000d
KTRI	Sioux City, Iowa	5000
KWVY	Waverly, Iowa	1000d
KARE	Atchison, Kans.	1000
KLIB	Liberal, Kans.	500d
WSAC	Fort Knox, Ky.	1000d
KPLC	Lake Charles, La.	5000
WLAM	Lewiston, Maine	5000
WJDY	Salisbury, Md.	5000d
WTTR	Westminster, Md.	1000d
WSRO	Marlborough, Mass.	1000d
WNBP	Newburyport, Mass.	500d
WKMF	Flint, Mich.	5000
WKLZ	Kalamazoo, Mich.	500d
KANO	Anoka, Minn.	1000d
WCHJ	Brookhaven, Miss.	1000d
WNAU	New Albany, Miss.	500d
KGHM	Brookfield, Mo.	500d
KTCB	Malden, Mo.	1000d
WTKO	Ithaca, N.Y.	1000d
WPDM	Potsdam, N.Y.	1000d
WBIG	Greensboro, N.C.	5000
WPNC	Plymouth, N.C.	1000d
WTOE	Spruce Pine, N.C.	1000d
WOHO	Toledo, Ohio	1000
KVLH	Pauls Valley, Okla.	250d
KVIN	Vinita, Okla.	500d
KRAF	Reedsport, Oreg.	5000d
WSAN	Allentown, Pa.	5000
WFAR	Farrell, Pa.	1000d
WWML	Portage, Pa.	500d
WQXL	Columbia, S.C.	5000d
WEAG	Alcoa, Tenn.	1000d
WVOL	Berry Hill, Tenn.	5000
KRBC	Abilene, Tex.	5000
KWRD	Henderson, Tex.	500d
KCNY	San Marcos, Tex.	250d
KELA	Centralia, Wash.	5000
KSEM	Moses Lake, Wash.	5000
KAPS	Mount Vernon, Wash.	500d
WWHY	Huntington, W.Va.	5000d
WJBT	Wheeling, W.Va.	500d
WBKV	West Bend, Wis.	1000d
KTWO	Casper, Wyo.	5000

1480—202.6

Kc.	Wave Length	W.P.
WARI	Abbeville, Ala.	1000
WBTS	Bridgeport, Ala.	1000d
WIXI	Irondale, Ala.	5000d
WABB	Mobile, Ala.	5000
KHAT	Phoenix, Ariz.	500
KGLU	Safford, Ariz.	1000
KTHS	Berryville, Ark	1000
KWUN	Concord, Calif.	500d
KRED	Eureka, Calif.	5000
KYOS	Merced, Calif.	5000
KWIZ	Santa Ana, Calif.	5000
KSEE	Santa Maria, Calif.	1000
KTUX	Pueblo, Colo.	1000d
WSOR	Windsor, Conn.	500d
WAPG	Arcadia, Fla.	1000d
WTHR	Panama Beach, Fla.	500d
WXIV	Windemere, Fla.	1000d
WYZE	Atlanta, Ga.	5000d
WRDW	Augusta, Ga.	5000
WGSB	Geneva, Ill.	1000
WJBM	Jerseyville, Ill.	500d
WTHI	Terre Haute, Ind.	1000
WRSW	Warsaw, Ind.	1000
KLEE	Ottumwa, Iowa	500d
KBEA	Mission, Kans.	1000d
KLEO	Wichita, Kans.	5000
WKDA	Hopkinsville, Ky.	1000d
WNKY	Neon, Ky.	1000d
WTLO	Somerset, Ky.	1000d
KCKW	Jena, La.	500
KANV	Jonesville, La.	500d
KJOE	Shreveport, La.	1000d
WSAR	Fall River, Mass.	5000
WMAX	Grand Rapids, Michigan	1000d
WIOS	Tawas City, Mich.	1000d
WYSI	Ypsilanti, Mich.	500wd
KAUS	Austin, Minn.	1000
KGCX	Sidney, Mont.	5000
KLMS	Lincoln, Nebr.	1000
KWEW	Hobbs, N. Mex.	5000
WLEA	Hornell, N.Y.	1000d
WHOM	New York, N.Y.	5000
WREM	Remsen, N.Y.	5000d
WWOK	Charlotte, N.C.	5000
WYRN	Louisburg, N.C.	500d
WMSJ	Sylva, N.C.	5000d
WHBC	Canton, Ohio	5000
WCIN	Cincinnati, Ohio	5000
WTRA	Latrobe, Pa.	500d
WDAS	Philadelphia, Pa.	5000
WISL	Shamokin, Pa.	1000
WSHP	Shippensburg, Pa.	500d
WMDD	Fajardo, P.R.	5000
KSDR	Waterton, S.D.	1000d
WJFC	Jefferson City, Tenn.	500
WLOK	Memphis, Tenn.	5000d
KBOX	Dallas, Tex.	5000
KLVL	Pasadena, Tex.	1000
KAPE	San Antonio, Tex.	500d
KONI	Spanish Fork, Utah	1000d
WCFR	Springfield, Vt.	1000d
WBBL	Richmond, Va.	5000
WLEE	Richmond, Va.	5000
WBLU	Salem, Va.	5000d
KFHA	Lakewood, Wash.	1000d
KVAN	Vancouver, Wash.	1000d
WISM	Madison, Wis.	5000
KRAE	Cheyenne, Wyo.	1000d

1490—201.2

Kc.	Wave Length	W.P.
CFMR	Fort Simpson NWT.	250
CFRC	Kingston, Ont.	100
CKCR	Kitchener, Ont.	1000
CKBM	Montmagny, Que.	1000
WANA	Anniston, Ala.	250
WAJF	Decatur, Ala.	1000
WRLD	Lanett, Ala.	250
WHBB	Selma, Ala.	250
KYCA	Prescott, Ariz.	1000
KAIR	Tucson, Ariz.	250
KXAR	Hope, Ark.	250
KTLO	Mtn. Home, Ark.	250
KDRS	Paragould, Ark.	250
KOTN	Pine Bluff, Ark.	250
KXRJ	Russellville, Ark.	1000
KWAC	Bakersfield, Calif.	1000
KPAS	Banning, Calif.	250
KBLA	Burbank, Calif.	250
KICO	Calexico, Calif.	250
KOWL	Lake Tahoe, Calif.	250
KTOB	Petaluma, Calif.	1000
KBLF	Red Bluff, Calif.	1000
KDB	Santa Barbara, Calif.	1000
KSYC	Yreka, Calif.	1000
KBOL	Boulder, Colo.	1000
KGUC	Gunnison, Colo.	250
KCMS	Manitou Sprgs., Colo.	100
KOLR	Sterling, Colo.	250
WTOR	Torrington, Conn.	250
WTRL	Bradenton, Fla.	250
WJBS	DeLand, Fla.	250
WMBM	Miami Beach, Fla.	250
WSRA	Milton, Fla.	250
WRGR	Starke, Fla.	250
WTTB	Vero Beach, Fla.	250
WSIR	Winter Haven, Fla.	250
WMOG	Brunswick, Ga.	250
WMJM	Cordele, Ga.	1000
WMRE	Monroe, Ga.	250
WSFB	Quitman, Ga.	250
WSNT	Sandersville, Ga.	500
WSYL	Sylvania, Ga.	250
KTOH	Lihue, Hawaii	250
KCID	Caldwell, Idaho	1000
WKRO	Cairo, Ill.	250
WDAN	Danville, Ill.	1000
WBBR	East St. Louis, Ill.	500
WOPA	Oak Park, Ill.	1000
WZOE	Princeton, Ind.	1000
WKBV	Richmond, Ind.	1000
WNDU	South Bend, Ind.	250
KBUR	Burlington, Iowa	1000
WDBQ	Dubuque, Iowa	1000
KRIB	Mason City, Iowa	250
KKAN	Phillipsburg, Kans.	250
KTOP	Topeka, Kans.	250
WFKY	Frankfort, Ky.	250
WKAY	Glasgow, Ky.	1000
WDMI	Owensboro, Ky.	1000
WSIP	Paintsville, Ky.	1000
WIKC	Bogalusa, La.	1000
KEUN	Eunice, La.	250
KCIL	Houma, La.	1000
KRUS	Ruston, La.	250
WPOR	Portland, Maine	1000
WTVL	Waterville, Maine	1000
WARK	Hagerstown, Md.	1000
WHAV	Haverhill, Mass.	250
WMRC	Milford, Mass.	250
WTXL	W. Springfield, Mass.	1000
WABJ	Adrian, Mich.	1000
WBFC	Fremont, Mich.	250
WMDN	Midland, Mich.	1000
WCBQ	Whitehall, Mich.	1000
KXRA	Alexandria, Minn.	250
KOZY	Grand Rapids, Minn.	250
KLGR	Redwd. Falls, Minn.	1000
WLOX	Biloxi, Miss.	1000
WCLD	Cleveland, Miss.	250
WHOC	Philadelphia, Miss.	250
WTUP	Tupelo, Miss.	250
WVIM	Vicksburg, Miss.	250
KDMO	Carthage, Mo.	250
KTTR	Rolla, Mo.	1000
KDRO	Sedalia, Mo.	250
KBOW	Butte, Mont.	1000
KBON	Omaha, Nebr.	1000
WEMJ	Laconia, N.H.	1000
WLDB	Atlantic City, N.J.	250
KRSN	Los Alamos, N.Mex.	250
KRTN	Raton, N.Mex.	250
WCSS	Amsterdam, N.Y.	1000
WBTA	Batavia, N.Y.	250
WKNY	Kingston, N.Y.	1000
WICY	Malone, N.Y.	1000
WDLC	Port Jervis, N.Y.	250
WOLF	Syracuse, N.Y.	250
WSSB	Durham, N.C.	250
WFLB	Fayetteville, N.C.	250
WLOE	Leaksville, N.C.	250
WRNB	New Bern, N.C.	1000
WRMT	Rocky Mount, N.C.	250
WSTP	Salisbury, N.C.	250
WSVM	Valdese, N.C.	250
KNDC	Hettinger, N.Dak.	250
WHSL	Wilmington, N.C.	250
KOVC	Valley City, N.Dak.	250
WBEX	Chillicothe, Ohio	1000
WJMO	Cleveland Hghts., Ohio	250
WOHI	E. Liverpool, Ohio	250
WMOA	Mariotta, Ohio	1000
WMRN	Marion, Ohio	1000
KWRW	Guthrie, Okla.	100
KBIX	Muskogee, Okla.	250
KBKR	Baker, Oreg.	250
KRNR	Roseburg, Oreg.	250
KBZY	Salem, Oreg.	1000
WESB	Bradford, Pa.	1000
WAZL	Hazleton, Pa.	1000
WARD	Johnstown, Pa.	250
WGAL	Lancaster, Pa.	1000
WBCB	Levittown, Pa.	1000
WMRF	Lewiston, Pa.	1000
WMGW	Meadville, Pa.	250
WNBT	Wellsboro, Pa.	1000
WSIB	Beaufort, S.C.	100
WGCD	Chester, S.C.	250
WMRB	Greenville, S.C.	1000
KORN	Mitchell, S.Dak.	250
WOPI	Bristol, Tenn.	1000
WDXB	Chattanooga, Tenn.	1000
WROL	Fountain City, Tenn.	250
WJJM	Lewisburg, Tenn.	1000
WDXL	Lexington, Tenn.	1000
KNOW	Austin, Tex.	250
KIBL	Beeville, Tex.	250
KBST	Big Spring, Tex.	250
KHUZ	Borger, Tex.	250
KNEL	Brady, Tex.	250
KSAM	Huntsville, Tex.	250
KVOZ	Laredo, Tex.	250
KZZN	Littlefield, Tex.	250
KPLT	Paris, Tex.	250
KGKB	Tyler, Tex.	250
KVWC	Vernon, Tex.	250
KVOG	Ogden, Utah	1000
WKVT	Brattleboro, Vt.	250
WIKE	Newport, Vt.	1000
WCVA	Culpeper, Va.	250
WVEC	Hampton, Va.	250
WAYB	Waynesboro, Va.	250
KBRO	Bremerton, Wash.	1000
KLOG	Kelso, Wash.	250
KENE	Toppenish, Wash.	250
KTEL	Walla Walla, Wash.	250
WTGR	Charleston, W.Va.	250
WTCS	Fairmont, W.Va.	250
WLOH	Princeton, W.Va.	250
WGEZ	Beloit, Wis.	250
WLCX	LaCrosse, Wis.	1000
WIGM	Medford, Wis.	1000
WOSH	Oshkosh, Wis.	1000
KIML	Gillette, Wyo.	250
KLME	Laramie, Wyo.	100
KRTR	Thermopolis, Wyo.	250
KGOS	Torrington, Wyo.	1000

1500—199.9

Kc.	Wave Length	W.P.
CHUC	Port Hope, Ont.	1000
KXRX	San Jose, Calif.	5000
WTOP	Washington, D.C.	50000
WKIZ	Key West, Fla.	250
WJBK	Detroit, Mich.	10000
KSTP	St. Paul, Minn.	50000
KPIR	Eugene, Ore.	10000d
WMNT	Manati, P.R.	250
KTXO	Sherman, Tex.	250
KANI	Wharton, Tex.	500

1510—199.1

Kc.	Wave Length	W.P.
CKOT	Tillsonburg, Ont.	1000d
KALF	Mesa, Ariz.	10000d
KASK	Ontario, Calif.	1000
KIRV	Fresno, Calif.	500
KTIM	San Rafael, Calif.	1000d
KMOR	Littleton, Colo.	1000
WNLC	New London, Conn.	5000
WJRC	Joliet, Ill.	500d
WKAI	Macomb, Ill.	250d
KFIG	Iowa Falls, Iowa	500d
WMEX	Boston, Mass.	5000
WAST	Jackson, Mich.	500d
WLKM	Three Rivers, Mich.	500
KANS	Independence, Mo.	1000d
WRAN	Dover, N.J.	1000
WBRW	Brewster, N.Y.	1000d
WLAC	Nashville, Tenn.	50000
KCTX	Childress, Tex.	250d
KSTV	Stephenville, Tex.	250d
KGA	Spokane, Wash.	50000
WAUX	Waukesha, Wis.	10000d

1520—197.4

Kc.	Wave Length	W.P.
KGHT	Hollister, Calif.	500
KACY	Port Hueneme, Calif.	10000
WGNP	Indian Rocks Beach, Fla.	1000d
WIXX	Oakland Park, Fla.	1000d
WHOW	Clinton, Ill.	5000d
WLUV	Loves Park, Ill.	500d
WSVL	Shelbyville, Ind.	250
KSIB	Creston, Iowa	1000d
WRSL	Stanford, Ky.	500d
KXKW	Lafayette, La.	500
WKBW	Buffalo, N.Y.	50000
WFYI	Mineola, N.Y.	50000d
KOMA	Okla. City, Okla.	50000
KGON	Oregon City, Oreg.	10000
WWWW	Rio Piedras, P.R.	250

1530—196.1

Kc.	Wave Length	W.P.
KFBK	Sacramento, Calif.	50000
WRPM	Poplarville, Miss.	1000d
WTHM	Lapeer, Mich.	5000d
KMAM	Butler, Mo.	250

Kc.	Wave Length	W.P.
WENG	Englewood, Fla.	1000
WCKY	Cincinnati, Ohio	50000
KPBR	El Paso, Tex.	1000d
KGBT	Harlingen, Tex.	50000
KCLR	Ralls, Tex.	1000d
WQVA	Quantico, Va.	250

1540—195.0

Kc.	Wave Length	W.P.
ZNS	Nassau, B.W.I.	10000
CHFI	Toronto, Ont.	50kwd
KPOL	Los Angeles, Calif.	50000
WSMI	Litchfield, Ill.	1000d
WBNL	Boonville, Ind.	250d
WLOI	LaPorte, Ind.	250d
KXEL	Waterloo, Iowa	50000
KNEX	McPherson, Kans.	250d
KLKC	Parsons, Kans.	250d
WDON	Wheaton, Md.	1000
WPTR	Albany, N.Y.	50000
WIFM	Elkin, N.C.	250d
WABQ	Cleveland, Ohio	1000d
WJMJ	Philadelphia, Pa.	50000d
WPTS	Pittston, Pa.	1000d
WPME	Punxsutawney, Pa.	1000d
WADK	Newport, R.I.	1000d
KCUL	Ft. Worth, Tex.	50000d
KGBC	Galveston, Tex.	1000
KBVU	Bellevue, Wash.	1000
WTKM	Hartford, Wis.	500d

1550—193.5

Kc.	Wave Length	W.P.
CBE	Windsor, Ont.	10000
WBHM	Birmingham, Ala.	50000d
WAAY	Huntsville, Ala.	5000
WMOE	Mobile, Ala.	50000d
KFIF	Tucson, Ariz.	50000d
KXEX	Fresno, Calif.	500d
KKHI	San Fran., Calif.	10000
KDAB	Arvada, Colo.	10000d
WRIZ	Coral Gables, Fla.	10000d
WORT	New Smyrna Bch., Fla.	250
WYOU	Tampa, Fla.	10000d
WSMA	Smyrna, Ga.	10000d
WJIL	Jacksonville, Ill.	1000d
WCTW	New Castle, Ind.	250
KEDD	Dodge City, Kans.	1000d
WIRV	Irvine, Ky.	1000d
WMSK	Morganfield, Ky.	250d
WYNE	Baton Rouge, La.	5000d
KOKA	Shreveport, La.	10000
WSER	Elkton, Md.	250d
WSHN	Fremont, Mich.	1000d
WSAO	Sanitobia, Miss.	5kwd
KBLR	Bolivar, Mo.	250
KGMD	Cape Girardeau, Mo.	5000d
KKJO	St. Joseph, Mo.	5000
WCGR	Canadaigua, N.Y.	250
WBAZ	Kingston, N.Y.	500d
WBVM	Utica, N.Y.	1000
WHTB	Greenville, N.C.	500d
WTYN	Tryon, N.C.	1000d
WPEG	Winston-Salem, N.C.	1000d
KUTT	Fargo, N.D.	5000d
WOLR	Delaware, Ohio	500d
KMAD	Madill, Okla.	250
KREK	Sapulpa, Okla.	500d
WLOA	Braddock, Pa.	1000d
WTTC	Towanda, Pa.	500d
WKFE	Yauco, P.R.	250
WBSC	Bennetsville, S.C.	10000
WTHB	N. Augusta, S.C.	1000d
KVPH	Canyon, Tex.	1000
KWBC	Navasota, Tex.	250d
WYRL	Bristol, Tenn.	1000d
WTPI	Cookville, Tenn.	250d
WKPT	Kingsport, Tenn.	10000d
WKBA	Vinton, Va.	1000d
WBOF	Virginia Beach, Va.	5000d
WXVA	Charlestown, W.Va.	500d
KOQT	Bellingham, Wash.	1000d

1560—192.3

Kc.	Wave Length	W.P.
CFRS	Simcoe, Ont.	250d
KPMC	Bakersfield, Calif.	10000
KIQS	Willows, Calif.	250d
WBYS	Canton, Ill.	250d
KSWI	Council Bluffs, Iowa	1000d
WDXR	Paducah, Ky.	1000
KQYX	Joplin, Mo.	250
WQXR	New York, N.Y.	50000
WSDC	Mocksville, N.C.	1kwd
WGLD	Chardon, Ohio	250d
WTNS	Coshocton, Ohio	1000d
WTOD	Toledo, Ohio	5000d
KWCO	Chickasha, Okla.	1000
WRSJ	Bayamon, P.R.	5000
WLVN	Nashville, Tenn.	10000d
KCAD	Abilene, Tex.	500d
KHBR	Hillsboro, Tex.	250d
KGUL	Port Lavaca, Tex.	500d
KHOK	Hoquiam, Wash.	1000d

1570—191.1

Kc.	Wave Length	W.P.
CHUB	Nanaimo, B.C.	10000
CKLM	Montreal, Canada	10000d
CFDR	Drillia, Ont.	10000
WCRL	Oneonta, Ala.	1000
WRWJ	Selma, Ala.	5000d
KBRI	Brinkley, Ark.	250d
KBJT	Fordyce, Ark.	250d
KRKC	King City, Calif.	250d
KCVR	Lodi, Calif.	1000d
KACE	Riverside, Calif.	1000d
KLOV	Loveland, Colo.	250d
WTWB	Auburndale, Fla.	5000d
WPAP	Fernandina Beach, Florida	1000d
WOKC	Okeechobee, Fla.	1000
WJOE	Ward Ridge, Fla.	250
WMES	Ashburn, Ga.	1000d
WGHC	Clayton, Ga.	1000d
WEAD	College Park, Ga.	1000d
WGSR	Millen, Ga.	250d
WOKZ	Alton, Ill.	1000d
WFRL	Freeport, Ill.	5000d
WBEE	Harvey, Ill.	1000d
WTAY	Robinson, Ill.	250d
WILO	Frankfort, Ind.	250d
WAWK	Kendallville, Ind.	250d
WDWI	New Albany, Ind.	1000d
KMCD	Fairfield, Iowa	250d
KJFJ	Webster City, Iowa	250d
KNDY	Marysville, Kans.	250d
KWSK	Pratt, Kans.	250d
WKKS	Vanceburg, Ky.	250d
WABL	Amite, La.	500d
KLLA	Leesville, La.	1000
KMAR	Winnsboro, La.	1000
WAQE	Towson, Md.	5000d
WPEP	Taunton, Mass.	1000d
WMLD	Beverly, Mass.	500d
WDEW	Westfield, Mass.	1000d
WMRP	Flint, Mich.	1000d
WFUR	Grand Rapids, Michigan	1000d
KUXL	Golden Valley, Minn.	500d
WONA	Winona, Miss.	1000d
KLEX	Lexington, Mo.	250d
WAFS	Amsterdam, N.Y.	1000
WFLR	Dundee, N.Y.	1000d
WBUZ	Fredonia, N.Y.	250d
WAPC	Riverhead, N.Y.	1000d
WTLK	Taylorsville, N.C.	500
WNCA	Siler City, N.C.	1000d
WCLW	Mansfield, Ohio	1000
WPTW	Piqua, Ohio	250d
KTAT	Frederick, Okla.	250d
KOLS	Pryor, Okla.	1000d
KGGG	Forest Grove, Oreg.	1000d
KOHU	Hermiston, Oreg.	1000d
WBUX	Doylestown, Pa.	1000d
WAKU	Latrobe, Pa.	1000d
WFGN	Gaffney, S.C.	250d
WJES	Johnston, S.C.	250
WLSC	Loris, S.C.	1000d
WHLP	Centerville, Tenn.	1000d
WCLE	Cleveland, Tenn.	1000d
WTRB	Ripley, Tenn.	1000d
KZOL	Farwell, Tex.	250d
KVLG	La Grange, Tex.	250d
KTER	Terrell, Tex.	250d
KWIC	Salt Lake City, Utah	5000
WSWV	Pennington Gap, Va.	1000d
WYTI	Rocky Mount, Va.	1000d
WEER	Warrenton, W.Va.	500d
WAPL	Appleton, Wis.	1000d

1580—189.2

Kc.	Wave Length	W.P.
CBJ	Chicoutimi, Que.	10000
WEYY	Talladega, Ala.	1000d
KYND	Tempe, Ariz.	10000d
KPCA	Marked Tree, Ark.	250d
KFDF	Van Buren, Ark.	1000d
KPON	Anderson, Calif.	1000d
KWIP	Merced, Calif.	500d
KDAY	Santa Monica, Cal.	50000d
KHUM	Santa Rosa, Calif.	500d
KPIK	Colorado Sprgs., Colo.	5000d
WWIL	Ft. Lauderdale, Fla.	10000
WVGT	Mount Dora, Fla.	1000d
WCLS	Columbus, Ga.	1000d
WPFE	Eastman, Ga.	500d
WLBA	Gainesville, Ga.	5000d
WKIG	Glenville, Ga.	1000d
WKKD	Aurora, Ill.	250d
WDQN	DuQuoin, Ill.	250d
WBBA	Pittsfield, Ill.	250d
WKID	Urbana, Ill.	250d
WCNB	Connersville, Ind.	250d
WJVA	South Bend, Ind.	1000d
WAMW	Washington, Ind.	250d
KCHA	Charles City, Iowa	500d
KWNT	Davenport, Iowa	500d
KDSN	Denison, Iowa	500d
WAXU	Georgetown, Ky.	10000d
WMTL	Leitchfield, Ky.	250d
WPKY	Princeton, Ky.	250d
KLUV	Haynesville, La.	250d
KLOU	Lake Charles, La.	1000
WPGC	Bradbury Hgts., Md.	10000
WOWE	Allegan, Mich.	250d
WJUD	St. Johns, Mich.	1000d
KDOM	Windom, Minn.	250d
WAMY	Amory, Miss.	5000d
WGLC	Centreville, Miss.	250d
WESY	Leland, Miss.	1000
WPMP	Pascagoula-Moss Point, Mississippi	1000d
KCGM	Columbia, Mo.	250d
KESM	Eldorado Springs, Mo.	250d
KNIM	Maryville, Mo.	250d
WNJH	Hammonton, N.J.	250d
WCRV	Washington, N.J.	500d
KRZY	Albuquerque, N.Mex.	1000d
WPAC	Patchogue, N.Y.	10000d
WZKY	Albemarle, N.C.	250d
WPYB	Benson, N.C.	500d
WVKD	Columbus, Ohio	1000d
KLTR	Blackwell, Okla.	1000d
WCOY	Columbia, Pa.	500d
WEND	Ebensburg, Pa.	1000d
WANB	Waynesburg, Pa.	250d
WORG	Orangeburg, S.C.	1000d
WYCL	York, S.C.	250d
WSKT	Colonial Village, Tenn.	250d
WLIJ	Shelbyville, Tenn.	1000d
WSKT	South Knoxville, Tenn.	250
KKAL	Denver City, Tex.	250d
KGAF	Gainesville, Tex.	250d
KIRT	Mission, Tex.	1000d
KTLU	Rusk, Tex.	500d
KWED	Seguin, Tex.	1000d
KBYP	Shamrock, Tex.	250d
KBGO	Waco, Tex.	1000
WILA	Danville, Va.	1000d
WPUV	Pulaski, Va.	5000d
WTTN	Watertown, Wis.	1000d

1590—188.7

Kc.	Wave Length	W.P.
WATM	Atmore, Ala.	5000d
WVNA	Tuscumbia, Ala.	5000d
KPBA	Pine Bluff, Ark.	1000d
KLIV	San Jose, Calif.	5000
KUDU	Ventura, Calif.	1000
KCIN	Victorville, Calif.	500d
WBRY	Waterbury, Conn.	5000
WOWY	Clewiston, Fla.	500d
WILZ	St. Petersburg Beach, Florida	1000d
WELE	S. Daytona Bch., Fla.	1000d
WALG	Albany, Ga.	1000
WLFA	Lafayette, Ga.	5000d
WTGA	Thomaston, Ga.	500d
WNMP	Evanston, Ill.	1000d
WAIK	Galesburg, Ill.	5000d
WGEE	Indianapolis, Ind.	5000d
WPCO	Mt. Vernon, Ind.	500d
KWBG	Boone, Iowa	1000
KVGB	Great Bend, Kans.	5000
WLBN	Lebanon, Ky.	1000d
KEVL	White Castle, La.	1000d
WETT	Ocean City, Md.	1000
WTVB	Coldwater, Mich.	5000
WDOG	Marine City, Mich.	1000d
WMIC	St. Helen, Mich.	500d
KRAD	E. Grand Forks, Minn.	1000d
WOKJ	Jackson, Miss.	5000d
KDEX	Dexter, Mo.	1000d
KPRS	Kansas City, Mo.	1000d
KCLU	Rolla, Mo.	1000d
WSMN	Nashua, N.H.	5000
WERA	Plainfield, N.J.	500d
WAUB	Auburn, N.Y.	500d
WEHH	Elmira Heights-Horseheads, N.Y.	500d
WGGO	Salamanca, N.Y.	5000d
WVOE	Chadburn, N.C.	1000
WGTC	Greenville, N.C.	500
WNOS	High Point, N.C.	1000d
WAKR	Akron, Ohio	5000
WSRW	Hillsboro, Ohio	500d
KHEN	Henryetta, Okla.	500d
KTIL	Tillamook, Oreg.	1000
WZUM	Carnegie, Pa.	1000d
WCBG	Chambersburg, Pa.	5000d
WEEZ	Chester, Pa.	1000
WXRF	Guayama, P.R.	1000
WYNG	Warwick, R.I.	1000d
WABV	Abbeville, S.C.	1000d
WACA	Camden, S.C.	1000d
KCCR	Pierre, S.Dak.	1000d
WJSO	Jonesboro, Tenn.	5000d
WDBL	Springfield, Tenn.	1000d
KGAS	Carthage, Tex.	1000d
KERC	Eastland, Tex.	500d
KINT	El Paso, Tex.	1000d
KYOK	Houston, Tex.	5000
KCBD	Lubbock, Tex.	1000
KBUS	Mexia, Tex.	500d
KTOD	Sinton, Tex.	1000
WRLA	Luray, Va.	500d
WRGM	Richmond, Va.	5000d
KLFF	Mead, Wash.	1000d
KETO	Seattle, Wash.	5000d
WIXK	New Richmond, Wis.	5000d
WSWW	Platteville, Wis.	5000
WTRW	Two Rivers, Wis.	1000d
WAWA	West Allis, Wis.	1000d
KCHY	Cheyenne, Wyo.	1000d

1600—187.5

Kc.	Wave Length	W.P.
CHVC	Niagara Falls, Ont.	10000
WEUP	Huntsville, Ala.	5000d
WAPX	Montgomery, Ala.	1000
KVIC	Cottonwood, Ariz.	1000d
KXEW	Tucson, Ariz.	1000
KGST	Fresno, Calif.	1000d
KWOW	Pomona, Calif.	1000
KHER	Santa Maria, Calif.	500d
KUBA	Yuba City, Calif.	5000
KLAK	Lakewood, Colo.	5000
WKEN	Dover, Del.	5000
WKTX	Atlantic Beach, Fla.	1000d
WKWF	Key West, Fla.	500
WHEW	Riviera Beach, Fla.	1000
WDKB	Winter Garden, Fla.	1000d
WGKA	Atlanta, Ga.	1000d
WNGA	Nashville, Ga.	1000d
WCGD	Chicago Hgts., Ill.	1000d
WMCW	Harvard, Ill.	500d
WBTO	Linton, Ind.	500d
WARU	Peru, Ind.	1000d
KLGA	Algona, Iowa	5000d
KCRG	Cedar Rapids, Iowa	5000
KMDD	Ft. Scott, Kans.	500d
WSTL	Eminence, Ky.	500d
KFNV	Ferriday, La.	1000d
KLVI	Vivian, La.	500d
WINX	Rockville, Md.	1000
WBOS	Brookline, Mass.	5000
WTYM	East Longmeadow, Mass.	5000d
WHRV	Ann Arbor, Mich.	1000
WTRU	Muskegon, Mich.	5000
WKDL	Clarksdale, Miss.	1000d
WFFF	Columbia, Miss.	500d
KATZ	St. Louis, Mo.	5000
KTTN	Trenton, Mo.	500d
KNCY	Nebraska City, Nebr.	500d
KRFS	Superior, Nebr.	500d
WMCR	Oneida, N.Y.	1000d
WLNG	Sag Harbor, N.Y.	500
WXKW	Troy, N.Y.	500d
WWRL	Woodside, N.Y.	5000
WGIV	Charlotte, N.C.	1000
WIDU	Fayetteville, N.C.	1000d
WFRC	Reidsville, N.C.	1000
WKSK	W. Jefferson, N.C.	1000d
KDAK	Carrington, N.Dak.	500d
WAQI	Ashtabula, Ohio	1000d
WBLY	Springfield, Ohio	1000d
WTTF	Tiffin, Ohio	500d
KUSH	Cushing, Okla.	1000d
KASH	Eugene, Oreg.	5000
KSTH	St. Helens, Oreg.	1000d
WHOL	Allentown, Pa.	500d
WEZN	Elizabethtown, Pa.	500d
WFIS	Fountain Inn, S.C.	1000d
WFNL	No. Augusta, S.C.	500d
WHBT	Harriman, Tenn.	5000d
WKBJ	Milan, Tenn.	1000d
KBBB	Borger, Tex.	500d
KBOR	Brownsville, Tex.	1000
KWEL	Midland, Tex.	1000
KCFH	Cuero, Tex.	500d
KMAE	McKinney, Tex.	1000d
KOGT	Orange, Tex.	1000
KBBC	Centerville, Utah	1000d
WHLL	Wheeling, W.Va.	5000d
WCWC	Ripon, Wis.	5000d

U. S. and Canadian AM Stations by Location

Abbreviations: C.L., call letters; Kc., frequency in kilocycles; N.A., network affiliation—A: American Broadcasting Co.; C: Columbia Broadcasting System, Inc.; M: Mutual Broadcasting System; N: National Broadcasting Co., Inc.

Location	C.L.	Kc.	N.A.
Abbeville, Ala.	WARI	1480	
Abbeville, La.	KROF	960	
Abbeville, S.C.	WABV	1590	
Aberdeen, Md.	WAMD	970	
Aberdeen, Miss.	WMPA	1240	
Aberdeen, S.Dak.	KABR	1420	
	KSDN	930	A
Aberdeen, Wash.	KBKW	1450	
	KXRO	1320	
Abilene, Tex.	KRBC	1470	A
	KCAD	1560	
	KNIT	1280	
	KWKC	1340	M
Abingdon, Va.	WBBI	1230	
Ada, Okla.	KADA	1230	A
Adel, Ga.	WAAG	1470	
Adrian, Mich.	WABJ	1490	A
Aguadilla, P.R.	WABA	850	
	WGRF	1340	
Ahoskie, N.C.	WRCS	970	
Aiken, S.C.	WAKN	990	
	WLOW	1330	D
Aitkin, Minn.	KKIN	1000	D
Akron, Ohio	WAKR	1590	A
	WADC	1350	C
	WCUE	1150	M
	WHLO	640	M
Alamogordo, N.M.	KALG	1230	M
	KRAC	1270	
Alamosa, Colo.	KGIW	1450	M
Albany, Ga.	WALG	1590	A
	WLYB	1250	
	WGPC	1450	C

Location	C.L.	Kc.	N.A.
	WJAZ	960	
Albany, Ky.	WANY	1390	
Albany, Minn.	KASM	1150	
Albany, N.Y.	WABY	1400	
	WOKO	1460	M
	WPTR	1540	A
	WROW	590	C
Albany, Oreg.	KWIL	790	M
	KRKT	990	
Albemarle, N.C.	WABZ	1010	
	WZKY	1580	
Albert Lea, Minn.	KATE	1450	A
Albertville, Ala.	WAVU	630	
Albion, Mich.	WALM	1260	
Albuquerque, N.M.	KABQ	1350	
	KDEF	1150	A
	KGGM	610	C
	KOB	770	N
	KQEO	920	M
	KARA	1310	
	KMGM	730	
	KLOS	1450	
	KRZY	1580	A
Alcoa, Tenn.	WEAG	1470	
Alexander City, Ala.			
	WRFS	1050	
Alexandria, La.	KALB	580	A
	KDBS	1410	
	KSYL	970	N
Alexandria, Minn.	KXRA	1490	A
Alexandria, Va.	WPIK	730	M
Algona, Iowa	KLGA	1600	
Alice, Tex.	KOPY	1070	
Allegan, Mich.	WOWE	1580	
Allentown, Pa.	WHOL	1600	
	WAEB	790	
	WKAP	1320	
	WSAN	1470	N
Alliance, Nebr.	KCOW	1400	
Alliance, Ohio	WFAH	1310	
Alma, Ga.	WCQS	1400	
Alma, Mich.	WFYC	1280	
Alpena Township, Mich.			
	WATZ	1450	
Alpine, Tex.	KVLF	1240	M
Altavista, Va.	WKDE	1280	
Alton, Ill.	WOKZ	1570	
Altona, Man.	CFAM	1290	
Altoona, Pa.	WFBG	1290	N
	WRTA	1240	A
	WVAM	1430	C
Alturas, Calif.	KCNO	570	
Altus, Okla.	KWHW	1450	
Alva, Okla.	KALV	1430	
Amarillo, Tex.	KBUY	1010	M
	KFDA	1440	A
	KGNC	710	N
	KIXZ	940	C
	KRAY	1360	
	KZIP	1310	
Ambridge, Pa.	WMBA	1460	
Americus, Ga.	WDEC	1290	
Ames, Iowa	KSAI	1430	
	WOI	640	
Amherst, N.S.	CKDH	1400	
Amherst, N.Y.	WUFO	1080	
Amite, La.	WABL	1570	
Amory, Miss.	WAMY	1580	
Amos, Que.	CHAD	1340	
Amsterdam, N.Y.	WAFS	1570	
	WCSS	1490	
Anaconda, Mont.	KANA	580	
Anacortes, Wash.	KAGT	1340	
Anaheim, Calif.	KEZY	1190	
Anchorage, Alaska	KBYR	1270	
	KFQD	730	C-A
	KENI	550	A-M-N
Andalusia, Ala.	WCTA	920	
Anderson, Calif.	KPON	1580	
Anderson, Ind.	WHUT	1470	M
	WHBU	1240	C
Anderson, S.C.	WAIM	1230	C
	WANS	1280	M
Andrews, Tex.	KACT	1360	
Annapolis, Md.	WANN	1190	
	WABW	810	
	WNAV	1430	
Ann Arbor, Mich.	WHRV	1600	M
	WPAG	1050	
Anna, Ill.	WRAJ	1440	
Anniston, Ala.	WANA	1490	
	WDNG	1450	A
	WHMA	1390	
Anoka, Minn.	KANO	1470	
Ansonia, Conn.	WADS	690	M
Antigo, Wis.	WATK	900	
Antigonish, N.S.	CJFX	580	
Apollo, Pa.	WAVL	910	
Apple Valley, Cal.	KAVR	960	
Appleton, Wis.	WAPL	1570	
	WHBY	1230	M
Arab, Ala.	WRAB	1380	
Arcadia, Fla.	WAPG	1480	
Arcata, Calif.	KENL	1340	
Ardmore, Okla.	KVSO	1240	A
Arecibo, P.R.	WCMN	1280	
	WMIA	1070	
	WNIK	1230	
Arkadelphia, Ark.	KVRC	1240	M
Arkan. City, Kans.	KSOK	1280	
Arlington, Fla.	WQTY	1220	
Arlington, Va.	WAVA	780	
	WEAM	1390	
Artesia, N.M.	KSVP	990	M
Arvada, Colo.	KDAB	1550	
Ashburn, Ga.	WMES	1570	
Asbury Park, N.J.	WJLK	1310	
Asheboro, N.C.	WGWR	1260	
Asheville, N.C.	WISE	1310	

Location	C.L.	Kc.	N.A.
	WLOS	1380	N-M-A
	WSKY	1230	
	WWNC	570	C
Ashland, Ky.	WCMI	1340	C
	WTCR	1420	
Ashland, Ohio	WNCO	1340	
Ashland, Oreg.	KWIN	1400	M
	KRVC	1350	
Ashland, Va.	WIVE	1430	
Ashland, Wis.	WATW	1400	
Ashtabula, Ohio	WAQI	1600	
	WREO	970	
Aspen, Colo.	KSNO	5000	D
Astoria, Oreg.	KAST	1370	M
	KIAL	1230	
Atchison, Kans.	KARE	1470	
Athens, Ga.	WGAU	1340	C
	WOOL	1470	
	WRFC	960	
Athens, Ohio	WATH	970	
	WOUB	1340	
Athens, Tenn.	WLAR	1450	M
Athens, Tex.	KBUD	1410	
Atlanta, Ga.	WPLO	590	C
	WAKE	1340	
	WAOK	1380	
	WERD	860	
	WGKA	1600	
	WGST	920	A
	WIIN	970	
	WQXI	790	
	WSB	750	N
	WYZE	1480	C
Atlanta, Tex.	KALT	900	
Atlantic, Iowa	KJAN	1220	
Atlantic Beach, Fla.	WKTX	1600	
Atlantic City, N.J.	WFPG	1450	C
	WLDB	1490	A-M
	WMID	1340	A
Atmore, Ala.	WATM	1590	
Attleboro, Mass.	WARA	1320	
Auburn, Ala.	WAUD	1230	A
Auburn, Calif.	KAHI	950	
Auburn, N.Y.	WMBO	1340	M
	WAUB	1590	
Auburn, Wash.	KASY	1220	
Auburndale, Fla.	WTWB	1570	
Auburndale, Wis.	WLBL	930	
Augusta, Ga.	WAUG	1050	
	WBBQ	1340	M
	WBIA	1230	N
	WGAC	580	A
	WRDW	1480	C
Augusta, Maine	WRDO	1400	N
	WFAU	1340	M
Aurora, Colo.	KOSI	1430	M
Aurora, Ill.	WMRO	1280	
	WKKD	1580	
Aurora, Mo.	KSWM	940	
Austin, Minn.	KAUS	1480	M
	KQAQ	970	
Austin, Tex.	KNOW	1490	A
	KASE	970	
	KTBC	590	C
	KOKE	1370	
	KVET	1300	M
Avalon, Calif.	KBIG	740	
Avon Park, Fla.	WAVP	1390	
Avondale Estates, Ga.	WAVO	1420	
Aztec, N. Mex.	KNDE	1340	
Babylon, N.Y.	WBAB	1440	M
	WGLI	1290	
Bad Axe, Mich.	WLEW	1340	
Bainbridge, Ga.	WMGR	930	
	WAZA	1360	
Baker, Oreg.	KBKR	1490	
Bakersfield, Calif.	KAFY	550	M
	KBIS	970	
	KERN	1410	C
	KGEE	1230	
	KUZZ	800	
	KLYD	1350	
	KWAC	1490	
	KPMC	1560	A
Bellingham, Wash.	KPUG	1170	M
Baldwinsville, N.Y.	WSEN	1050	
Ballinger, Tex.	KRUN	1400	
Baltimore, Md.	WBAL	1090	N
	WBMD	750	
	WCAO	600	
	WCBM	680	C
	WFBR	1300	
	WITH	1230	M
	WSID	1010	
	WWIN	1400	A-M
Bamberg, S.C.	WWBD	790	
Bangor, Maine	WABI	910	A-M
	WGUY	1250	C
	WLBZ	620	N
Banning, Calif.	KPAS	1490	
Barboursville, Ky.	WBVL	950	
Bardstown, Ky.	WBRT	1320	
Barnesboro, Pa.	WNCC	950	
Barnwell, S.C.	WBAW	740	
Barre, Vt.	WSNO	1450	
Barrie, Ont.	CKBB	950	
Barstow, Calif.	KWTC	1230	A
	KIOT	1310	
Bartlesville, Okla.	KWON	1400	M
Bartow, Fla.	WBAR	1460	
Bassett, Va.	WODY	900	
Bastrop, La.	KTRY	730	
	KVOB	1340	
Batavia, N.Y.	WBTA	1490	M
Batesburg, S.C.	WBLR	1430	
Batesville, Ark.	KBTA	1340	
Batesville, Miss.	WBLE	1290	
Bath, Maine	WMMS	730	
Bath, N.Y.	WFSR	1580	

Location	C.L.	Kc.	N.A.
Baton Rouge, La.	WAIL	1460	M
	WYNE	1550	
	WYNK	1380	
	WIBR	1300	
	WJBO	1150	N
	WLCS	910	
	WXOK	1260	
Battle Creek, Mich.	WBCK	930	
	WELL	1400	A
Baxley, Ga.	WHAB	1260	
Bay City, Mich.	WBCM	1440	A
	WWBC	1250	
Bay City, Tex.	KIOX	1270	M
Bay Minette, Ala.	WBCA	1150	
Bayamon, P.R.	WRSJ	1560	
Baytown, Tex.	KWBA	1360	
Beacon, N.Y.	WBNR	1260	
Beardstown, Ill.	WRMS	790	
Beatrice, Nebr.	KWBE	1450	
Beaufort, N.C.	WBMA	1400	
Beaufort, S.C.	WBEU	960	
	WSIB	1490	
Beaumont, Tex.	KFOM	560	A
	KPYC	1450	
	KTRM	990	
Beaver Dam, Wis.	WBEV	1430	
Beaver Falls, Pa.	WBVP	1230	
Beckley, W. Va.	WJLS	560	C
	WWNR	620	
Bedford, Ind.	WBIW	1340	
Bedford, Pa.	WBFD	1310	
Bedford, Va.	WBLT	1350	
Beeville, Tex.	KIBL	1490	
Belen, N.Mex.	KARS	860	
Belgrade, Mont.	KGVW	630	
Bellaire, Ohio	WOMP	1290	M
Bellefontaine, Ohio	WOHP	1390	
Bellefonte, Pa.	WBLF	1330	
Bell Fourche, S.Dak.	KBFS	1450	
Belle Glade, Fla.	WSWN	900	
Belleville, Ont.	CJBQ	800	
Belleville, Ill.	WIBV	1260	
Bellevue, Wash.	KFKF	1330	
	KBVU	1540	
Bellingham, Wash.	KPUG	1170	M
	KGMI	790	A
	KOQT	1550	
Bellingham-Ferndale, Wash.			
	KENY	930	
Belmont, N.C.	WCGC	1270	M-A
Beloit, Wis.	WGEZ	1490	M
Belton, S.C.	WHPB	1390	
Belton, Tex.	KTON	940	
Belzoni, Miss.	WELZ	1460	
Bemidji, Minn.	KBUN	1450	M
Bend, Oreg.	KBND	1110	A
	KGRL	940	
Bennetsville, S.C.	WBSC	1550	M
Bennington, Vt.	WBTN	1370	
Benson, Minn.	KBMO	1290	
Benson, N.C.	WPYB	1580	
Benton, Ark.	KBBA	690	
Benton, Ky.	WCBL	1290	
Benton Harbor, Mich.	WHFB	1060	
Berkeley, Calif.	KRE	1400	
Berkeley Springs, W.Va.			
	WCST	1010	
Berlin, N.H.	WMOU	1230	
	WBRL	1400	
Berry Hill, Tenn.	WVOL	1470	
Berryville, Ark.	KTHS	1480	
Berwick, Pa.	WBRX	1280	
Bessemer, Ala.	WYAM	1450	
Bethesda, Md.	WUST	1120	
Bethlehem, Pa.	WGPA	1100	
Beverly, Mass.	WMLO	1570	
Biddeford, Maine	WIDE	1400	M
Big Delta, Alaska	WXLL	980	
Big Lake, Tex.	KBLT	1290	
Big Rapids, Mich.	WBRN	1460	
Big Sprg., Tex.	KBST	1490	A
	KHEM	1270	
	KBYG	1400	M
Big Stone Gap, Va.	WLSD	1220	
Biloxi, Miss.	WLOX	1490	M
	WVMI	570	
Billings, Mont.	KBMY	1240	M
	KGHL	790	N
	KOOK	970	C
	KOYN	910	
	KURL	730	
Binghamton, N.Y.	WINR	680	N
	WKOP	1360	M
	WNBF	1290	C
Birmingham, Ala.	WAPI	1070	N
	WBHM	1550	
	WBRC	960	A
	WCRT	1260	A
	WEZB	1220	
	WENN	1320	M
	WATV	900	C
	WSGN	610	
	WYDE	850	
	WVOK	690	
Bisbee, Ariz.	KSUN	1230	A
Bishop, Calif.	KIBS	1230	A
Bishopville, S.C.	WAGS	1380	
Bismarck, N.Dak.	KFYR	550	N
	KQDI	1350	
Bismarck-Mandan, N.Dak.			
	KBOM	1270	
Black Mountain, N.C.			
	WBMT	1350	
	WFGW	1010	
Black River Falls, Wis.			
	WWIS	1260	
Blackfoot, Idaho	KBLI	690	
Blackshear, Ga.	WBSG	1350	
Blackstone, Va.	WKLV	1440	

Location	C.L.	Kc.	N.A.
Blackwell, Okla.	KLTR	1580	
Blaine, Wash.	KARI	550	
Blakely, Ga.	WBBK	1260	
Blanding, Utah	KUTA	790	
Blind River, Ont.	CJNR	730	
Bloomington, Ill.	WJBC	1230	A
Bloomington, Ind.	WTTS	1370	A
Bloomsburg, Pa.	WCNR	930	
	WHLM	550	
Blountstown, Fla.	WKMK	1370	
Bluefield, W.Va.	WHIS	1440	N
	WKOY	1240	M
Blythe, Calif.	KYOR	1450	A
Blytheville, Ark.	KLCN	910	
Boaz, Ala.	WBSA	1300	
Bogalusa, La.	WIKC	1490	N
	WBOX	920	
Boise, Idaho	KATN	1010	
	KBOI	950	C
	KEST	790	
	KGEM	1140	M
	KIDO	630	N
	KYME	740	
Bolivar, Mo.	KBLR	1550	
Bonham, Tex.	KFYN	1420	
Boone, Iowa	KFGQ	1260	
	KWBG	1590	
Boone, N.C.	WATA	1450	
Boonville, Ind.	WBNL	1540	
Boonville, Mo.	KWRT	1370	
Booneville, Miss.	WBIP	1400	A
Boonville, N.Y.	WBRV	900	
Borger, Tex.	KHUZ	1490	M
	KBBB	1600	
Boston, Mass.	WBZ	1030	
	WCOP	1150	
	WILD	1090	
	WNAC	680	
	WEZE	1260	N
	WEEI	590	C
	WHDH	850	
	WMEX	1510	
	WORL	950	M
Boulder, Colo.	KBOL	1490	
	KDEY	1360	
Bowie, Tex.	KBAN	1410	
Bowling Green, Ky.	WKCT	930	A
	WBGN	1340	
	WLBJ	1410	M
Bowl. Green, Ohio	WMGS	730	
Bozeman, Mont.	KXXL	1450	N
	KBMN	1230	
Bradbury Hgts., Md.	WPGC	1580	
Braddock, Pa.	WLOA	1550	
Braddocks Heights, Md.			
	WMHI	1370	
Bradenton, Fla.	WTRL	1490	
	WBRD	1420	
Bradford, Pa.	WESB	1490	M
Brady, Tex.	KNEL	1490	
Brainerd, Minn.	KLIZ	1380	
Brampton, Ont.	CHIC	1090	
Brandon, Man.	CKX	1150	
Branson, Mo.	KBHM	1220	
Brantford, Ont.	CKPC	1380	
Brattleboro, Vt.	WTSA	1450	N
	WKVT	1490	
Brawley, Calif.	KROP	1300	A
Brazil, Ind.	WBZI	1380	
Breckenridge, Minn.	KBMW	1450	
Breckenridge, Tex.	KSTB	1430	
Bremen, Ga.	WWCC	1440	
Bremerton, Wash.	KBRO	1490	
Brenham, Tex.	KWHI	1280	
Brevard, N.C.	WPNF	1240	M-N
Brewster, N.Y.	WBRW	1510	
Brewton, Ala.	WEBJ	1240	M
Bridgeport, Ala.	WBTS	1480	
Bridgeport, Conn.	WICC	600	M
	WNAB	1450	A-M
Bridgeton, N.J.	WSNJ	1240	M
Bridgewater, N.S.	CKBW	1000	
Brigham City, Utah	KBUH	800	
Brighton, Colo.	KBRN	800	
Brinkley, Ark.	KBRI	1570	
Bristol, Conn.	WBIS	1440	
Bristol, Tenn.	WOPI	1490	N
	WYKE	1550	
Bristol, Va.	WCYB	690	A
	WFHG	980	M
Brockton, Mass.	WBET	1460	
	WOKW	1410	
Brockville, Ont.	CFJR	1450	
Broken Bow, Nebr.	KCNI	1280	
Brookfield, Mo.	KGHM	1470	
Brookhaven, Miss.	WCHJ	1470	
	WJMB	1340	M
Brookings, Oreg.	KURY	910	
Brookings, S.Dak.	KBRK	1430	
Brookline, Mass.	WBOS	1600	
Brooksville, Fla.	WWJB	1450	
Brownfield, Tex.	KTFY	1300	
Brownsville, Tex.	KBOR	1600	A
Brownwood, Tex.	KBWD	1380	M
	KEAN	1240	
Brunswick, Ga.	WGIG	1440	A
	WMOG	1490	
Brunswick, Maine	WCME	900	
Bryan, Tex.	KORA	1240	M
	WTAW	1150	
Buckhannon, W.Va.	WBUC	1460	
Buffalo, N.Y.	WBEN	930	C
	WYSL	1400	
	WEBR	970	M
	WGR	550	N
	WKBW	1520	N
	WWOL	1120	A

Location	C.L.	Kc.	N.A.
Buffalo, Wyo.	KBBS	1450	
Buford, Ga.	WDMF	1460	
Burbank, Calif.	KBLA	1490	
Burley, Idaho	KBAR	1230	A-M
Burlington, Iowa	KBUR	1490	A
Burlington, N.C.	WBBB	920	M
	WBAG	1150	
Burlington, Vt.	WCAX	620	N
	WDOT	1400	
	WJOY	1230	A
Burnett, Tex.	KTSL	1340	
Burns, Oreg.	KRNS	1230	
Butler, Ala.	WPRN	1220	
Butler, Mo.	KMAM	1530	
Butler, Pa.	WBUT	1050	
	WISR	680	
Butte, Mont.	KBOW	1490	C
	KOPR	550	M
	KXLF	1370	N
Cabano, Que.	CJAF	1340	
Cadillac, Mich.	WATT	1240	M
Caguas, P.R.	WNEL	1430	
	WVJP	1110	
Cairo, Ga.	WGRA	790	
Cairo, Ill.	WKRO	1490	
Calais, Maine	WQDY	1230	N
Caldwell, Idaho	KCID	1490	
	KBGN	910	
Calera, Ala.	WBYE	1370	
Calexico, Calif.	KICO	1490	A
Calgary, Alta.	CFAC	960	
	CBX	1010	
	CFCN	1060	
	CKXL	1140	
Calhoun, Ga.	WCGA	900	
Cambridge, Md.	WCEM	1240	
Cambridge, Mass.	WTAO	740	A
Cambridge, Ohio	WILE	1270	
Camden, Ark.	KAMD	910	
Camden, N.J.	WCAM	1310	
	WKDN	800	
Camden, S.C.	WACA	1590	
Camden, Tenn.	WFWL	1220	
Cameron, Tex.	KMIL	1330	
Camilla, Ga.	WCLB	1220	
Campbell, Ohio	WHOT	1330	
Campbellsville, Ky.	WTCO	1450	
Campbellton, N.B.	CKNB	950	
Camrose, Alta.	CFCW	1230	
Canandaigua, N.Y.	WCGR	1550	
Cannon City, Colo.	KRLN	1400	M
Canonsburg, Pa.	WARO	540	
Canton, Ga.	WCHK	1290	
Canton, Ill.	WBYS	1560	
Canton, Miss.	WDDB	1370	
Canton, N.C.	WWIT	970	
Canton, Ohio	WCNS	900	M
	WHOF	1060	
	WHBC	1480	A
Canyon, Tex.	KVPH	1550	
Cape Girardeau, Mo.	KFVS	960	
	KGMO	1550	
Carbondale, Ill.	WCIL	1020	
Carbondale, Pa.	WCDL	1440	
Caribou, Maine	WFST	600	
Carlisle, Pa.	WHYL	960	
Carlsbad, N.Mex.	KAVE	1240	C
	KPBM	740	
Carmel, Calif.	KRML	1410	
Carmi, Ill.	WROY	1460	
Carnegie, Pa.	WZUM	1590	
Caro, Mich.	WWRD	1360	
Carrington, N.Dak.	KDAK	1600	
Carrizo Springs, Tex.	KBEN	1450	
Carroll, Iowa	KCIM	1380	
Carrollton, Ala.	WRAG	590	
Carrollton, Ga.	WLBB	1100	
Carrollton, Mo.	KAOL	1430	
Carson City, Nev.	KPTL	1300	
Cartersville, Ga.	WBHF	1450	M
	WKRW	1270	
Carthage, Ill.	WCAZ	990	
Carthage, Mo.	KDMO	1490	
Carthage, Tenn.	WRKM	1350	
Carthage, Tex.	KGAS	1590	
Caruthersville, Mo.	KCRV	1370	
Casa Grande, Ariz.	KPIN	1260	
Casper, Wyo.	KTWO	1470	C
	KATI	1400	
	KVOC	1230	A-M
Cayce, S.C.	WCAY	620	C
Cedar City, Utah	KSUB	590	C
Cedar Falls, Iowa	KCFI	1250	
Cedar Rapids, Iowa	KCRG	1600	A
	KHAK	1380	
	KLWN	1450	
	WMT	600	C
Cedartown, Ga.	WGAA	1340	
Celina, Ohio	WCSM	1350	
Center, Ala.	WEIS	990	
Center, Tex.	KDET	930	
Centerville, Iowa	KCOG	1400	
Centerville, Tenn.	WHLP	1570	
Centerville, Utah	KBBC	1600	
Central City, Ky.	WNES	1050	
	WMTA	1380	
Centralia, Ill.	WCNT	1210	
Centralia & Chehalis, Wash.	KELA	1470	
Centreville, Miss.	WGLC	1580	
Chadburn, N.C.	WVOE	1590	
Chadron, Nebr.	KCSR	1450	
Chambersburg, Pa.	WCHA	800	
	WCBG	1590	
Champaign, Ill.	WDWS	1400	C
Chanute, Kans.	KCRB	1460	

Location	C.L.	Kc.	N.A.
Chapel Hill, N.C.	WCHL	1360	
Chardon, Ohio	WGLD	1560	
Charleroi, Pa.	WESA	940	
Charles City, Iowa	KCHA	1580	
Charleston, Ill.	WEIC	1270	
Charleston, Mo.	KCHR	1350	
Charleston, S.C.	WCSC	1390	C
	WDKE	1340	A-M
	WPAL	730	
	WQSN	1450	
	WTMA	1250	N
Charleston, W.Va.	WCAW	680	
	WCHS	580	C
	WTGR	1490	A
	WKAZ	950	N
	WTIP	1240	M
	WXVA	1550	
Charlotte, Mich.	WCER	1390	
Charlotte, N.C.	WBT	1100	C
	WAYS	610	M
	WGIV	1600	
	WKTC	1310	
	WSOC	930	M
	WIST	1240	N
	WWOK	1480	
Charlotte Amalie, V.I.			
	WSTA	1340	
	WBNB	1000	
Charlottesville, Va.	WCHV	1260	A
	WELK	1010	
	WINA	1400	M
Charlottetown, P.E.I.	CFCY	630	
Chase City, Va.	WMEK	980	
Chatham, Ont.	CFCO	630	
Chattanooga, Tenn.	WMOC	1450	M
	WAPO	1150	A-M
	WDEF	1370	N
	WDOD	1310	C
	WDXB	1490	
	WNOO	1260	
Cheboygan, Mich.	WCBY	1240	
Cheektowaga, N.Y.	WNIA	1230	
Chehalis, Wash.	KITI	1420	
Chelan, Wash.	KOZI	1220	
Cheraw, S.C.	WCRE	1420	
Cherokee, Iowa	KCHE	1440	
Chester, Ill.	KSGM	980	
Chester, Pa.	WEEZ	1590	
	WVCH	740	
Chester, S.C.	WGCD	1490	
Cheyenne, Wyo.	KFBC	1240	A
	KCHY	1590	
	KRAE	1480	
	KVWO	1370	M
Chicago, Ill.	WAAF	950	
	WAIT	820	M
	WBBM	780	C
	WCFL	1000	
	WCRW	1240	
	WEDC	1240	
	WYNR	1390	
	WGN	720	M
	WIND	560	
	WJJD	1160	
	WLS	890	A
	WMAQ	670	N
	WMBI	1110	
	WSBC	1240	
Chicago Hgts., Ill.	WMPP	1470	
	WCGO	1600	
Chickasha, Okla.	KWCO	1560	
Chico, Calif.	KHSL	1290	C
	KPAY	1060	
Chicopee, Mass.	WACE	730	
Chicoutimi, Que.	CBJ	1580	
	CJMT	1420	
Childress, Tex.	KCTX	1510	
Chillicothe, Mo.	KCHI	1010	
Chillicothe, Ohio	WBEX	1490	A
	WCHI	1350	
Chilliwack, B.C.	CHWK	1270	
Chipley, Fla.	WBGC	1240	
Chippewa Falls, Wis.			
	WAXX	1150	
Christiansburg, Va.	WBCR	1260	
Christiansted, V.I.	WIVI	970	
Church Hill, Tenn.	WMCH	1260	
Churchill, Man.	CHFC	1230	
Cicero, Ill.	WHFC	1450	
Cincinnati, Ohio	WCKY	1530	M
	WCIN	1480	
	WCPO	1230	
	WKRC	550	C
	WLW	700	N-A
	WSAI	1360	
Clanton, Ala.	WKLF	980	
Clare, Mich.	WCRM	990	
Claremont, N.H.	WTSV	1230	
Claremore, Okla.	KWPR	1270	
Clarion, Pa.	WWCH	1300	
Clarksburg, W.Va.	WBOY	1400	N
	WHAR	1340	M
	WPDX	750	
Clarksdale, Miss.	WRDX	1450	M
	WKDL	1600	
Clarksville, Ark.	KLYR	1360	
Clarksville, Tenn.	WJZM	1400	M
	WDXN	540	
Clarksville, Tex.	KCAR	1350	
Claxton, Ga.	WCLA	1470	
Clayton, Ga.	WGHC	1570	
Clayton, Mo.	KXLW	1320	
	KFUO	850	
Clayton, N.Mex.	KLMX	1450	
Clearfield, Pa.	WCPA	900	
Clearwater, Fla.	WTAN	1340	
	WAZE	860	
Cleburne, Tex.	KCLE	1120	
Clermont, Fla.	WSLG	1340	

Location	C.L.	Kc.	N.A.
Cleveland, Ga.	WRWH	1350	
Cleveland, Miss.	WCLD	1490	
	WDSK	1410	
Cleveland, Ohio	KYW	1100	
	WDOK	1260	M
	WERE	1300	
	WGAR	1220	C
	WHK	1420	
	WABQ	1540	
	WJW	850	N
Cleveland, Tenn.	WBAC	1340	M
	WCLE	1570	
Cleveland, Tex.	KVLB	1410	
Cleve. Hgts., Ohio	WJMO	1490	A
Clewiston, Fla.	WOWY	1590	
Clifton, Ariz.	KCLF	1400	A
Clifton Forge, Va.	WCFV	1230	M
Clincho, Va.	WDIC	1430	
Clinton, Ill.	WHOW	1520	
Clinton, Iowa	KCLN	1390	
	KRDS	1340	M
Clinton, Mo.	KDKD	1280	
Clinton, N.C.	WRRZ	880	A
Clinton, Okla.	KWOE	1320	
Clinton, S.C.	WPCC	1410	
Clinton, Tenn.	WYSH	1380	
Cloquet, Minn.	WKLK	1230	
Clovis, N.Mex.	KCLV	1240	
	KICA	980	
Coachella, Calif.	KCHV	970	
Coalinga, Calif.	KBMX	1470	
Coatesville, Pa.	WCDJ	1420	
Cocoa, Fla.	WKKO	860	
	WEZY	1350	
Cocoa Beach, Fla.	WRKT	1300	
Cody, Wyo.	KODI	1400	A
Coeur d'Alene, Ida.	KVNI	1240	M
Coffeyville, Kans.	KGGF	690	A
Colby, Kans.	KXXX	790	
Coldwater, Mich.	WTVB	1590	
Coleman, Tex.	KSTA	1000	
Colfax, Wash.	KCLX	1450	
College Park, Ga.	WEAD	1570	
Colonial Heights, Va.			
	WPVA	1290	
Colonial Village, Tenn.			
	WSKT	1580	
Colorado City, Tex.	KVMC	1320	
Colo. Sprgs., Colo.	KRDO	1240	
	KPIK	1580	
	KVOR	1300	C
	KSSS	740	
	KYSN	1460	M
Columbia, Ky.	WAIN	1270	
Columbia, Miss.	WCJU	1450	M
Columbia, Mo.	KFRU	1400	A
	KCGM	1580	
Columbia, Pa.	WCOY	1580	
Columbia, S.C.	WCOS	1400	A
	WIS	560	N
	WOIC	1320	C
	WNOK	1230	M
	WQXL	1470	
Columbia, Tenn.	WMCP	1280	
	WKRM	1340	
Columbus, Ga.	WDAK	540	N
	WRBL	1420	C
	WGBA	1270	M
	WCLS	1580	
	WOKS	1340	
Columbus, Ind.	WCSI	1010	
Columbus, Miss.	WACR	1050	
	WCBI	550	M
Columbus, Nebr.	KJSK	900	
Columbus, Ohio	WBNS	1460	C
	WCOL	1230	A
	WMNI	920	A
	WOSU	820	
	WTVN	610	
	WVKO	1580	
Colville, Wash.	KCVL	1270	
Commerce, Ga.	WJJC	1270	
Concord, Calif.	KWUN	1480	
Concord, N.H.	WKXL	1450	C
Concord, N.C.	WEGO	1410	
Concordia, Kans.	KNCK	1390	
	KFRM	550	A
Conneaut, Ohio	WWOW	1360	
Connellsville, Pa.	WCVI	1340	
Connersville, Ind.	WCNB	1580	
Conroe, Tex.	KMCO	900	
Conway, Ark.	KCON	1230	
	KVEE	1330	
Conway, N.H.	WBNC	1050	
Conway, S.C.	WLAT	1330	M
Cookeville, Tenn.	WHUB	1400	C
	WTPI	1550	
Coolidge, Ariz.	KCKY	1150	C
Coos Bay, Oreg.	KOOS	1230	M
	KYNG	1420	
Copper Hill, Tenn.	WLSB	1400	
Coquille, Oreg.	KWRO	630	
Coral Gables, Fla.	WRIZ	1550	
	WVCG	1070	
Corbin, Ky.	WCTT	680	M
	WYGO	1330	
Cordele, Ga.	WMJM	1490	M
Cordova, Alaska	KLAM	1450	
Corinth, Miss.	WCMA	1230	
Cornelia, Ga.	WCON	1450	
Corner Brook, Nfld.	CBY	790	
	CFCB	570	
Corning, Ark.	KCCB	1260	
Corning, N.Y.	WCBA	1350	
	WCLI	1450	A
Cornwall, Ont.	CJSS	1220	
	CFML	1110	
Corona, Calif.	KBUC	1370	
Corpus Christi, Tex.			

Location	C.L.	Kc.	N.A.
	KCTA	1030	M
	KCCT	1150	
	KEYS	1440	
	KRYS	1360	N
	KSIX	1230	A-M
	KUNO	1400	
Corry, Pa.	WOTR	1370	
Corsicana, Tex.	KAND	1340	
Cortez, Colo.	KVFC	740	
Cortland, N.Y.	WKRT	920	
Corvallis, Oreg.	KOAC	550	
	KFLY	1240	
	KLOO	1350	
Coshocton, Ohio	WTNS	1560	
Cottage Grove, Ore.	KNND	1400	
Cottonwood, Ariz.	KVRD	1240	
	KVIC	1600	
Coudersport, Pa.	WFRM	600	
Council Bluffs, Iowa			
	KSWI	1560	M-A
Courtenay, B.C.	CFCP	1440	
Covington, Ga.	WGFS	1430	
Covington, La.	WARB	730	
Covington, Tenn.	WKBL	1250	
Covington, Va.	WKEY	1340	A
Cowan, Tenn.	WZYX	1440	
Craig, Colo.	KRAI	550	
Cranbrook, B.C.	CKEK	570	
Crane, Tex.	KCRR	1380	
Crescent City, Calif.	KPLY	1240	
	KPOD	1310	
Creston, Iowa	KSIB	1520	
Crestview, Fla.	WCNU	1010	
	WJSB	1050	
Crewe, Va.	WSVS	800	
Crockett, Tex.	KIVY	1290	
Crookston, Minn.	KROX	1260	
Crossett, Ark.	KAGH	800	
Crossville, Tenn.	WAEW	1330	
Crowley, La.	KSIG	1450	M
Cuero, Tex.	KCFH	1600	
Cullman, Ala.	WFMH	1460	
	WKUL	1340	
Culpeper, Va.	WCVA	1490	M
Cumberland, Ky.	WCPM	1280	
Cumberland, Md.	WCUM	1230	C
	WTBO	1450	
Cummings, Ga.	WSNE	1410	
Cushing, Okla.	KUSH	1600	
Cuyahoga Falls, Ohio			
	WCVE	1150	
Cypress Gardens, Fla.	WGTD	540	
Cynthiana, Ky.	WCYN	1400	
Dade City, Fla.	WDCF	1350	
Dadeville, Ala.	WDVC	910	
Dalhart, Tex.	KXIT	1410	
Dallas, N.C.	WAAK	960	
Dallas, Oreg.	KROW	1460	
Dallas, Tex.	KRLD	1080	C
	KIXL	1040	
	KSKY	660	
	KLIF	1190	
	WFAA	570	A
	WFAA	820	N
	KBOX	1480	
	WRR	1310	M
The Dalles, Oreg.	KACI	1300	
	KODL	1440	A
Dalton, Ga.	WBLJ	1230	M
	WRCD	1430	
Danbury, Conn.	WLAD	800	
Danville, Ill.	WDAN	1490	C
	WITY	980	
Danville, Ky.	WHIR	1230	M
Danville, Va.	WBTM	1330	A
	WYPR	970	
	WDVA	1250	M
	WILA	1580	
Darlington, S.C.	WDAR	1350	
Dauphin, Man.	CKDM	730	
Davenport, Iowa	WOC	1420	N
	KWNT	1580	
	KSTT	1170	M
Dawson, Ga.	WDWD	990	
Dawson, Yukon T.	CFYT	1230	
Dawson Creek, B.C.	CJDC	560	
Dayton, Ohio	WHIO	1290	C
	WING	1410	
	WONE	980	
	WAVI	1210	
Dayton, Tenn.	WDNT	1280	
Daytona Beach, Fla.			
	WNDB	1150	M-A
	WMFJ	1450	
	WROD	1340	
Deadwood, S.Dak.	KDSJ	980	
Dearborn, Mich.	WKMH	1310	M
Decatur, Ala.	WHOS	800	
	WAJF	1490	
	WMSL	1400	M
Decatur, Ga.	WGUN	1010	A
Decatur, Ill.	WDZ	1050	
	WSOY	1340	C
Decorah, Iowa	KDEC	1240	
	KWLC	1240	
Deerfield, Va.	WABH	1150	
Defiance, Ohio	WONW	1280	
De Funiak Springs, Fla.			
	WDSP	1280	
	WZEP	1460	
De Kalb, Ill.	WLBK	1360	
De Land, Fla.	WJBS	1490	
	WOOO	1310	
Delano, Calif.	KCHJ	1010	
Delaware, Ohio	WDLE	1550	
Delray, Bch., Fla.	WDBF	1420	
Del Rio, Tex.	KDLK	1230	
Delta, Colo.	KDTA	1400	
Deming, N.Mex.	KOTS	1230	

Location	C.L.	Kc.	N.A.
Demopolis, Ala.	WXAL	1400	M
	WJWT	1350	
Denham Sprgs., La.	WLBI	1220	
Denison, Iowa	KDSN	1580	
Denison, Tex.	KDSX	950	
Denton, Tex.	KDNT	1440	
Denver, Colo.	KDEN	1340	
	KFML	1390	
	KHOW	630	A
	KIMN	950	A
	KLIR	990	
	KLZ	560	C
	KBTR	710	
	KOA	850	N
	KPOF	910	
	KFSC	1220	
	KTLN	1280	
Denver City, Tex.	KKAL	1580	
De Queen, Ark.	KDQN	1390	
DeRidder, La.	KDLA	1010	
Des Moines, Iowa	KCBC	1390	A
	KIOA	940	M
	KRNT	1350	C
	KSO	1460	
	KWKY	1150	M
	WHO	1040	N
Detroit, Mich.	WCAR	1130	
	WJBK	1500	
	WJLB	1400	
	WJR	760	
	WWJ	950	N
	WXYZ	1270	A
Detroit Lakes, Minn.	KDLM	1340	
Devils Lake, N.Dak.	KDLR	1240	M
Dexter, Mo.	KDEX	1590	
Diboll, Tex.	KSPL	1260	
Dickinson, N.Dak.	KDIX	1230	
Dickson, Tenn.	WDKN	1260	
Dillon, Mont.	KDBM	800	
Dillon, S.C.	WDSC	800	A
Dinuba, Calif.	KRDU	1130	
Dixon, Ill.	WIXN	1460	
Dodge City, Kans.	KGNO	1370	M
	KEDD	1550	
Dothan, Ala.	WAGF	1320	
	WDIG	1450	M
	WOOF	560	
Douglas, Ariz.	KAWT	1450	M
	KAPR	930	
Douglas, Ga.	WDMG	860	
	WDKA	1310	
Douglas, Wyo.	KWIV	1050	
Dover, Del.	WDOV	1410	M
	WKEN	1600	A
Dover, N.H.	WTSN	1270	
Dover, N.J.	WRAN	1510	
Dover, Ohio	WJER	1450	
Dowagiac, Mich.	WDOW	1440	
Doylestown, Pa.	WBUX	1570	
Drumheller, Alta.	CJDV	910	
Drummondville, Que.	CHRD	1340	
Dublin, Ga.	WMLT	1330	
	WXLI	1230	
Du Bois, Pa.	WCED	1420	C
Dubuque, Iowa	KDTH	1370	A
	WDBQ	1490	M
Duluth, Minn.	KDAL	610	C
	WEBC	560	
	KAOH	1390	
Dumas, Tex.	KDDD	800	
Duncan, Okla.	KRHD	1350	M
Dundalk, Md.	WAYE	860	
	WEBB	1360	
Dundee, N.Y.	WFLR	1570	
Dunkirk, N.Y.	WDOE	1410	
Dunn, N.C.	WCKB	780	
Du Quoin, Ill.	WDQN	1580	
Durango, Colo.	KIUP	930	
	KDGO	1240	
Durant, Okla.	KSEO	750	
Durham, N.C.	WDNC	620	C
	WSRC	1410	
	WSSB	1490	
	WTIK	1310	A
Dyersburg, Tenn.	WDSG	1450	
	WTRO	1330	
Eagle Pass, Tex.	KEPS	1270	
Eagle River, Wis.	WERL	950	
Easley, S.C.	WELP	1360	
E. Grand Forks, Minn.	KRAD	1590	
Eastland, Tex.	KERC	1590	
E. Lansing, Mich.	WKAR	870	
E. Liverpool, Ohio	WOHI	1490	A
East Longmeadow, Mass.	WTYM	1600	
Eastman, Ga.	WPFE	1580	
E. Moline, Ill.	WDLM	960	
E. Point, Ga.	WTJH	1260	
E. St. Louis, Ill.	WBBR	1490	A
Easton, Md.	WEMD	1460	
Easton, Pa.	WEEX	1230	
	WEST	1400	N
Eatontown, N.J.	WHTG	1410	
Eau Claire, Wis.	WEAQ	790	N
	WBIZ	1400	M
	WECL	1050	
Eau Gallie, Fla.	WMEG	920	
Ebensburg, Pa.	WEND	1580	
Edenton, N.C.	WCDJ	1260	
Edinburg, Tex.	KURV	710	
Edmonds, Wash.	KGDN	630	
Edmonton, Alta.	CBXA	740	
	CFRN	1260	
	CHED	630	
	CHFA	680	
	CJCA	930	
	CKUA	580	
Edmundston, N.C.	CJEM	570	
Effingham, Ill.	WCRA	1090	
Elba, Ala.	WELB	1350	
Elberton, Ga.	WSGC	1400	
El Cajon, Calif.	KDEO	910	A
El Campo, Tex.	KULP	1390	
El Centro, Calif.	KXO	1230	M
	KAMP	1430	
El Dorado, Ark.	KDMS	1290	
	KELD	1400	A
Eldorado, Kans.	KBTO	1360	
Eldorado Springs, Mo.	KESM	1580	
Elgin, Ill.	WRMN	1410	
Elizabeth City, N.C.	WCNC	1240	
	WGAI	560	M
Elizabethton, Tenn.	WBEJ	1240	
Elizabethtown, Ky.	WIEL	1400	
Elizabethtown, N.C.	WBLA	1440	
Elizabethtown, Pa.	WEZN	1600	
Elk City, Okla.	KBEK	1240	A
Elkhart, Ind.	WTRC	1340	N
	WCMR	1270	
Elkin, N.C.	WIFM	1540	
Elkins, W.Va.	WDNE	1240	
Elko, Nev.	KELK	1240	M
Elkton, Md.	WSER	1550	
Ellensburg, Wash.	KXLE	1240	
Ellsworth, Me.	WDEA	1350	
Elmira, N.Y.	WELM	1410	A-C
	WENY	1230	N
Elmira Heights-Horseheads, N.Y.	WEHH	1590	M
El Paso, Tex.	KROD	600	C
	KELP	920	
	KPBR	1530	
	KHEY	690	
	KINT	1590	
	KIZZ	1150	
	KSET	1340	M
	KTSM	1380	N
El Reno, Okla.	KELR	1460	
Ely, Minn.	WELY	1450	M
Ely, Nev.	KELY	1230	
Elyria, Ohio	WEOL	930	
Eminence, Ky.	WSTL	1600	
Emporia, Kans.	KVOE	1400	
Emporia, Va.	WEVA	860	
Emporium, Pa.	WLEM	1250	
Endicott, N.Y.	WENE	1430	A
Englewood, Colo.	KGMC	1150	
Englewood, Fla.	WENG	1530	
Enid, Okla.	KCRC	1390	A
	KGWA	960	M
Enterprise, Ala.	WIRB	600	
Enterprise, Oreg.	KWVR	1340	
Ephrata, Pa.	WGSA	1310	
Ephrata, Wash.	KULE	730	
Erie, Pa.	WWYN	1260	A
	WICU	1330	N
	WJET	1400	M
	WLEU	1450	
Erwin, Tenn.	WEMB	1420	
Escanaba, Mich.	WDBC	680	M
	WLST	600	A
Escondido, Calif.	KOWN	1450	
Estevan, Sask.	CJSL	1280	
Estherville, Iowa	KLIL	1340	
Etowah, Tenn.	WCPH	1220	
Eufaula, Ala.	WULA	1240	M
Eugene, Oreg.	KORE	1450	M
	KPIR	1500	
	KASH	1600	A
	KATR	1320	
	KERG	1280	C
	KUGN	590	N
Eunice, La.	KEUN	1490	M
Eureka, Calif.	KINS	980	C
	KDAN	790	
	KRED	1480	M
Eustis, Fla.	WLCO	1240	
Evanston, Ill.	WEAW	1330	
	WNMP	1590	
Evanston, Wyo.	KLUK	1240	
Evansville, Ind.	WROZ	1400	C
	WGBF	1280	N
	WIKY	820	
	WJPS	1330	A
Eveleth, Minn.	WEVE	1340	M
Everett, Wash.	KRKO	1380	
	KWYZ	1230	
Evergreen, Ala.	WBLO	1470	
Fairbanks, Alaska	KFAR	610	A-M-N
	KFRB	900	C-A
Fairbury, Nebr.	KGMT	1310	
Fairfax, Va.	WEEL	1310	
Fairfield, Ill.	WFIW	1390	
Fairfield, Iowa	KMCD	1570	
Fairhope, Ala.	WABF	1220	
Fairmont, Minn.	KSUM	1370	M
Fairmont, N.C.	WFMO	860	
Fairmont, W.Va.	WMMN	920	C
	WTCS	1490	A
Fajardo, P.R.	WMDD	1480	
Falfurrias, Tex.	KPSO	1260	
Fall River, Mass.	WALE	1400	M
	WSAR	1480	A
Falls Church, Va.	WFAX	1220	
Falls City, Nebr.	KTNC	1230	
Fargo, N.Dak.	WDAY	970	N
	KFNW	900	
	KUTT	1550	
	KFGO	790	A
Faribault, Minn.	KDHL	920	
Farmington, Me.	WKTJ	1380	
Farmington, Mo.	KREI	800	
Farmington, N.M.	KENN	1390	
	KWYK	960	
	KRZE	1280	
Farmville, N.C.	WFAG	1250	
Farmville, Va.	WFLO	870	
Farrell, Pa.	WFAR	1470	
Farwell, Tex.	KZOL	1570	
Fayette, Ala.	WWWF	990	
Fayetteville, Ark.	KHOG	1440	
	KFAY	1250	M
Fayetteville, N.C.	WFAI	1230	C
	WFNC	940	M
	WFLB	1490	A
	WIDU	1600	
Fayetteville, Tenn.	WEKR	1240	M
Fergus Falls, Minn.	KOTE	1250	M
Fernandina Beach, Fla.	WPAP	1570	
Ferriday, La.	KFNV	1600	
Festus, Mo.	KJCF	1400	
	KXEN	1010	
Findlay, Ohio	WFIN	1330	
Fisher, W.Va.	WELD	690	A
Fitchburg, Mass.	WEIM	1280	M
	WFGM	960	
Fitzgerald, Ga.	WBHB	1240	M
Flagstaff, Ariz.	KCLS	600	N
	KFGT	1000	
	KJKJ	1400	
	KVNA	690	A
	KEOS	1290	
Flat River, Mo.	KFMO	1240	M
Flin Flon, Man.	CFAR	590	
Flint, Mich.	WFDF	910	N
	WTRX	1330	A
	WAMM	1420	
	WMRP	1570	
	WKMF	1470	M
	WTAC	600	A
Flomaton, Ala.	WTCB	990	
Florence, Ala.	WJOI	1340	M
	WOLS	1230	
	WOWL	1240	A
Florence, S.C.	WJMX	970	A
	WYNN	540	
Floydada, Tex.	KFLD	900	
Foley, Ala.	WHEP	1310	
Fond du Lac, Wis.	KFIZ	1450	M
Fordyce, Ark.	KBJT	1570	
Forest, Miss.	WMAG	860	
Forest City, N.C.	WBBO	780	
	WAGY	1320	
Forest Grove, Oreg.	KGGG	1570	
Forrest City, Ark.	KXJK	950	
Ft. Bragg, Calif.	KDAC	1230	
Ft. Collins, Colo.	KCOL	1410	A
	KZIX	600	
Ft. Dodge, Iowa	KVFD	1400	M
	KWMT	540	A
Ft. Frances, Ont.	CFOB	800	
Ft. Knox, Ky.	WSAC	1470	
Ft. Lauderdale, Fla.	WFTL	1400	
	WWIL	1580	
Ft. Madison, Iowa	KXGI	1360	
Ft. Morgan, Colo.	KFTM	1400	
Ft. Myers, Fla.	WINK	1240	C
	WMYR	1410	
Ft. Payne, Ala.	WFPA	1400	
	WZOB	1250	
Ft. Pierce, Fla.	WARN	1330	
	WIRA	1400	
Ft. Saint John, B.C.	CKNL	970	
Ft. Scott, Kans.	KMDO	1600	
Ft. Simpson, NWT.	CFMR	1490	
Ft. Smith, Ark.	KFPW	1230	C
	KFSA	950	A
	KTCS	1410	M
	KWHN	1320	
Ft. Stockton, Tex.	KFST	860	
Ft. Valley, Ga.	WFPM	1150	
Ft. Walton Beach, Fla.	WNUE	950	
	WFTW	1260	
Ft. Wayne, Ind.	WGL	1250	A
	WOWO	1190	
	WANE	1450	C
	WKJG	1380	N
Ft. William, Ont.	CKPR	580	
	CJLX	800	
Ft. Worth, Tex.	KJIM	870	
	KCUL	1540	
	KFJZ	1270	
	KNOK	970	
	WBAP	570	A
	WBAP	820	N
	KXOL	1360	
Fostoria, Ohio	WFOB	1430	
Fountain City, Tenn.	WFCT	1430	
	WRDL	1490	
Fountain Inn, S.C.	WFIS	1600	
Fowler, Calif.	KLIP	1220	
Framingham, Mass.	WKOX	1190	
Frankfort, Ind.	WILO	1570	
Frankfort, Ky.	WFKY	1490	M
Franklin, Ky.	WFKN	1220	
Franklin, La.	KFRA	1390	
Franklin, N.C.	WFSC	1050	
Franklin, Pa.	WFRA	1430	
Franklin, Tenn.	WAGG	950	
Franklin, Va.	WYSR	1250	
Frederick, Md.	WFMD	930	C
Frederick, Okla.	KTAT	1570	
Fredericksburg, Tex.	KNAF	910	M
Fredericksburg, Va.	WFVA	1230	A
	WFLS	1350	
Fredericton, N.B.	CFNB	550	
Fredericktown, Mo.	KFTW	1450	
Fredonia, N.Y.	WBUZ	1570	
Freeport, Ill.	WFRL	1570	
Freeport, N.Y.	WGBB	1240	
Freeport, Tex.	KBRZ	1460	
Fremont, Mich.	WBFC	1490	
	WSHN	1550	
Fremont, Nebr.	KHUB	1340	
Fremont, Ohio	WFRO	900	
Fresno, Calif.	KARM	1430	A
	KBIF	900	
	KIRV	1510	
	KEAP	980	
	KXEX	1550	
	KFRE	940	C
	KGST	1600	
	KMAK	1340	
	KMJ	580	N
	KYNO	1300	
Front Royal, Va.	WFTR	1450	M
Frostburg, Md.	WFRB	560	
Fulton, Ky.	WFUL	1270	
Fulton, Mo.	KFAL	900	
Fulton, N.Y.	WOSC	1300	
Fuquay Sprgs., N.C.	WFVG	1460	
Gadsden, Ala.	WGAD	1350	A
	WETO	930	M
	WAAX	570	
Gaffney, S.C.	WFGN	1570	
Gainesville, Fla.	WDVH	980	
	WGGG	1230	M
	WRUF	850	N
Gainesville, Ga.	WGGA	550	C
	WDUN	1240	A
	WLBA	1580	
Gainesville, Tex.	KGAF	1580	
Gaithersburg, Md.	WHMC	1150	
Galax, Va.	WBOB	1360	M
Galesburg, Ill.	WGIL	1400	
	WAIK	1590	A
Gallatin, Tenn.	WHIN	1010	
Gallipolis, Ohio	WJEH	990	
Gallup, N. Mex.	KGAK	1330	A
	KYVA	1230	
Galt, Ont.	CKGR	1110	
Galveston, Tex.	KILE	1400	
	KGBC	1540	
Gander, Nfld.	CBG	1450	
Garden City, Kans.	KNCO	1050	
	KIUL	1240	M
Gardner, Mass.	WGAW	1340	
Gary, Ind.	WWCA	1270	
	WGRY	1370	
Gastonia, N.C.	WGNC	1450	A
	WLTC	1370	
Gate City, Va.	WGAT	1050	
Gaylord, Mich.	WATC	900	
Geneva, Ala.	WGEA	1150	
Geneva, Ill.	WGSB	1480	
Geneva, N.Y.	WGVA	1240	A
Georgetown, Del.	WJWL	900	
Georgetown, Ky.	WAXU	1580	
Georgetown, S.C.	WGTN	1400	M
Gettysburg, Pa.	WGET	1320	M
Gillette, Wyo.	KIML	1490	
Gilroy, Calif.	KPER	1290	
Gladewater, Tex.	KEES	1430	
Glasgow, Ky.	WKAY	1490	
	WCDS	1440	D
Glasgow, Mont.	KLTZ	1240	
Glendale, Ariz.	KRUX	1360	
Glendale, Calif.	KIEV	870	
Glendive, Mont.	KXGN	1400	
	KGLE	590	
Glens Falls, N.Y.	WSET	1410	
	WWSC	1450	A
Glenville, Ga.	WKIG	1580	
Glenwood Sprgs., Colo.	KGLN	980	M
Globe, Ariz.	KZOW	1240	A
Gloucester, Va.	WDDY	1420	
Gloversville-Johnston, N.Y.	WENT	1340	C
Gold Beach, Oreg.	KBLY	1220	
Golden, Colo.	KICM	1250	
Golden Valley, Minn.	KEVE	1440	M
	KUXL	1570	
Goldsboro, N.C.	WFMC	730	
	WGBR	1150	A
	WGDL	1300	
Gonzales, Tex.	KCTI	1450	
Goodland, Kans.	KLOE	730	M
Goose Bay, Nfld.	CFGB	1340	
Goshen, Ind.	WKAM	1460	
Grafton, N.D.	KGPC	1340	
Grafton, W.Va.	WVVW	1260	
Graham, Tex.	KSWA	1330	
Granby, Que.	CHEF	1450	
Grand Coulee, Wash.	KFDR	1360	
Grande Prairie, Alta.	CFGP	1050	
Grand Falls, Nfld.	CBT	540	
Grand Forks, N.D.	KFJM	1370	
	KILO	1440	C
	KNOX	1310	M
Grand Haven, Mich.	WGHN	1370	

Location	C.L.	Kc.	N.A.
Grand Island, Nebr.			
	KMMJ	750	A
	KRGI	1430	
Grand Junction, Colo.			
	KREX	920	C
	KEXO	1230	A
	KSTR	620	
	KWSL	1340	
Grand Prairie, Tex.			
	KPCW	730	
Grand Rapids, Mich.			
	WJEF	1230	C
	WFUR	1570	
	WGRD	1410	
	WLAV	1340	A
	WMAX	1480	M
	WOOD	1300	N
Grand Rapids, Minn.			
	KOZY	1490	M
Grangeville, Idaho	KORT	1230	
Granite City, Ill.	WGNU	920	
Grants, N.Mex.	KMIN	980	
Grants Pass, Oreg.	KAGI	930	M
	KAJO	1270	
Gravelbourg, Sask.	CFGR	1230	
	CFRG	710	
Grayson, Ky.	WGOH	1370	
Gt. Barrington, Mass.			
	WSBS	860	
Gt. Bend, Kans.	KVGB	1590	N
Gt. Falls, Mont.	KFBB	1310	C
	KUDI	1450	
	KMON	560	M
	KARR	1400	N
Greeley, Colo.	KFKA	1310	
	KYOU	1450	
Green Bay, Wis.	WBAY	1360	C
	WJPG	1440	M
	WDUZ	1400	A
Greeneville, Tenn.	WGRV	1340	
	WSMG	1450	
Greenfield, Mass.	WHAI	1240	M
Greensboro, N.C.	WBIG	1470	C
	WCOG	1320	
	WGBG	1400	A
	WPET	950	
Greensburg, Pa.	WHJB	620	
Greenville, Ala.	WGYV	1380	
Greenville, Mich.	WPLB	1380	
Greenville, Miss.	WJPR	1330	
	WDDT	900	
	WGVM	1260	
Greenville, Pa.	WGRP	940	
Greenville, N.C.	WGTC	1590	M
	WOOW	1340	
Greenville, S.C.	WESC	660	
	WFBC	1330	N
	WMRB	1490	C-M
	WMUU	1260	
	WQOK	1440	C
Greenville, Tex.	KGVL	1400	
Greenwood, Miss.	WABG	960	A
	WGRM	1240	N
Greenwood, S.C.	WCRS	1450	N
	WGSW	1350	
Greer, S.C.	WEAB	800	
	WCKI	1300	A
Grenada, Miss.	WNAG	1400	M
Gresham, Oreg.	KGRO	1230	
Gretna, Va.	WMNA	730	
Griffin, Ga.	WKEU	1450	M
	WHIE	1320	
	WRIX	1410	
Grinnell, Iowa	KGRN	1410	
Groton, Conn.	WSUB	980	
Grove City, Pa.	WSAJ	1340	
Grundy, Va.	WNRG	1250	
Guayama, P.R.	WXRF	1590	
Guelph, Ont.	CJOY	1460	
Gulfport, Miss.	WROA	1390	
	WGCM	1240	A
Gunnison, Colo.	KGUC	1490	
Guntersville, Ala.	WGSV	1270	
Guthrie, Okla.	KWRW	1490	
Guymon, Okla.	KGYN	1220	
Hagerstown, Md.	WARK	1490	C
	WJEJ	1240	A-M
Haines City, Fla.	WHAN	930	
Haleyville, Ala.	WJBB	1230	M
Halfway, Md.	WDDW	1410	
Halifax, N.S.	CBH	790	
	CHNS	960	
	CJCH	920	
Hamden, Conn.	WDEE	1220	
Hamilton, Ala.	WERH	970	
Hamilton, Mont.	KYLQ	980	
Hamilton, Ohio	WMOH	1450	
Hamilton, Ont.	CHIQ	1280	
	CHML	900	
	CKOC	1150	
Hamilton, Tex.	KCLW	900	
Hamlet, N.C.	WKDX	1400	
Hammond, Ind.	WJOB	1230	
Hammond, La.	WFPR	1400	
Hammonton, N.J.	WNJH	1580	
Hampton, S.C.	WBHC	1270	
Hampton, Va.	WVEC	1490	
Hancock, Mich.	WMPL	920	
Hanford, Calif.	KNGS	620	
Hannibal, Mo.	KHMO	1070	
Hanover, N.H.	WTSL	1400	
	WDCR	1340	
Hanover, Pa.	WHVR	1280	
Harlan, Ky.	WHLN	1410	
Harlingen, Tex.	KGBT	1530	
Harriman, Tenn.	WHBT	1600	

Location	C.L.	Kc.	N.A.
Harrisburg, Ill.	WEBQ	1240	
Harrisburg, Pa.	WHGB	1400	A
	WCMB	1460	M
	WHP	580	C
	WKBO	1230	N
Harrison, Ark.	KHOZ	900	
Harrisonburg, Va.	WHBG	1360	
	WSVA	550	N
Harrodsburg, Ky.	WHBN	1420	
Hartford, Conn.	WDRC	1360	C
	WCCC	1290	M
	WPOP	1410	M-A
	WTIC	1080	N
Hartford, Wis.	WTKM	1540	
Hartselle, Ala.	WHRT	860	
Hartsville, S.C.	WHSC	1450	M
Hartwell, Ga.	WKLY	980	
Harvard, Ill.	WMCW	1600	
Harvey, Ill.	WBEE	1570	
Hastings, Mich.	WBCH	1220	
Hastings, Nebr.	KHAS	1230	
Hattiesburg, Miss.	WBKH	950	
	WFOR	1400	N
	WHSY	1230	A
	WXXX	1310	
Havelock, N.C.	WUSM	1330	
Haverhill, Mass.	WHAV	1490	
Havre, Mont.	KOJM	610	M
Havre de Grace, Md.			
	WASA	1330	
Hawkinsville, Ga.	WCEH	610	
Haynesville, La.	KLUV	1580	
Hays, Kans.	KAYS	1400	
Hayward, Wis.	WHSM	910	
Hazard, Ky.	WKIC	1390	M
Hazelhurst, Ga.	WVOH	920	D
Hazlehurst, Miss.	WMDC	1220	
Hazleton, Pa.	WAZL	1490	N-M
	WTHT	1300	
Helena, Ark.	KFFA	1360	M
Helena, Mont.	KCAP	1340	M
	KBLL	1240	N
Hemet, Calif.	KHSJ	1320	
Hempstead, N.Y.	WHLI	1100	
Henderson, Ky.	WSON	860	
Henderson, Nev.	KBMI	1400	
	KTOO	1280	
Henderson, N.C.	WHNC	890	M
	WIZS	1450	
Henderson, Tex.	KGRI	1000	
	KWRD	1470	
Hendersonville, N.C.			
	WHKP	1450	A
Henryetta, Okla.	KHEN	1590	
Hereford, Tex.	KPAN	860	
Herkimer, N.Y.	WALY	1420	
Hermiston, Oreg.	KOHU	1570	
Herrin, Ill.	WJPF	1340	M
Hettinger, N.Dak.	KNDC	1490	
Hibbing, Minn.	WMFG	1240	N
Hickory, N.C.	WHKY	1290	A
	WIRC	630	
Highland Park, Ill.			
	WNSH	1430	
Highland Park, Tex.	KVIL	1150	
Highland Springs, Va.			
	WENZ	1450	
High Point, N.C.	WMFR	1230	A
	WNOS	1590	
	WHPE	1070	
Hillsboro, Ohio	WSRW	1590	
Hillsboro, Oreg.	KUIK	1360	
Hillsboro, Tex.	KHBR	1560	
Hillsdale, Mich.	WCSR	1340	
Hillsville, Va.	WHHV	1400	
Hilo, Hawaii	KHBC	970	C
	KIPA	1110	
	KIMO	850	M
Hinesville, Ga.	KGML	990	
Hobart, Okla.	KTJS	1420	
Hobbs, N.Mex.	KWEW	1480	M
	KHOB	1390	
Holbrook, Ariz.	KDJI	1270	
Holdredge, Nebr.	KUVR	1380	
Holland, Mich.	WHTC	1450	
	WJBL	1260	
Hollister, Calif.	KGHT	1520	
Hollywood, Fla.	WGMA	1320	
Holly Hill, S.C.	WHHL	1440	D
Holyoke, Mass.	WREB	930	
Homer, La.	KHAL	1320	
Homestead, Fla.	WSDB	1430	
Homewood, Ala.	WJLD	1400	
Honolulu, Hawaii	KGMB	590	C
	KZOO	1210	
	KHAI	1090	
	KPOI	1380	
	KIKI	830	
	KGU	760	N
	KHVH	1040	
	KORL	650	M
	KNDI	1270	
	KOHO	1170	
	KTRG	990	
	KULA	690	A
Hood River, Oreg.	KIHR	1340	
Hope, Ark.	KXAR	1490	
Hopewell, Va.	WHAP	1340	
Hopkinsville, Ky.	WHOP	1230	C
	WKOA	1480	
Hoquiam, Wash.	KHOK	1560	
Hornell, N.Y.	WWHG	1320	
	WLEA	1480	M
Hot Springs, Ark.	KAAB	1340	A
	KBHS	590	
	KZNG	1470	M
Hot Springs, S. Dak.	KOBH	580	
Houghton, Mich.	WHDF	1400	

Location	C.L.	Kc.	N.A.
Houghton Lake, Mich.			
	WHGR	1290	
Houlton, Maine	WHOU	1340	
Houma, La.	KCIL	1490	N
Houston, Miss.	WCPC	1320	
Houston, Mo.	KHTN	1250	
Houston, Tex.	KCOH	1430	
	KILT	610	
	KNUZ	1230	
	KODA	1010	
	KPRC	950	N
	KTHT	790	
	KTRH	740	C
	KXYZ	1320	A
	KYOK	1590	
Howell, Mich.	WHMI	1350	
Hudson, N.Y.	WHUC	1230	
Hugo, Okla.	KIHN	1340	
Hull, Que.	CKCH	970	
Humacao, P.R.	WALO	1240	
Humboldt, Tenn.	WIRJ	740	
Huntingdon, Pa.	WHUN	1150	
Huntington, Ind.	WHLT	1300	
Huntington, N.Y.	WGSM	740	
Huntington, W.Va.			
	WKEE	800	M-A
	WSAZ	930	N
	WWHY	1470	M
Huntsville, Ala.	WBHP	1230	M
	WEUP	1600	
	WFIX	1450	
	WAAY	1550	A
Huntsville, Ont.	CKAR	630	
Huntsville, Tex.	KSAM	1490	
Huron, S.Dak.	KIJV	1340	
Hutchinson, Kans.	KWBW	1450	N
	KWHK	1260	
Hutchinson, Minn.	KDUZ	1260	
Idabel, Okla.	KBEL	1240	
Idaho Falls, Idaho	KID	590	C
	KIFI	1260	A-M
	KTEE	900	
Independence, Ia.	KUPI	980	
	KOUR	1220	
Independence, Kans.			
	KIND	1010	M
Independence, Mo.	KANS	1510	
Indiana, Pa.	WDAD	1450	C
Indianapolis, Ind.			
	WFBM	1260	A
	WGEE	1590	
	WIBC	1070	
	WIRE	1430	N
	WISH	1310	C
	WXLW	950	M
Indianola, Miss.	WDLT	1380	
Indian Rocks Beach, Fla.			
	WGNP	1520	
Indio, Calif.	KREO	1400	A
Inglewood, Calif.	KTYM	1460	
Inkster, Mich.	WCHB	1440	
International Falls, Minn.			
	KGHS	1230	
Invrik, N.W.T.	CHAK	860	
Iola, Kansas	KALN	1370	
Ionia, Mich.	WION	1430	
Iowa City, Iowa	KXIC	800	
	WSUI	910	
Iowa Falls, Iowa	KFIG	1510	
Iron Mtn., Mich.	WMIQ	1450	A
Iron River, Mich.	WIKB	1230	M
Irondale, Ala.	WIXI	1480	
Ironton, Ohio	WIRO	1230	M
Ironwood, Mich.	WJMS	630	M
Irvine, Ky.	WIRV	1550	
Isabella, P.R.	WISA	1390	
Ishpeming, Mich.	WJPD	1240	
	WJAN	970	
Islip, N.Y.	WBIC	540	
Ithaca, N.Y.	WHCU	870	C
	WTKO	1470	A
Iuka, Miss.	WVOM	1270	
Jackson, Ala.	WTHG	1290	M
Jackson, Mich.	WIBM	1450	A
	WKHM	970	M
	WAST	1510	
Jackson, Miss.	WJDX	620	N
	WJQS	1400	M
	WJXN	1450	
	WOKJ	1590	
	WRBC	1300	M
	WSLI	930	
Jackson, Ohio	WLMJ	1280	
Jackson, Tenn.	WDXI	1310	
	WJAK	1460	
	WTJS	1390	A
Jacksonville, Fla.	WJAX	930	N
	WAPE	690	
	WZOK	1320	A-M
	WIVY	1050	
	WMBR	1460	C
	WOBS	1360	
	WPDQ	600	
	WQIK	1280	
	WRHC	1400	
Jacksonville, Ill.	WJIL	1550	
	WLDS	1180	
Jacksonville, N.C.	WJNC	1240	M
	WLAS	910	
Jacksonville, Tex.	KEBE	1400	
Jacksonville Bch., Fla.			
	WZRO	1010	
Jamestown, N.Dak.	KEYJ	1400	M
	KSJB	600	C
Jamestown, N.Y.	WJTN	1240	A
	WXYJ	1340	M
Jamestown, Tenn.	WCLC	1260	
Janesville, Wis.	WCLO	1230	M

Location	C.L.	Kc.	N.A.
Jasper, Ala.	WWWB	1360	
	WARF	1240	
Jasper, Ind.	WITZ	990	
Jasper, Tex.	KTXJ	1350	
Jefferson City, Mo.	KLIK	950	
	KWOS	1240	M
Jefferson City, Tenn.			
	WJFC	1480	
Jeffersonville, Ind.	WXVW	250	
Jena, La.	KCKW	1480	
Jennings, La.	KJEF	1290	
Jerome, Idaho	KART	1400	
Jerseyville, Ill.	WJBM	1480	
Jesup, Ga.	WBGR	1370	
Johnson City, Tenn.			
	WJCW	910	C
	WETB	790	M
Johnston, S.C.	WJES	250	
Johnstown, N.Y.	WIZR	930	
Johnstown, Pa.	WJAC	850	
	WARD	1490	C
	WCRO	1230	M
Joliet, Ill.	WJOL	1340	
	WJRC	1510	
Joliette, Que.	CJLM	1350	
Jonesboro, Ark.	KBTM	1230	M
	KNEA	970	
Jonesboro, La.	KTOC	920	
Jonesboro, Tenn.	WJSO	1590	
Jonesville, La.	KANV	1480	
Jonquiere, Que.	CKRS	590	
Joplin, Mo.	WMBH	1450	M
	KQYX	1560	
	KFSB	1310	
	KODE	1230	C
Junction, Tex.	KMBL	1450	
Junc. City, Kans.	KJCK	1420	
Juneau, Alaska	KINY	800	C-A
	KJNO	630	A-M-N
Kailua, Hawaii	KLEI	1130	
Kaimuki, Hawaii	KAIM	870	
Kalamazoo, Mich.	WKPR	1420	
	WKZO	590	C
	WKLZ	1470	M
	WKMI	1360	
Kalispell, Mont.	KGEZ	600	M
	KOFI	930	
Kamloops, B.C.	CFJC	910	
Kane, Pa.	WADP	960	
Kankakee, Ill.	WKAN	1320	
Kannapolis, N.C.	WGTL	870	
	WRKB	1460	
Kans. City, Kans.	KCKN	1340	
Kansas City, Mo.	KCMO	810	C
	KMBC	980	A
	KPRS	1590	
	KUDL	1380	
	WDAF	610	N
	WHB	710	
Kearney, Nebr.	KGFW	1340	M
	KRNY	1460	
Keene, N.H.	WKNE	1290	N
	WKBK	1220	
Kelowna, B.C.	CKOV	630	
Kelso, Wash.	KLOG	1490	
Kendallville, Ind.	WAWK	1570	
Kenedy, Tex.	KAML	990	
Kennett, Mo.	KBOA	830	
Kennewick-Pasco-Richland, Wash.	KEPR	610	C
Kenora, Ont.	CJRL	1220	
Kenosha, Wis.	WLIP	1050	
Kentville, N.S.	CKEN	1350	
Keokuk, Iowa	KOKX	1310	
Kermit, Tex.	KERB	600	
Kerrville, Tex.	KERV	1230	
Kershaw, S.C.	WKSC	1300	
Ketchikan, Alaska	KTKN	930	C-A
Kewanee, Ill.	WKEI	1450	
Keyser, W.Va.	WKYR	1270	M
Key West, Fla.	WKWF	1600	A-M
	WKIZ	1500	
Kilgore, Tex.	KOCA	1240	
Killeen, Tex.	KLEN	1050	M
Kimball, Nebr.	KIMB	1260	
King City, Calif.	KRKC	1570	
Kingman, Ariz.	KAAA	1230	A
Kings Mountain, N.C.			
	WKMT	1220	
Kingsport, Tenn.	WKIN	1320	
	WKPT	1550	N
Kingston, N.Y.	WBAZ	1550	M
	WGHQ	920	
	WKNY	1490	C
Kingston, Ont.	CFRC	1490	
	CKLC	1380	
	CKWS	960	
Kingstree, S.C.	WDKD	1310	
Kingsville, Tex.	KINE	1330	
Kinston, N.C.	WELS	1010	
	WFTC	960	A
	WISP	1230	M
Kirkland, Wash.	KCDI	1460	
	KNBX	1050	
Kirkland Lake, Ont.	CJKL	560	
Kirksville, Mo.	KIRX	1450	A
Kissimmee, Fla.	WKBX	1220	
Kitchener, Ont.	CKCR	1490	
	CKKW	1320	
Kittanning, Pa.	WACB	1380	
Klamath Falls, Oreg.			
	KAGO	1150	M
	KFLW	1450	A-C
	KLAD	960	
Knoxville, Iowa	KNIA	1320	
Knoxville, Tenn.	WBIR	1240	A
	WIVK	860	
	WATE	620	N

Location	C.L.	Kc.	N.A.
	WKGN	1340	M
	WKXV	900	M
	WNOX	990	C
Kodiak, Alaska	WCVQ	960	
Kokomo, Ind.	WIOU	1350	C
Kosciusko, Miss.	WKOZ	1350	A
Laconia, N.H.	WLNH	1350	
	WEMJ	1490	
LaCrosse, Wis.	WKBH	1410	N
	WLCX	1490	
	WKTY	580	A
Ladysmith, Wis.	WLDY	1340	
Lafayette, Ga.	WLFA	1590	
Lafayette, Ind.	WASK	1450	M
	WAZY	1410	
	WBAA	920	
Lafayette, La.	KPEL	1420	A
	KVDL	1330	N
	KXKW	1520	
Lafayette, Tenn.	WEEN	1460	
LaFollette, Tenn.	WLAF	1450	
LaGrande, Oreg.	KLBM	1450	
LaGrange, Ga.	WLAG	1240	M
	WTRP	620	
LaGrange, Ill.	WTAQ	1300	
LaGrange, Tex.	KVLG	1570	
LaJunta, Colo.	KBZZ	1400	M
Lake Charles, La.	KLOU	1580	
	KPLC	1470	N
	KAOK	1400	M
Lake City, Fla.	WDSR	1340	
	WGRO	960	
Lake City, S.C.	WJDT	1260	
Lakeland, Fla.	WLAK	1430	N
	WONN	1230	M
	WYSE	1330	
Lake Placid, N.Y.	WIRD	920	
Lake Providence, La.	KLPL	1050	
Lake Tahoe, Calif.	KOWL	1490	
Lakeview, Oreg.	KQIK	1230	
Lake Wales, Fla.	WIPC	1280	
Lakewood, Colo.	KLAK	1600	
Lakewood, Wash.	KFHA	1480	
Lake Worth, Fla.	WLIZ	1380	
Lamar, Colo.	KLMR	920	M
Lamesa, Tex.	KPET	690	
Lampasas, Tex.	KCYL	1450	
Lancaster, Calif.	KAVL	610	
	KBVM	1380	
Lancaster, Ohio	WHOK	1320	
Lancaster, Pa.	WGAL	1490	N
	WLAN	1390	A-M
Lancaster, S.C.	WLCM	1360	
Lander, Wyo.	KOVE	1330	M
Lanett, Ala.	WRLD	1490	A
Langley Prairie, B.C.	CJJC	1000	
Lansdale, Pa.	WNPV	1440	
Lansford, Pa.	WLSH	1410	
Lansing, Mich.	WILS	1320	
	WJIM	1240	A-N
	WMRT	1010	
Lapeer, Mich.	WMPC	1230	
	WTHM	1530	
LaPorte, Ind.	WLOI	1540	
Laramie, Wyo.	KLME	1490	
	KOWB	1290	M
Laredo, Tex.	KGNS	1300	
	KVOZ	1490	M
LaSalle, Ill.	WLPO	1220	
LaSarre, Que.	CKLS	1240	
LasCruces, N.Mex.	KOBE	1450	
	KGRT	570	
Las Vegas, Nev.	KENO	1460	A
	KLAS	1230	C
	KORK	1340	M
	KRAM	920	
	KLUC	1050	
	KVEG	970	
Las Vegas, N.Mex.	KFUN	1230	A
Latrobe, Pa.	WPKV	1570	M
	WTRA	1480	
LaTuque, Que.	CFLM	1240	
Laurel, Miss.	WAML	1340	N
	WLAU	1600	A
	WNSL	1260	
Laurens, S.C.	WLBG	860	
Laurinburg, N.C.	WEWO	1080	
	WLCW	1300	
Lawrence, Kans.	KFKU	1250	
	KLWN	1320	
Lawrence, Mass.	WCCM	800	M
Lawrenceburg, Tenn.	WDXE	1370	
Lawrenceville, Ga.	WLAW	1360	
Lawrenceville, Ill.	WAKO	910	
Lawrenceville, Va.	WLES	580	
Lawton, Okla.	KSWO	1380	A
	KCCO	1050	
Leadville, Colo.	KBRR	1230	
Leaksville, N.C.	WLOE	1490	M
Leamington, Ont.	CJSP	710	
Leavenworth, Kans.	KCLO	1410	
Lebanon, Ky.	WLBN	1590	
Lebanon, Mo.	KLWT	1230	
Lebanon, Oreg.	KGAL	920	
Lebanon, Pa.	WLBR	1270	
Lebanon, Tenn.	WCOR	900	
Leesburg, Fla.	WLBE	790	M
	WBIL	1410	
Leesburg, Va.	WAGE	1290	
Leesville, La.	KLLA	1570	
Lehighton, Pa.	WYNS	1150	
Leitchfield, Ky.	WMTL	1580	
Leland, Miss.	WESY	1580	
LeMars, Iowa	KLEM	1410	
Lemoore, Calif.	KLAN	1320	
Lenoir, N.C.	WJRI	1340	M
Lenoir, Tenn.	WLIL	730	
Leonardtown, Md.	WKIK	1370	
Lethbridge, Alta.	CJOC	1220	
	CHEC	1090	
Levelland, Tex.	KLVT	1230	
Levittown, Pa.	WBCB	1490	
Lewisburg, Pa.	WUNS	1010	
Lewisburg, Tenn.	WJJM	1490	M
Lewiston, Idaho	KRLC	1350	M
	KDZE	1300	
Lewiston, Maine	WCOU	1240	M
	WLAM	1470	A
Lewistown, Mont.	KXLD	1230	M
Lewistown, Pa.	WKVA	920	A
	WMRF	1490	N
Lexington, Ky.	WLAP	630	M
	WBLG	1300	A
	WVLK	590	C
Lexington, Miss.	WXTN	1150	
Lexington, Mo.	KLEX	1570	
Lexington, Nebr.	KRVN	1010	
Lexington, N.C.	WBUY	1440	
Lexington, Tenn.	WDXL	1490	
Lexington, Va.	WREL	1450	N
Lexington Pk., Md.	WPTX	920	
Libby, Mont.	KLCB	1230	M
	KLIB	1470	
Liberal, Kans.	KSCB	1270	
Liberty, N.Y.	WVDS	1240	
Liberty, Tex.	KWLD	1050	
Lihue, Hawaii	KTOH	1490	
Lima, Ohio	WIMA	1150	A
Lincoln, Ill.	WPRC	1370	
Lincoln, Nebr.	KFOR	1240	A
	KLIN	1400	
	KLMS	1480	
Lincolnton, N.C.	WLON	1050	
Lindsay, Ont.	CKLY	910	
Linton, Ind.	WBTO	1600	
Litchfield, Ill.	WSMI	1540	
Litchfield, Minn.	KLFD	1410	
Little Falls, Minn.	KLTF	960	
Little Falls, N.Y.	WLFH	1230	
Littlefield, Tex.	KZZN	1490	
Little Rock, Ark.	KARK	920	N
	KAJI	1250	M
	KLRA	1010	A
	KOKY	1440	
	KAAY	1090	C-M
	KVLC	1050	
Littleton, Colo.	KMOR	1510	
Live Oak, Fla.	WNER	1250	
Livingston, Mont.	KPRK	1340	M
Livingston, Tenn.	WLIV	920	
Livingston, Tex.	KETX	1440	
	KVLL	1220	
Lloydminster, Alta.	CKSA	1150	
Lock Haven, Pa.	WBPZ	1230	M
Lockport, N.Y.	WUSJ	1340	
Lodi, Calif.	KCVR	1570	
Logan, Utah	KVNU	610	M
	KSTU	1300	
	KLGN	1390	
Logan, W.Va.	WLOG	1230	M
	WVOW	1290	
Logansport, Ind.	WSAL	1230	M
Lompoc, Calif.	KKOK	1410	
	KLPC	1330	D
	KNEZ	960	
London, Ky.	WFTG	1400	
London, Ont.	CFPL	980	
	CKSL	1290	
Long Beach, Calif.	KFOX	1280	
	KGER	1390	
Longmont, Colo.	KLMO	1050	
Long Prairie, Minn.	KEYL	1400	
Longview, Tex.	KFRO	1370	A
	KLUE	1280	
Longview, Wash.	KEDO	1400	A
	KBAM	1270	
Lookout Mtn., Tenn.	WFLI	1070	
Lorain, Ohio	WWIZ	1380	A
Lordsburg, N.Mex.	KLHS	950	
Loris, S.C.	WLSC	1570	
Los Alamos, N.Mex.	KRSN	1490	A
Los Angeles, Calif.	KABC	790	A
	KFI	640	N
	KHJ	930	M
	KFSG	1150	
	KFWB	980	
	KGFJ	1230	
	KFAC	1330	
	KLAC	570	
	KMPC	710	
	KNX	1070	C
	KPOL	1540	
	KGBS	1020	
	KRKD	1150	
Los Banos, Calif.	KLBS	1330	
Louisburg, N.C.	WYRN	1480	
Louisville, Ga.	WPEH	1420	
Louisville, Ky.	WAVE	970	N
	WAKY	790	M
	WHAS	840	C
	WKLO	1080	A
	WINN	1240	
	WKYW	900	C
	WLOU	1350	
	WTMT	620	A-M
Louisville, Miss.	WLSM	1270	
Loveland, Colo.	KLOV	1570	
Loves Park, Ill.	WLUV	1520	
Lovington, N.Mex.	KLEA	630	
Lowell, Mass.	WCAP	980	
	WLLH	1400	
Lubbock, Tex.	KCBD	1590	M-N
	KDAV	580	
	KLBK	1340	
	KFYO	790	C
	KLLL	1460	M
	KSEL	950	A
Lucedale, Miss.	WHHT	1440	
Ludington, Mich.	WKLA	1450	A
Lufkin, Tex.	KRBA	1340	A
	KTRE	1420	M
Lumberton, N.C.	WAGR	580	
	WTSB	1340	M
Luray, Va.	WRLA	1590	
	WRAA	1330	
Lynchburg, Va.	WLVA	590	A
	WDMS	1320	
	WWOD	1390	M
	WBRG	1050	
Lynn, Mass.	WLYN	1360	
Lyons, Ga.	WBBT	1340	
Macomb, Ill.	WKAI	1510	
Macon, Ga.	WBML	1240	
	WCRY	900	
	WIBB	1280	
	WMAZ	940	C
	WNEX	1400	A-M
Macon, Miss.	WMBC	1400	
Madera, Calif.	KHOT	1250	
Madill, Okla.	KMAD	1550	
Madison, Fla.	WMAF	1230	
Madison, Ga.	WYTH	1250	
Madison, Ind.	WORX	1270	
Madison, S.D.	KJAM	1390	
Madison, Tenn.	WENO	1430	
Madison, Wis.	WHA	970	
	WIBA	1310	N
	WISM	1480	A-M
	WKOW	1070	C
Madisonville, Ky.	WFMW	730	
	WTTL	1310	
Magee, Miss.	WSJC	790	
Magnolia, Ark.	KVMA	630	M
Makawao, Hawaii	KNUI	1310	
Malden, Mo.	KTCB	1470	
Malone, N.Y.	WICY	1490	M
Malvern, Ark.	KBOK	1310	
Manassas, Va.	WPRW	1460	
Manati, P.R.	WMNT	1500	
Manchester, Conn.	WINF	1230	C
Manchester, Ga.	WFDR	1370	
Manchester, Ky.	WWXL	1450	
Manchester, N.H.	WFEA	1370	M
	WGIR	610	C
	WKBR	1250	
Manchester, Tenn.	WMSR	1320	
Manhattan, Kans.	KSAC	580	
	KMAN	1350	
Manistee, Mich.	WMTE	1340	
Manitou Springs, Colo.	KCMS	1490	
Manitowoc, Wis.	WCUB	980	
	WOMT	1240	M
Mankato, Minn.	KYSM	1230	N
	KTOE	1420	A
Manning, S.C.	WYMB	1410	
Mansfield, La.	KDBC	1360	
Mansfield, Ohio	WMAN	1400	A
	WCLW	1570	
Maquoketa, Iowa	KMAQ	1320	
Marathon, Fla.	WEFG	1300	
Marianna, Ark.	KZOT	1460	
Marianna, Fla.	WTYS	1340	M
	WTOT	980	
Marietta, Ga.	WFOM	1230	
	WBIE	1050	
Marietta, Ohio	WMOA	1490	A
Marine City, Mich.	WDOG	1590	
Marinette, Wis.	WMAM	570	N
Marion, Ala.	WJAM	1310	
Marion, Ill.	WGGH	1150	
Marion, Ind.	WBAT	1400	A
	WMRI	860	
Marion, N.C.	WBRM	1250	
Marion, Ohio	WMRN	1490	A
Marion, S.C.	WATP	1430	
Marion, Va.	WMEV	1010	A
Marion, Va.	WOLD	133	
Marked Tree, Ark.	KPCA	1580	
Marksville, La.	KAPB	1370	
Marlborough, Mass.	WSRO	1470	
Marquette, Mich.	WDMJ	1320	M
Marshall, Minn.	KMHL	1400	A
Marshall, Mo.	KMMD	1300	
Marshall, N.C.	WMMH	1460	
Marshall, Tex.	KMHT	1450	
	KADO	1410	
Marshalltown, Iowa	KFJB	1230	
Marshfield, Wis.	WDLB	1450	
Martin, Tenn.	WCMT	1410	
Martinsburg, W.Va.	WEPM	1340	
Martinsville, Va.	WHEE	1370	
	WMVA	1450	N
Marystown, Nfld. Can.	CHCM	560	
Marysville, Calif.	KMYC	1410	M
Marysville, Kans.	KNDY	1570	
Maryville, Mo.	KNIM	1580	
Maryville, Tenn.	WGAP	1400	
Mason City, Iowa	KGLO	1300	C
	KRIB	1490	
	KSMN	1010	
Massena, N.Y.	WMSA	1340	A
	WSTS	1050	
Massillon, Ohio	WTIG	990	
Matane, Que.	CKBL	1250	
Matawan, W.Va.	WHJC	1360	
Mattoon, Ill.	WLBH	1170	
Mauston, Wis.	WRJC	1270	
Mayaguez, P.R.	WAEL	600	
	WKJB	710	
	WDRA	760	
	WPRA	990	
	WTIL	1300	
Mayfield, Ky.	WNGO	1320	
Mayodan, N.C.	WMYN	1420	
Maysville, Ky.	WFTM	1240	M
McAlester, Okla.	KTMC	1400	
	KNED	1150	
McAllen, Tex.	KRIO	910	M
McCamey, Tex.	KAMY	1450	
McComb, Miss.	WHNY	1250	A
	WAPF	980	
McCook, Nebr.	KBRL	1300	M
	KWRV	1360	
McGehee, Ark.	KVSA	1220	
McKeesport, Pa.	WEDO	810	C
	WPQR	1360	M
McKenzie, Tenn.	WHDM	1440	
McKinney, Tex.	KMAE	1600	
McMinnville, Oreg.	KMCM	1260	
McMinnville, Tenn.	WBMC	960	
	WAKI	1230	M
McPherson, Kans.	KNEX	1540	
McRae, Ga.	WDAX	1410	
Mead, Wash.	KLFF	1590	
Meadville, Pa.	WMGW	1490	
Medford, Mass.	WHIL	1430	
Medford, Oreg.	KMED	1440	A
	KMFR	860	
	KDOV	1300	
	KBOY	730	
	KYJC	1230	A-C
Medford, Wis.	WIGM	1490	M
Medicine Hat, Alta.	CHAT	1270	
Media, Pa.	WXUR	690	
Melbourne, Fla.	WMMB	1240	M
Memphis, Tenn.	WHBQ	560	M
	WHER	1430	
	WMC	790	N
	WDIA	1070	
	WMPS	680	
	WHHM	1340	A
	WLOK	1480	
	WREC	600	C
	KWAM	990	
Mena, Ark.	KENA	1450	
Menominee, Mich.	WAGN	1340	A
Menomonie, Wis.	WMNE	1360	
Merced, Calif.	KYOS	1480	M
	KWIP	1580	
Meriden, Conn.	WMMW	1470	
Meridian, Miss.	WCOC	910	C
	WDAL	1330	M
	WMOX	1010	
	WOKK	1450	A
	WQIC	1390	
Merrill, Wis.	WXMT	730	
Mesa, Ariz.	KBUZ	1310	
Mesa, Ariz.	KALF	1510	
Metropolis, Ill.	WMOK	920	
Metter, Ga.	WMAC	1360	
Mexia, Tex.	KBUS	1590	
Mexico, Mo.	KXEO	1340	M
Mexico, Pa.	WJUN	1220	
Miami, Ariz.	KIKO	1340	
Miami, Fla.	WGBS	710	C
	WCKR	610	N
	WFAB	990	
	WMBM	1220	
	WAME	1260	A
	WMIE	1140	
	WQAM	560	
	WSKP	1450	
	WINZ	940	M
Miami, Okla.	KGLC	910	
Miami Beach, Fla.	WMBM	1490	
	WKAT	1360	C
	WFUN	790	
Michigan City, Ind.	WIMS	1420	
Middleport-Pomroy, Ohio	WMPO	1390	
Middlesboro, Ky.	WMIK	560	
Middletown, Conn.	WCNX	1150	
Middletown, N.Y.	WALL	1340	
Middletown, Ohio	WPFB	910	
Midland, Mich.	WMDN	1490	
Midland, Ont.	CKMP	1230	
Midland, Tex.	KCRS	550	A
	KJBC	1150	
	KWEL	1600	
Milan, Tenn.	WKBJ	1600	
Miles City, Mont.	KATL	1340	M
Milford, Del.	WKSB	930	
Milford, Mass.	WMRC	1490	
Milledgeville, Ga.	WMVG	1450	M
Millen, Ga.	WGSR	1570	
Millington, Tenn.	WHEY	1220	
	WGMM	1380	
Millville, N.J.	WMVB	1440	
Milton, Fla.	WEBY	1330	M
	WSRA	1490	
Milton, Pa.	WMLP	1570	
	WARC	1380	
Milwaukee, Wis.	WEMP	1250	
	WFOX	860	M
	WRIT	1340	
	WISN	1150	A
	WMIL	1290	
	WOKY	920	
	WTMJ	620	N
Minden, La.	KASO	1240	
Mineral Wells, Tex.	KORC	1140	
Mineola, N.Y.	WFYI	1520	D
Minneapolis, Minn.	WCCO	830	C
	WLOL	1330	
	WMIN	1400	

Location	C.L.	Kc.	N.A.
	WDGY	1130	
	WPBC	980	
	WTCN	1280	A
	KTCR	690	
	KTIS	900	
	KUOM	770	
Minot, N. Dak.	KLPM	1390	M
	KQDY	1320	
	KCJB	910	C
Mission, Kans.	KBEA	1480	
Mission, Tex.	KIRT	1580	
Missoula, Mont.	KGVO	1290	C
	KXLL	1450	N
	KQTE	1340	M
	KYSS	910	
Mitchell, S.Dak.	KORN	1490	M
Moab, Utah	KURA	1450	
Moberly, Mo.	KNCM	1230	
Mobile, Ala.	WALA	1410	N
	WMOE	1550	
	WABB	1480	A
	WGOK	900	
	WTUF	840	
	WKRG	710	C
	WLIQ	1360	
	WMOZ	960	
Mobridge, S.Dak.	KOLY	1300	
Mocksville, N.C.	WSDC	1560	D
Modesto, Calif.	KTRB	860	
	KBEE	970	A
	KFIV	1360	A
Mojave, Calif.	KDOL	1340	
Moline, Ill.	WQUA	1230	A
Monahans, Tex.	KVKM	1330	M
Moncks Corner, N.C.	WBER	950	
Moncton, N. B.	CBAF	1330	
	CKCW	1220	
Monett, Mo.	KRMO	990	
Monmouth, Ill.	WRAM	1330	
Monroe, Ga.	WMRE	1490	
Monroe, La.	KMLB	1440	A-N
	KLIC	1230	M
	KNOE	1390	
Monroe, Mich.	WQTE	560	
Monroe, N.C.	WMAP	1060	
Monroe, Wis.	WEKZ	1260	
Monroeville, Ala.	WMFC	1360	
Mont Laurier, Que.	CKML	610	
Monterey, Calif.	KIDD	630	
	KMBY	1240	C
Montevideo, Minn.	KDMA	1460	A
Monte Vista, Colo.	KSLV	1240	
Montezuma, Ga.	WMNZ	1050	
Montgomery, Ala.	WBAM	740	
	WCOV	1170	C
	WAPX	1600	N
	WHHY	1440	N
	WMGY	800	M
	WRMA	950	
Montgomery, W.Va.	WMON	1340	M
Monticello, Ark.	KHBM	1430	
Monticello, Ky.	WFLW	1360	
Montmagny, Que.	CKBM	1490	
Montpelier-Barre, Vt.	WSKI	1240	A
Montreal, Que.	CBF	690	
	CBM	940	N
	CKLM	1570	N
	CFCF	600	A
	CHLP	1410	
	CJAD	800	
	CJMS	1280	
	CKAC	730	C
	CKGM	980	
Montrose, Colo.	KUBC	580	
Montrose, Pa.	WPEL	1250	
Mooresville, N.C.	WHIP	1350	
Moorhead, Minn.	KVOX	1280	M
Moosejaw, Sask.	CHAB	800	
Morehead, Ky.	WMOR	1330	
Morehead City, N.C.	WMBL	740	
Morgan City, La.	KMRC	1430	M
Morganfield, Ky.	WMSK	1550	
Morganton, N.C.	WMNC	1430	
Morgantown, W.Va.	WAJR	1440	N
	WCLG	1300	
Morrilton, Ark.	KVOM	800	
Morris, Minn.	KMRS	1230	
Morristown, N.J.	WMTR	1250	
Morristown, Tenn.	WCRK	1150	M
	WMTN	1300	
Morton, Tex.	KRAN	1280	
Moscow, Idaho	KRPL	1400	
Moses Lake, Wash.	KSEM	1470	
	KWIQ	1260	
Moultrie, Ga.	WMGA	1400	A
	WMTM	1300	
Moundsville, W.Va.	WMOD	1370	
Mountain Grove, Mo.	KLRS	1360	
Mountain Home, Ark.	KTLO	1490	
Mt. Airy, N.C.	WPAQ	740	
	WSYD	1300	M
Mt. Carmel, Ill.	WVMC	1360	
Mt. Clemens, Mich.	WBRB	1430	
Mt. Dora, Fla.	WVGT	1580	
Mt. Jackson, Va.	WSIG	790	
Mt. Kisco, N.Y.	WVIP	1310	
Mt. Olive, N.C.	WDJS	1430	
Mt. Pleasant, Mich.	WCEN	1150	
Mt. Pleasant, Tex.	KIMP	960	
Mt. Shasta, Calif.	KWSD	620	
Mt. Sterling, Ky.	WMST	1150	
Mt. Vernon, Ill.	WMIX	940	
Mt. Vernon, Ind.	WPCO	1590	
Mt. Vernon, Ky.	WRVK	1460	
Mt. Vernon, Ohio	WMVO	1300	
Mt. Vernon, Wash.	KAPS	1470	
Mt. Vernon, Wash.	KBRC	1430	
Muleshoe, Tex.	KMUL	1380	
Mullins, S.C.	WJAY	1280	
Muncie, Ind.	WLBC	1340	C
Munfordville, Ky.	WLOC	1150	
Munising, Mich.	WMAB	1400	
Murfreesboro, Tenn.	WGNS	1450	
	WMTS	860	
Murphy, N.C.	WCVP	600	
	WKRK	1390	
Murphysboro, Ill.	WINI	1420	
Murray, Ky.	WNBS	1340	
Murray, Utah	KMUR	1230	
Muscatine, Iowa	KWPC	860	
Muscle Shoals City, Alabama	WLAY	1450	
Muskegon, Mich.	WKBZ	850	A
	WTRU	1600	
	WMUS	1090	
Muskogee, Okla.	KBIX	1490	A
	KMUS	1380	
Myrtle Beach, S.C.	WMYB	1450	
Nacogdoches, Tex.	KEEE	1230	A
	KSFA	860	
Nampa, Idaho	KFXD	580	
	KWLW	1340	
Nanaimo, B.C.	CHUB	1570	
Nanticoke, Pa.	WNAK	730	
Napa, Calif.	KVON	1440	
Naples, Fla.	WNOG	1270	
Narrows, Va.	WNRV	990	
Nashua, N.H.	WOTW	900	
	WSMN	1590	
Nashville, Ark.	KBHC	1260	
Nashville, Ga.	WNGA	1600	
Nashville, Tenn.	WKDA	1240	
	WLAC	1510	C
	WMAK	1300	
	WLVN	1560	
	WNAH	1360	M
	WSIX	980	A
	WSM	650	N
Natchez, Miss.	WMIS	1240	N
	WNAT	1450	M
Natchitoches, La.	KNOC	1450	M
Naugatuck, Conn.	WOWW	860	
Navasota, Tex.	KWBC	1550	
Nebraska City, Nebr.	KNCY	1600	
Needles, Calif.	KSFE	1340	
Neenah, Wis.	WNAM	1280	
Neillsville, Wis.	WCCN	1370	
Nelson, B.C.	CKLN	1390	
Neon, Ky.	WNKY	1480	
Neosho, Mo.	KBTN	1420	
Nevada, Mo.	KNEM	1240	
New Albany, Ind.	WOWI	1570	
New Albany, Miss.	WNAU	1470	
Newark, Del.	WWRK	1260	
Newark, N.J.	WJRZ	970	
	WNJR	1430	
	WVNJ	620	
Newark, N.Y.	WACK	1420	
Newark, Ohio	WCLT	1430	
New Bedford, Mass.	WBSM	1420	
	WNBH	1340	M
New Bern, N.C.	WHIT	1450	M
	WRNB	1490	
Newberry, S.C.	WKDK	1240	
New Boston, Ohio	WIOI	1010	
New Braunfels, Tex.	KGNB	1420	
New Britain, Conn.	WHAY	910	A
	WRYM	840	
New Brunswick, N.J.	WCTC	1450	
Newburgh, N.Y.	WGNY	1220	
Newburyport, Mass.	WNBP	1470	
New Carlisle, Que.	CHNC	610	
New Castle, Ind.	WCTW	1550	
Newcastle, N.B.	CKMR	790	
New Castle, Pa.	WKST	1280	A
Newcastle, Wyo.	KASL	1240	
New Glasgow, N.S.	CKEC	1320	
New Haven, Conn.	WAVZ	1300	
	WELI	960	
	WNHC	1340	A
New Iberia, La.	KANE	1240	
	KVIM	1360	
New Kensington, Pa.	WKPA	1150	
New London, Conn.	WNLC	1510	M
New Martinsville, W.Va.	WETZ	1330	M
Newnan, Ga.	WCOH	1400	M
	WNEA	1300	
New Orleans, La.	WDSU	1280	N
	WJMR	990	M
	WBOK	800	
	WNOE	1060	
	WSMB	1350	A
	WNPS	1450	
	WTIX	690	
	WWL	870	C
	WWOM	600	
	WYLD	940	M
Newport, Ark.	KNBY	1280	
Newport, Ky.	WNOP	740	
Newport, N.H.	WCNL	1010	
Newport, Oreg.	KNPT	1310	
Newport, R.I.	WADK	1540	
Newport, Tenn.	WLIK	1270	
Newport, Vt.	WIKE	1490	
Newport News, Va.	WGH	1310	A
	WTID	1270	
New Richmond, Wis.	WIXK	1590	
New Rochelle, N.Y.	WVOX	1460	
New Smyrna Beach, Fla.	WSBB	1230	M
	WORT	1550	
Newton, Iowa	KCOB	1280	
Newton, Kans.	KJRG	950	
Newton, Miss.	WBKN	1410	
Newton, N.J.	WNNJ	1360	
Newton, N.C.	WNNC	1230	
New Ulm, Minn.	KNUJ	860	
New Westminster, B.C.	CKNW	980	
New York, N.Y.	WABC	770	A
	WBNX	1380	
	WCBS	880	C
	WEVD	1330	
	WHOM	1480	
	WINS	1010	M
	WLIB	1190	
	WMCA	570	
	WHN	1050	
	WNEW	1130	
	WNYC	830	
	WOR	710	
	WAOO	1280	
	WPOW	1330	
	WQXR	1560	
	WNBC	660	N
Niagara Falls, N.Y.	WHLD	1270	
	WJJL	1440	M
Niagara Falls, Ont.	CHVC	1600	
Nicholasville, Ky.	WNVL	1250	
Niles, Mich.	WNIL	1290	
Nogales, Ariz.	KNOG	1340	A
Nome, Alaska	KICY	850	
Norfolk, Nebr.	WJAG	780	
Norfolk, Va.	WTAR	790	C
	WCMS	1050	
	WNOR	1230	
	WRAP	850	
Normal, Ill.	WIOK	1440	
Norman, Okla.	WNAD	640	
	KNOR	1400	
Norman Wells, Northwest Territory	CFNW	1240	
Norristown, Pa.	WNAR	1110	
N. Adams, Mass.	WMNB	1230	
N. Augusta, S.C.	WGUS	1380	
	WFNL	1600	
	WTHB	1550	
N. Battleford, Sask.	CJNB	1460	
North Bay, Ont.	CFCH	600	
North Bend, Oreg.	KFIR	1340	C
North Charleston, S.C.	WNCG	910	
Northfield, Minn.	WCAL	770	
Northampton, Mass.	WHMP	1400	M
N. Little Rock, Ark.	KDXE	1380	A
	KXLR	1150	
North Platte, Nebr.	KJLT	970	
	KNOP	1410	
	KODY	1240	N
No. Syracuse, N.Y.	WSOQ	1220	M
No. Vancouver, B.C.	CKLG	730	
N. Vernon, Ind.	WOCH	1460	
No. Wilkesboro, N.C.	WKBC	810	
Norton, Va.	WNVA	1350	M
Norwalk, Conn.	WNLK	1350	
Norwich, Conn.	WICH	1310	
Norwich, N.Y.	WCHN	970	
Oakdale, La.	KREH	900	
Oakes, N.Dak.	KEYD	1220	
Oak Grove, La.	KWCL	1280	
Oak Hill, W.Va.	WOAY	860	
Oakland, Calif.	KEWB	910	
	KABL	960	
	KDIA	1310	
Oakland Park, Fla.	WIXX	1520	
Oak Park, Ill.	WOPA	1490	
Oak Ridge, Tenn.	WATO	1290	M
Oakville, Ont.	CHWO	1250	
Ocala, Fla.	WMOP	900	
	WTMC	1290	N
	WKOS	1370	
Ocean City, Md.	WETT	1590	
Oceanlake, Oreg.	KBCH	1380	
Oceanside, Calif.	KUDE	1320	
Ocilla, Ga.	WSIZ	1380	
Odessa, Tex.	KECK	920	
	KOSA	1230	C
	KOYL	1310	
	KRIG	1410	M
Oelwein, Iowa	KOEL	950	
Ogallala, Nebr.	KOGA	930	
Ogden, Utah	KLO	1430	M
	KANN	1250	
	KSVN	730	
	KVOG	1490	
Ogdensburg, N.Y.	WSLB	1400	M
Oil City, Pa.	WKRZ	1340	
Okeechobee, Fla.	WOKC	1570	
Okla. City, Okla.	KBYE	890	A
	KLPR	1140	
	KOCY	1340	
	KOMA	1520	
	KTOK	1000	A-M
	KJEM	800	
	WKY	930	
Okmulgee, Okla.	KOKL	1240	
Old Saybrook, Conn.	WLIS	1420	
Olean, N.Y.	WMNS	1360	
	WHDL	1450	A
Olney, Ill.	WVLN	740	
Olympia, Wash.	KGY	1240	M
	KITN	920	
Omaha, Nebr.	KBON	1490	
	KFAB	1110	N
	KOIL	1290	
	KOOO	1420	
	KMEO	660	M
	WOW	590	C
Omak, Wash.	KOMW	680	
Oneida, N.Y.	WMCR	1600	
Oneida, Tenn.	WBNT	1310	
O'Neill, Nebr.	KBRX	1350	
Oneonta, Ala.	WCRL	1570	
Oneonta, N.Y.	WDOS	730	
Ontario, Calif.	KASK	1510	
Ontario, Oreg.	KSRV	1380	
Opelika, Ala.	WPHO	1400	M
Opelousas, La.	KSLO	1230	A
Opp, Ala.	WAMI	860	
Opportunity, Wash.	KZUN	630	
Orange, Mass.	WCAT	1390	
Orange, Tex.	KOGT	1600	
Orange, Va.	WJMA	1340	
Orangeburg, S.C.	WDIX	1150	A
	WORG	1580	
	WTND	920	
Orange Park, Fla.	WAYR	550	
Oregon City, Oreg.	KGON	1520	M
Orillia, Ont.	CFOR	1570	
Orlando, Fla.	WDBO	580	C
	WHOO	990	M
	WHIY	1270	
	WLOF	950	
	WKIS	740	N
Ormond Bch., Fla.	WQXQ	1380	
Orofino, Idaho	KLER	950	
Oroville, Calif.	KAOR	1340	
Ortonville, Minn.	KDIO	1350	
Osage Bch., Mo.	KRMS	1150	
Osceola, Ark.	KOSE	860	
Oshawa, Ont.	CKLB	1350	
Oshkosh, Wis.	WOSH	1490	A
Oskaloosa, Iowa	KBOE	740	
Oswego, N.Y.	WSGO	1440	
Othello, Wash.	KRSC	1400	
Otsego, Mich.	WDMC	980	
Ottawa, Ill.	WCMY	1430	
Ottawa, Kans.	KOFO	1220	
Ottawa, Ont.	CBO	910	
	CFRA	580	
	CKOY	1310	
Ottumwa, Iowa	KBIZ	1240	A
	KLEE	1480	
Owatonna, Minn.	KRFO	1390	
Owego, N.Y.	WEBO	1330	
Owensboro, Ky.	WOMI	1490	M
	WVJS	1420	A
Owen Sound, Ont.	CFOS	560	
Owosso, Mich.	WOAP	1080	
Oxford, Miss.	WSUH	1420	
Oxford, N.C.	WOXF	1340	
Oxnard, Calif.	KOXR	910	
Ozark, Ala.	WOZK	900	
Paducah, Ky.	WKYB	570	M
	WDXR	1560	N
	WPAD	1450	C
Page, Ariz.	KPGE	1340	
Pahokee, Fla.	WRIM	1250	
Painesville, Ohio	WPVL	1460	
Paintsville, Ky.	WSIP	1490	M
Palatka, Fla.	WWPF	1260	
	WSUZ	800	
Palestine, Tex.	KNET	1450	
Palm Bch., Fla.	WQXT	1340	A
Palm Sprgs., Calif.	KCMJ	1010	C
	KDES	920	
	KPAL	1450	
Palmdale, Calif.	KUTY	1470	
Palo Alto, Calif.	KIBE	1220	
Pampa, Tex.	KPDN	1340	M
	KHHH	1230	
Panama City, Fla.	WDLP	590	
	WPCF	1430	A
Panama City Beach, Fla.	WTHR	1480	
	WSCM	1290	
Paradise, Calif.	KMET	930	
Paragould, Ark.	KDRS	1490	
Paris, Ark.	KCCL	1460	
Paris, Ill.	WPRS	1440	
Paris, Ky.	WKLX	1440	
Paris, Tenn.	WTPR	710	
Paris, Tex.	KPLT	1490	A
	KFTV	1250	
Parkersburg, W.Va.	WCEF	1050	
	WPAR	1450	C
	WTAP	1230	A-M
Park Falls, Wis.	WPFP	1450	
Parry Sound, Ont.	CKAR-1	1340	
Parsons, Kans.	KLKC	1540	
Pasadena, Calif.	KALI	1430	
	KPPC	1240	
	KWKW	1300	
Pasadena, Tex.	KLVL	1480	
	KIKK	650	
Pascagoula-Moss Point, Miss.	WPMP	1580	A
Pasco, Wash.	KORD	910	
	KPKW	1340	
Paso Robles, Calif.	KPRL	1230	M
Patchogue, L.I., N.Y.	WALK	1370	
	WPAC	1580	
Paterson, N.J.	WPAT	930	
Pauls Valley, Okla.	KVLH	1470	
Pawtucket, R.I.	WXTR	550	A
Payette, Idaho	KEOK	1450	
Peace River, Alta.	CKYL	630	
Pearsall, Tex.	KVWG	1280	
Pecos, Tex.	KIUN	1400	M

Location	C.L.	Kc.	N.A.
Peekskill, N.Y.	WLNA	1420	
Pekin, Ill.	WSIV	1140	
Pell City, Ala.	WFHK	1430	
Pembroke, Ont.	CHOV	1350	
Pendleton, Oreg.	KKID	1240	A
	KUBE	1050	
	KUMA	1290	A
Pennington Gap, Va.	WSWV	1570	
Pensacola, Fla.	WBOP	980	
	WDEB	610	C
	WBSR	1450	
	WNVY	1230	A
	WCOA	1370	N
	WPFA	790	
Penticton, B.C.	CKOK	800	
Peoria, Ill.	WAAP	1350	N
	WMBD	1470	C
	WIRL	1290	
	WPEO	1020	M
Perry, Fla.	WPRY	1400	
Perry, Ga.	WPGA	980	
Perry, Iowa	KDLS	1310	
Perryton, Tex.	KEYE	1400	M
Peru, Ind.	WARU	1600	
Petaluma, Calif.	KTOB	1490	
Peterborough, Ont.	CHEX	980	
	CKPT	1420	
Petersburg, Va.	WSSV	1240	M
Petoskey, Mich.	WMBN	1340	
Phenix City, Ala.	WPNX	1460	A
Philadelphia, Miss.	WHOC	1490	
Philadelphia, Pa.	WCAU	1210	C
	WDAS	1480	
	WFIL	560	A
	WFLN	900	
	WHAT	1340	
	WIBG	990	
	WIP	610	
	WJMJ	1540	
	WPEN	950	M
	WRCV	1060	N
	WTEL	860	
Philipsburg, Pa.	WPHB	1260	
Phillipsburg, Kans.	KKAN	1490	
Phoenix, Ariz.	KIFN	860	
	KXIV	1400	
	KHAT	1480	
	KHEP	1280	
	KCAC	1010	
	KOY	550	A
	KOOL	960	C
	KPHO	910	A
	KUEQ	740	
	KRIZ	1230	
	KTAR	620	N
Picayune, Miss.	WRJW	1320	
Piedmont, Ala.	WPID	1280	
Pierre, S.Dak.	KGFX	630	
	KCCR	1590	
Pikeville, Ky.	WLSI	900	
	WPKE	1240	M
Pine Bluff, Ark.	KCLA	1400	
	KADL	1270	
	KOTN	1490	M
	KPBA	1590	
Pine City, Minn.	WCMP	1350	
Pineville, Ky.	WMLF	1230	
Pineville, W.Va.	WWYO	970	
Pipestone, Minn.	KLOH	1050	
Piqua, Ohio	WPTW	1570	
Pittsburg, Calif.	KKIS	990	
Pittsburg, Kans.	KOAM	860	N
	KSEK	1340	
Pittsburgh, Pa.	KDKA	1020	
	KQV	1410	A
	WAMO	860	
	WJAS	1320	N
	WPIT	730	
	WRYT	1250	
	WYRE	1080	M
	WWSW	970	
Pittsfield, Ill.	WBBA	1580	
Pittsfield, Mass.	WBEC	1420	A
	WBRK	1340	M
Pittston, Pa.	WPTS	1540	
Plainfield, N.J.	WERA	1590	
Plainview, Tex.	KVOP	1400	M
	KPLA	1050	
Plant City, Fla.	WPLA	910	
Platteville, Wis.	WSWW	1590	
Plattsburg, N.Y.	WEAV	960	A-N
	WIRY	1340	M
Pleasanton, Tex.	KBOP	1380	
Pleasantville, N.J.	WOND	1400	
Plymouth, Mass.	WPLM	1390	
Plymouth, N.C.	WPNC	1470	
Plymouth, Wis.	WPLY	1420	
Pocahontas, Ark.	KPOC	1420	
Pocatello, Idaho	KSEI	930	N
	KWIK	1240	M
	KSNN	1290	
Pocomoke City, Md.	WDMV	540	
Pointe Claire, Que.	CFOX	1470	
Pomona, Calif.	KWOW	1600	
	KKAR	1220	
Pompano Beach, Fla.	WLOD	980	
	WPOM	1470	A
Ponca City, Okla.	WBBZ	1230	M
Ponce, P.R.	WPRP	910	
	WEUC	1420	
	WPAB	550	
	WLEO	1170	
	WISO	1260	
Pontiac, Mich.	WPON	1460	
Pontotoc, Miss.	WSEL	1440	
Poplar Bluff, Mo.	KWOC	930	
	KLID	1340	
Poplarville, Miss.	WRPM	1530	
Portage, Pa.	WWML	1470	
Portage, Wis.	WPDR	1350	
Portage la Prairie, Man.	CFRY	920	
Portageville, Mo.	KMIS	1050	
Port Alberni, B.C.	CJAV	1240	
Portales, N.Mex.	KENM	1450	
Port Angeles, Wash.	KAPY	1000	D
	KONP	1450	
Port Arthur, Ont.	CFPA	1230	
Port Arthur, Tex.	KOLE	1340	
	KPAC	1250	M
Porterville, Calif.	KTIP	1450	A
Port Hope, Ont.	CHUC	1500	
Port Hueneme, Calif.	KACY	1520	
Port Huron, Mich.	WHLS	1450	
	WTTH	1380	A
Port Jervis, N.Y.	WDLC	1490	
Port Lavaca, Tex.	KGUL	1560	
Portland, Ind.	WPGW	1440	
Portland, Maine	WCSH	970	N
	WGAN	560	C
	WLOB	1310	
	WPOR	1490	A-M
Portland, Oreg.	KBPS	1450	
	KISN	910	
	KBEV	1010	
	KLIQ	1290	
	KEX	1190	
	KGW	620	N
	KOIN	970	C
	KPAM	1410	
	KPDQ	800	
	KPOJ	1330	
	KWJJ	1080	A
	KXL	750	
Port Neches, Tex.	KPNG	1150	
Portsmouth, N.H.	WBBX	1380	
	WHEB	750	
Portsmouth, Ohio	WPAY	1400	C
	WNXT	1260	A
Portsmouth, Va.	WHIH	1400	A-M
	WPMH	1010	
	WAVY	1350	N
Post, Tex.	KUKO	1370	
Poteau, Okla.	KLCO	1280	
Potosi, Mo.	KYRO	1280	
Potsdam, N.Y.	WPDM	1470	
Pottstown, Pa.	WPAZ	1370	
Pottsville, Pa.	WPAM	1450	
	WPPA	1360	M
Poughkeepsie, N.Y.	WEOK	1390	
	WKIP	1450	A
Powell, Wyo.	KPOW	1260	A-M
Poynette, Wis.	WIBU	1240	
Prairie du Chien, Wis.	WPRE	980	
Pratt, Kans.	KWSK	1570	
	KPRT	1290	
Prescott, Ariz.	KYCA	1490	N
	KENT	1340	
	KNOT	1450	A
Prescott, Ark.	KTPA	1370	
Presque Isle, Me.	WAGM	950	
	WEGP	1390	
Preston, Idaho	KPST	1340	
Prestonsburg, Ky.	WPRT	960	
	WDOC	1310	
Price, Utah	KOAL	1230	M
Prichard, Ala.	WSIM	1270	
Prince Albert, Sask.	CKBI	900	
Prince George, B.C.	CKPG	550	
Prince Rupert, B.C.	CFPR	1240	
Princeton, Ind.	WRAY	1250	
Princeton, Ky.	WPKY	1580	
Princeton, N.J.	WHWH	1350	
Princeton, W.Va.	WLOH	1490	A
Prineville, Oreg.	KRCO	690	
Prosser, Wash.	KARY	1310	
Providence, R.I.	WEAN	790	C
	WHIM	1110	
	WICE	1290	
	WJAR	920	N
	WLKW	990	
	WPRO	630	
	WRIB	1220	M
Provo, Utah	KIXX	1400	A
	KEYY	1450	
	KOVO	960	M
Pryor, Okla.	KOLS	1570	
Pueblo, Colo.	KDZA	1230	
	KAPI	690	
	KFEL	970	
	KGHF	1350	A-M
	KCSJ	590	
	KTUX	1480	
Pulaski, Tenn.	WKSR	1420	A
Pulaski, Va.	WPUV	1580	
Pullman, Wash.	KWSC	1250	
	KOFE	1150	
Punxsutawney, Pa.	WPME	1540	
Putnam, Conn.	WINY	1350	
Puyallup, Wash.	KAYE	1450	
Quanah, Tex.	KOLJ	1150	
Quantico, Va.	WQVA	1530	
Quebec, Que.	CBV	980	
	CHRC	800	
	CJLR	1060	
	CJQC	1340	
	CKCV	1280	
Quesnel, B.C.	CKCQ	570	
Quincy, Fla.	WCNH	1230	M
Quincy, Ill.	WGEM	1440	A
	WTAD	930	C
Quincy, Mass.	WJDA	1300	
Quincy, Wash.	KPOR	1370	
Quitman, Ga.	WSFB	1490	
Racine, Wis.	WRAC	1460	
	WRJN	1400	A
Radford, Va.	WRAD	1460	
Raleigh, N.C.	WKIX	850	A
	WPTF	680	N
	WLLE	570	
	WRAL	1240	
Ralls, Tex.	KCLR	1530	
Rantoul, Ill.	WRTL	1460	
Rapid City, S.Dak.	KOTA	1380	C
	KIMM	1150	
	KRSD	1340	
	KEZU	920	
Raton, N.Mex.	KRTN	1490	A
Ravenswood, W.Va.	WMOV	1360	
Rawlins, Wyo.	KRAL	1240	A-M
Raymond, Wash.	KAPA	1340	
Raymondville, Tex.	KSOX	1240	
Rayville, La.	KRIH	990	
Reading, Pa.	WEEU	850	A
	WHUM	1240	C
	WRAW	1340	N
Redding, Calif.	KRDG	1230	M
	KAHR	1330	
	KQMS	1400	
	KVCV	600	C
	KVIP	540	
Red Bluff, Calif.	KBLF	1490	
Red Deer, Alta.	CKRD	850	
Redfield, S.Dak	KFCB	1380	
Redlands, Calif.	KCAL	1410	
Red Lion, Pa.	WGCB	1440	
Red Lodge, Mont.	KRBN	1450	
Redmond, Oreg.	KPRB	1240	
Red Wing, Minn.	KCUE	1250	
Redwood Falls, Minn.	KLGR	1490	
Reedsburg, Wis.	WRDB	1400	
Reedsport, Oreg.	KRAF	1470	
Regina, Sask.	CBK	540	
	CJME	1300	
	CKCK	620	
	CKRM	980	
Reidsville, N.C.	WFRC	1600	A
	WREV	1220	
Remsen, N.Y.	WREM	1480	
Reno, Nev.	KOH	630	N
	KBET	1340	M
	KOLO	920	C
	KONE	1450	
	KDOT	1230	
Rensselaer, N.Y.	WEEE	1300	
Rexburg, Idaho	KRXK	1230	
Rhinelander, Wis.	WOBT	1240	
Rice Lake, Wis.	WJMC	1240	M
Richfield, Utah	KSVC	980	
Richland, Wash.	KALE	960	
Richland, Wis.	WRCO	1450	
Richlands, Va.	WRIC	540	
Richmond, Ind.	WKBV	1490	A
Richmond, Ky.	WEKY	1340	M
Richmond, Va.	WANT	990	
	WBBL	1480	
	WRGM	1590	
	WLEE	1480	M
	WEET	1320	
	WMBG	1380	A
	WRNL	910	C
	WRVA	1140	N
	WXGI	950	
Richmond Hill, Ont.	CJRH	1310	
Richwood, W.Va.	WVAR	1280	
Ridgecrest, Calif.	KRCK	1360	
	KLOA	1240	
Rimouski, Que.	CJBR	900	
Rio Piedras, P.R.	WUNO	1320	
	WWWW	1520	
Ripley, Tenn.	WTRB	1570	
Ripon, Wis.	WCWC	1600	
Riverhead, N.Y.	WRIV	1390	
	WAPC	1570	
Riverside, Calif.	KPRO	1440	
	KACE	1570	
Riverton, Wyo.	KVOW	1450	M
Riviera Beach, Fla.	WHEW	1600	
Riviere du Loup, Que.	CJFP	1400	
Roanoke, Ala.	WELR	1360	
Roanoke, Va.	WDBJ	960	C
	WRIS	1410	M
	WHYE	910	
	WROV	1240	A
	WSLS	610	N
Roanoke Rapids, N.C.	WCBT	1230	M
Roaring Sprgs., Pa.	WKMC	1370	
Roberval, Que.	CHRL	910	
Robinson, Ill.	WTAY	1570	
Rochester, Minn.	KROC	1340	N
	KWEB	1270	
Rochester, N.H.	WWNH	930	
Rochester, N.Y.	WBBF	950	M
	WHAM	1180	N
	WHEC	1460	C
	WRVM	680	
	WSAY	1370	
	WROC	1280	N
Rockford, Ill.	WROK	1440	A
	WJRL	1150	
	WRRR	1330	
Rock Hill, S.C.	WRHI	1340	M
	WTYC	1150	
Rockingham, N.C.	WAYN	900	
Rock Island, Ill.	WHBF	1270	C
Rockland, Maine	WRKD	1450	A
Rockmart, Ga.	WPLK	1220	
Rock Springs, Wyo.	KVRS	1360	A-M
Rockville, Md.	WINX	1600	
Rockwood, Tenn.	WRKH	580	
Rocky Ford, Colo.	KAVI	1320	
Rocky Mount, N.C.	WCEC	810	
	WEED	1390	A
	WRMT	1490	
	WKWS	1290	
Rocky Mount, Va.	WYTI	1570	
Rogers, Ark.	KAMO	1390	
Rogers City, Mich.	WHAK	960	
Rogersville, Tenn.	WRGS	1370	
Rolla, Mo.	KCLU	1590	
	KTTR	1490	
Rome, Ga.	WLAQ	1410	A
	WIYN	1360	
	WRGA	1470	C
	WROM	710	
Rome, N.Y.	WKAL	1450	A
	WRNY	1350	
Ronceverte, W.Va.	WRON	1400	
Roseburg, Oreg.	KRNR	1490	C
	KRXL	1250	
	KYES	950	
Rosenberg, Tex.	KFRD	980	
Rossville, Ga.	WRIP	980	
Roswell, N.Mex.	KRSY	1230	
	KGFL	1430	M
	KBIM	910	
Rouyn, Que.	CKRN	1400	
Roxboro, N.C.	WRXO	1430	
Royal Oak, Mich.	WEXL	1340	
Rugby, N. Dak.	KGCA	1450	
Ruidoso, N.Mex.	KRRR	1340	
Rumford, Me.	WRUM	790	
Rupert, Idaho	KAYT	970	
Rushton, La.	KRUS	1490	
Rusk, Texas	KTLU	1580	
Russell, Kans.	KRSL	990	
Russellville, Ala.	WWWR	920	
Russellville, Ark.	KXRJ	1490	
Russellville, Ky.	WRUS	610	
Rutland, Vt.	WHWB	1000	
	WSYB	1380	M
Sackville, N.B.	CBA	1070	
Sacramento, Calif.	KCRA	1320	N
	KFBK	1530	A
	KGMS	1380	M
	KJAY	1430	
	KRAK	1140	M
	KROY	1240	C
	KXOA	1470	
Safford, Ariz.	KGLU	1480	A
	KATO	1230	
Sag Harbor, N.Y.	WLNG	1600	
Saginaw, Mich.	WKNX	1210	
	WSAM	1400	N
	WSGW	790	C
Sanitobia, Miss.	WSAU	1550	
St. Albans, Vt.	WWSR	1420	
St. Albans, W.Va.	WKLC	1300	
St. Anne-de-la-Pocatiere, Que.	CHGB	1310	
St. Augustine, Fla.	WFOY	1240	C
	WETH	1420	
St. Boniface, Man.	CKSB	1050	
St. Catherines, Ont.	CKTB	610	
St. Charles, Mo.	KADY	1460	
St. Cloud, Minn.	KFAM	1450	N
	WJON	1240	
St. George, Utah	KDXU	1450	
St. Helen, Mich.	WMIC	1590	
St. Helens, Oreg.	KOHI	1600	
St. Hyacinthe, Que.	CKBS	1240	
St. Jean, Que.	CHRS	1090	
St. Jerome, Que.	CKJL	900	
Saint John, N.B.	CFBC	930	
	CHSJ	1150	
St. Johns, Mich.	WJUD	1580	
St. John's, Nfld.	CBN	640	
	CJON	930	
	VOAR	1230	
	VOCM	590	
	VOWR	800	
St. Johnsbury, Vt.	WTWN	1340	
St. Joseph, Mich.	WSJM	1400	
St. Joseph, Mo.	KFEQ	680	
	KKJO	1550	M
	KUSN	1270	
St. Joseph d'Alma, Que.	CFGT	1270	
St. Louis, Mo.	KATZ	1600	
	KFUO	850	
	KMOX	1120	C
	KSD	550	N
	KSTL	690	
	KWK	1380	
	KXOK	630	
	WEW	770	M
	WIL	1430	A
St. Louis Park, Minn.	KRSI	950	
St. Mary's, Pa.	WKBI	1400	
St. Paul, Minn.	KSTP	1500	N
	KDWB	630	M
St. Peter, Minn.	KRBI	1310	
St. Petersburg, Fla.	WPIN	680	
	WSUN	620	A
	WLCY	1380	M
St. Petersburg Beach, Fla.	WILZ	1590	
St. Thomas, Ont.	CHLO	680	
Salamanca, N.Y.	WGGO	1590	
Salem, Ill.	WJBD	1350	
Salem, Ind.	WSLM	1220	
Salem, Mass.	WESX	1230	M
Salem, Mo.	KSMO	1340	
Salem, Oreg.	KSLM	1390	A
	KAPT	1220	

Location	C.L.	Kc.	N.A.
	KBZY	1490	N
	KGAY	1430	
Salem, Va.	WBLU	1480	
Salida, Colo.	KVRH	1340	M
Salina, Kans.	KSAL	1150	M
Salinas, Calif.	KDON	1460	
	KSBW	1380	M
Saline, Mich.	WOIA	1290	
Salisbury, Md.	WBOC	960	
	WICO	1320	A
	WJDY	1470	
Salisbury, N.C.	WSTP	1490	M
	WSAT	1280	A
Salmon, Idaho	KSRA	960	
Salt Lake City, Utah			
	KALL	910	A
	KCPX	1320	N
	KLUB	570	M
	KNAK	1280	
	KSL	1160	C
	KSOP	1370	
	KSXX	630	
	KWHO	860	
	KWIC	1570	
San Angelo, Tex.	KTEO	1340	
	KGKL	960	A
	KPEP	1420	
	KWFR	1260	
San Antonio, Tex.	KAPE	1480	
	KCOR	1350	
	KENS	680	C
	KBER	1150	
	KITE	930	
	KUKA	1250	
	KUBO	1310	
	KMAC	630	A
	KONO	860	
	KTSA	550	
	WOAI	1200	N
San Bernardino, Calif.			
	KCKC	1350	
	KFXM	590	
	KRNO	1240	
	KMEN	1290	M
Sandersville, Ga.	WSNT	1490	
San Diego, Calif.	KCBQ	1170	
	KFMB	540	C
	KOGO	600	N
	KGB	1360	A
	KSON	1240	
	KSDO	1130	
Sandpoint, Idaho	KSPT	1400	
Sand Spring, Okla.	KTOW	1340	
Sandusky, Ohio	WLEC	1450	M
San Fernando, Calif.	KGIL	1260	
Sanford, Fla.	WTRR	1400	
	WSFR	1360	
Sanford, Me.	WSME	1220	
Sanford, N.C.	WEYE	1290	
	WWGP	1050	
San Francisco, Calif.	KFRC	610	M
	KCBS	740	C
	KFAX	1100	
	KGO	810	A
	KNBC	680	N
	KKHI	1550	M
	KSAY	1010	
	KSAN	1450	
	KSFO	560	
	KYA	1260	
San German, P.R.	WRJS	1090	
San Jose, Calif.	KLOK	1170	
	KLIV	1590	M
	KEEN	1370	
	KXRX	1500	
San Juan, P.R.	WAPA	680	M
	WHOA	870	
	WIAC	740	
	WIPR	940	
	WKAQ	580	C
	WKVM	810	
	WKYN	630	
	WITA	1140	
San Luis Obispo, Calif.			
	KATY	1340	
	KCJH	1280	
	KSLY	1400	
	KVEC	920	M
San Marcos, Tex.	KCNY	1470	
San Mateo, Calif.	KOFY	1050	
San Rafael, Calif.	KTIM	1510	
San Saba, Tex.	KBAL	1410	
Santa Ana, Calif.	KWIZ	1480	
Santa Barbara, Cal.	KDB	1490	
	KGUD	990	
	KIST	1340	N
	KTMS	1250	A-M
	KACL	1290	
Santa Cruz, Calif.	KSCO	1080	
Santa Fe, N.Mex.	KTRC	1400	A
	KVSF	1260	C
Santa Maria, Cal.	KCOY	1400	
	KHER	1600	
	KSMA	1240	
	KSEE	1480	
Santa Monica, Cal.	KDAY	1580	
Santa Paula, Calif.	KSPA	1400	
Santa Rosa, Calif.	KSRO	1350	
	KHUM	1580	
	KVRE	1460	
	KJAX	1150	
Santa Rosa, N.Mex.	KSYX	1420	
Sapulpa, Okla.	KREK	1550	
Saranac Lake, N.Y.	WNBZ	1240	A
Sarasota, Fla.	WKXY	930	
	WSAF	1220	
	WSPB	1450	C
	WYND	1280	
Saratoga Springs, N.Y.			
	WSPN	900	
Sarnia, Ont.	CHOK	1070	
Saskatoon, Sask.	CFQC	600	
	CFNS	1170	
	CKOM	1250	
Sault Ste. Marie, Michigan	WSOO	1230	
Sault Ste. Marie, Ontario	CJIC	1050	
	CKCY	920	
Savannah, Ga.	WBYG	1450	M
	WEAS	900	
	WSAV	630	N
	WSGA	1400	
	WTOC	1290	C
	WSOK	1230	A
Savannah, Tenn.	WORM	1010	
Sayre, Pa.	WATS	960	
Schefferville, Que.	CFKL	1230	
Schenectady, N.Y.	WGY	810	N
	WSNY	1240	
Scotland Neck, N.C.	WYAL	1280	
Scottsbluff, Nebr.			
	KNEB	960	A-M
	KOLT	1320	C
Scottsboro, Ala.	WCRI	1050	
	WROS	1330	
Scottsdale, Ariz.	KWBY	1440	
Scottsville, Ky.	WLCK	1250	
Scranton, Pa.	WARM	590	A
	WEJL	630	
	WGBI	910	C
	WICK	1400	
	WSCR	1320	N
Seaford, Del.	WSUX	1280	
Searcy, Ark.	KWCB	1300	
Seaside, Oreg.	KSRG	730	
Seattle, Wash.	KAYO	1150	M
	KUDY	910	
	KING	1090	A
	KIRO	710	C
	KJR	950	
	KOL	1300	
	KOMO	1000	N
	KETD	1590	
	KTW	1250	
	KVI	570	
	KXA	770	
Sebring, Fla.	WJCM	960	
	WSEB	1340	
Sedalia, Mo.	KDRO	1490	
	KSIS	1050	
Seguin, Tex.	KWED	1580	
Selma, Ala.	WGWC	1340	C
	WHBB	1490	
	WRWJ	1570	
Seminole, Tex.	KTFO	1250	
Seneca Township, S.C.	WSNW	1150	
Seven Iles, Que.	CKCN	560	
Sevierville, Tenn.	WSEV	930	
Seward, Alaska	KIBH	1340	C-A
Seymour, Ind.	WJCD	1390	
Seymour, Tex.	KSEY	1230	
Shamokin, Pa.	WISL	1480	
Shamrock, Tex.	KBYP	1580	
Sharon, Pa.	WPIC	790	
Shawano, Wis.	WTCH	960	
Shawinigan, Que.	CKSM	1220	
Shawnee, Okla.	KGFF	1450	M
Sheboygan, Wis.	WHBL	1330	A
	WKTS	950	
Sheffield, Ala.	WSHF	1290	
Shelby, Mont.	KSEN	1150	M
Shelby, N.C.	WOHS	730	M
	WADA	1390	
Shelbyville, Ind.	WSVL	1520	
Shelbyville, Tenn.	WHAL	1400	
	WLIJ	1580	
Shenandoah, Iowa	KFNF	920	
	KMA	960	A
Sherbrooke, Que.	CHLT	630	
	CKTS	900	
Sheridan, Wyo.	KWYD	1410	M
	KROE	930	
Sherman, Tex.	KRRV	910	M
	KTXO	1500	
Shippensburg, Pa.	WSHP	1480	
Show Low, Ariz.	KVWM	1050	
Shreveport, La.	KANB	1300	
	KBCL	1220	
	KCIJ	1050	C
	KEEL	710	
	KOKA	1550	M
	KJOE	1480	M
	KREB	980	
	KRMD	1340	A
	KWKH	1130	C
Sidney, Mont.	KGCX	1480	M
Sidney, Nebr.	KSID	1340	A
Sierra Vista, Ariz.	KHFH	1420	A
Sikeston, Mo.	KSIM	1400	
Siler City, N.C.	WNCA	1570	
Siloam Sprgs., Ark.	KUOA	1290	M
Silsbee, Tex.	KKAS	1300	
Silver City, N.Mex.	KSIL	1340	C
Silver Sprgs., Md.	WQMR	1050	
Simcoe, Ont.	CFRS	1560	
Sinton, Tex.	KTOD	1590	
Sioux City, Iowa	KSCJ	1360	A
	KMNS	620	M
	KTRI	1470	
Sioux Falls, S.Dak.	KISD	1230	
	KELO	1320	
	KNWC	1270	
	KSOD	1140	A
Sitka, Alaska	KIFW	1230	C-A
	KSEW	1400	
Skowhegan, Maine	WGHM	1150	
Slaton, Tex.	KCAS	1050	
Smithfield, N.C.	WMPM	1270	
Smiths Falls, Ont.	CJET	630	
Smyrna, Ga.	WSMA	1550	
Snyder, Tex.	KSNY	1450	M
Socorro, N.Mex.	KSRC	1290	
Soda Sprgs., Idaho	KBRV	540	
Solvay, N.Y.	WQSR	1320	
Somerset, Ky.	WSFC	1240	M
	WTLO	1480	
Somerset, Pa.	WVSC	990	
Sonora, Calif.	KVML	1450	
Sonora, Tex.	KCKG	1240	
Sorel, P.Q.	CJSO	1320	
South Beloit, Ill.	WBEL	1380	
So. Bend, Ind.	WNDU	1490	A
	WJVA	1580	M
	WSBT	960	C
Southbridge, Mass.	WESO	970	
So. Boston, Va.	WHLF	1400	A
Southern Pines, N.C.	WEEB	990	
South Daytona Beach, Florida	WELE	1590	
So. Gastonia, N.C.	WGAS	1420	
So. Haven, Mich.	WJOR	940	
So. Knoxville, Tenn.	WSKT	1580	
So. Paris, Me.	WKTQ	1450	
So. Pittsburg, Tenn.	WEPG	910	
So. St. Paul, Minn.			
	KDWB	630	M
So. Williamsport, Pa.			
	WMPT	1450	
Spanish Fork, Utah	KONI	1480	
Sparks, Nev.	KBUB	1270	
Sparta, Ill.	WHCO	1230	
Sparta, Tenn.	WSMT	1050	
Sparta, Wis.	WKLJ	990	
	WCOW	1290	
Spartanburg, S.C.	WZOO	1400	M
	WORD	910	N
	WSPA	950	C
Spencer, Iowa	KICD	1240	
Spencer, W.Va.	WSPZ	1400	
Spokane, Wash.	KGA	1510	A
	KLYK	1230	
	KPEG	1380	
	KHQ	590	N
	KNEW	790	M
	KREM	970	
	KXLY	920	C
	KCFA	1330	
Springdale, Ark.	KBRS	1340	A
Springfield, Ill.	WCVS	1450	A-M
	WMAY	970	N
	WTAX	1240	C
Springfield, Mass.	WBZA	1030	
	WHYN	560	C
	WMAS	1450	M
	WSPR	1270	
Springfield, Mo.	KGBX	1260	N
	KICK	1340	
	KTTS	1400	C
	KWTO	560	A
Springfield, Ohio	WIZE	1340	A
	WBLY	1600	
Springfield, Oreg.	KEED	1050	
Springfield, Tenn.	WDBL	1590	
Springfield, Vt.	WCFR	1480	
Springhill, La.	KBSF	1460	
Spruce Pine, N.C.	WTOE	1470	
Stamford, Conn.	WSTC	1400	A
Stamford, Tex.	KDWT	1400	
Stanford, Ky.	WRSL	1520	
Starke, Fla.	WRGR	1490	
Starkville, Miss.	WSSO	1230	
State College, Pa.	WMAJ	1450	N
	WRSC	1390	
Statesboro, Ga.	WWNS	1240	
Statesville, N.C.	WSIC	1400	
	WDBM	550	
Staunton, Va.	WTON	1240	A
	WAFC	900	
Stephenville, Tex.	KSTV	1510	
Sterling, Colo.	KGEK	1230	
	KOLR	1490	
Sterling, Ill.	WSDR	1240	
Steubenville, Ohio	WSTV	1340	M
Stevens Point, Wis.	WSPT	1010	
Stillwater, Minn.	WAVN	1220	
Stillwater, Okla.	KSPI	780	
Stockton, Calif.	KJOY	1280	
	KSTN	1420	
	KWG	1230	A
Storm Lake, Iowa	KAYL	990	
Stratford, Ont.	CJCS	1240	
Streator, Ill.	WIZZ	1250	
Stroudsburg, Pa.	WVPO	840	
Stuart, Fla.	WSTU	1450	M
Stuart, Va.	WHED	1270	
Sturgeon Bay, Wis.	WDOR	910	
Sturgis, Mich.	WSTR	1230	
Stuttgart, Ark.	KWAK	1240	M
Sudbury, Ont.	CKSO	790	
	CFBR	550	
	CHNO	900	
Suffolk, Va.	WLPM	1460	A
Sulphur, La.	KIKS	1310	
Sulphur Sprgs., Tex.	KSST	1230	
Summerside, P.E.I.	CJRW	1240	
Summerville, Ga.	WGTA	930	
Summerville, S.C.	WALS	980	
Sumter, S.C.	WFIG	1290	M
	WDXY	1240	
	WSSC	1340	A
Sunbury, Pa.	WKOK	1240	C
Sunnyside, Wash.	KREW	1230	
Sun Valley, Ida.	KSKI	1340	
Superior, Nebr.	KRFS	1600	
Superior, Wis.	WDSM	710	N
	WIGL	970	
	WQMN	1320	
Susanville, Calif.	KSUE	1240	
Swainsboro, Ga.	WJAT	800	
Sweetwater, Tenn.	WDEH	800	
Sweetwater, Tex.	KXOX	1240	
Swift Current, Sask.	CKSW	1400	
Sydney, N.S.	CBI	1140	
	CJCB	1270	
Sylacauga, Ala.	WFEB	1340	M
	WMLS	1290	
Sylva, N.C.	WMSJ	1480	
Sylvania, Ga.	WSYL	1490	
Syracuse, N.Y.	WHEN	620	C
	WFBL	1390	M
	WNDR	1260	
	WOLF	1490	A
	WSYR	570	N
Tabor City, N.C.	WTAB	1370	
Tacoma, Wash.	KMO	1360	
	KTAC	850	
	KTNT	1400	
	KVI	570	M
Taft, Calif.	KTKR	1310	
Tahlequah, Okla.	KTLQ	1350	
Tahoe Valley, Calif.			
	KTHO	590	
Talladega, Ala	WEYY	1580	
	WNUZ	1230	M
Tallahassee, Fla.	WMEN	1330	
	WRFB	1410	
	WTAL	1270	M
	WTNT	1450	C
Tallassee, Ala.	WTLS	1300	
Tallulah, La.	KTLD	1360	
Tampa, Fla.	WALT	1110	
	WDAE	1250	C
	WYOU	1550	
	WFLA	970	N
	WHBO	1050	M
	WINQ	1010	
	WTMP	1150	
	WSOL	1300	
Taos, N.Mex.	KKIT	1340	
Tarboro, N.C.	WCPS	760	
Tarpon Sprgs., Fla.	WRBB	1470	
Tasley, Va.	WESR	1330	
Taunton, Mass.	WPEP	1570	
Tawas City, Mich.	WIOS	1480	
Taylor, Tex.	KTAE	1260	
Taylorsville, N.C.	WTLK	1570	
Taylorville, Ill.	WTIM	1410	
Tazewell, Tenn.	WNTT	1250	
Tell City, Ind.	WTCJ	1230	
Tempe, Ariz.	KUPD	1060	
	KYND	1580	
Temple, Tex.	KTEM	1400	
Terrace, B.C.	CFTK	1140	
Terre Haute, Ind.	WBOW	1230	N
	WMFT	1300	A
	WTHI	1480	C
Terrell, Tex.	KTER	1570	
Terrytown, Nebr.	KEYR	690	
Texarkana, Ark.	KOSY	790	M
Texarkana, Tex.	KCMC	740	A
	KATQ	940	
	KTFS	1400	
Texas City, Tex.	KTLW	920	
Thayer, Mo.	KALM	1290	
The Dalles, Oreg.	KODL	1440	
	KRMW	1300	
Thermopolis, Wyo.	KRTR	1490	M
	KTHE	1240	
Thief River Falls, Minn.	KTRF	1230	
Thetford Mines, Que.	CKLD	1230	
Thibodaux, La.	KTIB	630	
Thomaston, Ga.	WSFT	1220	
	WTGA	1590	
Thomasville, Ala.	WJDB	630	
Thomasville, Ga.	WPAX	1240	
	WKTG	730	
Thomasville, N.C.	WTNC	790	
Thomson, Ga.	WTWA	1240	M
Three Rivers, Mich.			
	WLKM	1510	
Three Rivers, Que.	CHLN	550	
	CKTR	1150	
Ticonderoga, N.Y.	WIPS	1250	
Tiffin, Ohio	WTTF	1600	M
Tifton, Ga.	WTIF	1340	
	WWGS	1430	
Tillamook, Oreg.	KTIL	1590	
Tillsonburg, Ont.	CKOT	1510	
Timmins, Ont.	CFCL	620	
	CKGB	680	
Titusville, Fla.	WRMF	1060	
Titusville, Pa.	WTIV	1230	
Toccoa, Ga.	WLET	1420	M
	WNES	630	
Toledo, Ohio	WOHO	1470	M
	WSPD	1370	N
	WTOD	1560	C
	WTOL	1230	A
Toledo, Oreg.	KTDO	1230	
Tolleson, Ariz.	KZON	1190	
Tomah, Wis.	WTMB	1460	
Tompkinsville, Ky.	WTKY	1370	
Tooele, Utah	KDYL	990	
Topeka, Kans.	WIBW	580	C
	KEWI	1440	
	WREN	1250	A
	KTOP	1490	M
Toppenish, Wash.	KENE	1490	

Location	C.L.	Kc.	N.A.
Toronto, Ont.	CBL	740	N
	CHFI	1540	D
	CFRB	1010	C
	CHUM	1050	M
	CJBC	860	
	CKEY	580	M
	CKFH	1430	
Torrington, Conn.	WBZY	990	
	WTOR	1490	M
Torrington, Wyo.	KGOS	1490	
Towanda, Pa.	WTTC	1550	
Towson, Md.	WAQE	1570	
Trail, B.C.	CJAT	610	
Traverse City, Mich.	WTCM	1400	
	WCCW	1310	
Trenton, Mo.	KTTN	1600	
Trenton, N.J.	WAAT	1300	
	WBUD	1260	
	WTTM	920	M
Trinidad, Colo.	KCRT	1240	M
Troy, Ala.	WTBF	970	M
Troy, N.Y.	WHAZ	1330	
	WTRY	980	
Troy, N.C.	WXKW	1000	
	WJRM	1390	
Truckee, Calif.	KHOE	1400	
Truro, N.S.	CKCL	600	
Truth or Consequences, New Mexico	KCHS	1400	
Tryon, N.C.	WTYN	1550	M
Tucson, Ariz.	KTUC	1400	A
	KXEW	1600	
	KAIR	1490	
	KCEE	790	
	KTAN	580	A
	KCUB	1290	M
	KEVT	690	
	KOBY	940	
	KMOP	1330	
	KFIF	1550	
	KTKT	990	
	KOLD	1450	C
Tucumcari, N.Mex.	KTNM	1400	M
Tulare, Calif.	KCOK	1270	M
	KGEN	1370	
Tulia, Tex.	KTUE	1260	
Tullahoma, Tenn.	WJIG	740	
Tulsa, Okla.	KAKC	970	
	KOME	1300	
	KRMG	740	C
	KELI	1430	C
	KVOO	1170	N
	KFMJ	1050	
Tupelo, Miss.	WELO	580	M
	WTUP	1490	A
Turlock, Calif.	KCEY	1390	
Tuscaloosa, Ala.	WJRD	1150	
	WACT	1420	
	WNPT	1280	A
	WTUG	790	
	WTBC	1230	M
Tuscumbia, Ala.	WVNA	1590	
	WRCK	1410	
Tuskegee, Ala.	WABT	580	
Twenty-Nine Palms, Calif.	KDHI	1250	
Twin Falls, Idaho	KTFI	1270	N
	KLIX	1310	M
	KEEP	1450	
Two Rivers, Wis.	WTRW	1590	
Tyler, Tex.	KDOK	1330	
	KGJB	1490	M
	KTBB	600	A
	KZEY	690	
Tyrone, Pa.	WTRN	1340	
Ukiah, Calif.	KUKI	1400	
	KMSL	1250	
Union, Mo.	KLPW	1220	
Union, S.C.	WBCU	1460	
Union City, Tenn.	WENK	1240	
Uniontown, Pa.	WMBS	590	C
Urbana, Ill.	WILL	580	
	WKID	1580	
Utica, N.Y.	WIBX	950	C
	WBVM	1550	
	WRUN	1150	
	WTLB	1310	A
Uvalde, Tex.	KVOU	1400	
Val D'Or, Que.	CKVD	1230	
Valdese, N.C.	WSUM	1490	
Valdosta, Ga.	WGOV	950	M
	WGAF	910	A
	WJEM	1150	
	WVLO	1450	
Valentine, Nebr.	KVSH	940	
Vallejo, Calif.	KNBA	1190	
Valley City, N.Dak.	KOVC	1490	M
Valleyfield, P.R.	CFLV	1370	
Valparaiso-Niceville, Fla.	WNSM	1340	
Van Buren, Ark.	KFDF	1580	
Van Cleve, Ky.	WMTC	730	
Van Wert, Ohio	WERT	1220	
Vanceburg, Ky.	WKKS	1570	
Vancouver, B.C.	CBU	690	
	CFUN	1410	
	CHQM	1320	

Location	C.L.	Kc.	N.A.
	CJOR	600	
	CKWX	1130	M
Vancouver, Wash.	KKEY	1150	
	KVAN	1480	
Venice, Fla.	WAMR	1320	
Ventura, Calif.	KVEN	1450	M
	KUDU	1590	
Verdun, Que.	CKVL	850	
Vermillion, S.Dak.	KUSD	690	
Vernal, Utah	KVEL	1250	
Vernon, B.C.	CJIB	940	
Vernon, Tex.	KVWC	1490	
Vero Beach, Fla.	WAXE	1370	
	WTTB	1490	A
Vicksburg, Miss.	WQBC	1420	M
	WVIM	1490	
Victoria, B.C.	CJVI	900	
	CFAX	870	
	CKDA	1220	
Victoria, Tex.	KNAL	1410	
Victoriaville, Que.	CFDA	1380	
Victorville, Calif.	KCIN	1590	
Vidalia, Ga.	WVOP	970	
Vieques, P.R.	WIVV	1370	
Ville Marie, Que.	CKVM	710	
Ville Platte, La.	KVPI	1050	
Ville St. Georges, Que.	CKRB	1460	
Vincennes, Ind.	WAOV	1450	M
Vineland, N.J.	WWBZ	1360	
	WDVL	1270	
Vinita, Okla.	KVIN	1470	
Vinton, Va.	WKBA	1550	
Virginia, Minn.	WHLB	1400	N
Virginia Bch., Va.	WBOF	1550	
Virouqua, Wis.	WISV	1360	
Visalia, Calif.	KONG	1400	
Vivian, La.	KLVI	1600	
Waco, Tex.	WACO	1580	A
	KAWA	1010	
	KBGO	1580	
	KWTX	1230	M
Wadena, Minn.	KWAD	920	M
Wadesboro, N.C.	WADE	1210	
Wailuku, Hawaii	KMVI	550	N
Waipahu, Hawaii	KAHU	920	
Walhalla, S.C.	WGOG	1460	
Wallace, Idaho	KWAL	620	M
Wallace, N.C.	WLSE	1400	
Walla Walla, Wash.	KHIT	1320	
	KUJ	1420	M
	KTEL	1490	A
Walnut Ridge, Ark.	KRLW	1320	
Walsenburg, Colo.	KFLJ	1380	
Walterboro, S.C.	WALD	1220	A
Waltham, Mass.	WCRB	1330	
Walton, N.Y.	WDLA	1270	
Ward Ridge, Fla.	WJOE	1570	
Ware, Mass.	WARE	1250	M
Warner Robbins, Ga.	WRPB	1350	A
Warren, Ark.	KWRF	860	
Warren, Ohio	WHHH	1440	
Warren, Pa.	WNAE	1310	
Warrensburg, Mo.	KOKO	1450	
Warrenton, Mo.	KWRE	730	
Warrenton, Va.	WEER	1570	
	WKCW	1420	
Warsaw, Ind.	WRSW	1480	
Warsaw, Va.	WNNT	690	
Warwick-E.Greenwich, R.I.	WYNG	1590	
Wasco, Calif.	KWSO	1050	
Washington, D.C.	WGMS	570	
	WMAL	630	A
	WOL	1450	M
	WOOK	1340	
	WWDC	1260	
	WRC	980	N
	WTOP	1500	C
Washington, Ga.	WKLE	1370	
Washington, Ind.	WAMW	1580	
Washington, Iowa	KCII	1380	
Washington, N.J.	WCRV	1580	
	WITN	930	A
Washington, N.C.	WEEW	1320	
Washington, Pa.	WJPA	1450	M
Washington Court House, Ohio	WCHO	1250	
Waterbury, Conn.	WATR	1320	A
	WBRY	1590	C
	WWCO	1240	M
Waterbury, Vt.	WDEV	550	M
Waterloo, Iowa	KXEL	1540	A
	KNWS	1090	
	KWWL	1330	M
Watertown, N.Y.	WATN	1240	
	WOTT	1410	
	WWNY	790	C
Watertown, S.Dak.	KSDR	1480	
	KWAT	950	M
Watertown, Wis.	WTTN	1580	
Waterville, Me.	WTVL	1490	A
Watseka, Ill.	WGFA	1360	
Watsonville, Calif.	KOMY	1340	
Wauchula, Fla.	WAUC	1310	

Location	C.L.	Kc.	N.A.
Waukegan, Ill.	WKRS	1220	
Waukesha, Wis.	WAUX	1510	
Waupaca, Wis.	WDUX	800	A
Wausau, Wis.	WRIG	1400	N
	WSAU	550	A
	WHVF	1230	
Waverly, Iowa	KWVY	1470	
Waverly, Ohio	WPKO	1380	
Waxahachie, Tex.	KBEC	1390	
Waycross, Ga.	WACL	570	
	WAYX	1230	M
Waynesboro, Ga.	WBRO	1310	
Waynesboro, Miss.	WABO	990	
Waynesboro, Pa.	WAYZ	1380	
Waynesboro, Va.	WAYB	1490	M
	WRWV	970	
Waynesburg, Pa.	WANB	1580	
Waynesville, Mo.	KJPW	1390	
Waynesville, N.C.	WHCC	1400	
Weatherford, Tex.	KZEE	1220	
Webster City, Iowa	KJFJ	1570	
Weed, Calif.	KDAD	800	
Weirton, W.Va.	WEIR	1430	N
Weiser, Idaho	KWEI	1260	
Welch, W.Va.	WELC	1150	
	WOVE	1340	M
Weldon, N.C.	WCNF	1400	
Welland, Ontario	CHOW	1470	
Wellsboro, Pa.	WNBT	1490	M
Wellston, Ohio	WKOV	1330	
Wellsville, N.Y.	WLSV	790	
Wenatchee, Wash.	KPQ	560	A
	KUEN	900	
	KMEL	1340	M
Wendell-Zebulon, N.C.	WETC	540	
Weslaco, Tex.	KRGV	1290	N
West Allis, Wis.	WAWA	1590	
W. Bend, Wis.	WBKV	1470	
Westbrook, Me.	WJAB	1440	
West Covina, Calif.	KGRB	900	
W. Frankfort, Ill.	WFRX	1300	
West Jefferson, N.C.	WKSK	1600	
W. Memphis, Ark.	KSUD	730	
W. Monroe, La.	KUZN	1310	
W. Palm Beach, Fla.	WEAT	850	M
	WJNO	1230	C
	WIRK	1290	M
West Plains, Mo.	KWPM	1450	
West Point, Ga.	WBMK	1310	
West Point, Miss.	WROB	1450	M
Westport, Conn.	WMMM	1260	M
W. Springfield, Mass.	WTXL	1490	A
W. Yarmouth, Mass.	WOCB	1240	M
Westerly, R.I.	WERI	1230	M
Westfield, Mass.	WDEW	1570	
Westminster, Md.	WTTR	1470	
Weston, W.Va.	WHAW	980	M
W. Warwick, R.I.	WWRI	1450	
Wetumpka, Ala.	WETU	1250	
Wewoka-Seminole, Okla.	KWSH	1260	A
Weyburn, Sask.	CFSL	1340	
Wharton, Tex.	KANI	1500	
Wheatland, Wyo.	KYCN	1340	
Wheaton, Md.	WDON	1540	
Wheeling, W.Va.	WHLL	1600	
	WJBT	1470	
	WKWK	1400	A
	WWVA	1170	C
White Castle, La.	KEVL	1590	
White Plains, N.Y.	WFAS	1230	
White River Junc., Vt.	WWRJ	910	
Whitehall, Mich.	WCBP	1490	
Whitehorse, Y.T.	CFWH	570	
Whitesburg, Ky.	WTCW	920	
Whiteville, N.C.	WENC	1220	
Wichita, Kans.	KAKE	1240	M
	KLEO	1480	M
	KFDI	1070	N
	KFH	1330	C
	KSIR	900	
	KWBB	1410	
Wichita Falls, Tex.	KNIN	990	M
	KTRN	1290	
	KWFT	620	C
Wickenburg, Ariz.	KAKA	1250	
Wickford, R.I.	WKFD	1370	
Wildwood, N.J.	WCMC	1230	M
Wilkes-Barre, Pa.	WBAX	1240	M
	WBRE	1340	N
	WILK	980	A
Willcox, Ariz.	KWCX	1250	
Williamsburg, Ky.	WEZJ	1440	
Williamsburg, Va.	WBCI	740	
Williams Lake, B.C.	CKCQ-1	1240	
Williamson, W.Va.	WBTH	1400	M
Williamsport, Pa.	WLYC	1050	
	WRAK	1400	N
	WWPA	1340	C
Williamston, N.C.	WIAM	900	

Location	C.L.	Kc.	N.A.
Willimantic, Conn.	WILI	1400	M
Williston, N.D.	KEYZ	1360	
Willmar, Minn.	KWLM	1340	A
Willoughby, Ohio	WELW	1330	D
Willow Springs, Mo.	KUKU	1330	
Willows, Calif.	KIQS	1560	
Wilmington, Del.	WAMS	1380	M
	WDEL	1150	N
	WILM	1450	A
	WTUX	1290	
Wilmington, N.C.	WMFD	630	A
	WHSL	1490	
	WKLM	980	
	WGNI	1340	M
Wilson, N.C.	WGTM	590	C
	WLLY	1350	
	WVOT	1420	M
Winchester, Ky.	WWKY	1380	
Winchester, Tenn.	WCDT	1340	
Winchester, Va.	WINC	1400	A
	WHPL	610	
Windemere, Fla.	WXIV	1480	
Winder, Ga.	WIMO	1300	
Windom, Minn.	KDOM	1580	
Windsor, Conn.	WSOR	1480	
Windsor, N.S.	CFAB	1450	
Windsor, Ont.	CBE	1550	
	CKLW	800	M
Wingham, Ont.	CKNX	920	
Winnemucca, Nev.	KWNA	1400	
Winnfield, La.	KVCL	1270	
Winner, S.Dak.	KWYR	1260	
Winnipeg, Man.	CBW	990	
	CKRC	630	
	CKY	580	
	CJOB	680	
Winnsboro, La.	KMAR	1570	
Winnsboro, S.C.	WCKM	1250	
	WRBI	980	
Winona, Minn.	KWNO	1230	A
	KAGE	1380	
Winona, Miss.	WONA	1570	
Winslow, Ariz.	KVNC	1010	A
Winston-Salem, N.C.	WAAA	980	
	WAIR	1340	
	WPEG	1550	
	WSJS	600	N
	WTOB	1380	M-C
Winter Garden, Fla.	WOKB	1600	
Winter Haven, Fla.	WSIR	1490	M
	WINT	1360	
Winter Park, Fla.	WABR	1440	M
Wisconsin Rapids, Wis.	WFHR	1320	M
	WRNE	1220	
Wolf Pt., Mont.	KVCK	1450	M
Wood River, Ill.	WBBY	590	M
Woodside, N.Y.	WWRL	1600	
Woodstock, N.B.	CJCJ	920	
Woodstock, Ont.	CKOX	1340	
Woodward, Okla.	KSIW	1450	
Woonsocket, R.I.	WNRI	1380	
	WWON	1240	
Wooster, Ohio	WWST	960	
Worcester, Mass.	WAAB	1440	M-N-A
	WNEB	1230	
	WORC	1310	
	WTAG	580	C
Worland, Wyo.	KWOR	1340	M
Worthington, Minn.	KWOA	730	
Worthington, Ohio	WRFD	880	
Wynne, Ark.	KWYN	1400	
Wytheville, Va.	WYVE	1280	
Yakima, Wash.	KIT	1280	
	KIMA	1460	C
	KBBO	1390	
	KUTI	980	
	KYAK	1390	M
Yankton, S.D.	KYNT	1450	
	WNAX	570	C
Yarmouth, N.S.	CJLS	1340	
Yauco, P.R.	WKFE	1550	
Yazoo City, Miss.	WAZF	1230	
Yellowknife, N.W.T.	CFYK	1340	
York, Nebr.	KAWL	1370	
York, Pa.	WNOW	1250	M
	WORK	1350	N
	WSBA	910	A
York, S.C.	WYCL	1580	
Yorkton, Sask.	CJGX	940	
Youngstown, Ohio	WBBW	1240	M
	WFMJ	1390	N
	WKBN	570	C
Ypsilanti, Mich.	WYSI	1480	
Yreka, Calif.	KSYC	1490	
Yuba City, Calif.	KUBA	1600	
	KAGR	1450	
Yuma, Ariz.	KOFA	1240	
	KBLU	1320	
	KVOY	1400	A
	KYUM	560	N
Zanesville, Ohio	WHIZ	1240	N
Zarephath, N.J.	WAWZ	1380	
Zephyr Hills, Fla.	WZRH	1400	

U. S. AM Stations by Call Letters

C.L.	Location	Kc.
KAAA	Kingman, Ariz.	1230
KAAB	Hot Springs, Ark.	1340
KAAY	Little Rock, Ark.	1090
KABC	Los Angeles, Calif.	790
KABL	Oakland, Calif.	960
KABQ	Albuquerque, N.M.	1350
KABR	Aberdeen, S.Dak.	1420
KACE	Riverside, Calif.	1570
KACI	The Dalles, Oreg.	1300
KACT	Andrews, Tex.	1360
KACY	Port Hueneme, Calif.	1520
KADA	Ada, Okla.	1230
KADL	Pine Bluff, Ark.	1270
KADO	Marshall, Tex.	1410
KADY	St. Charles, Mo.	1460
KAFP	Petaluma, Calif.	1490
KAFY	Bakersfield, Calif.	550
KAGE	Winona, Minn.	1380
KAGH	Crossett, Ark.	800
KAGI	Grants Pass, Oreg.	930
KAGO	Klamath Falls, Oreg.	1150
KAGR	Yuba City, Calif.	1450
KAGT	Anacortes, Wash.	1340
KAHI	Auburn, Calif.	950
KAHU	Waipahu, Hawaii	920

C.L.	Location	Kc.
KAHR	Redding, Calif.	1330
KAIM	Kaimuki, Hawaii	870
KAIR	Tucson, Ariz.	1490
KAJI	Little Rock, Ark.	1250
KAJO	Grants Pass, Oreg.	1270
KAKA	Wickenburg, Ariz.	1250
KAKC	Tulsa, Okla.	970
KAKE	Wichita, Kan.	1240
KALB	Alexandria, La.	580
KALE	Richland, Wash.	960
KALF	Mesa, Ariz.	1510
KALG	Alamogordo, N.Mex.	1230
KALI	Pasadena, Calif.	1430
KALL	Salt Lake City, Utah	910
KALM	Thayer, Mo.	1290
KALN	Iola, Kan.	1370
KALT	Atlanta, Tex.	900
KALV	Alva, Okla.	1430
KAMD	Camden, Ark.	910
KAML	Kenedy, Tex.	990
KAMO	Rogers, Ark.	1390
KAMP	El Centro, Calif.	1430
KAMY	McCamey, Tex.	1450
KANA	Anaconda, Mont.	580
KANB	Shreveport, La.	1300
KAND	Corsicana, Tex.	1340
KANE	New Iberia, La.	1240
KANI	Wharton, Tex.	1500
KANN	Ogden, Utah	1250
KANO	Anoka, Minn.	1470
KANS	Independence, Mo.	1510
KAOH	Duluth, Minn.	1390
KAOK	Lake Charles, La.	1400
KAOL	Carrollton, Mo.	1430
KAPA	Raymond, Wash.	1340
KAPB	Marksville, La.	1370
KAPE	San Antonio, Tex.	1480
KAPI	Pueblo, Colo.	690
KAPR	Douglas, Ariz.	930
KAPS	Mt. Vernon, Wash.	1470
KAPT	Salem, Ore.	1220
KAPY	Port Angeles, Wash.	1290
KARA	Albuquerque, N.M.	1310
KARE	Atchison, Kan.	1470
KARI	Blaine, Wash.	550
KARK	Little Rock, Ark.	920
KARM	Fresno, Calif.	1430
KARR	Great Falls, Mont.	1400
KARS	Belen, N.M.	860
KART	Jerome, Idaho	1400
KARY	Prosser, Wash.	1310
KASE	Austin, Tex.	970
KASH	Eugene, Ore.	1600
KASI	Ames, Iowa	1430
KASK	Ontario, Calif.	1510
KASL	Newcastle, Wyo.	1240
KASM	Albany, Minn.	1150
KASO	Minden, La.	1240
KAST	Astoria, Ore.	1370
KASY	Auburn, Wash.	1220
KATE	Albert Lea, Minn.	1450
KATI	Casper, Wyo.	1400
KATL	Miles City, Mont.	1340
KATN	Boise, Idaho	1010
KATO	Safford, Ariz.	1230
KATQ	Texarkana, Tex.	940
KATR	Eugene, Ore.	1320
KATY	San Luis Obispo, Cal.	1340
KATZ	St. Louis, Mo.	1600
KAUS	Austin, Minn.	1480
KAVE	Carlsbad, N.Mex.	1240
KAVI	Rocky Ford, Colo.	1320
KAVL	Lancaster, Calif.	610
KAVR	Apple Valley, Calif.	960
KAWA	Waco, Tex.	1010
KAWL	York, Neb.	1370
KAWT	Douglas, Ariz.	1450
KAYC	Beaumont, Tex.	1450
KAYE	Puyallup, Wash.	1450
KAYG	Lakewood, Wash.	1480
KAYL	Storm Lake, Iowa	990
KAYO	Seattle, Wash.	1150
KAYS	Hays, Kans.	1400
KAYT	Rupert, Idaho	970
KBAL	San Saba, Tex.	1410
KBAM	Longview, Wash.	1270
KBAN	Bowie, Tex.	1410
KBAR	Burley, Idaho	1230
KBBA	Benton, Ark.	690
KBBB	Borger, Tex.	1600
KBBC	Centerville, Utah	1600
KBBO	Yakima, Wash.	1390
KBBR	North Bend, Oreg.	1340
KBBS	Buffalo, Wyo.	1450
KBCH	Oceanlake, Oreg.	1380
KBCL	Shreveport, La.	1220
KBEA	Mission, Kans.	1480
KBEC	Waxahachie, Tex.	1390
KBEE	Modesto, Calif.	970
KBEK	Elk City, Okla.	1240
KBEL	Idabel, Okla.	1240
KBEN	Carrizo Sprgs., Tex.	1450
KBER	San Antonio, Tex.	1150
KBET	Reno, Nev.	1340
KBEV	Portland, Oreg.	1010
KBFS	Belle Fourche, S.Dak.	1450
KBGN	Caldwell, Idaho	910
KBGO	Waco, Tex.	1580
KBHC	Nashville, Ark.	1260
KBHM	Branson, Mo.	1220
KBHS	Hot Springs, Ark.	590
KBIF	Fresno, Calif.	900
KBIG	Avalon, Calif.	740
KBIM	Roswell, N.Mex.	910
KBIS	Bakersfield, Calif.	970
KBIX	Muskogee, Okla.	1490
KBIZ	Ottumwa, Iowa	1240
KBJT	Fordyce, Ark.	1570
KBKR	Baker, Oreg.	1490
KBKW	Aberdeen, Wash.	1450
KBLA	Burbank, Calif.	1490
KBLF	Red Bluff, Calif.	1490
KBLI	Blackfoot, Idaho	690
KBLR	Bolivar, Mo.	1550
KBLT	Big Lake, Tex.	1290
KBLU	Yuma, Ariz.	1320
KBLY	Gold Beach, Oreg.	1220
KBMI	Henderson, Nev.	1400
KBMN	Bozeman, Mont.	1230
KBMO	Benson, Minn.	1290
KBMW	Breckinrdg., Minn.	1450
KBMX	Coalinga, Calif.	1470
KBMY	Billings, Mont.	1240
KBND	Bend, Oreg.	1110
KBOA	Kennett, Mo.	830
KBOE	Oskaloosa, Iowa	740
KBOI	Boise, Idaho	950
KBOK	Malvern, Ark.	1310
KBOL	Boulder, Colo.	1490
KBOM	Bismark-Mandan, N. Dak.	1270
KBON	Omaha, Nebr.	1490
KBOP	Pleasanton, Tex.	1380
KBOR	Brownsville, Tex.	1600
KBOW	Butte, Mont.	1490
KBOX	Dallas, Tex.	1480
KBOY	Medford, Oreg.	730
KBPS	Portland, Oreg.	1450
KBRC	Mt. Vernon, Wash.	1430
KBRI	Brinkley, Ark.	1570
KBRK	Brookings, S.Dak.	1430
KBRL	McCook, Nebr.	1300
KBRN	Brighton, Colo.	800
KBRO	Bremerton, Wash.	1490
KBRR	Leadville, Colo.	1230
KBRS	Springdale, Ark.	1340
KBRV	Soda Sprgs., Ida.	540
KBRX	O'Neill, Nebr.	1350
KBRZ	Freeport, Texas	1460
KBSF	Springhill, La.	1460
KBST	Big Spring, Tex.	1490
KBTA	Batesville, Ark.	1340
KBTM	Jonesboro, Ark.	1230
KBTN	Neosho, Mo.	1420
KBTO	El Dorado, Kans.	1360
KBTR	Denver, Colo.	710
KBUC	Corona, Calif.	1370
KBUD	Athens, Tex.	1410
KBUH	Brigham City, Utah	800
KBUN	Bemidji, Minn.	1450
KBUR	Burlington, Iowa	1490
KBUS	Mexia, Tex.	1590
KBUY	Amarillo, Tex.	1010
KBUZ	Mesa, Ariz.	1310
KBVM	Lancaster, Calif.	1380
KBVU	Bellevue, Wash.	1540
KBWD	Brownwood, Tex.	1380
KBYE	Okla. City, Okla.	890
KBYG	Big Spring, Tex.	1400
KBYP	Shamrock, Tex.	1580
KBYR	Anchorage, Alaska	1270
KBZY	Salem, Oreg.	1490
KBZZ	LaJunta, Colo.	1400
KCAC	Phoenix, Ariz.	1010
KCAD	Abilene, Tex.	1560
KCAL	Redlands, Calif.	1410
KCAP	Helena, Mont.	1340
KCAR	Clarksville, Tex.	1350
KCAS	Slaton, Tex.	1050
KCBC	Des Moines, Iowa	1390
KCBD	Lubbock, Tex.	1590
KCBQ	San Diego, Calif.	1170
KCBS	San Fran., Calif.	740
KCCL	Paris, Ark.	1460
KCCO	Lawton, Okla.	1050
KCCR	Pierre, S.Dak.	1590
KCCT	Corpus Christi, Tex.	1150
KCDI	Kirkland, Wash	
KCEE	Tucson, Ariz.	790
KCEY	Turlock, Calif.	1390
KCFA	Spokane, Wash.	1330
KCFH	Cuero, Tex.	1600
KCFI	Cedar Falls, Iowa	1250
KCGM	Columbia, Mo.	1580
KCHA	Charles City, Iowa	1580
KCHE	Cherokee, Iowa	1440
KCHI	Chillicothe, Mo.	1010
KCHJ	Delano, Calif.	1010
KCHR	Charleston, Mo.	1350
KCHS	Truth or Consequences, New Mexico	1400
KCHV	Coachella, Calif.	970
KCHY	Cheyenne, Wyo.	1590
KCID	Caldwell, Idaho	1490
KCII	Washington, Iowa	1380
KCIJ	Shreveport, La.	1050
KCIL	Houma, La.	1490
KCIM	Carroll, Iowa	1380
KCIN	Victorville, Calif.	1590
KCJB	Minot, N.Dak.	910
KCJH	San Luis Obispo, Cal.	1280
KCKC	San Bernardino, Cal.	1350
KCKG	Sonora, Tex	1240
KCKN	Kansas City, Kans.	1340
KCKW	Jena, La.	1480
KCKY	Coolidge, Ariz.	1150
KCLA	Pine Bluff, Ark.	1400
KCLE	Cleburne, Tex.	1120
KCLF	Clifton, Ariz.	1400
KCLN	Clinton, Iowa	1390
KCLO	Leavenworth, Kans.	1410
KCLR	Ralls, Tex.	1530
KCLS	Flagstaff, Ariz.	600
KCLU	Rolla, Mo.	1590
KCLV	Clovis, N.Mex.	1240
KCLW	Hamilton, Tex.	900
KCLX	Colfax, Wash.	1450
KCMC	Texarkana, Tex.	1230
KCMJ	Palm Sprgs., Calif.	1010
KCMO	Kansas City, Mo.	810
KCMS	Manitou Sprgs., Colo.	1490
KCNI	Broken Bow, Nebr.	1280
KCNO	Alturas, Calif.	570
KCNY	San Marcos, Tex.	1470
KCOB	Newton, Iowa	1280
KCOG	Centerville, Iowa	1400
KCOH	Houston, Tex.	1430
KCOK	Tulare, Calif.	1270
KCOL	Ft. Collins, Colo.	1410
KCON	Conway, Ark.	1230
KCOR	San Antonio, Tex.	1350
KCOW	Alliance, Nebr.	1400
KCOY	Santa Maria, Calif.	1400
KCPX	Salt Lake City, Utah	1320
KCRA	Sacramento, Calif.	1320
KCRB	Chanute, Kans.	1460
KCRC	Enid, Okla.	1390
KCRG	Cedar Rapids, Iowa	1600
KCRM	Crane, Tex.	1380
KCRS	Midland, Tex.	550
KCRT	Trinidad, Colo.	1240
KCRV	Caruthersville, Mo.	1370
KCSJ	Pueblo, Colo.	590
KCSR	Chadron, Nebr.	1450
KCTA	Corpus Christi, Tex.	1030
KCTI	Gonzales, Tex.	1450
KCTX	Childress, Tex.	1510
KCUB	Tucson, Ariz.	1290
KCUE	Red Wing, Minn.	1250
KCUL	Fort Worth, Tex.	1540
KCVL	Colville, Wash.	1270
KCVR	Lodi, Calif.	1570
KCYL	Lampasas, Tex.	1450
KDAB	Arvada, Colo.	1550
KDAC	Ft. Bragg, Calif.	1230
KDAD	Weed, Calif.	800
KDAK	Carrington, N.D.	1600
KDAL	Duluth, Minn.	610
KDAN	Eureka, Calif.	790
KDAV	Lubbock, Tex.	580
KDAY	Santa Monica, Calif.	1580
KDB	Santa Barbara, Calif.	1490
KDBC	Mansfield, La.	1360
KDBM	Dillon, Mont.	800
KDBS	Alexandria, La.	1410
KDDD	Dumas, Tex.	800
KDEC	Decorah, Iowa	1240
KDEF	Albuquerque, N.Mex.	1150
KDEN	Denver, Colo.	1340
KDEO	El Cajon, Calif.	910
KDES	Palm Sprgs., Calif.	920
KDET	Center, Tex.	930
KDEX	Dexter, Mo.	1590
KDEY	Boulder, Colo.	1360
KDGO	Durango, Colo.	1240
KDHI	Twenty-nine Palms, California	1250
KDHL	Faribault, Minn.	920
KDIA	Oakland, Calif.	1310
KDIO	Ortonville, Minn.	1350
KDIX	Dickinson, N.Dak.	1230
KDJI	Holbrook, Ariz.	1270
KDKA	Pittsburgh, Pa.	1020
KDKD	Clinton, Mo.	1280
KDLA	DeRidder, La.	1010
KDLK	Del Rio, Tex.	1230
KDLM	Detroit Lakes, Minn.	1340
KDLR	Devils Lake, N.Dak.	1240
KDLS	Perry, Iowa	1310
KDMA	Montevideo, Minn.	1450
KDMO	Carthage, Mo.	1490
KDMS	El Dorado, Ark.	1290
KDNT	Denton, Tex.	1440
KDOK	Tyler, Tex.	1330
KDOL	Mojave, Calif.	1340
KDOM	Windom, Minn.	1580
KDON	Salinas, Calif.	1460
KDOT	Reno, Nev.	1230
KDOV	Medford, Oreg.	1300
KDQN	DeQueen, Ark.	1390
KDRO	Sedalia, Mo.	1490
KDRS	Paragould, Ark.	1490
KDSJ	Deadwood, S.Dak.	980
KDSN	Denison, Iowa	1580
KDSX	Denison, Tex.	950
KDTA	Delta, Colo.	1400
KDTH	Dubuque, Iowa	1370
KDUZ	Hutchinson, Minn.	1260
KDWB	St. Paul, Minn.	630
KDWT	Stamford, Tex.	1200
KDXE	No. Little Rock, Ark.	1380
KDXU	St. George, Utah	1450
KDYL	Tooele, Utah	990
KDZA	Pueblo, Colo.	1230
KEAN	Brownwood, Tex.	1240
KEAP	Fresno, Calif.	980
KEBE	Jacksonville, Tex.	1400
KECK	Odessa, Tex.	920
KEDD	Dodge City, Kans.	1550
KEDO	Longview, Wash.	1400
KEED	Springfield, Oreg.	1050
KEEE	Nacogdoches, Tex.	1230
KEEL	Shreveport, La.	710
KEEN	San Jose, Calif.	1370
KEEP	Twin Falls, Idaho	1450
KEES	Gladewater, Tex.	1430
KEKO	Kailua, Hawaii	1130
KELA	Centralia, Wash.	1470
KELD	El Dorado, Ark.	1400
KELI	Tulsa, Okla.	1430
KELK	Elko, Nev.	1240
KELO	Sioux Falls, S.Dak.	1320
KELP	El Paso, Tex.	920
KELR	El Reno, Okla.	1460
KELY	Ely, Nev.	1230
KENA	Mena, Ark.	1450
KENE	Toppenish, Wash.	1490
KENI	Anchorage, Alaska	550
KENL	Arcata, Calif.	1340
KENM	Portales, N.Mex.	1450
KENN	Farmington, N.M.	1390
KENO	Las Vegas, Nev.	1460
KENS	San Antonio, Tex.	680
KENY	Bellingham-Ferndale, Wash.	930
KEOK	Payette, Idaho	1450
KEOS	Flagstaff, Ariz.	1290
KEPR	Kennewick, Wash.	610
KEPS	Eagle Pass, Tex.	1270
KERB	Kermit, Tex.	600
KERC	Eastland, Tex.	1590
KERG	Eugene, Oreg.	1280
KERN	Bakersfield, Calif.	1410
KERV	Kerrville, Tex.	1230
KESM	Eldorado Springs, Mo.	1580
KEST	Boise, Idaho	790
KETO	Seattle, Wash.	1590
KETX	Livingston, Tex.	1440
KEUN	Eunice, La.	1490
KEVE	Minneapolis, Minn.	1440
KEVL	White Castle, La.	1590
KEVT	Tucson, Ariz.	690
KEWB	Oakland, Calif.	910
KEWI	Topeka, Kans.	1440
KEX	Portland, Oreg.	1190
KEXO	Grand Junc., Colo.	1230
KEYD	Oakes, N.Dak.	1220
KEYE	Perryton, Tex.	1400
KEYJ	Jamestown, N.Dak.	1400
KEYL	Long Prairie, Minn.	1400
KEYR	Terrytown, Nebr.	690
KEYS	Corpus Christi, Tex.	1440
KEYY	Provo, Utah	1450
KEYZ	Williston, N.Dak.	1360
KEZU	Rapid City, S.Dak.	920
KEZY	Anaheim, Calif.	1190
KFAB	Omaha, Nebr.	1110
KFAC	Los Angeles, Calif.	1330
KFAL	Fulton, Mo.	900
KFAM	St. Cloud, Minn.	1450
KFAR	Fairbanks, Alaska	610
KFAX	San Francisco, Calif.	1100
KFAY	Fayetteville, Ark.	1250
KFBB	Great Falls, Mont.	1310
KFBC	Cheyenne, Wyo.	1240
KFBK	Sacramento, Calif.	1530
KFCB	Redfield, S. Dak.	1380
KFDA	Amarillo, Tex.	1440
KFDF	Van Buren, Ark.	1580
KFDI	Wichita, Kansas	1070
KFDM	Beaumont, Tex.	560
KFDR	Grand Coulee, Wash.	1360
KFEL	Pueblo, Colo.	970
KFEQ	St. Joseph, Mo.	680
KFFA	Helena, Ark.	1360
KFGO	Fargo, N.D.	790
KFGQ	Boone, Iowa	1260
KFH	Wichita, Kans.	1330
KFI	Los Angeles, Calif.	640
KFIF	Tucson, Ariz.	1550
KFIG	Iowa Falls, Iowa	1510
KFIV	Modesto, Calif.	1360
KFIZ	Fond du Lac, Wis.	1450
KFJB	Marshalltown, Iowa	1230
KFJM	Grand Forks, N.Dak	1370
KFJZ	Ft. Worth, Tex.	1270
KFKA	Greeley, Colo.	1310
KFKF	Bellevue, Wash.	1330
KFKU	Lawrence, Kans.	1250
KFLD	Floydada, Tex.	900
KFLJ	Walsenburg, Colo.	1380
KFLT	Mountain Home, Ida.	1240
KFLW	Klamath Falls, Oreg.	1450
KFLY	Corvallis, Oreg.	1240
KFMB	San Diego, Calif.	540
KFMJ	Tulsa, Okla.	1050
KFML	Denver, Colo.	1390
KFMO	Flat River, Mo.	1240
KFNF	Shenandoah, Iowa	920
KFNV	Ferriday, La.	1600
KFNW	Fargo, N.Dak.	900
KFOR	Lincoln, Nebr.	1240
KFOX	Long Beach, Calif.	1280
KFPW	Ft. Smith, Ark.	1230
KFQD	Anchorage, Alaska	730
KFRA	Franklin, La.	1390
KFRB	Fairbanks, Alaska	900
KFRC	San Francisco, Calif.	610
KFRD	Rosenberg, Tex.	980
KFRE	Fresno, Calif.	940
KFRM	Kansas City, Mo.	550
KFRO	Longview, Tex.	1370
KFRU	Columbia, Mo.	1400
KFSA	Ft. Smith, Ark.	950
KFSB	Joplin, Mo.	1310
KFSC	Denver, Colo.	1220
KFSD	San Diego, Calif.	600
KFSG	Los Angeles, Calif.	1150
KFST	Ft. Stockton, Tex.	860
KFTM	Ft. Morgan, Colo.	1400
KFTV	Paris, Tex.	1250
KFTW	Fredericktown, Mo.	1450
KFUN	Las Vegas, N.Mex.	1230
KFUO	St. Louis, Mo.	850
KFVS	Cape Girardeau, Mo.	960
KFWB	Los Angeles, Calif.	980
KFXD	Nampa, Idaho	580
KFXM	San Bernardino, Calif.	590
KFYN	Bonham, Tex.	1420

C.L.	Location	Kc.
KFYO	Lubbock, Tex.	790
KFYR	Bismarck, N.Dak.	550
KGA	Spokane, Wash.	1510
KGAF	Gainesville, Tex.	1580
KGAK	Gallup, N.Mex.	1330
KGAL	Lebanon, Oreg.	920
KGAS	Carthage, Tex.	1590
KGAY	Salem, Oreg.	1430
KGB	San Diego, Calif.	1360
KGBC	Galveston, Tex.	1540
KGBS	Los Angeles, Calif.	1020
KGBT	Harlingen, Tex.	1530
KGBX	Springfield, Mo.	1260
KGCA	Rugby, N.D.	1450
KGCX	Sidney, Mont.	1480
KGDN	Edmonds, Wash.	630
KGEE	Bakersfield, Calif.	1230
KGEK	Sterling, Colo.	1230
KGEM	Boise, Idaho	1140
KGEN	Tulare, Calif.	1370
KGER	Long Beach, Calif.	1390
KGEZ	Kalispell, Mont.	600
KGFF	Shawnee, Okla.	1450
KGFJ	Los Angeles, Calif.	1230
KGFL	Roswell, N.Mex.	1400
KGFW	Kearney, Nebr.	1340
KGFX	Pierre, S.Dak.	630
KGGF	Coffeyville, Kans.	690
KGGG	Forest Grove, Oreg.	1570
KGGM	Albuquerque, N.Mex.	610
KGHF	Pueblo, Colo.	1350
KGHL	Billings, Mont.	790
KGHM	Brookfield, Mo.	1470
KGHS	International Falls, Minn.	1230
KGHT	Hollister, Calif.	1520
KGIL	San Fernando, Calif.	1260
KGIW	Alamosa, Colo.	1450
KGKB	Tyler, Tex.	1490
KGKL	San Angelo, Tex.	960
KGLC	Miami, Okla.	910
KGLE	Glendive, Mont.	590
KGLN	Glenwood Sprgs., Colo.	980
KGLO	Mason City, Iowa	1300
KGLU	Safford, Ariz.	1480
KGMB	Honolulu, Hawaii	590
KGMC	Englewood, Colo.	1150
KGMI	Bellingham, Wash.	790
KGMO	Cape Girardeau, Mo.	1220
KGMS	Sacramento, Calif.	1380
KGMT	Fairbury, Nebr.	1310
KGNB	New Braunfels, Tex.	1420
KGNC	Amarillo, Tex.	710
KGNO	Dodge City, Kans.	1370
KGNS	Laredo, Tex.	1390
KGO	San Francisco, Calif.	810
KGON	Oregon City, Oreg.	1520
KGOS	Torrington, Wyo.	1490
KGPC	Grafton, N.Dak.	1340
KGRI	Henderson, Tex.	1000
KGRL	Bend, Oreg.	940
KGRN	Grinnell, Iowa	1410
KGRO	Gresham, Oreg.	1230
KGRT	Las Cruces, N.Mex.	570
KGST	Fresno, Calif.	1600
KGU	Honolulu, Hawaii	760
KGUC	Gunnison, Colo.	1490
KGUD	Santa Barbara, Calif.	990
KGUL	Port Lavaca, Tex.	1560
KGVL	Greenville, Tex.	1400
KGVO	Missoula, Mont.	1290
KGVW	Belgrade, Mont.	630
KGW	Portland, Oreg.	620
KGWA	Enid, Okla.	960
KGY	Olympia, Wash.	1240
KGYN	Guymon, Okla.	1220
KAHI	Honolulu, Hawaii	1090
KHAK	Cedar Rapids, Iowa	1380
KHAL	Homer, La.	1300
KHAR	Anchorage, Alaska	590
KHAS	Hastings, Nebr.	1230
KHAT	Phoenix, Ariz.	1480
KHBC	Hilo, Hawaii	970
KHBM	Monticello, Ark.	1430
KHBR	Hillsboro, Tex.	1560
KHEM	Big Springs, Tex.	1270
KHEN	Henryetta, Okla.	1590
KHEP	Phoenix, Ariz.	1280
KHER	Santa Maria, Calif.	1600
KHEY	El Paso, Tex.	690
KHFH	Fry, Ariz.	1420
KHHH	Pampa, Tex.	1230
KHIT	Walla Walla, Wash.	1320
KHJ	Los Angeles, Calif.	930
KHMO	Hannibal, Mo.	1070
KHOB	Hobbs, N.Mex.	1390
KHOE	Truckee, Calif.	1400
KHOG	Fayetteville, Ark.	1440
KHOK	Hoquiam, Wash.	1560
KHOT	Madera, Calif.	1250
KHOW	Denver, Colo.	630
KHOZ	Harrison, Ark.	900
KHQ	Spokane, Wash.	590
KHSJ	Hemet, Calif.	1320
KHSL	Chico, Calif.	1290
KHTN	Hooston, Mo.	1250
KHUB	Fremont, Nebr.	1340
KHUM	Santa Rosa, Calif.	1580
KHUZ	Borger, Tex.	1490
KHVH	Honolulu, Hawaii	1040
KIAL	Astoria, Ore.	1230
KIBE	Palo Alto, Calif.	1220
KIBH	Seward, Alaska	1340
KIBL	Beeville, Tex.	1490
KIBS	Bishop, Calif.	1230
KICA	Clovis, N.M.	980
KICD	Spencer, Iowa	1240
KICK	Springfield, Mo.	1340
KICM	Golden, Colo.	1250
KICO	Calexico, Calif.	1490
KICY	Nome, Alaska	850
KID	Idaho Falls, Idaho	590
KIDD	Monterey, Calif.	630
KIDO	Boise, Idaho	630
KIEV	Glendale, Calif.	870
KIFI	Idaho Falls, Idaho	1260
KIFN	Phoenix, Ariz.	860
KIFW	Sitka, Alaska	1230
KIHN	Hugo, Okla.	1340
KIHR	Hood River, Oreg.	1340
KIJV	Huron, S.Dak.	1340
KIKI	Honolulu, Hawaii	830
KIKK	Pasadena, Tex.	650
KIKO	Miami, Ariz.	1340
KIKS	Sulphur, La.	1310
KILE	Galveston, Tex.	1400
KILO	Grand Forks, S.Dak.	1440
KILT	Houston, Tex.	610
KIMA	Yakima, Wash.	1460
KIMB	Kimball, Nebr.	1260
KIMM	Rapid City, S.D.	1150
KIML	Gillette, Wyo.	1490
KIMN	Denver, Colo.	950
KIMO	Hilo, Hawaii	850
KIMP	Mt. Pleasant, Tex.	960
KIND	Independence, Kans.	1010
KINE	Kingsville, Tex.	1330
KING	Seattle, Wash.	1090
KINS	Eureka, Calif.	980
KINT	El Paso, Tex.	1590
KINY	Juneau, Alaska	800
KIOA	Des Moines, Iowa	940
KIOT	Barstow, Calif.	1310
KIOX	Bay City, Tex.	1270
KIPA	Hilo, Hawaii	1110
KIQS	Willows, Calif.	1560
KIRO	Seattle, Wash.	710
KIRT	Mission, Tex.	1580
KIRX	Kirksville, Mo.	1450
KISD	Sioux Falls, S.Dak.	1230
KISN	Portland, Ore.	910
KIST	Santa Barbara, Calif.	1340
KIT	Yakima, Wash.	1280
KITE	San Antonio, Tex.	930
KITI	Chehalis, Wash.	1420
KITN	Olympia, Wash.	920
KIUL	Garden City, Kans.	1240
KIUN	Pecos, Tex.	1400
KIUP	Durango, Colo.	930
KIVY	Crockett, Tex.	1290
KIXL	Dallas, Tex.	1040
KIXX	Provo, Utah	1400
KIXZ	Amarillo, Tex.	940
KIZZ	El Paso, Tex.	1150
KJAM	Madison, S.Dak.	1390
KJAN	Atlantic, Iowa	1220
KJAX	Santa Rosa, Calif.	1150
KJAY	Sacramento, Calif.	1430
KJBC	Midland, Tex.	1150
KJCF	Festus, Mo.	1400
KJCK	Junction City, Kans.	1420
KJEF	Jennings, La.	1290
KJEM	Oklahoma City, Okla.	800
KJET	Beaumont, Tex.	1380
KJFJ	Webster City, Iowa	1570
KJIM	Ft. Worth, Tex.	870
KJKJ	Flagstaff, Ariz.	1400
KJLT	North Platte, Nebr.	970
KJNO	Juneau, Alaska	630
KJOE	Shreveport, La.	1480
KJOY	Stockton, Calif.	1280
KJPW	Waynesville, Mo.	1390
KJR	Seattle, Wash.	950
KJRG	Newton, Kans.	950
KJSK	Columbus, Nebr.	900
KKAL	Denver City, Tex.	1580
KKAN	Phillipsburg, Kans.	1490
KKAR	Pomona, Calif.	1220
KKAS	Silsbee, Tex.	1300
KKEY	Vancouver, Wash.	1150
KKHI	San Francisco, Calif.	1550
KKID	Pendleton, Oreg.	1240
KKIN	Aitkin, Minn.	930
KKIS	Pittsburg, Calif.	990
KKIT	Taos, N.Mex.	1340
KKJO	St. Joseph, Mo.	1550
KKOK	Lompoc, Calif.	1410
KLAC	Los Angeles, Calif.	570
KLAD	Klamath Falls, Oreg.	960
KLAK	Lakewood, Colo.	1600
KLAM	Cordova, Alaska	1450
KLAN	Lemoore, Calif.	1320
KLAS	Las Vegas, Nev.	1230
KLBK	Lubbock, Tex.	1340
KLBM	La Grande, Oreg.	1450
KLBS	Los Banos, Calif.	1330
KLCB	Libby, Mont.	1230
KLCN	Blytheville, Ark.	910
KLCO	Poteau, Okla.	1280
KLEA	Lovington, N.Mex.	630
KLEE	Ottumwa, Iowa	1480
KLEI	Kailua, Hawaii	1240
KLEM	LeMars, Iowa	1410
KLEN	Killeen, Tex.	1050
KLEO	Wichita, Kans.	1480
KLER	Orofino, Idaho	950
KLEX	Lexington, Mo.	1570
KLFD	Litchfield, Minn.	1410
KLFF	Mead, Wash.	1590
KLGA	Algona, Iowa	1600
KLGN	Logan, Utah	1390
KLGR	Redwood Falls, Minn.	1490
KLHS	Lordsburg, N.M.	950
KLIB	Liberal, Kans.	1470
KLIC	Monroe, La.	1230
KLID	Poplar Bluff, Mo.	1340
KLIF	Dallas, Tex.	1190
KLIK	Jefferson City, Mo.	950
KLIL	Estherville, Iowa	1340
KLIN	Lincoln, Nebr.	1400
KLIP	Fowler, Calif.	1220
KLIQ	Portland, Oreg.	1290
KLIR	Denver, Colo.	990
KLIX	Twin Falls, Idaho	1310
KLIZ	Brainerd, Minn.	1380
KLKC	Parsons, Kans.	1540
KLLA	Leesville, La.	1570
KLLL	Lubbock, Tex.	1460
KLME	Laramie, Wyo.	1490
KLMO	Longmont, Colo.	1050
KLMR	Lamar, Colo.	920
KLMS	Lincoln, Nebr.	1480
KLMX	Clayton, N.Mex.	1450
KLO	Ogden, Utah	1430
KLOA	Ridgecrest, Calif	1240
KLOE	Goodland, Kans.	730
KLOG	Kelso, Wash.	1490
KLOH	Pipestone, Minn.	1050
KLOK	San Jose, Calif.	1170
KLOO	Corvallis, Oreg.	1350
KLOS	Albuquerque, N.Mex.	1450
KLOU	Lake Charles, La.	1580
KLOW	Loveland, Colo.	1570
KLPC	Lompoc, Calif.	1330
KLPL	Lake Providence, La.	1050
KLPM	Minot, N.Dak.	1390
KLPR	Okla. City, Okla.	1140
KLPW	Union, Mo.	1220
KLRA	Little Rock, Ark.	1010
KLRS	Mountain Grove, Mo.	1360
KLTF	Little Falls, Minn.	960
KLTR	Blackwell, Okla.	1580
KLTZ	Glasgow, Mont.	1240
KLUB	Salt Lake City, Utah	570
KLUC	Las Vegas, Nev.	1050
KLUE	Longview, Tex.	1280
KLUK	Evanston, Wyo.	1240
KLUV	Haynesville, La.	1580
KLVL	Pasadena, Tex.	1480
KLVT	Levelland, Tex.	1230
KLWN	Lawrence, Kans.	1320
KLWT	Lebanon, Mo.	1230
KLWN	Cedar Rapids, Ia.	1450
KLYD	Bakersfield, Calif.	1350
KLYK	Spokane, Wash.	1230
KLYQ	Hamilton, Mont.	980
KLYR	Clarksville, Ark.	1360
KLZ	Denver, Colo.	560
KMA	Shenandoah, Iowa	960
KMAC	San Antonio, Tex.	630
KMAD	Madill, Okla.	1550
KMAE	McKinney, Tex.	1600
KMAK	Fresno, Calif.	1340
KMAM	Butler, Mo.	1530
KMAN	Manhattan, Kans.	1350
KMAQ	Maquoketa, Iowa	1320
KMAR	Winnsboro, La.	1570
KMBC	Kansas City, Mo.	980
KMBL	Junction, Tex.	1450
KMBO	Tucson, Ariz.	940
KMBY	Monterey, Calif.	1240
KMCD	Fairfield, Iowa	1570
KMCM	McMinnville, Oreg.	1260
KMCO	Conroe, Tex.	900
KMOO	Ft. Scott, Kans.	1600
KMED	Medford, Oreg.	1440
KMEN	San Bernardino, California	1290
KMEO	Omaha, Nebr.	660
KMET	Paradise, Calif.	930
KMFR	Medford, Ore.	860
KMGM	Albuquerque, N. Mex	730
KMHT	Marshall, Tex.	1450
KMIL	Cameron, Tex.	1330
KMIN	Grants, N.M.	980
KMIS	Portageville, Mo.	1050
KMJ	Fresno, Calif.	580
KMLB	Monroe, La.	1440
KMMJ	Grand Island, Nebr.	750
KMNS	Sioux City, Iowa	620
KMO	Tacoma, Wash.	1360
KMON	Great Falls, Mont.	560
KMOP	Tucson, Ariz.	1330
KMOR	Littleton, Colo.	1510
KMOX	St. Louis, Mo.	1120
KMPC	Los Angeles, Calif.	710
KMRC	Morgan City, La.	1430
KMRS	Morris, Minn.	1230
KMSL	Ukiah, Calif.	1250
KMUL	Muleshoe, Tex.	1380
KMUR	Murray, Utah	1230
KMUS	Muskogee, Okla.	1380
KMVI	Wailuku, Hawaii	550
KMYC	Marysville, Calif.	1410
KMYT	Clayton, Mo.	1320
KNAF	Fredericksburg, Tex.	910
KNAK	Salt Lake City, Utah	1280
KNAL	Victoria, Tex.	1410
KNBA	Vallejo, Calif.	1190
KNBC	San Francisco, Calif.	680
KNBE	Kanab, Utah	1240
KNBX	Kirkland, Wash.	1050
KNBY	Newport, Ark.	1280
KNCK	Concordia, Kans.	1390
KNCM	Moberly, Mo.	1230
KNCO	Garden City, Kans.	1050
KNCY	Nebraska City, Nebr.	1600
KNDC	Hettinger, N.Dak.	1490
KNDE	Aztec, N.Mex.	1340
KNDI	Honolulu, Hawaii	1270
KNDY	Marysville, Kans.	1570
KNEA	Jonesboro, Ark.	970
KNEB	Scottsbluff, Nebr.	960
KNED	McAlester, Okla.	1150
KNEL	Brady, Tex.	1490
KNEM	Nevada, Mo.	1240
KNET	Palestine, Tex.	1450
KNEW	Spokane, Wash.	790
KNEX	McPherson, Kans.	1540
KNEZ	Lompoc, Calif.	960
KNGS	Hanford, Calif.	620
KNIA	Knoxville, Iowa	1320
KNIM	Maryville, Mo.	1580
KNIN	Wichita Falls, Tex.	990
KNIT	Abilene, Tex.	1280
KNND	Cottage Grove, Oreg.	1400
KNOC	Natchitoches, La.	1450
KNOE	Monroe, La.	1390
KNOG	Nogales, Ariz.	1340
KNOK	Ft. Worth, Tex.	970
KNOP	N. Platte, Nebr.	1410
KNOR	Norman, Okla.	1400
KNOT	Prescott, Ariz.	1450
KNOW	Austin, Tex.	1490
KNOX	Grand Forks, N.Dak.	1310
KNPT	Newport, Ore.	1310
KNUI	Makawao, Hawaii	1310
KNUJ	New Ulm, Minn.	860
KNUZ	Houston, Tex.	1230
KNWC	Sioux Falls, S.D.	1270
KNWS	Waterloo, Iowa	1090
KNX	Los Angeles, Calif.	1070
KOA	Denver, Colo.	850
KOAC	Corvallis, Oreg.	550
KOAL	Price, Utah	1230
KOAM	Pittsburg, Kans.	860
KORR	Oroville, Calif.	1340
KOB	Albuquerque, N.Mex.	770
KOBE	Las Cruces, N.Mex.	1450
KOBH	Hot Springs, S.Dak.	580
KOCA	Kilgore, Tex.	1240
KOCY	Oklahoma City, Okla.	1340
KODA	Houston, Tex.	1010
KODE	Joplin, Mo.	1230
KODI	Cody, Wyo.	1400
KODL	The Dalles, Oreg.	1440
KODY	North Platte, Nebr.	1240
KOEL	Oelwein, Iowa	950
KOFA	Yuma, Ariz.	1240
KOFE	Pullman, Wash.	1150
KOFI	Kalispell, Mont.	930
KOFO	Ottawa, Kans.	1220
KOFY	San Mateo, Calif.	1050
KOGA	Ogallala, Nebr.	930
KOGT	Orange, Tex.	1600
KOH	Reno, Nev.	630
KOHO	Honolulu, Hawaii	1170
KOHU	Hermiston, Oreg.	1570
KOIL	Omaha, Nebr.	1290
KOIN	Portland, Oreg.	970
KOJM	Havre, Mont.	610
KOKA	Shreveport, La.	1550
KOKE	Austin, Tex.	1370
KOKL	Okmulgee, Okla.	1240
KOKO	Warrensburg, Mo.	1450
KOKX	Keokuk, Iowa	1310
KOKY	Little Rock, Ark.	1440
KOL	Seattle, Wash.	1300
KOLD	Tucson, Ariz.	1450
KOLE	Port Arthur, Tex.	1340
KOLJ	Quanah, Tex.	1150
KOLO	Reno, Nev.	920
KOLR	Sterling, Colo.	1490
KOLS	Pryor, Okla.	1570
KOLT	Scottsbluff, Nebr.	1320
KOLY	Mobridge, S.Dak.	1300
KOMA	Okla. City, Okla.	1520
KOME	Tulsa, Okla.	1300
KOMO	Seattle, Wash.	1000
KOMW	Omak, Wash.	680
KOMY	Watsonville, Calif.	1340
KONE	Reno, Nev.	1450
KONG	Visalia, Calif.	1400
KONI	Spanish Fork, Utah	1480
KONO	San Antonio, Tex.	860
KONP	Port Angeles, Wash.	1450
KOOK	Billings, Mont.	970
KOOL	Phoenix, Ariz.	960
KOOO	Omaha, Nebr.	1420
KOOS	Coos Bay, Oreg.	1230
KOPR	Butte, Mont.	550
KOPY	Alice, Tex.	1070
KOQT	Bellingham, Wash.	1550
KORA	Bryan, Tex.	1240
KORC	Mineral Wells, Tex.	1140
KORD	Pasco, Wash.	910
KORE	Eugene, Oreg.	1450
KORK	Las Vegas, Nev.	1340
KORN	Mitchell, S.Dak.	1490
KORT	Grangeville, Idaho	1230
KOSA	Odessa, Tex.	1230
KOSE	Osceola, Ark.	860
KOSI	Aurora, Colo.	1430
KOSY	Texarkana, Ark.	790
KOTA	Rapid City, S.Dak.	1380
KOTE	Fergus Falls, Minn.	1250
KOTN	Pine Bluff, Ark.	1490
KOTS	Deming, N.M.	1230
KOUR	Independence, Iowa	1220
KOVC	Valley City, N.Dak.	1490
KOVE	Lander, Wyo.	1330
KOVO	Provo, Utah	960
KOWB	Laramie, Wyo.	1290
KOWL	Bijou, Calif.	1490
KOWN	Escondido, Calif.	1450
KOXR	Oxnard, Calif.	910
KOY	Phoenix, Ariz.	550
KOYL	Odessa, Tex.	1310
KOYN	Billings, Mont.	910

C.L.	Location	Kc.
KOZE	Lewiston, Idaho	1300
KOZI	Chelan, Wash.	1220
KOZY	Grand Rapids, Minn.	1490
KPAC	Port Arthur, Tex.	1250
KPAK	Minden, La.	1240
KPAL	Palm Springs, Calif.	1450
KPAM	Portland, Oreg.	1410
KPAN	Hereford, Tex.	860
KPAP	Redding, Calif.	1270
KPAS	Banning, Calif.	1490
KPAY	Chico, Calif.	1060
KPBA	Pine Bluff, Ark.	1590
KPBM	Carlsbad, N.Mex.	740
KPBR	El Paso, Tex.	1530
KPCA	Marked Tree, Ark.	1580
KPCN	Grand Prairie, Tex.	730
KPDN	Pampa, Tex.	1340
KPDQ	Portland, Oreg.	800
KPEG	Spokane, Wash.	1380
KPEL	Lafayette, La.	1420
KPEP	San Angelo, Tex.	1420
KPER	Gilroy, Calif.	1290
KPET	Lamesa, Tex.	690
KPGE	Page, Ariz.	1340
KPHO	Phoenix, Ariz.	910
KPIK	Colorado Sprgs., Colo.	1580
KPIN	Casa Grande, Ariz.	1260
KPIR	Eugene, Wash.	1500
KPKW	Pasco, Wash.	1340
KPLA	Plainview, Tex.	1050
KPLC	Lake Charles, La.	1470
KPLT	Paris, Tex.	1490
KPLW	Union, Mo.	1220
KPLY	Crescent City, Calif.	1240
KPMC	Bakersfield, Calif.	1560
KPNG	Port Neches, Tex.	1150
KPOC	Pocahontas, Ark.	1420
KPOD	Crescent City, Calif.	1310
KPOF	Denver, Colo.	910
KPOI	Honolulu, Hawaii	1380
KPOJ	Portland, Oreg.	1330
KPOK	Scottsdale, Ariz.	1440
KPOL	Los Angeles, Calif.	1540
KPON	Anderson, Calif.	1580
KPOR	Quincy, Wash.	1370
KPOW	Powell, Wyo.	1260
KPPC	Pasadena, Calif.	1240
KPQ	Wenatchee, Wash.	560
KPRB	Redmond, Oreg.	1240
KPRC	Houston, Tex.	950
KPRK	Livingston, Mont.	1340
KPRL	Paso Robles, Calif.	1230
KPRO	Riverside, Calif.	1440
KPRS	Kansas City, Mo.	1590
KPRT	Pratt, Kans.	1290
KPSO	Falfurrias, Tex.	1260
KPST	Preston, Idaho	1340
KPTL	Carson City, Nev.	1300
KPUG	Bellingham, Wash.	1170
KQAQ	Austin, Minn.	970
KQDF	Spokane, Wash.	1280
KQDI	Bismarck, N.D.	1350
KQDY	Minot, N.Dak.	1320
KQEN	Roseburg, Oreg.	1250
KQEO	Albuquerque, N.Mex.	920
KQIK	Lakeview, Oreg.	1230
KQMS	Redding, Calif.	1400
KQTE	Missoula, Mont.	1340
KQV	Pittsburgh, Pa.	1410
KQYX	Joplin, Mo.	1560
KRAC	Alamogordo, N.M.	1270
KRAD	E. Grand Forks, Minn.	1590
KRAE	Cheyenne, Wyo.	1480
KRAI	Craig, Colo.	550
KRAK	Stockton, Calif.	1140
KRAL	Rawlins, Wyo.	1240
KRAM	Las Vegas, Nev.	920
KRAN	Morton, Tex.	1280
KRAY	Amarillo, Tex.	1360
KRBA	Lufkin, Tex.	1340
KRBC	Abilene, Tex.	1470
KRBI	St. Peter, Minn.	1310
KRBN	Red Lodge, Mont.	1450
KRCK	Ridgecrest, Calif.	1360
KRCO	Prineville, Oreg.	690
KRDG	Redding, Calif.	1230
KRDO	Colo. Springs, Colo.	1240
KRDP	Reedsport, Oreg.	1470
KROU	Dinuba, Calif.	1240
KRE	Berkeley, Calif.	1400
KREB	Shreveport, La.	980
KRED	Eureka, Calif.	1480
KREH	Oakdale, La.	900
KREI	Farmington, Mo.	800
KREK	Sapulpa, Okla.	1550
KREM	Spokane, Wash.	970
KREO	Indio, Calif.	1400
KREW	Sunnyside, Wash.	1230
KREX	Grand Junc., Colo.	920
KRFO	Owatonna, Minn.	1390
KRFS	Superior, Nebr.	1600
KRGI	Grand Island, Neb.	1430
KRGV	Weslaco, Tex.	1290
KRHD	Duncan, Okla.	1350
KRIB	Mason City, Iowa	1490
KRIG	Odessa, Tex.	1410
KRIH	Rayville, La.	990
KRIO	McAllen, Tex.	910
KRIZ	Phoenix, Ariz.	1230
KRKC	King City, Calif.	1570
KRKD	Los Angeles, Calif.	1150
KRKO	Everett, Wash.	1380
KRKT	Albany, Ore.	990
KRLC	Lewiston, Idaho	1350
KRLD	Dallas, Tex.	1080
KRLN	Canon City, Colo.	1400
KRLW	Walnut Ridge, Ark.	1320
KRMD	Shreveport, La.	1340
KRMG	Tulsa, Okla.	740
KRML	Carmel, Calif.	1410
KRMO	Monett, Mo.	990
KRMS	Osage Beach, Mo.	1150
KRNO	San Bernardino, Calif.	1240
KRNR	Roseburg, Oreg.	1490
KRNS	Burns, Oreg.	1230
KRNT	Des Moines, Iowa	1350
KRNY	Kearney, Nebr.	1460
KROC	Rochester, Minn.	1340
KROD	El Paso, Tex.	600
KROE	Sheridan, Wyo.	930
KROF	Abbeville, La.	960
KROP	Brawley, Calif.	1300
KROS	Clinton, Iowa	1340
KROW	Dallas, Ore.	1460
KROX	Crookston, Minn.	1260
KROY	Sacramento, Calif.	1240
KRPL	Moscow, Idaho	1400
KRRR	Ruidoso, N.Mex.	1340
KRRV	Sherman, Tex.	910
KRSC	Othello, Wash.	1400
KRSD	Rapid City, S.Dak.	1340
KRSI	St. Louis Park, Minn.	950
KRSL	Russell, Kans.	990
KRSN	Los Alamos, N.Mex.	1490
KRSY	Roswell, N.Mex.	1230
KRTN	Raton, N.Mex.	1490
KRTR	Thermopolis, Wyo.	1490
KRUN	Ballinger, Tex.	1400
KRUS	Ruston, La.	1490
KRUX	Glendale, Ariz.	1360
KRVC	Ashland, Oreg.	1350
KRVN	Lexington, Nebr.	1010
KRXK	Rexburg, Idaho	1230
KRYS	Corpus Christi, Tex.	1360
KRZE	Farmington, N.M.	1280
KRZY	Albuquerque, N.M.	1580
KSAC	Manhattan, Kans.	580
KSAL	Salina, Kans.	1150
KSAM	Huntsville, Tex.	1490
KSAN	San Francisco, Calif.	1450
KSAY	San Francisco, Calif.	1010
KSBW	Salinas, Calif.	1380
KSCB	Liberal, Kans.	600
KSCJ	Sioux City, Iowa	1360
KSCO	Santa Cruz, Calif.	1080
KSD	St. Louis, Mo.	550
KSDN	Aberdeen, S.Dak.	930
KSDO	San Diego, Calif.	1130
KSDR	Waterton, S.Dak.	1480
KSEE	Santa Maria, Calif.	1480
KSEI	Pocatello, Idaho	930
KSEK	Pittsburg, Kans.	1340
KSEL	Lubbock, Tex.	950
KSEM	Moses Lake, Wash.	1470
KSEN	Shelby, Mont.	1150
KSEO	Durant, Okla.	750
KSET	El Paso, Tex.	1340
KSEW	Sitka, Alaska	1400
KSEY	Seymour, Tex.	1230
KSFA	Nacogdoches, Tex.	860
KSFE	Needles, Calif.	1340
KSFO	San Francisco, Calif.	560
KSGM	Chester, Ill.	980
KSIB	Creston, Iowa	1520
KSID	Sidney, Nebr.	1340
KSIG	Crowley, La.	1450
KSIL	Silver City, N.Mex.	1340
KSIM	Sikeston, Mo.	1400
KSIR	Wichita, Kans.	900
KSIS	Sedalia, Mo.	1050
KSIW	Woodward, Okla.	1450
KSIX	Corpus Christi, Tex.	1230
KSJB	Jamestown, N.Dak.	600
KSKI	Sun Valley, Idaho	1340
KSKY	Dallas, Tex.	660
KSL	Salt Lake City, Utah	1160
KSLM	Salem, Oreg.	1390
KSLO	Opelousas, La.	1230
KSLV	Monte Vista, Colo.	1240
KSMA	Santa Maria, Calif.	1240
KSMN	Mason City, Iowa	1010
KSMO	Salem, Mo.	1340
KSNB	Santa Barbara, Calif.	1290
KSNN	Pocatello, Ida.	1290
KSNO	Aspen, Colo.	1260
KSNY	Snyder, Tex.	1450
KSO	Des Moines, Iowa	1460
KSOK	Arkansas City, Kans.	1280
KSON	San Diego, Calif.	1240
KSOO	Sioux Falls, S.Dak.	1140
KSOP	Salt Lake City, Utah	1370
KSOX	Raymondville, Tex.	1240
KSPA	Santa Paula, Calif.	1400
KSPI	Stillwater, Okla.	780
KSPL	Diboll, Tex.	1260
KSPT	Sandpoint, Idaho	1400
KSRA	Salmon, Idaho	960
KSRC	Socorro, N.Mex.	1290
KSRO	Santa Rosa, Calif.	1350
KSRV	Ontario, Oreg.	1380
KSSS	Colorado Springs, Colo.	740
KSST	Sulphur Springs, Tex.	1230
KSTA	Coleman, Tex.	1000
KSTB	Breckenridge, Tex.	1430
KSTH	St. Helen's, Oreg.	1600
KSTL	St. Louis, Mo.	690
KSTN	Stockton, Calif.	1420
KSTP	St. Paul, Minn.	1500
KSTR	Grand Junction, Colo.	620
KSTT	Davenport, Iowa	1170
KSTV	Stephenville, Tex.	1510
KSUB	Cedar City, Utah	590
KSUD	W. Memphis, Ark.	730
KSUE	Susanville, Calif.	1240
KSUM	Fairmont, Minn.	1370
KSUN	Bisbee, Ariz.	1230
KSVC	Richfield, Utah	980
KSVN	Ogden, Utah	730
KSVP	Artesia, N.Mex.	990
KSWA	Graham, Tex.	1330
KSWC	Tucson, Ariz.	1550
KSWI	Council Bluffs, Iowa	1560
KSWM	Aurora, Mo.	940
KSWO	Lawton, Okla.	1380
KSXX	Salt Lake City, Utah	630
KSYC	Yreka, Calif.	1490
KSYL	Alexandria, La.	970
KSYX	Santa Rosa, N.Mex.	1420
KTAC	Tacoma, Wash.	850
KTAE	Taylor, Tex.	1260
KTAN	Tucson, Ariz.	580
KTAR	Phoenix, Ariz.	620
KTAT	Frederick, Okla.	1570
KTBB	Tyler, Tex.	600
KTBC	Austin, Tex.	590
KTCB	Malden, Mo.	1470
KTCR	Minneapolis, Minn.	690
KTCS	Fort Smith, Ark.	1410
KTDO	Toledo, Oreg.	1230
KTEE	Idaho Falls, Idaho	900
KTEL	Walla Walla, Wash.	1490
KTEM	Temple, Tex.	1400
KTEO	San Angelo, Tex.	1340
KTER	Terrell, Tex.	1570
KTFI	Twin Falls, Idaho	1270
KTFO	Seminole, Tenn.	1250
KTFS	Texarkana, Tex.	1400
KTFY	Brownfield, Tex.	1300
KTHE	Thermopolis, Wyo.	1240
KTHO	Tahoe Valley, Calif.	590
KTHS	Berryville, Ark.	1480
KTHT	Houston, Tex.	790
KTIB	Thibodaux, La.	630
KTIL	Tillamook, Oreg.	1590
KTIM	San Rafael, Calif.	1510
KTIP	Porterville, Calif.	1450
KTIS	Minneapolis, Minn.	900
KTJS	Hobart, Okla.	1420
KTKN	Ketchikan, Alaska	930
KTKR	Taft, Calif.	1310
KTKT	Tucson, Ariz.	990
KTLD	Tallulah, La.	1360
KTLN	Denver, Colo.	1280
KTLO	Mtn. Home, Ark.	1490
KTLQ	Tahlequah, Okla.	1350
KTLU	Rusk, Tex.	1580
KTLW	Texas City, Tex.	920
KTMC	McAlester, Okla.	1400
KTMS	Santa Barbara, Calif.	1250
KTNC	Falls City, Nebr.	1230
KTNM	Tucumcari, N.Mex.	1400
KTNT	Tacoma, Wash.	1400
KTOC	Jonesboro, La.	920
KTOD	Sinton, Tex.	1590
KTOE	Mankato, Minn.	1420
KTOH	Lihue, Hawaii	1490
KTOK	Oklahoma City, Okla.	1000
KTON	Belton, Tex.	940
KTOO	Henderson, Nev.	1280
KTOP	Topeka, Kans.	1490
KTOW	Sand Spring, Okla.	1340
KTPA	Prescott, Ark.	1370
KTRB	Modesto, Calif.	860
KTRC	Santa Fe, N.Mex.	1400
KTRE	Lufkin, Tex.	1420
KTRF	Thief River Falls, Minn.	1230
KTRG	Honolulu, Hawaii	990
KTRH	Houston, Tex.	740
KTRI	Sioux City, Iowa	1470
KTRM	Beaumont, Tex.	990
KTRN	Wichita Falls, Tex.	1290
KTRY	Bastrop, La.	730
KTSA	San Antonio, Tex.	550
KTSL	Burnett, Tex.	1340
KTSM	El Paso, Tex.	1380
KTTN	Trenton, Mo.	1600
KTTR	Rolla, Mo.	1490
KTTS	Springfield, Mo.	1400
KTUC	Tucson, Ariz.	1400
KTUE	Tulia, Tex.	1260
KTUX	Pueblo, Colo.	1480
KTW	Seattle, Wash.	1250
KTWO	Casper, Wyo.	1470
KTXJ	Jasper, Tex.	1350
KTXO	Sherman, Tex.	1500
KTYM	Inglewood, Calif.	1460
KUAM	Agana, Guam	610
KUBA	Yuba City, Calif.	1600
KUBC	Montrose, Colo.	580
KUBE	Pendleton, Oreg.	1050
KUDE	Oceanside, Calif.	1320
KUDI	Great Falls, Mont.	1450
KUDL	Kansas City, Mo.	1380
KUDU	Ventura, Calif.	1590
KUDY	Seattle, Wash.	910
KUEN	Wenatchee, Wash.	900
KUEQ	Phoenix, Ariz.	740
KUGN	Eugene, Oreg.	590
KUIK	Hillsboro, Oreg.	1360
KUJ	Walla Walla, Wash.	1420
KUKA	San Antonio, Tex.	1250
KUKI	Ukiah, Calif.	1400
KUKO	Post, Tex.	1370
KUKU	Willow Springs, Mo.	1330
KULA	Honolulu, Hawaii	690
KULE	Ephrata, Wash.	730
KULP	El Campo, Tex.	1390
KUMA	Pendleton, Oreg.	1290
KUNO	Corpus Christi, Tex.	1400
KUOA	Siloam Springs, Ark.	1290
KUOM	Minneapolis, Minn.	770
KUPD	Tempe, Ariz.	1060
KUPI	Idaho Falls, Idaho	980
KURA	Moab, Utah	1450
KURL	Billings, Mont.	730
KURV	Edinburg, Tex.	710
KURY	Brookings, Oreg.	910
KUSD	Vermillion, S.Dak.	690
KUSH	Cushing, Okla.	1600
KUSN	St. Joseph, Mo.	1270
KUTA	Blanding, Utah	790
KUTI	Yakima, Wash.	980
KUTT	Fargo, N.Dak.	1550
KUTY	Palmdale, Calif.	1470
KUVR	Holdredge, Nebr.	1380
KUXL	Golden Valley, Minn.	
KUZN	W. Monroe, La.	1310
KUZZ	Bakersfield, Calif.	800
KVAN	Vancouver, Wash.	1480
KVCK	Wolf Point, Nebr.	1450
KVCL	Winnfield, La.	1270
KVCV	Redding, Calif.	600
KVEC	San Luis Obispo, Calif.	920
KVEE	Conway, Ark.	1330
KVEG	Las Vegas, Nev.	970
KVEL	Vernal, Utah	1250
KVEN	Ventura, Calif.	1450
KVET	Austin, Tex.	1300
KVFC	Cortez, Colo.	740
KVFD	Ft. Dodge, Iowa	1400
KVGB	Great Bend, Kans.	1590
KVI	Seattle, Wash.	570
KVIC	Cottonwood, Ariz.	1600
KVIL	Highland Park, Tex.	1150
KVIM	New Iberia, La.	1360
KVIN	Vinita, Okla.	1470
KVIP	Redding, Calif.	540
KVKM	Monahans, Tex.	1330
KVLB	Cleveland, Tex.	1410
KVLC	Little Rock, Ark.	1050
KVLF	Alpine, Tex.	1240
KVLG	LaGrange, Tex.	1570
KVLH	Pauls Valley, Okla.	1470
KVLL	Livingston, Tex.	1220
KVMA	Magnolia, Ark.	630
KVMC	Colorado City, Tex.	1320
KVML	Sonora, Calif.	1450
KVNA	Flagstaff, Ariz.	690
KVNC	Winslow, Ariz.	1010
KVNI	Coeur d'Alene, Idaho	1240
KVNU	Logan, Utah	610
KVOB	Bastrop, La.	1340
KVOC	Casper, Wyo.	1230
KVOE	Emporia, Kans.	1400
KVOG	Ogden, Utah	1490
KVOL	Lafayette, La.	1330
KVOM	Morrilton, Ark.	800
KVON	Napa, Calif.	1440
KVOO	Tulsa, Okla.	1170
KVOP	Plainview, Tex.	1400
KVOR	Colo. Springs, Colo.	1300
KVOU	Uvalde, Tex.	1400
KVOW	Riverton, Wyo.	1450
KVOX	Moorhead, Minn.	1280
KVOY	Yuma, Ariz.	1400
KVOZ	Laredo, Tex.	1490
KVPH	Canyon, Tex.	1550
KVPI	Ville Platte, La.	1050
KVRC	Arkadelphia, Ark.	1240
KVRD	Cottonwood, Ariz.	1240
KVRE	Santa Rosa, Calif.	1460
KVRH	Salida, Colo.	1340
KVRS	Rock Springs, Wyo.	1360
KVSA	McGehee, Ark.	1220
KVSF	Santa Fe, N.Mex.	1260
KVSH	Valentine, Nebr.	940
KVSO	Ardmore, Okla.	1240
KVWC	Vernon, Tex.	1490
KVWD	Pearsall, Tex.	1280
KVWM	Show Low, Ariz.	1050
KVWO	Cheyenne, Wyo.	1370
KWAC	Bakersfield, Calif.	1490
KWAD	Wadena, Minn.	920
KWAK	Stuttgart, Ark.	1240
KWAL	Wallace, Idaho	620
KWAM	Memphis, Tenn.	990
KWAT	Watertown, S.Dak.	950
KWBA	Baytown, Tex.	1360
KWBB	Wichita, Kans.	1410
KWBC	Navasota, Tex.	1550
KWBE	Beatrice, Nebr.	1450
KWBG	Boone, Iowa	1590
KWBW	Hutchinson, Kans.	1450
KWCB	Searcy, Ark.	1300
KWCL	Oak Grove, La.	1280
KWCO	Chickasha, Okla.	1560
KWEB	Rochester, Minn.	1270
KWED	Seguin, Tex.	1580
KWEI	Weiser, Idaho	1260
KWEL	Midland, Tex.	1600
KWEW	Hobbs, N.Mex.	1480
KWFR	San Angelo, Tex.	1260
KWFT	Wichita Falls, Tex.	620
KWG	Stockton, Calif.	1230
KWHI	Brenham, Tex.	1280
KWHK	Hutchinson, Kans.	1260
KWHN	Fort Smith, Ark.	1320
KWHO	Salt Lake City, Utah	860
KWHW	Altus, Okla.	1450
KWIC	Salt Lake City, Utah	1570
KWIK	Pocatello, Idaho	1240
KWIL	Albany, Oreg.	790
KWIN	Ashland, Oreg.	580
KWIP	Merced, Calif.	1580
KWIQ	Moses Lake, Wash.	1260
KWIV	Douglas, Wyo.	1050
KWIZ	Santa Ana, Calif.	1480
KWJJ	Portland, Oreg.	1080

C.L.	Location	Kc.
KWK	St. Louis, Mo.	1380
KWKC	Abilene, Tex.	1340
KWKH	Shreveport, La.	1130
KWKW	Pasadena, Calif.	1300
KWKY	Des Moines, Iowa	1150
KWLC	Decorah, Iowa	1240
KWLD	Liberty, Tex.	1050
KWLM	Willmar, Minn.	1340
KWLW	Nampa, Idaho	1340
KWMT	Ft. Dodge, Iowa	540
KWNA	Winnemucca, Nev.	1400
KWNO	Winona, Minn.	1230
KWNT	Davenport, Iowa	1580
KWOA	Worthington, Minn.	730
KWOC	Poplar Bluff, Mo.	930
KWOE	Clinton, Okla.	1320
KWON	Bartlesville, Okla.	1400
KWOR	Worland, Wyo.	1340
KWOS	Jefferson City, Mo.	1240
KWOW	Pomona, Calif.	1600
KWPC	Muscatine, Iowa	860
KWPM	West Plains, Mo.	1450
KWPR	Claremore, Okla.	1270
KWRA	Idaho Falls, Idaho	1400
KWRD	Henderson, Tex.	1470
KWRE	Warrenton, Mo.	730
KWRF	Warren, Ark.	860
KWRO	Coquille, Oreg.	630
KWRT	Boonville, Mo.	1370
KWRV	McCook, Nebr.	1360
KWRW	Guthrie, Okla.	1490
KWSC	Pullman, Wash.	1250
KWSD	Mt. Shasta, Calif.	620
KWSH	Wewoka-Seminole, Oklahoma	1260
KWSK	Pratt, Kans.	1570
KWSL	Grand Junction, Colo.	1340
KWSO	Wasco, Calif.	1050
KWTC	Barstow, Calif.	1230
KWTO	Springfield, Mo.	560
KWTX	Waco, Tex.	1230
KWVN	Concord, Calif.	1480
KWVR	Enterprise, Oreg.	1340
KWVY	Waverly, Iowa	1470
KWWL	Waterloo, Iowa	1330
KWYK	Farmington, N.Mex.	960
KWYN	Wynne, Ark.	1400
KWYO	Sheridan, Wyo.	1410
KWYR	Winner, S.Dak.	1260
KWYZ	Everett, Wash.	1230
KXA	Seattle, Wash.	770
KXAR	Hope, Ark.	1490
KXEL	Waterloo, Iowa	1540
KXEN	St. Louis, Mo.	1010
KXEO	Mexico, Mo.	1340
KXEW	Tucson, Ariz.	1600
KXEX	Fresno, Calif.	1550
KXGI	Ft. Madison, Iowa	1360
KXGN	Glendive, Mont.	1400
KXIC	Iowa City, Iowa	800
KXIT	Dalhart, Tex.	1410
KXIV	Phoenix, Ariz.	1400
KXJK	Forrest City, Ark.	950
KXKW	Lafayette, La.	1520
KXL	Portland, Oreg.	750
KXLE	Ellensburg, Wash.	1240
KXLF	Butte, Mont.	1370
KXLJ	Helena, Mont.	1240
KXLL	Missoula, Mont.	1450
KXLO	Lewiston, Mont.	1230
KXLR	Little Rock, Ark.	1150
KXLW	Clayton, Mo.	1320
KXLY	Spokane, Wash.	920
KXO	El Centro, Calif.	1230
KXOA	Sacramento, Calif.	1470
KXOK	St. Louis, Mo.	630
KXOL	Ft. Worth, Tex.	1360
KXOX	Sweetwater, Tex.	1240
KXRA	Alexandria, Minn.	1490
KXRJ	Russellville, Ark.	1490
KXRO	Aberdeen, Wash.	1320
KXRX	San Jose, Calif.	1500
KXXL	Bozeman, Mont.	1450
KXXX	Colby, Kans.	790
KXYZ	Houston, Tex.	1320
KYA	San Francisco, Calif.	1260
KYCA	Prescott, Ariz.	1490
KYCN	Wheatland, Wyo.	1340
KYES	Roseburg, Oreg.	950
KYJC	Medford, Oreg.	1230
KYME	Boise, Idaho	740
KYND	Tempe, Ariz.	1580
KYNG	Coos Bay, Oreg.	1420
KYNO	Fresno, Calif.	1300
KYNT	Yankton, S.Dak.	1450
KYOK	Houston, Tex.	1590
KYOR	Blythe, Calif.	1450
KYOS	Merced, Calif.	1480
KYOU	Greeley, Colo.	1450
KYRO	Potosi, Mo.	1280
KYSM	Mankato, Minn.	1230
KYSN	Colorado Sprgs., Colo.	1460
KYSS	Missoula, Mont.	910
KYUM	Yuma, Ariz.	560
KYVA	Gallup, N.Mex.	1230
KYW	Cleveland, Ohio	1100
KZEE	Weatherford, Tex.	1220
KZEY	Tyler, Tex.	690
KZIP	Amarillo, Tex.	1310
KZIX	Fort Collins, Colo.	600
KZNG	Hot Springs, Ark.	1470
KZOK	Prescott, Ariz.	1340
KZOL	Farwell, Tex.	1570
KZON	Tolleson, Ariz.	1190
KZOO	Honolulu, Hawaii	1210
KZOT	Marianna, Ark.	1460
KZOW	Globe, Ariz.	1240
KZUN	Opportunity, Wash.	630

C.L.	Location	Kc.
KZZN	Littlefield, Tex.	1490
WAAA	Winston-Salem, N.C.	980
WAAB	Worcester, Mass.	1440
WAAF	Chicago, Ill.	950
WAAG	Adel, Ga.	1470
WAAK	Dallas, N.C.	960
WAAP	Peoria, Ill.	1350
WAAT	Trenton, N.J.	1300
WAAX	Gadsden, Ala.	570
WAAY	Huntsville, Ala.	1550
WABA	Aguadilla, P.Rico	850
WABB	Mobile, Ala.	1480
WABC	New York, N.Y.	770
WABF	Fairhope, Ala.	1220
WABG	Greenwood, Miss.	960
WABH	Deerfield, Va.	1150
WABI	Bangor, Maine	910
WABJ	Adrian, Mich.	1490
WABL	Amite, La.	1570
WABO	Waynesboro, Miss.	990
WABQ	Cleveland, Ohio	1540
WABR	Winter Park, Fla.	1440
WABT	Tuskegee, Ala.	580
WABV	Abbeville, S.C.	1590
WABW	Annapolis, Md.	810
WABY	Albany, N.Y.	1400
WABZ	Albemarle, N.C.	1010
WACA	Camden, S.C.	1590
WACB	Kittanning, Pa.	1380
WACE	Chicopee, Mass.	730
WACK	Newark, N.Y.	1420
WACL	Waycross, Ga.	570
WACO	Waco, Tex.	1460
WACR	Columbus, Miss.	1050
WACT	Tuscaloosa, Ala.	1420
WADA	Shelby, N.C.	1390
WADC	Akron, Ohio	1350
WADE	Wadesboro, N.C.	1210
WADK	Newport, R.I.	1540
WADO	New York, N.Y.	1280
WADP	Kane, Pa.	960
WADS	Ansonia, Conn.	690
WAEB	Allentown, Pa.	790
WAEL	Mayaguez, P.Rico	600
WAFC	Staunton, Va.	900
WAFS	Amsterdam, N.Y.	1570
WAGE	Leesburg, Va.	1290
WAGF	Dothan, Ala.	1320
WAGG	Franklin, Tenn.	950
WAGM	Presque Isle, Maine	950
WAGN	Menominee, Mich.	1340
WAGR	Lumberton, N.C.	580
WAGS	Bishopville, S.C.	1380
WAGY	Forest City, N.C.	1320
WAIK	Galesburg, Ill.	1590
WAIL	Baton Rouge, La.	1460
WAIM	Anderson, S.C.	1230
WAIN	Columbia, Ky.	1270
WAIR	Winston-Salem, N.C.	1340
WAIT	Chicago, Ill.	820
WAJF	Decatur, Ala.	1490
WAJR	Morgantown, W.Va.	1440
WAKE	Atlanta, Ga.	1340
WAKI	McMinnville, Tenn.	1230
WAKN	Aiken, S.C.	990
WAKO	Lawrenceville, Ill.	910
WAKR	Akron, Ohio	1590
WAKU	Latrobe, Pa.	1570
WAKY	Louisville, Ky.	790
WALA	Mobile, Ala.	1410
WALD	Walterboro, S.C.	1220
WALE	Fall River, Mass.	1400
WALG	Albany, Ga.	1590
WALK	Patchogue, N.Y.	1370
WALL	Middletown, N.Y.	1340
WALM	Albion, Mich.	1260
WALO	Humacao, P.R.	1240
WALT	Tampa, Fla.	1110
WALY	Herkimer, N.Y.	1420
WAMD	Aberdeen, Md.	970
WAME	Miami, Fla.	1260
WAMI	Opp, Ala.	860
WAML	Laurel, Miss.	1340
WAMM	Flint, Mich.	1420
WAMO	Homestead, Pa.	860
WAMR	Venice, Fla.	1320
WAMS	Wilmington, Del.	1380
WAMW	Washington, Ind.	1580
WAMY	Amory, Miss.	1580
WANA	Anniston, Ala.	1490
WANB	Waynesburg, Pa.	1580
WAND	Canton, Ohio	900
WANE	Ft. Wayne, Ind.	1450
WANN	Annapolis, Md.	1190
WANS	Anderson, S.C.	1280
WANT	Richmond, Va.	990
WANY	Albany, Ky.	1390
WAOK	Atlanta, Ga.	1380
WAOV	Vincennes, Ind.	1450
WAPA	San Juan, P.R.	680
WAPC	Riverhead, N.Y.	1570
WAPE	Jacksonville, Fla.	690
WAPF	McComb, Miss.	980
WAPG	Arcadia, Fla.	1480
WAPI	Birmingham, Ala.	1070
WAPL	Appleton, Wis.	1570
WAPO	Chattanooga, Tenn.	1150
WAPX	Montgomery, Ala.	1600
WAQE	Towson, Md.	1570
WAQI	Ashtabula, Ohio	1600
WARA	Attleboro, Mass.	1320
WARB	Covington, La.	730
WARD	Johnstown, Pa.	1490
WARE	Ware, Mass.	1250
WARF	Jasper, Ala.	1240
WARI	Abbeville, Ala.	1480
WARK	Hagerstown, Md.	1490
WARL	Arlington, Va.	780

C.L.	Location	Kc.
WARM	Scranton, Pa.	590
WARN	Ft. Pierce, Fla.	1330
WARO	Canonsburg, Pa.	540
WARU	Peru, Ind.	1600
WASA	Havre de Grace, Md.	1330
WASK	Lafayette, Ind.	1450
WATA	Boone, N.C.	1450
WATC	Gaylord, Mich.	900
WATE	Knoxville, Tenn.	620
WATH	Athens, Ohio	970
WATK	Antigo, Wis.	900
WATM	Atmore, Ala.	1590
WATN	Watertown, N.Y.	1240
WATO	Oak Ridge, Tenn.	1290
WATP	Marion, S.C.	1430
WATR	Waterbury, Conn.	1320
WATS	Sayre, Pa.	960
WATT	Cadillac, Mich.	1240
WATV	Birmingham, Ala.	900
WATW	Ashland, Wis.	1400
WATZ	Alpena, Mich.	1450
WAUB	Auburn, N.Y.	1590
WAUC	Wauchula, Fla.	1310
WAUD	Auburn, Ala.	1230
WAUG	Augusta, Ga.	1050
WAUX	Waukesha, Wis.	1510
WAVE	Louisville, Ky.	970
WAVI	Dayton, Ohio	1210
WAVL	Apollo, Pa.	910
WAVN	Stillwater, Minn.	1220
WAVO	Avondale Estates, Ga.	1420
WAVP	Avon Park, Fla.	1390
WAVU	Albertville, Ala.	630
WAVY	Portsmouth, Va.	1350
WAVZ	New Haven, Conn.	1300
WAWA	West Allis, Wis.	1590
WAWK	Kendallville, Ind.	1570
WAWZ	Zarephath, N.J.	1380
WAXE	Vero Beach, Fla.	1370
WAXU	Georgetown, Ky.	1580
WAXX	Chippewa Falls, Wis.	1150
WAYB	Waynesboro, Va.	1490
WAYE	Dundalk, Md.	860
WAYN	Rockingham, N.C.	900
WAYR	Orange Park, Fla.	550
WAYS	Charlotte, N.C.	610
WAYX	Waycross, Ga.	1230
WAYZ	Waynesboro, Pa.	1380
WAZA	Bainbridge, Ga.	1360
WAZE	Clearwater, Fla.	860
WAZF	Yazoo City, Miss.	1230
WAZL	Hazelton, Pa.	1490
WAZS	Summerville, S.C.	780
WAZY	Lafayette, Ind.	1410
WBAA	West Lafayette, Ind.	920
WBAB	Babylon, N.Y.	1440
WBAC	Cleveland, Tenn.	1340
WBAG	Burlington, N.C.	1150
WBAL	Baltimore, Md.	1090
WBAM	Montgomery, Ala.	740
WBAP	Ft. Worth, Tex.	570, 820
WBAR	Bartow, Fla.	1460
WBAT	Marion, Ind.	1400
WBAW	Barnwell, S.C.	740
WBAX	Wilkes-Barre, Pa.	1240
WBAY	Green Bay, Wis.	1360
WBAZ	Kingston, N.Y.	1550
WBBA	Pittsfield, Ill.	1580
WBBB	Burlington, N.C.	920
WBBF	Rochester, N.Y.	950
WBBI	Abingdon, Va.	1230
WBBK	Blakely, Ga.	1260
WBBL	Richmond, Va.	1480
WBBM	Chicago, Ill.	780
WBBO	Forest City, N.C.	780
WBBQ	Augusta, Ga.	1340
WBBR	E. St. Louis, Ill.	1490
WBBT	Lyons, Ga.	1340
WBBW	Youngstown, Ohio	1240
WBBX	Portsmouth, N.H.	1380
WBBY	Wood River, Ill.	590
WBBZ	Ponca City, Okla.	1230
WBCA	Bay Minette, Ala.	1150
WBCB	Levittown, Pa.	1490
WBCH	Hastings, Mich.	1220
WBCI	Williamsburg, Va.	740
WBCK	Battle Creek, Mich.	930
WBCM	Bay City, Mich.	1440
WBCR	Christiansburg, Va.	1260
WBCU	Union, S.C.	1460
WBEC	Pittsfield, Mass.	1420
WBEE	Harvey, Ill.	1570
WBEJ	Elizabethton, Tenn.	1240
WBEL	South Beloit, Ill.	1380
WBEN	Buffalo, N.Y.	930
WBER	Moncks Corner, N.C.	950
WBET	Brockton, Mass.	1460
WBEU	Beaufort, S.C.	960
WBEV	Beaver Dam, Wis.	1430
WBEX	Chillicothe, Ohio	1490
WBFC	Fremont, Mich.	1490
WBFD	Bedford, Pa.	1310
WBGC	Chipley, Fla.	1240
WBGN	Bowling Green, Ky.	1340
WBGR	Jesup, Ga.	1370
WBHB	Fitzgerald, Ga.	1240
WBHC	Hampton, S.C.	1270
WBHF	Cartersville, Ga.	1450
WBHM	Birmingham, Ala.	1550
WBHP	Huntsville, Ala.	1230
WBIA	Augusta, Ga.	1230
WBIC	Islip, N.Y.	540
WBIE	Marietta, Ga.	1050
WBIG	Greensboro, N.C.	1470
WBIL	Leesburg, Fla.	1410
WBIP	Booneville, Miss.	1400
WBIR	Knoxville, Tenn.	1240
WBIS	Bristol, Conn.	1440

C.L.	Location	Kc.
WBIW	Bedford, Ind.	1340
WBIZ	Eau Claire, Wis.	1400
WBKH	Hattiesburg, Miss.	950
WBKN	Newton, Miss.	1410
WBKV	West Bend, Wis.	1470
WBLA	Elizabethtown, N.C.	1440
WBLE	Batesville, Miss.	1290
WBLF	Bellefonte, Pa.	1330
WBLG	Lexington, Ky.	1300
WBLJ	Dalton, Ga.	1230
WBLO	Evergreen, Ala.	1470
WBLR	Batesburg, S.C.	1430
WBLT	Bedford, Va.	1350
WBLU	Salem, Va.	1480
WBLY	Springfield, Ohio	1600
WBMA	Beaufort, N.C.	1400
WBMC	McMinnville, Tenn.	960
WBMD	Baltimore, Md.	750
WBMK	West Point, Ga.	1310
WBML	Macon, Ga.	1240
WBMT	Black Mountain, N.C.	1350
WBNB	Charlotte Amalie, Virgin Islands	1000
WBNC	Conway, N.H.	1050
WBNL	Boonville, Ind.	1540
WBNR	Beacon, N.Y.	1260
WBNS	Columbus, Ohio	1460
WBNT	Oneida, Tenn.	1310
WBNX	New York, N.Y.	1380
WBOB	Galax, Va.	1360
WBOC	Salisbury, Md.	960
WBOF	Virginia Beach, Va.	1550
WBOK	New Orleans, La.	800
WBOP	Pensacola, Fla.	980
WBOS	Brookline, Mass.	1600
WBOW	Terre Haute, Ind.	1230
WBOY	Clarksburg, W.Va.	1400
WBPZ	Lock Haven, Pa.	1230
WBRB	Mt. Clemens, Mich.	1430
WBRC	Birmingham, Ala.	960
WBRD	Bradenton, Fla.	1420
WBRE	Wilkes-Barre, Pa.	1340
WBRG	Lynchburg, Va.	1050
WBRK	Pittsfield, Mass.	1340
WBRL	Berlin, N.H.	1400
WBRM	Marion, N.C.	1250
WBRN	Big Rapids, Mich.	1460
WBRO	Waynesboro, Ga.	1310
WBRT	Bardstown, Ky.	1320
WBRV	Boonville, N.Y.	900
WBRW	Brewster, N.Y.	1510
WBRX	Berwick, Pa.	1280
WBRY	Waterbury, Conn.	1590
WBSA	Boaz, Ala.	1300
WBSC	Bennettsville, S.C.	1550
WBSG	Blackshear, Ga.	1350
WBSM	New Bedford, Mass.	1420
WBT	Charlotte, N.C.	1110
WBTA	Batavia, N.Y.	1490
WBTH	Williamson, W.Va.	1400
WBTM	Danville, Va.	1330
WBTN	Bennington, Vt.	1370
WBTO	Linton, Ind.	1600
WBTS	Bridgeport, Ala.	1480
WBUC	Buckhannon, W.Va.	1460
WBUD	Trenton, N.J.	1260
WBUT	Butler, Pa.	1050
WBUX	Doylestown, Pa.	1570
WBUY	Lexington, N.C.	1440
WBUZ	Fredonia, N.Y.	1570
WBVA	Waynesboro, Va.	970
WBVL	Barbourville, Ky.	950
WBVM	Utica, N.Y.	1550
WBVP	Beaver Falls, Pa.	1230
WBYE	Calera, Ala.	1370
WBYG	Savannah, Ga.	1450
WBYS	Canton, Ill.	1560
WBZ	Boston, Mass.	1030
WBZA	Springfield, Mass.	1030
WBZI	Brazil, Ind.	1380
WBZY	Torrington, Conn.	990
WCAL	Northfield, Minn.	770
WCAM	Camden, N.J.	1310
WCAO	Baltimore, Md.	600
WCAP	Lowell, Mass.	980
WCAR	Detroit, Mich.	1130
WCAT	Orange, Mass.	1390
WCAU	Philadelphia, Pa.	1210
WCAW	Charleston, W.Va.	680
WCAX	Burlington, Vt.	620
WCAY	Cayce, S.C.	620
WCAZ	Carthage, Ill.	990
WCBA	Corning, N.Y.	1350
WCBG	Chambersburg, Pa.	1590
WCBI	Columbus, Miss.	550
WCBL	Benton, Ky.	1290
WCBM	Baltimore, Md.	680
WCBS	New York, N.Y.	880
WCBT	Roanoke Rapids, N.C.	1230
WCBY	Cheboygan, Mich.	1240
WCCC	Hartford, Conn.	1290
WCCM	Lawrence, Mass.	800
WCCN	Neillsville, Wis.	1370
WCCO	Minneapolis, Minn.	830
WCCW	Traverse City, Mich.	1310
WCDL	Carbondale, Pa.	1440
WCDJ	Edenton, N.C.	1260
WCDS	Glasgow, Ky.	1440
WCDT	Winchester, Tenn.	1340
WCEC	Rocky Mount, N.C.	810
WCED	DuBois, Pa.	1420
WCEF	Parksburg, W.Va.	1050
WCEH	Hawkinsville, Ga.	610
WCEM	Cambridge, Md.	1240
WCEN	Mt. Pleasant, Mich.	1150

C.L.	Location	Kc.
WCER	Charlotte, Mich.	1390
WCFL	Chicago, Ill.	1000
WCFR	Springfield, Vt.	1480
WCFV	Clifton Forge, Va.	1230
WCGA	Calhoun, Ga.	900
WCGC	Belmont, N.C.	1270
WCGO	Chicago Hghts., Ill.	1600
WCGR	Canandaigua, N.Y.	1550
WCHA	Chambersburg, Pa.	800
WCHB	Inkster, Mich.	1440
WCHI	Chillicothe, Ohio	1350
WCHJ	Brookhaven, Miss.	1470
WCHK	Canton, Ga.	1290
WCHO	Washington Court House, Ohio	1250
WCHL	Chapel Hill, N.C.	1360
WCHN	Norwich, N.Y.	970
WCHS	Charleston, W.Va.	580
WCHV	Charlottesville, Va.	1260
WCIL	Carbondale, Ill.	1020
WCIN	Cincinnati, Ohio	1480
WCJU	Columbia, Miss.	1450
WCKB	Dunn, N.C.	780
WCKI	Greer, S.C.	1300
WCKM	Winnsboro, S.C.	1250
WCKR	Miami, Fla.	610
WCKY	Cincinnati, Ohio	1530
WCLA	Claxton, Ga.	1470
WCLB	Camilla, Ga.	1220
WCLC	Jamestown, Tenn.	1260
WCLD	Cleveland, Miss.	1490
WCLE	Cleveland, Tenn.	1570
WCLG	Morgantown, W.Va.	1300
WCLI	Corning, N.Y.	1450
WCLO	Janesville, Wis.	1230
WCLS	Columbus, Ga.	1580
WCLT	Newark, Ohio	1430
WCLW	Mansfield, Ohio	1570
WCMA	Corinth, Miss.	1230
WCMB	Harrisburg, Pa.	1460
WCMC	Wildwood, N.J.	1230
WCME	Brunswick, Maine	900
WCMI	Ashland, Ky.	1340
WCMN	Arecibo, P.R.	1280
WCMP	Pine City, Minn.	1350
WCMR	Elkhart, Ind.	1270
WCMS	Norfolk, Va.	1050
WCMT	Martin, Tenn.	1410
WCMY	Ottawa, Ill.	1430
WCNB	Connersville, Ind.	1580
WCNC	Elizabeth City, N.C.	1240
WCNF	Weldon, N.C.	1400
WCNH	Quincy, Fla.	1230
WCNL	Newport, N. H.	1010
WCNR	Bloomsburg, Pa.	930
WCNT	Centralia, Ill.	1210
WCNU	Crestview, Fla.	1010
WCNX	Middletown, Conn.	1150
WCOA	Pensacola, Fla.	1370
WCOC	Meridian, Miss.	910
WCOG	Greensboro, N.C.	1320
WCOH	Newnan, Ga.	1400
WCOJ	Coatesville, Pa.	1420
WCOL	Columbus, Ohio	1230
WCON	Cornelia, Ga.	1450
WCOP	Boston, Mass.	1150
WCOR	Lebanon, Tenn.	900
WCOS	Columbia, S.C.	1400
WCOU	Lewiston, Maine	1240
WCOV	Montgomery, Ala.	1170
WCOW	Sparta, Wis.	1290
WCOY	Columbia, Pa.	1580
WCPA	Clearfield, Pa.	900
WCPC	Houston, Miss.	1320
WCPH	Etowah, Tenn.	1220
WCPM	Cumberland, Ky.	1280
WCPO	Cincinnati, Ohio	1230
WCPS	Tarboro, N.C.	760
WCQS	Alma, Ga.	1400
WCRA	Effingham, Ill.	1090
WCRB	Waltham, Mass.	1330
WCRE	Cheraw, S.C.	1420
WCRI	Scottsboro, Ala.	1050
WCRK	Morristown, Tenn.	1150
WCRL	Oneonta, Ala.	1570
WCRM	Clare, Mich.	990
WCRO	Johnstown, Pa.	1230
WCRR	Corinth, Miss.	1330
WCRS	Greenwood, S.C.	1450
WCRT	Birmingham, Ala.	1260
WCRV	Washington, N.J.	1580
WCRW	Chicago, Ill.	1240
WCRY	Macon, Ga.	900
WCSC	Charleston, S.C.	1390
WCSH	Portland, Maine	970
WCSI	Columbus, Ind.	1010
WCSM	Celina, Ohio	1350
WCSR	Hillsdale, Mich.	1340
WCSS	Amsterdam, N.Y.	1490
WCST	Berkeley Springs, W.Va.	1010
WCTA	Andalusia, Ala.	920
WCTC	New Brunswick, N.J.	1450
WCTT	Corbin, Ky.	680
WCTW	New Castle, Ind.	1550
WCUB	Manitowoc, Wis.	980
WCUE	Cuyahoga Falls, Ohio	1150
WCUM	Cumberland, Md.	1230
WCVA	Culpeper, Va.	1490
WCVI	Connellsville, Pa.	1340
WCVP	Murphy, N.C.	600
WCVQ	Kodiak, Alaska	960
WCVS	Springfield, Ill.	1450
WCWC	Ripon, Wis.	1600
WCYB	Bristol, Va.	690
WCYN	Cynthiana, Ky.	1400
WDAD	Indiana, Pa.	1450
WDAE	Tampa, Fla.	1250
WDAF	Kansas City, Mo.	610
WDAK	Columbus, Ga.	540
WDAL	Meridian, Miss.	1330
WDAN	Danville, Ill.	1490
WDAR	Darlington, S.C.	1350
WDAS	Philadelphia, Pa.	1480
WDAX	McRae, Ga.	1410
WDAY	Fargo, N. Dak.	970
WDBC	Escanaba, Mich.	680
WDBF	Delray Beach, Fla.	1420
WDBJ	Roanoke, Va.	960
WDBL	Springfield, Tenn.	1590
WDBM	Statesville, N.C.	550
WDBO	Orlando, Fla.	580
WDBQ	Dubuque, Iowa	1490
WDCF	Dade City, Fla.	1350
WDCR	Hanover, N.H.	1340
WDDT	Greenville, Miss.	900
WDDW	Halfway, Md.	1410
WDDY	Gloucester, Va.	1420
WDEA	Ellsworth, Me.	1350
WDEB	Pensacola, Fla.	610
WDEC	Americus, Ga.	1290
WDEE	Hamden, Conn.	1220
WDEF	Chattanooga, Tenn.	1370
WDEH	Sweetwater, Tenn.	800
WDEL	Wilmington, Del.	1150
WDEV	Waterbury, Vt.	550
WDEW	Westfield, Mass.	1570
WDGY	Minneapolis, Minn.	1130
WDIA	Memphis, Tenn.	1070
WDIG	Dothan, Ala.	1450
WDIX	Orangeburg, S.C.	1150
WDJS	Mt. Olive, N.C.	1430
WDKD	Kingstree, S.C.	1310
WDKN	Dickson, Tenn.	1260
WDLA	Walton, N.Y.	1270
WDLB	Marshfield, Wis.	1450
WDLC	Port Jervis, N.Y.	1490
WDLR	Delaware, Ohio	1550
WDLM	E. Moline, Ill.	960
WDLP	Panama City, Fla.	590
WDLT	Indianola, Miss.	1380
WDMC	Otsego, Mich.	980
WDMF	Buford, Ga.	1460
WDMG	Douglas, Ga.	860
WDMJ	Marquette, Mich.	1320
WDMS	Lynchburg, Va.	1320
WDMV	Pocomoke City, Md.	540
WDNC	Durham, N.C.	620
WDNE	Elkins, W.Va.	1240
WDNG	Anniston, Ala.	1450
WDNT	Dayton, Tenn.	1280
WDOB	Canton, Miss.	1370
WDOC	Prestonsburg, Ky.	1310
WDOD	Chattanooga, Tenn.	1310
WDOE	Dunkirk, N.Y.	1410
WDOG	Marine City, Mich.	1590
WDOK	Cleveland, Ohio	1260
WDOL	Athens, Ga.	1470
WDON	Wheaton, Md.	1540
WDOR	Sturgeon Bay, Wis.	910
WDOS	Oneonta, N.Y.	730
WDOT	Burlington, Va.	1400
WDOV	Dover, Del.	1410
WDOW	Dowagiac, Mich.	1440
WDQN	DuQuoin, Ill.	1580
WDRC	Hartford, Conn.	1360
WDSC	Dillon, S.C.	800
WDSG	Dyersburg, Tenn.	1450
WDSK	Cleveland, Miss.	1410
WDSM	Superior, Wis.	710
WDSP	DeFuniak Springs, Florida	1280
WDSR	Lake City, Fla.	1340
WDSU	New Orleans, La.	1280
WDUN	Gainesville, Ga.	1240
WDUX	Waupaca, Wis.	800
WDUZ	Green Bay, Wis.	1400
WDVA	Danville, Va.	1250
WDVH	Gainesville, Fla.	980
WDVL	Vineland, N.J.	1270
WDWD	Dawson, Ga.	990
WDWS	Champaign, Ill.	1400
WDXB	Chattanooga, Tenn.	1490
WDXE	Lawrenceburg, Tenn.	1370
WDXI	Jackson, Tenn.	1310
WDXL	Lexington, Tenn.	1490
WDXN	Clarksville, Tenn.	540
WDXR	Paducah, Ky.	1560
WDXY	Sumter, S.C.	1240
WDZ	Decatur, Ill.	1050
WEAB	Greer, S.C.	800
WEAG	Alcoa, Tenn.	1470
WEAM	Arlington, Va.	1390
WEAN	Providence, R.I.	790
WEAQ	Eau Claire, Wis.	790
WEAS	College Park, Ga.	1570
WEAT	W. Palm Beach, Fla.	850
WEAV	Plattsburg, N.Y.	960
WEAW	Evanston, Ill.	1330
WEBB	Baltimore, Md.	1360
WEBC	Duluth, Minn.	560
WEBJ	Brewton, Ala.	1240
WEBO	Owego, N.Y.	1330
WEBQ	Harrisburg, Ill.	1240
WEBR	Buffalo, N.Y.	970
WEBY	Milton, Fla.	1330
WECL	Eau Claire, Wis.	1050
WEDC	Chicago, Ill.	1240
WEDO	McKeesport, Pa.	810
WEEB	Southern Pines, N.C.	990
WEED	Rocky Mount, N.C.	1390
WEEE	Rensselaer, N.Y.	1300
WEEI	Boston, Mass.	590
WEEL	Fairfax, Va.	1310
WEEN	Lafayette, Tenn.	1460
WEER	Warrenton, Va.	1570
WEET	Richmond, Va.	1320
WEEU	Reading, Pa.	850
WEEW	Washington, N.C.	1320
WEEX	Easton, Pa.	1230
WEEZ	Chester, Pa.	1590
WEGO	Concord, N.C.	1410
WEGP	Presque Isle, Maine	1390
WEHH	Elmira Heights-Horseheads, N. Y.	1590
WEIC	Charleston, Ill.	1270
WEIM	Fitchburg, Mass.	1280
WEIR	Weirton, W.Va.	1430
WEIS	Center, Ala.	990
WEJL	Scranton, Pa.	630
WEKR	Fayetteville, Tenn.	1240
WEKY	Richmond, Ky.	1340
WEKZ	Monroe, Wis.	1260
WELB	Elba, Ala.	1350
WELC	Welch, W.Va.	1150
WELD	Fisher, W.Va.	690
WELE	S. Daytona, Fla.	1590
WELI	New Haven, Conn.	960
WELK	Charlottesville, Va.	1010
WELL	Battle Creek, Mich.	1400
WELM	Elmira, N.Y.	1410
WELO	Tupelo, Miss.	580
WELP	Easley, S.C.	1360
WELR	Roanoke, Ala.	1360
WELS	Kinston, N.C.	1010
WELW	Willoughby, O.	1330d
WELY	Ely, Minn.	1450
WELZ	Belzoni, Miss.	1460
WEMB	Erwin, Tenn.	1420
WEMD	Easton, Md.	1460
WEMJ	Laconia, N.H.	1490
WEMP	Milwaukee, Wis.	1250
WENA	Bayamon, P.R.	1560
WENC	Whiteville, N.C.	1220
WEND	Edensburg, Pa.	1580
WENE	Endicott, N.Y.	1430
WENK	Union City, Tenn.	1240
WENN	Birmingham, Ala.	1320
WENO	Madison, Tenn.	1430
WENT	Gloversville, N.Y.	1340
WENY	Elmira, N.Y.	1230
WEOK	Poughkeepsie, N.Y.	1390
WEOL	Elyria, Ohio	930
WEPG	S. Pittsburgh, Tenn.	910
WEPM	Martinsburg, W.Va.	1340
WERA	Plainfield, N.J.	1590
WERD	Atlanta, Ga.	860
WERE	Cleveland, Ohio	1300
WERH	Hamilton, Ala.	970
WERI	Westerly, R.I.	1230
WERL	Eagle River, Wis.	950
WERT	Van Wert, Ohio	1220
WESA	Charleroi, Pa.	940
WESB	Bradford, Pa.	1490
WESC	Greenville, S.C.	660
WESN	N. Augusta, S.C.	1550
WESO	Southbridge, Mass.	970
WESR	Tasley, Va.	1330
WEST	Easton, Pa.	1400
WESX	Salem, Mass.	1230
WESY	Leland, Miss.	1580
WETB	Johnson City, Tenn.	790
WETC	Wendell-Zebulon, N.C.	540
WETH	St. Augustine, Fla.	1420
WETO	Gadsden, Ala.	930
WETT	Ocean City, Md.	1590
WETU	Wetumpka, Ala.	1250
WETZ	New Martinsville, West Virginia	1330
WEUC	Ponce, P.R.	1420
WEUP	Huntsville, Ala.	1600
WEVA	Emporia, Va.	860
WEVD	New York, N.Y.	1330
WEVE	Eveleth, Minn.	1340
WEW	St. Louis, Mo.	770
WEWO	Laurinburg, N.C.	1080
WEXL	Royal Oak, Mich.	1340
WEYE	Sanford, N.C.	1290
WEYY	Talladega, Ala.	1580
WEZB	Birmingham, Ala.	1220
WEZE	Boston, Mass.	1260
WEZJ	Williamsburg, Ky.	1440
WEZN	Elizabethtown, Pa.	1600
WEZY	Cocoa, Fla.	1350
WFAA	Dallas, Tex.	570, 820
WFAB	Miami, Fla.	990
WFAG	Farmville, N.C.	1250
WFAH	Alliance, Ohio	1310
WFAI	Fayetteville, N.C.	1230
WFAR	Farrell, Pa.	1470
WFAS	White Plains, N.Y.	1230
WFAU	Augusta, Me.	1340
WFAX	Falls Church, Va.	1220
WFBC	Greenville, S.C.	1330
WFBG	Altoona, Pa.	1290
WFBL	Syracuse, N.Y.	1390
WFBM	Indianapolis, Ind.	1260
WFBR	Baltimore, Md.	1300
WFCT	Fountain City, Tenn.	1450
WFDF	Flint, Mich.	910
WFDR	Manchester, Ga.	1370
WFEA	Manchester, N.Y.	1370
WFEB	Sylacauga, Ala.	1340
WFEC	Miami, Fla.	1220
WFFF	Columbia, Miss.	1600
WFFG	Marathon, Fla.	1300
WFGM	Fitchburg, Mass.	960
WFGN	Gaffney, S.C.	1570
WFGW	Black Mountains, N.C.	1010
WFHG	Bristol, Va.	980
WFHK	Pell City, Ala.	1430
WFHR	Wis. Rapids, Wis.	1320
WFIG	Sumter, S.C.	1290
WFIL	Philadelphia, Pa.	560
WFIN	Findlay, Ohio	1330
WFIS	Fountain Inn, S.C.	1600
WFIW	Fairfield, Ill.	1390
WFKN	Franklin, Ky.	1220
WFKY	Frankfort, Ky.	1490
WFLA	Tampa, Fla.	970
WFLB	Fayetteville, N.C.	1490
WFLI	Lookout Mtn., Tenn.	1070
WFLN	Philadelphia, Pa.	900
WFLO	Farmville, Va.	870
WFLR	Dundee, N.Y.	1570
WFLS	Fredericksburg, Va.	1350
WFLW	Monticello, Ky.	1360
WFMC	Goldsboro, N.C.	730
WFMD	Frederick, Md.	930
WFMH	Cullman, Ala.	1460
WFMJ	Youngstown, Ohio	1390
WFMO	Fairmont, N.C.	860
WFMW	Madisonville, Ky.	730
WFNC	Fayetteville, N.C.	1390
WFNL	No. Augusta, S.C.	1600
WFOB	Fostoria, Ohio	1430
WFOM	Marietta, Ga.	1230
WFOR	Hattiesburg, Miss.	1400
WFOX	Milwaukee, Wis.	860
WFOY	St. Augustine, Fla.	1240
WFPA	Fort Payne, Ala.	1400
WFPG	Atlantic City, N.J.	1450
WFPM	Fort Valley, Ga.	1150
WFPR	Hammond, La.	1400
WFRA	Franklin, Pa.	1430
WFRB	Frostburg, Md.	560
WFRC	Reidsville, N.C.	1600
WFRL	Freeport, Ill.	1570
WFRM	Coudersport, Pa.	600
WFRO	Fremont, Ohio	900
WFRX	West Frankfort, Ill.	1300
WFSC	Franklin, N.C.	1050
WFSR	Bath, N.Y.	1380
WFST	Caribou, Maine	600
WFTC	Kinston, N.C.	960
WFTG	London, Ky.	1400
WFTL	Ft. Lauderdale, Fla.	1400
WFTM	Maysville, Ky.	1240
WFTR	Front Royal, Va.	1450
WFTW	Ft. Walton Beach, Florida	1260
WFUL	Fulton, Ky.	1270
WFUN	Huntsville, Ala.	1450
WFUR	Grand Rapids, Mich.	1570
WFVA	Fredericksburg, Va.	1230
WFVG	Fuquay Sprgs., N.C.	1460
WFWL	Camden, Tenn.	1220
WFYC	Alma, Mich.	1280
WFYI	Mineola, N.Y.	1520
WGAA	Cedartown, Ga.	1340
WGAC	Augusta, Ga.	580
WGAD	Gadsden, Ala.	1350
WGAF	Valdosta, Ga.	910
WGAI	Elizabeth City, N.C.	560
WGAL	Lancaster, Pa.	1490
WGAN	Portland, Maine	560
WGAP	Maryville, Tenn.	1400
WGAR	Cleveland, Ohio	1220
WGAS	S. Gastonia, N.C.	1420
WGAT	Gate City, Va.	1050
WGAU	Athens, Ga.	1340
WGAW	Gardner, Mass.	1340
WGBA	Columbus, Ga.	1270
WGBB	Freeport, N.Y.	1240
WGBF	Evansville, Ind.	1280
WGBG	Greensboro, N.C.	1400
WGBI	Scranton, Pa.	910
WGBR	Goldsboro, N. C.	1150
WGBS	Miami, Fla.	710
WGCB	Red Lion, Pa.	1440
WGCD	Chester, S.C.	1490
WGCM	Gulfport, Miss.	1240
WGEA	Geneva, Ala.	1150
WGEE	Indianapolis, Ind.	1590
WGEM	Quincy, Ill.	1440
WGET	Gettysburg, Pa.	1320
WGEZ	Beloit, Wis.	1490
WGFA	Watseka, Ill.	1360
WGFS	Covington, Ga.	1430
WGGA	Gainesville, Ga.	550
WGGG	Gainesville, Fla.	1230
WGGH	Marion, Ill.	1150
WGGO	Salamanca, N.Y.	1590
WGH	Newport News, Va.	1310
WGHC	Clayton, Ga.	1570
WGHM	Skowegan, Maine	1150
WGHN	Grd. Haven, Mich.	1370
WGHO	Kingston, N.Y.	920
WGIG	Brunswick, Ga.	1440
WGIL	Galesburg, Ill.	1400
WGIR	Manchester, N.H.	610
WGIV	Charlotte, N.C.	1600
WGKA	Atlanta, Ga.	1600
WGL	Fort Wayne, Ind.	1250
WGLC	Centreville, Miss.	1580
WGLD	Chardon, Ohio	1560
WGLI	Babylon, N.Y.	1290
WGMA	Hollywood, Fla.	1320
WGML	Hinesville, Ga.	990
WGMM	Millington, Tenn.	1380
WGMS	Washington, D.C.	570
WGN	Chicago, Ill.	720
WGNC	Gastonia, N.C.	1450
WGNI	Wilmington, N.C.	1450
WGNS	Murfreesboro, Tenn.	1450
WGNO	Granite City, Ill.	920
WGNP	Indian Rocks Beach, Fla.	1520
WGNY	Newburgh, N.Y.	1220
WGOG	Walhalla, S.C.	1460
WGOH	Grayson, Ky.	1370
WGOK	Mobile, Ala.	900

C.L.	Location	Kc.
WGOL	Goldsboro, N.C.	1300
WGOV	Valdosta, Ga.	950
WGPA	Bethlehem, Pa.	1100
WGPC	Albany, Ga.	1450
WGR	Buffalo, N.Y.	550
WGRA	Cairo, Ga.	790
WGRD	Grand Rapids, Mich.	1410
WGRF	Aguadella, P.R.	1340
WGRM	Greenwood, Miss.	1240
WGRO	Lake City, Fla.	960
WGRP	Greenville, Pa.	940
WGRV	Greeneville, Tenn.	1340
WGRY	Gary, Ind.	1370
WGSA	Ephrata, Pa.	1310
WGSB	Geneva, Ill.	1480
WGSM	Huntington, N.Y.	740
WGSR	Millen, Ga.	1570
WGST	Atlanta, Ga.	920
WGSV	Guntersville, Ala.	1270
WGSW	Greenwood, S.C.	1350
WGTA	Summerville, Ga.	930
WGTC	Greenville, N.C.	1590
WGTL	Kannapolis, N.C.	870
WGTM	Wilson, N.C.	590
WGTN	Georgetown, S.C.	1400
WGTO	Cypress Gardens, Fla.	540
WGUN	Decatur, Ga.	1010
WGUS	North Augusta, S.C.	1380
WGUY	Bangor, Maine	1250
WGVA	Geneva, N.Y.	1240
WGVM	Greenville, Miss.	1260
WGWC	Selma, Ala.	1340
WGWR	Asheboro, N.C.	1260
WGY	Schenectady, N.Y.	810
WGYV	Greenville, Ala.	1380
WHA	Madison, Wis.	970
WHAB	Baxley, Ga.	1260
WHAI	Greenfield, Mass.	1240
WHAK	Rogers City, Mich.	960
WHAL	Shelbyville, Tenn.	1400
WHAM	Rochester, N.Y.	1180
WHAN	Haines City, Fla.	930
WHAP	Hopewell, Va.	1340
WHAR	Clarksburg, W.Va.	1340
WHAS	Louisville, Ky.	840
WHAT	Philadelphia, Pa.	1340
WHAV	Haverhill, Mass.	1490
WHAW	Weston, W.Va.	980
WHAY	New Britain, Conn.	910
WHAZ	Troy, N.Y.	1330
WHB	Kansas City, Mo.	710
WHBB	Selma, Ala.	1490
WHBC	Canton, Ohio	1480
WHBF	Rock Island, Ill.	1270
WHBG	Harrisonburg, Va.	1360
WHBL	Sheboygan, Wis.	1330
WHBN	Harrodsburg, Ky.	1420
WHBO	Tampa, Fla.	1050
WHBQ	Memphis, Tenn.	560
WHBT	Harriman, Tenn.	1600
WHBU	Anderson, Ind.	1240
WHBY	Appleton, Wis.	1230
WHCC	Waynesville, N.C.	1400
WHCO	Sparta, Ill.	1230
WHCU	Ithaca, N.Y.	870
WHDF	Houghton, Mich.	1400
WHDH	Boston, Mass.	850
WHDL	Olean, N.Y.	1450
WHDM	McKenzie, Tenn.	1440
WHEB	Portsmouth, N.H.	750
WHEC	Rochester, N.Y.	1460
WHEE	Martinsville, Va.	1370
WHEN	Syracuse, N.Y.	620
WHEO	Stuart, Va.	1270
WHEP	Foley, Ala.	1310
WHER	Memphis, Tenn.	1430
WHEW	Riveria Beach, Fla.	1600
WHEY	Millington, Tenn.	1220
WHFB	Benton Harbor, Mich.	1060
WHFC	Cicero, Ill.	1450
WHGB	Harrisburg, Pa.	1400
WHGR	Houghton L., Mich.	1290
WHHH	Warren, Ohio	1440
WHHL	Holly Hill, S.C.	1440
WHHM	Memphis, Tenn.	1340
WHHT	Lucedale, Miss.	1440
WHHV	Hillsville, Va.	1400
WHHY	Montgomery, Ala.	1440
WHIE	Griffin, Ga.	1320
WHIH	Portsmouth, Va.	1400
WHIL	Medford, Mass.	1430
WHIM	E. Providence, R.I.	1110
WHIN	Gallatin, Tenn.	1010
WHIO	Dayton, Ohio	1290
WHIP	Mooresville, N.C.	1350
WHIR	Danville, Ky.	1230
WHIS	Bluefield, W.Va.	1440
WHIT	New Bern, N.C.	1450
WHIY	Orlando, Fla.	1270
WHIZ	Zanesville, Ohio	1240
WHJB	Greensburg, Pa.	620
WHJC	Matawan, W.Va.	1360
WHK	Cleveland, Ohio	1420
WHKP	Hendersonville, N.C.	1450
WHKY	Hickory, N.C.	1290
WHLB	Virginia, Minn.	1400
WHLD	Niagara Falls, N.Y.	1270
WHLF	South Boston, Va.	1400
WHLI	Hempstead, N.Y.	1100
WHLL	Wheeling, W.Va.	1600
WHLM	Bloomsburg, Pa.	550
WHLN	Harlan, Ky.	1410
WHLO	Akron, Ohio	640
WHLP	Centerville, Tenn.	1570
WHLS	Port Huron, Mich.	1450
WHLT	Huntington, Ind.	1300
WHMA	Anniston, Ala.	1390
WHMC	Gaithersburg, Md.	1150

C.L.	Location	Kc.
WHMI	Howell, Mich.	1350
WHMP	Northampton, Mass.	1400
WHN	New York, N.Y.	1050
WHNC	Henderson, N.C.	890
WHNY	McComb, Miss.	1250
WHO	Des Moines, Iowa	1040
WHOA	San Juan, P.R.	870
WHOC	Philadelphia, Miss.	1490
WHOF	Canton, Ohio	1060
WHOK	Lancaster, Ohio	1320
WHOL	Allentown, Pa.	600
WHOM	New York, N.Y.	1480
WHOO	Orlando, Fla.	990
WHOP	Hopkinsville, Ky.	1230
WHOS	Decatur, Ala.	800
WHOT	Campbell, Ohio	1330
WHOU	Houlton, Maine	1340
WHOW	Clinton, Ill.	1520
WHP	Harrisburg, Pa.	580
WHPB	Belton, S.C.	1390
WHPE	High Point, N.C.	1070
WHRT	Hartselle, Ala.	860
WHRV	Ann Arbor, Mich.	1600
WHSC	Hartsville, S.C.	1450
WHSL	Wilmington, N.C.	1490
WHSM	Hayward, Wis.	910
WHSY	Hattiesburg, Miss.	1230
WHTC	Holland, Mich.	1450
WHTG	Eatontown, N.J.	1410
WHUB	Cookeville, Tenn.	1400
WHUC	Hudson, N.Y.	1230
WHUM	Reading, Pa.	1240
WHUN	Huntington, Pa.	1150
WHUT	Anderson, Ind.	1470
WHVF	Wausau, Wis.	1230
WHVR	Hanover, Pa.	1280
WHWB	Rutland, Vt.	1000
WHWH	Princeton, N.J.	1350
WHYE	Roanoke, Va.	910
WHYL	Carlisle, Pa.	960
WHYN	Springfield, Mass.	560
WIAC	San Juan, P.R.	740
WIAM	Williamston, N.C.	900
WIBA	Madison, Wis.	1310
WIBB	Macon, Ga.	1280
WIBC	Indianapolis, Ind.	1070
WIBG	Philadelphia, Pa.	990
WIBM	Jackson, Mich.	1450
WIBR	Baton Rouge, La.	1300
WIBU	Poynette, Wis.	1240
WIBV	Belleville, Ill.	1260
WIBW	Topeka, Kans.	580
WIBX	Utica, N.Y.	950
WICC	Bridgeport, Conn.	600
WICE	Providence, R.I.	1290
WICH	Norwich, Conn.	1310
WICK	Scranton, Pa.	1400
WICO	Salisbury, Md.	1320
WICU	Erie, Pa.	1330
WICY	Malone, N.Y.	1490
WIDE	Biddeford, Maine	1400
WIDU	Fayetteville, N.C.	1600
WIEL	Elizabethtown, Ky.	1400
WIFM	Elkin, N.C.	1540
WIGL	Superior, Wis.	970
WIGM	Medford, Wis.	1490
WIIN	Atlanta, Ga.	970
WIKB	Iron River, Mich.	1230
WIKC	Bogalusa, La.	1490
WIKE	Newport, Vt.	1490
WIKY	Evansville, Ind.	820
WIL	St. Louis, Mo.	1430
WILA	Danville, Va.	1580
WILD	Boston, Mass.	1090
WILE	Cambridge, Ohio	1270
WILI	Willimantic, Conn.	1400
WILK	Wilkes-Barre, Pa.	980
WILL	Urbana, Ill.	580
WILM	Wilmington, Del.	1450
WILO	Frankfort, Ind.	1570
WILS	Lansing, Mich.	1320
WILZ	St. Petersburg Beach, Florida	1590
WIMA	Lima, Ohio	1150
WIMO	Winder, Ga.	1300
WIMS	Michigan City, Ind.	1420
WINA	Charlottesville, Va.	1400
WINC	Winchester, Va.	1400
WIND	Chicago, Ill.	560
WINF	Manchester, Conn.	1230
WING	Dayton, Ohio	1410
WINI	Murphysboro, Ill.	1420
WINK	Fort Myers, Fla.	1240
WINN	Louisville, Ky.	1240
WINQ	Tampa, Fla.	1010
WINR	Binghamton, N.Y.	680
WINS	New York, N.Y.	1010
WINT	Winter Haven, Fla.	1360
WINX	Rockville, Md.	1600
WINY	Putnam, Conn.	1350
WINZ	Miami, Fla.	940
WIOI	New Boston, Ohio	1010
WIOK	Normal, Ill.	1440
WION	Ionia, Mich.	1430
WIOS	Tawas City, Mich.	1480
WIOU	Kokomo, Ind.	1350
WIP	Philadelphia, Pa.	610
WIPC	Lake Wales, Fla.	1280
WIPR	San Juan, P.R.	940
WIPS	Ticonderoga, N.Y.	1250
WIRA	Fort Pierce, Fla.	1400
WIRB	Enterprise, Ala.	600
WIRC	Hickory, N.C.	630
WIRD	Lake Placid, N.Y.	920
WIRE	Indianapolis, Ind.	1430
WIRJ	Humboldt, Tenn.	740
WIRK	W. Palm Beach, Fla.	1290
WIRL	Peoria, Ill.	1290

C.L.	Location	Kc.
WIRO	Ironton, Ohio	1230
WIRV	Irvine, Ky.	1550
WIRY	Plattsburg, N.Y.	1340
WIS	Columbia, S.C.	560
WISA	Isabella, P.R.	1390
WISE	Asheville, N.C.	1310
WISH	Indianapolis, Ind.	1310
WISL	Shamokin, Pa.	1480
WISM	Madison, Wis.	1480
WISN	Milwaukee, Wis.	1150
WISO	Ponce, P.R.	1260
WISP	Kinston, N.C.	1230
WISR	Butler, Pa.	680
WIST	Charlotte, N.C.	1240
WISV	Viroqua, Wis.	1360
WITA	San Juan, P.R.	1140
WITH	Baltimore, Md.	1230
WITW	Washington, N.C.	930
WITY	Danville, Ill.	980
WITZ	Jasper, Ind.	990
WIVE	Ashland, Va.	1430
WIVI	Christiansted, V.I.	970
WIVK	Knoxville, Tenn.	860
WIVV	Vieques, P.R.	1370
WIVY	Jacksonville, Fla.	1050
WIXK	New Richmond, Wis.	1590
WIXN	Dixon, Ill.	1460
WIXX	Oakland Park, Fla.	1520
WIYN	Rome, Ga.	1360
WIZE	Springfield, Ohio	1340
WIZR	Johnstown, N.Y.	930
WIZS	Henderson, N.C.	1450
WIZZ	Streator, Ill.	1250
WJAB	Westbrook, Me.	1440
WJAC	Johnstown, Pa.	850
WJAG	Norfolk, Nebr.	780
WJAK	Jackson, Tenn.	1460
WJAM	Marion, Ala.	1310
WJAN	Ishpeming, Mich.	970
WJAR	Providence, R.I.	920
WJAS	Pittsburgh, Pa.	1320
WJAT	Swainsboro, Ga.	800
WJAX	Jacksonville, Fla.	930
WJAY	Mullins, S.C.	1280
WJAZ	Albany, Ga.	960
WJBB	Haleyville, Ala.	1230
WJBC	Bloomington, Ill.	1230
WJBD	Salem, Ill.	1350
WJBK	Detroit, Mich.	1500
WJBL	Holland, Mich.	1260
WJBM	Jerseyville, Ill.	1480
WJBO	Baton Rouge, La.	1150
WJBS	DeLand, Fla.	1490
WJBT	Wheeling, W.Va.	1470
WJCD	Seymour, Ind.	1390
WJCM	Sebring, Fla.	960
WJCW	Johnson City, Tenn.	910
WJDA	Quincy, Mass.	1300
WJDB	Thomasville, Ala.	630
WJDX	Jackson, Miss.	620
WJDY	Salisbury, Md.	1470
WJEF	Grand Rapids, Mich.	1230
WJEH	Gallipolis, Ohio	990
WJEJ	Hagerstown, Md.	1240
WJEM	Valdosta, Ga.	1150
WJER	Dover, Ohio	1450
WJES	Johnston, S.C.	1570
WJET	Erie, Pa.	1400
WJFC	Jefferson City, Tenn.	1480
WJHO	Opelika, Ala.	1400
WJIG	Tullahoma, Tenn.	740
WJIL	Jacksonville, Ill.	1550
WJIM	Lansing, Mich.	1240
WJIV	Savannah, Ga.	900
WJJC	Commerce, Ga.	1270
WJJD	Chicago, Ill.	1160
WJJL	Niagara Falls, N.Y.	1440
WJJM	Lewisburg, Tenn.	1490
WJLB	Detroit, Mich.	1400
WJLD	Homewood, Ala.	1400
WJLK	Asbury Park, N.J.	1310
WJLS	Beckley, W.Va.	560
WJMA	Orange, Va.	1340
WJMB	Brookhaven, Miss.	1340
WJMC	Rice Lake, Wis.	1240
WJMJ	Philadelphia, Pa.	1540
WJMO	Cleveland Hgts., Ohio	1490
WJMR	New Orleans, La.	990
WJMS	Ironwood, Mich.	630
WJMW	Athens, Ala.	730
WJMX	Florence, S.C.	970
WJNC	Jacksonville, N.C.	1240
WJNO	W. Palm Beach, Fla.	1230
WJOB	Hammond, Ind.	1230
WJOE	Ward Ridge, Fla.	1570
WJOI	Florence, Ala.	1340
WJOL	Joliet, Ill.	1340
WJON	St. Cloud, Minn.	1240
WJOR	South Haven, Mich.	940
WJOT	Lake City, S.C.	1260
WJOY	Burlington, Vt.	1230
WJPA	Washington, Pa.	1450
WJPD	Ishpeming, Mich.	1240
WJPF	Herrin, Ill.	1340
WJPG	Green Bay, Wis.	1440
WJPR	Greenville, Miss.	1330
WJPS	Evansville, Ind.	1330
WJQS	Jackson, Miss.	1400
WJR	Detroit, Mich.	760
WJRC	Joliet, Ill.	1510
WJRD	Tuscaloosa, Ala.	1150
WJRI	Lenoir, N.C.	1340
WJRL	Rockford, Ill.	1150
WJRM	Troy, N.C.	1390
WJRZ	Newark, N.J.	970
WJSB	Crestview, Fla.	1050
WJSO	Jonesboro, Tenn.	1590
WJTN	Jamestown, N.Y.	1240

C.L.	Location	Kc.
WJUD	St. Johns, Mich.	1580
WJUN	Mexico, Pa.	1220
WJVA	South Bend, Ind.	1580
WJW	Cleveland, Ohio	850
WJWL	Georgetown, Del.	900
WJWS	South Hill, Va.	1370
WJWT	Demopolis, Ala.	1350
WJXN	Jackson, Miss.	1450
WJZM	Clarksville, Tenn.	1400
WKAI	Macomb, Ill.	1510
WKAL	Rome, N.Y.	1450
WKAM	Goshen, Ind.	1460
WKAN	Kankakee, Ill.	1320
WKAP	Allentown, Pa.	1320
WKAQ	San Juan, P.R.	580
WKAR	East Lansing, Mich.	870
WKAT	Miami Beach, Fla.	1360
WKAY	Glasgow, Ky.	1490
WKAZ	Charleston, W.Va.	950
WKBC	N. Wilkesboro, N.C.	810
WKBH	La Crosse, Wis.	1410
WKBI	St. Mary's, Pa.	1400
WKBJ	Milan, Tenn.	1600
WKBK	Keene, N.H.	1220
WKBL	Covington, Tenn.	1250
WKBN	Youngstown, Ohio	570
WKBO	Harrisburg, Pa.	1230
WKBR	Manchester, N.H.	1250
WKBV	Richmond, Ind.	1490
WKBW	Buffalo, N.Y.	1520
WKBX	Kissimmee, Fla.	1220
WKBZ	Muskegon, Mich.	850
WKCT	Bowling Green, Ky.	930
WKCW	Warrenton, Va.	1420
WKDA	Nashville, Tenn.	1240
WKDE	Altavista, Va.	1280
WKDK	Newberry, S.C.	1240
WKDL	Clarksdale, Miss.	1600
WKDN	Camden, N.J.	800
WKDX	Hamlet, N.C.	1400
WKEE	Huntington, W.Va.	800
WKEI	Kewanee, Ill.	1450
WKEN	Dover, Del.	1600
WKEU	Griffin, Ga.	1450
WKEY	Covington, Va.	1340
WKFD	Wickford, R.I.	1370
WKGN	Knoxville, Tenn.	1340
WKHM	Jackson, Mich.	970
WKIC	Hazard, Ky.	1390
WKID	Urbana, Ill.	1580
WKIG	Glenville, Ga.	1580
WKIK	Leonardtown, Md.	1370
WKIN	Kingsport, Tenn.	1320
WKIP	Poughkeepsie, N.Y.	1450
WKIS	Orlando, Fla.	740
WKIX	Raleigh, N.C.	850
WKIZ	Key West, Fla.	1500
WKJB	Mayaguez, P.R.	710
WKJG	Fort Wayne, Ind.	1380
WKKD	Aurora, Ill.	1580
WKKO	Cocoa, Fla.	860
WKKS	Vanceburg, Ky.	1570
WKLA	Ludington, Mich.	1450
WKLC	St. Albans, W.Va.	1300
WKLE	Washington, Ga.	1370
WKLF	Clanton, Ala.	980
WKLJ	Sparta, Wis.	990
WKLK	Cloquet, Minn.	1230
WKLM	Wilmington, N.C.	980
WKLO	Louisville, Ky.	1080
WKLV	Blackstone, Va.	1440
WKLX	Paris, Ky.	1440
WKLY	Hartwell, Ga.	980
WKLZ	Kalamazoo, Mich.	1470
WKMC	Roaring Sprgs., Pa.	1370
WKMF	Flint, Mich.	1470
WKMH	Dearborn, Mich.	1310
WKMI	Kalamazoo, Mich.	1360
WKMK	Blountstown, Fla.	1370
WKMT	Kings Mtn., N.C.	1220
WKNE	Keene, N.H.	1290
WKNX	Saginaw, Mich.	1210
WKNY	Kingston, N.Y.	1490
WKOA	Hopkinsville, Ky.	1480
WKOK	Sunbury, Pa.	1240
WKOP	Binghamton, N.Y.	1360
WKOS	Ocala, Fla.	1370
WKOV	Wellston, Ohio	1330
WKOW	Madison, Wis.	1070
WKOX	Framingham, Mass.	1190
WKOY	Bluefield, W.Va.	1240
WKOZ	Kosciusko, Miss.	1350
WKPA	New Kensington, Pa.	1150
WKPR	Kalamazoo, Mich.	1420
WKPT	Kingsport, Tenn.	1400
WKRC	Cincinnati, Ohio	550
WKRG	Mobile, Ala.	710
WKRK	Murphy, N.C.	1390
WKRM	Columbia, Tenn.	1340
WKRO	Cairo, Ill.	1490
WKRS	Waukegan, Ill.	1220
WKRT	Cortland, N.Y.	920
WKRW	Cartersville, Ga.	
WKRZ	Oil City, Pa.	1340
WKSB	Milford, Del.	930
WKSC	Kershaw, S.C.	1300
WKSK	W. Jefferson, N.C.	1600
WKSR	Pulaski, Tenn.	1420
WKST	New Castle, Pa.	1280
WKTC	Charlotte, N.C.	1310
WKTG	Thomasville, Ga.	730
WKTJ	Farmington, Maine	1380
WKTL	Sheboygan, Wis.	950
WKTQ	South Paris, Maine	1450
WKTX	Atlantic Beach, Fla.	1600

C.L.	Location	Kc.
WKTY	LaCrosse, Wis.	580
WKUL	Cullman, Ala.	1340
WKVA	Lewistown, Pa.	920
WKVM	San Juan, P.R.	810
WKVT	Brattleboro, Vt.	1490
WKWF	Key West, Fla.	1600
WKWK	Wheeling, W.Va.	1400
WKWS	Rocky Mount, Va.	1290
WKXL	Concord, N.H.	1450
WKXV	Knoxville, Tenn.	900
WKXY	Sarasota, Fla.	930
WKY	Oklahoma City, Okla.	930
WKYB	Paducah, Ky.	570
WKYN	Rio Piedras, P.R.	630
WKYR	Keyser, W.Va.	1270
WKYW	Louisville, Ky.	900
WKZO	Kalamazoo, Mich.	590
WLAC	Nashville, Tenn.	1510
WLAD	Danbury, Conn.	800
WLAF	LaFollette, Tenn.	1450
WLAG	La Grange, Ga.	1240
WLAK	Lakeland, Fla.	1430
WLAM	Lewiston, Maine	1470
WLAN	Lancaster, Pa.	1390
WLAP	Lexington, Ky.	630
WLAQ	Rome, Ga.	1410
WLAR	Athens, Tenn.	1450
WLAS	Jacksonville, N.C.	910
WLAT	Conway, S.C.	1330
WLAU	Laurel, Miss.	1600
WLAV	Grand Rapids, Mich.	1340
WLAW	Lawrenceville, Ga.	1360
WLAY	Muscle Shoals, Ala.	1450
WLBA	Gainesville, Ga.	1580
WLBB	Carrollton, Ga.	1100
WLBC	Muncie, Ind.	1340
WLBE	Leesburg, Fla.	790
WLBG	Laurens, S.C.	860
WLBH	Mattoon, Ill.	1170
WLBI	Denham Springs, La.	1220
WLBJ	Bowling Green, Ky.	1410
WLBK	DeKalb, Ill.	1360
WLBL	Stevens Point, Wis.	930
WLBN	Lebanon, Ky.	1590
WLBR	Lebanon, Pa.	1270
WLBZ	Bangor, Maine	620
WLCK	Scottsville, Ky.	1250
WLCM	Lancaster, S.C.	1360
WLCN	Laurensburg, N.C.	1300
WLCO	Eustis, Fla.	1240
WLCS	Baton Rouge, La.	910
WLCX	LaCrosse, Wis.	1490
WLCY	St. Petersburg, Fla.	1380
WLDB	Atlantic City, N.J.	1490
WLDS	Jacksonville, Ill.	1180
WLDY	Ladysmith, Wis.	1340
WLEA	Hornell, N.Y.	1480
WLEC	Sandusky, Ohio	1450
WLEE	Richmond, Va.	1480
WLEM	Emporium, Pa.	1240
WLEO	Ponce, P.R.	1170
WLGS	Lawrenceville, Va.	580
WLET	Toccoa, Ga.	1420
WLEU	Erie, Pa.	1450
WLEW	Bad Axe, Mich.	1340
WLFA	Lafayette, Ga.	1590
WLFH	Little Falls, N.Y.	1230
WLIB	New York, N.Y.	1190
WLIJ	Shelbyville, Tenn.	1580
WLIK	Newport, Tenn.	1270
WLIL	Lenoir, Tenn.	730
WLIP	Kenosha, Wis.	1050
WLIQ	Mobile, Ala.	1360
WLIS	Old Saybrook, Conn.	1420
WLIV	Livingston, Tenn.	920
WLIZ	Lake Worth, Fla.	1380
WLKM	Three Rivers, Mich.	1510
WLKW	Providence, R.I.	990
WLLE	Raleigh, N.C.	570
WLLH	Lowell, Mass.	1400
WLLY	Wilson, N.C.	1350
WLMJ	Jackson, Ohio	1280
WLNA	Peekskill, N.Y.	1420
WLNG	Sag Harbor, N.Y.	1600
WLNH	Laconia, N.H.	1350
WLOA	Braddock, Pa.	1550
WLOB	Portland, Maine	1310
WLOC	Munfordville, Ky.	1150
WLOD	Pompano Beach, Fla.	980
WLOE	Leaksville, N.C.	1490
WLOF	Orlando, Fla.	950
WLOG	Logan, W.Va.	1230
WLOH	Princeton, W.Va.	1490
WLOI	LaPorte, Ind.	1540
WLOK	Memphis, Tenn.	1480
WLOL	Minneapolis, Minn.	1330
WLON	Lincolnton, N.C.	1050
WLOS	Asheville, N.C.	1380
WLOU	Louisville, Ky.	1350
WLOW	Aiken, S.C.	1300
WLOX	Biloxi, Miss.	1490
WLPM	Suffolk, Va.	1460
WLPO	LaSalle, Ill.	1220
WLPS	Lehighton, Pa.	1150
WLS	Chicago, Ill.	890
WLSB	Copper Hill, Tenn.	1400
WLSC	Loris, S.C.	1570
WLSD	Big Stone Gap, Va.	1220
WLSE	Wallace, N.C.	1400
WLSH	Lansford, Pa.	1410
WLSI	Pikeville, Ky.	900
WLSM	Louisville, Miss.	1270
WLST	Escanaba, Mich.	600
WLSV	Wellsville, N.Y.	790
WLTC	Gastonia, N.C.	1370

C.L.	Location	Kc.
WLUV	Loves Park, Ill.	1520
WLVA	Lynchburg, Va.	590
WLVN	Nashville, Tenn.	1560
WLW	Cincinnati, Ohio	700
WLYB	Albany, Ga.	1250
WLYN	Lynn, Mass.	1360
WLYO	New Orleans, La.	940
WLYC	Williamsport, Pa.	1050
WMAB	Munising, Mich.	1400
WMAC	Metter, Ga.	1360
WMAF	Madison, Fla.	1230
WMAG	Forest, Miss.	860
WMAJ	State College, Pa.	1450
WMAK	Nashville, Tenn.	1300
WMAL	Washington, D.C.	630
WMAM	Marinette, Wis.	570
WMAN	Mansfield, Ohio	1400
WMAP	Monroe, N.C.	1060
WMAQ	Chicago, Ill.	670
WMAS	Springfield, Mass.	1450
WMAT	Lansing, Mich.	1010
WMAX	Grand Rapids, Mich.	1480
WMAY	Springfield, Ill.	970
WMAZ	Macon, Ga.	940
WMBA	Ambridge, Pa.	1460
WMBC	Macon, Miss.	1400
WMBD	Peoria, Ill.	1470
WMBG	Richmond, Va.	1380
WMBH	Joplin, Mo.	1450
WMBI	Chicago, Ill.	1110
WMBL	Morehead City, N.C.	740
WMBM	Miami Beach, Fla.	1490
WMBN	Petoskey, Mich.	1340
WMBO	Auburn, N.Y.	1340
WMBR	Jacksonville, Fla.	1460
WMBS	Uniontown, Pa.	590
WMC	Memphis, Tenn.	790
WMCA	New York, N.Y.	570
WMCH	Church Hill, Tenn.	1260
WMCP	Columbia, Tenn.	1280
WMCR	Oneida, N.Y.	1600
WMCW	Harvard, Ill.	1600
WMDC	Hazlehurst, Miss.	1220
WMDD	Fajardo, P.R.	1480
WMDN	Midland, Mich.	1490
WMEG	Eau Gallie, Fla.	920
WMEK	Chase City, Va.	980
WMEN	Tallahassee, Fla.	1330
WMEV	Marion, Va.	1010
WMEX	Boston, Mass.	1510
WMFC	Monroeville, Ala.	1360
WMFD	Wilmington, N.C.	630
WMFG	Hibbing, Minn.	1240
WMFJ	Daytona Beach, Fla.	1450
WMFR	High Point, N.C.	1230
WMFT	Terre Haute, Ind.	1300
WMGA	Moultrie, Ga.	1400
WMGR	Bainbridge, Ga.	930
WMGS	Bowling Green, Ohio	730
WMGW	Meadville, Pa.	1490
WMGY	Montgomery, Ala.	800
WMID	Atlantic City, N.J.	1340
WMIE	Miami, Fla.	1140
WMIK	Middlesboro, Ky.	560
WMIL	Milwaukee, Wis.	1290
WMIN	Mpls.-St. Paul, Minn.	1400
WMIQ	Iron Mountain, Mich.	1450
WMIS	Natchez, Miss.	1240
WMIX	Mt. Vernon, Ill.	940
WMJM	Cordele, Ga.	1490
WMLF	Pineville, Ky.	1230
WMLO	Beverly, Mass.	1570
WMLS	Sylacauga, Ala.	1290
WMLT	Dublin, Ga.	1330
WMMB	Melbourne, Fla.	1240
WMMH	Marshall, N.C.	1460
WMMM	Westport, Conn.	1260
WMMN	Fairmont, W.Va.	920
WMMS	Bath, Maine	730
WMMW	Meriden, Conn.	1470
WMNA	Gretna, Va.	730
WMNB	No. Adams, Mass.	1230
WMNC	Morganton, N.C.	1430
WMNE	Menomonie, Wis.	1360
WMNI	Columbus, Ohio	920
WMNS	Olean, N.Y.	1360
WMNT	Manati, P.R.	1500
WMNZ	Montezuma, Ga.	1050
WMOA	Marietta, Ohio	1490
WMOC	Chattanooga, Tenn.	1450
WMOD	Moundsville, W.Va.	1370
WMOE	Mobile, Ala.	1550
WMOG	Brunswick, Ga.	1490
WMOH	Hamilton, Ohio	1450
WMOK	Metropolis, Ill.	920
WMON	Montgomery, W.Va.	1340
WMOP	Ocala, Fla.	900
WMOR	Morehead, Ky.	1330
WMOU	Berlin, N.H.	1230
WMOV	Ravenswood, W.Va.	1360
WMOX	Meridian, Miss.	1240
WMOZ	Mobile, Ala.	960
WMPA	Aberdeen, Miss.	1240
WMPC	Lapeer, Mich.	1230
WMPL	Hancock, Mich.	920
WMPM	Smithfield, N.C.	1270
WMPO	Middleport-Pomroy, Ohio	1390
WMPP	Chicago Heights, Ill.	1470
WMPS	Memphis, Tenn.	680
WMPT	So. Williamsport, Pa.	1450
WMRB	Greenville, S.C.	1490
WMRC	Milford, Mass.	1490
WMRE	Monroe, Ga.	1490
WMRF	Lewistown, Pa.	1490
WMRI	Marion, Ind.	860
WMRN	Marion, Ohio	1490
WMRO	Aurora, Ill.	1280

C.L.	Location	Kc.
WMRP	Flint, Mich.	1570
WMSA	Massena, N.Y.	1340
WMSJ	Sylva, N.C.	1480
WMSK	Morganfield, Ky.	1550
WMSL	Decatur, Ala.	1400
WMSR	Manchester, Tenn.	1320
WMST	Mt. Sterling, Ky.	1150
WMT	Cedar Rapids, Iowa	600
WMTA	Central City, Ky.	1380
WMTC	Vancleve, Ky.	730
WMTE	Manistee, Mich.	1340
WMTL	Leitchfield, Ky.	1580
WMTM	Moultrie, Ga.	1300
WMTN	Morristown, Tenn.	1300
WMTR	Morristown, N.J.	1250
WMTS	Murfreesboro, Tenn.	860
WMUS	Muskegon, Mich.	1090
WMUU	Greenville, S.C.	1260
WMVA	Martinsville, Va.	1450
WMVB	Millville, N.J.	1440
WMVG	Milledgeville, Ga.	1450
WMVO	Mt. Vernon, Ohio	1300
WMYB	Myrtle Beach, S.C.	1450
WMYN	Mayodan, N.C.	1420
WMYR	Ft. Myers, Fla.	1410
WNAB	Bridgeport, Conn.	1450
WNAC	Boston, Mass.	680
WNAD	Norman, Okla.	640
WNAE	Warren, Pa.	1310
WNAG	Grenada, Miss.	1400
WNAH	Nashville, Tenn.	1360
WNAK	Nanticoke, Pa.	730
WNAM	Neenah, Wis.	1280
WNAR	Norristown, Pa.	1110
WNAT	Natchez, Miss.	1450
WNAU	New Albany, Miss.	1470
WNAV	Annapolis, Md.	1430
WNAX	Yankton, S.Dak.	570
WNBC	New York, N.Y.	660
WNBF	Binghamton, N.Y.	1290
WNBH	New Bedford, Mass.	1340
WNBP	Newburyport, Mass.	1470
WNBS	Murray, Ky.	1340
WNBT	Wellsboro, Pa.	1490
WNBZ	Saranac Lake, N.Y.	1240
WNCA	Siler City, N.C.	1570
WNCC	Barnesboro, Pa.	950
WNCG	N. Charleston, S.C.	910
WNCO	Ashland, Ohio	1340
WNDB	Daytona Beach, Fla.	1150
WNDR	Syracuse, N.Y.	1260
WNDU	South Bend, Ind.	1490
WNEB	Worcester, Mass.	1230
WNEG	Toccoa, Ga.	630
WNER	Live Oak, Fla.	1250
WNES	Central City, Ky.	1050
WNEW	New York, N.Y.	1130
WNEX	Macon, Ga.	1400
WNGA	Nashville, Ga.	1600
WNGO	Mayfield, Ky.	1320
WNHC	New Haven, Conn.	1340
WNIA	Cheektowaga, N.Y.	1230
WNIK	Arecibo, P.R.	1230
WNIL	Niles, Mich.	1290
WNJH	Hammonton, N.J.	1580
WNJR	Newark, N.J.	1430
WNKY	Neon, Ky.	1480
WNLC	New London, Conn.	1510
WNLK	Norwalk, Conn.	1350
WNMP	Evanston, Ill.	1590
WNNC	Newton, N.C.	1230
WNNJ	Newton, N.J.	1360
WNNT	Warsaw, Va.	690
WNOE	New Orleans, La.	1060
WNOG	Naples, Fla.	1270
WNOK	Columbia, S.C.	1230
WNOO	Chattanooga, Tenn.	1260
WNOP	Newport, Ky.	740
WNOR	Norfolk, Va.	1230
WNOS	High Point, N.C.	1590
WNOW	York, Pa.	1250
WNOX	Knoxville, Tenn.	990
WNPS	New Orleans, La.	1450
WNPT	Tuscaloosa, Ala.	1280
WNPV	Lansdale, Pa.	1440
WNRG	Grundy, Va.	1250
WNRI	Woonsocket, R.I.	1380
WNRK	Newark, Del.	1260
WNRV	Narrows, Va.	990
WNSH	Highland Park, Ill.	1430
WNSL	Laurel, Miss.	1260
WNSM	Valparaiso-Niceville, Florida	1340
WNTT	Tazewell, Tenn.	1250
WNUE	Ft. Walton Beach, Fla.	950
WNUZ	Talladega, Ala.	1230
WNVA	Norton, Va.	1350
WNVL	Nicholasville, Ky.	1250
WNVY	Pensacola, Fla.	1230
WNXT	Portsmouth, Ohio	1260
WNYC	New York, N.Y.	830
WOAI	San Antonio, Tex.	1200
WOAP	Owosso, Mich.	1080
WOAY	Oak Hill, W.Va.	860
WOBS	Jacksonville, Fla.	1360
WOBT	Rhinelander, Wis.	1240
WOC	Davenport, Iowa	1420
WOCB	W. Yarmouth, Mass.	1240
WOCH	North Vernon, Ind.	1460
WOCK	Okeechobee, Fla.	1570
WODY	Bassett, Va.	900
WOHI	E. Liverpool, Ohio	1490
WOHO	Toledo, Ohio	1470
WOHP	Bellefontaine, Ohio	1390
WOHS	Shelby, N.C.	730
WOI	Ames, Iowa	640
WOIA	Saline, Mich.	1290
WOIC	Columbia, S.C.	1320

C.L.	Location	Kc.
WOKA	Douglas, Ga.	1310
WOKB	Winter Garden, Fla	1600
WOKE	Charleston, S.C.	1340
WOKK	Meridian, Miss.	1450
WOKJ	Jackson, Miss.	1590
WOKO	Albany, N.Y.	1460
WOKS	Columbus, Ga.	1340
WOKW	Brockton, Mass.	1410
WOKY	Milwaukee, Wis.	920
WOKZ	Alton, Ill.	1570
WOL	Washington, D.C.	1450
WOLD	Marion, Va.	1330
WOLF	Syracuse, N.Y.	1490
WOLS	Florence, Ala.	1230
WOMI	Owensboro, Ky.	1490
WOMP	Bellaire, Ohio	1290
WOMT	Manitowoc, Wis.	1240
WONA	Winona, Miss.	1570
WOND	Pleasantville, N.J.	1400
WONE	Dayton, Ohio	980
WONN	Lakeland, Fla.	1230
WONW	Defiance, Ohio	1280
WOOD	Grand Rapids, Mich.	1300
WOOF	Dothan, Ala.	560
WOOK	Washington, D.C.	1340
WOOO	Deland, Fla.	1310
WOOW	Greenville, N.C.	1340
WOPA	Oak Park, Ill.	1490
WOPI	Bristol, Tenn.	1490
WOR	New York, N.Y.	710
WORA	Mayaguez, P.R.	760
WORC	Worcester, Mass.	1310
WORD	Spartanburg, S.C.	910
WORG	Orangeburg, S.C.	1580
WORK	York, Pa.	1350
WORL	Boston, Mass.	950
WORM	Savannah, Tenn.	1010
WORT	New Smyrna Beach, Florida	1550
WORX	Madison, Ind.	1270
WOSC	Fulton, N.Y.	1300
WOSH	Oshkosh, Wis.	1490
WOSU	Columbus, Ohio	820
WOTR	Corry, Pa.	1370
WOTT	Watertown, N.Y.	1410
WOTW	Nashua, N.H.	900
WOUB	Athens, Ohio	1340
WOVE	Welch, W.Va.	1340
WOW	Omaha, Nebr.	590
WOWE	Allegan, Mich.	1580
WOWI	New Albany, Ind.	1570
WOWL	Florence, Ala.	1240
WOWO	Ft. Wayne, Ind.	1190
WOWW	Naugatuck, Conn.	860
WOWY	Clewiston, Fla.	500d
WOXF	Oxford, N.C.	1340
WOZK	Ozark, Ala.	900
WPAB	Ponce, P.R.	550
WPAC	Patchogue, N.Y.	1580
WPAD	Paducah, Ky.	1450
WPAG	Ann Arbor, Mich.	1050
WPAL	Charleston, S.C.	730
WPAM	Pottsville, Pa.	1450
WPAP	Fernandina Beach, Florida	1570
WPAQ	Mount Airy, N.C.	740
WPAR	Parkersburg, W.Va.	1450
WPAT	Paterson, N.J.	930
WPAX	Thomasville, Ga.	1240
WPAY	Portsmouth, Ohio	1400
WPAZ	Pottstown, Pa.	1370
WPBC	Minneapolis, Minn.	980
WPCC	Clinton, S.C.	1400
WPCF	Panama City, Fla.	1430
WPCO	Mt. Vernon, Ind.	1590
WPDM	Potsdam, N.Y.	1470
WPDQ	Jacksonville, Fla.	600
WPDR	Portage, Wis.	1350
WPDX	Clarksburg, W.Va.	750
WPEG	Winston-Salem, N.C.	1550
WPEH	Louisville, Ga.	1420
WPEL	Montrose, Pa.	1250
WPEN	Philadelphia, Pa.	950
WPEO	Peoria, Ill.	1020
WPEP	Taunton, Mass.	1570
WPET	Greensboro, N.C.	950
WPFA	Pensacola, Fla.	790
WPFB	Middletown, Ohio	910
WPFE	Eastman, Ga.	1580
WPFP	Park Falls, Wis.	1450
WPGA	Perry, Ga.	980
WPGC	Bradbury Hghts., Md.	1580
WPGW	Portland, Ind.	1440
WPHB	Philipsburg, Pa.	1260
WPIC	Sharon, Pa.	790
WPID	Piedmont, Ala.	1280
WPIK	Alexandria, Va.	730
WPIN	St. Petersburg, Fla.	680
WPIT	Pittsburgh, Pa.	730
WPKE	Pikeville, Ky.	1240
WPKO	Waverly, Ohio	1380
WPKY	Princeton, Ky.	1580
WPLA	Plant City, Fla.	910
WPLB	Greenville, Mich.	1380
WPLK	Rockmart, Ga.	1220
WPLM	Plymouth, Mass.	1390
WPLO	Atlanta, Ga.	590
WPLY	Plymouth, Wis.	1420
WPME	Punxsutawney, Pa.	1540
WPMH	Portsmouth, Va.	1010
WPMP	Pascagoula, Miss.	1580
WPNC	Plymouth, N.C.	1470
WPNF	Brevard, N.C.	1240
WPNX	Phenix City, Ala.	1460
WPOM	Pompano Beach, Fla.	1470
WPON	Pontiac, Mich.	1460
WPOP	Hartford, Conn.	1410
WPOR	Portland, Maine	1490

C.L.	Location	Kc.
WPOW	New York, N.Y.	1330
WPPA	Pottsville, Pa.	1360
WPQR	McKeesport, Pa.	1360
WPRA	Mayaguez, P.R.	990
WPRC	Lincoln, Ill.	1370
WPRE	Prairie Du Chien, Wis.	980
WPRN	Butler, Ala.	1220
WPRO	Providence, R.I.	630
WPRP	Ponce, P.R.	910
WPRS	Paris, Ill.	1440
WPRT	Prestonsburg, Ky.	960
WPRW	Manassas, Va.	1460
WPRY	Perry, Fla.	1400
WPTF	Raleigh, N.C.	680
WPTR	Albany, N.Y.	1540
WPTS	Pittston, Pa.	1540
WPTW	Piqua, Ohio	1570
WPTX	Lexington Pk., Md.	920
WPUP	Gainesville, Fla.	1390
WPUV	Pulaski, Va.	1580
WPVA	Colonial Hghts., Va.	1290
WPVL	Painesville, Ohio	1460
WPYB	Benson, N.C.	1580
WQAM	Miami, Fla.	560
WQBC	Vicksburg, Miss.	1420
WQDY	Calais, Maine	1230
WQIC	Meridian, Miss.	1390
WQIK	Jacksonville, Fla.	1280
WQMN	Superior, Wis.	1320
WQMR	Silver Spring, Md.	1050
WQOK	Greenville, S.C.	1440
WQSN	Charleston, S.C.	1450
WQSR	Solvay, N.Y.	1320
WQTE	Monroe, Mich.	560
WQTY	Arlington, Fla.	1220
WQUA	Moline, Ill.	1230
WQVA	Quantico, Va.	1250
WQXI	Atlanta, Ga.	790
WQXL	Columbia, S.C.	1320
WQXQ	Ormond Bch., Fla.	1380
WQXR	New York, N.Y.	1560
WQXT	Palm Beach, Fla.	1340
WRAA	Luray, Va.	1330
WRAB	Arab, Ala.	1380
WRAC	Racine, Wis.	1460
WRAD	Radford, Va.	1460
WRAG	Carrollton, Ala.	590
WRAJ	Anna, Ill.	1440
WRAK	Williamsport, Pa.	1400
WRAL	Raleigh, N.C.	1240
WRAM	Monmouth, Ill.	1330
WRAN	Dover, N.J.	1510
WRAP	Norfolk, Va.	850
WRAW	Reading, Pa.	1340
WRAY	Princeton, Ind.	1250
WRBB	Tarpon Springs, Fla.	1470
WRBC	Jackson, Miss.	1300
WRBL	Columbus, Ga.	1420
WRC	Washington, D.C.	980
WRCD	Dalton, Ga.	1430
WRCK	Tuscumbia, Ala.	1410
WRCO	Richland, Wis.	1450
WRCS	Ahoskie, N.C.	970
WRCV	Philadelphia, Pa.	1060
WRDB	Reedsburg, Wis.	1400
WRDO	Augusta, Maine	1400
WRDW	Augusta, Ga.	1480
WREB	Holyoke, Mass.	930
WREC	Memphis, Tenn.	600
WREL	Lexington, Va.	1450
WREM	Remsen, N.Y.	1480
WREN	Topeka, Kans.	1250
WREO	Ashtabula, Ohio	970
WREV	Reidsville, N.C.	1220
WRFB	Tallahassee, Fla.	1410
WRFC	Athens, Ga.	960
WRFD	Worthington, Ohio	880
WRFS	Alexander City, Ala.	1050
WRGA	Rome, Ga.	1470
WRGM	Richmond, Va.	1590
WRGR	Starke, Fla.	1490
WRGS	Rogersville, Tenn.	1370
WRHC	Jacksonville, Fla.	1400
WRHI	Rock Hill, S.C.	1340
WRIB	Providence, R.I.	1220
WRIC	Richlands, Va.	540
WRIG	Wausau, Wis.	1400
WRIM	Pahokee, Fla.	1250
WRIP	Rossville, Ga.	980
WRIS	Roanoke, Va.	1410
WRIT	Milwaukee, Wis.	1340
WRIV	Riverhead, N.Y.	1390
WRIX	Griffin, Ga.	1410
WRIZ	Coral Gables, Fla.	1550
WRJC	Mauston, Wis.	1270
WRJN	Racine, Wis.	1400
WRJS	San German, P.R.	1090
WRJW	Picayune, Miss.	1320
WRKB	Kannapolis, N.C.	1460
WRKD	Rockland, Maine	1450
WRKH	Rockwood, Tenn.	580
WRKM	Carthage, Tenn.	1350
WRKT	Cocoa Beach, Fla.	1300
WRLA	Luray, Va.	1590
WRLD	Lanitt, Ala.	1490
WRMA	Montgomery, Ala.	950
WRMF	Titusville, Fla.	1050
WRMN	Elgin, Ill.	1410
WRMS	Beardstown, Ill.	790
WRMT	Rocky Mount, N.C.	1490
WRNB	New Bern, N.C.	1490
WRNE	Wis. Rapids, Wis.	1220
WRNL	Richmond, Va.	910
WRNY	Rome, N.Y.	1350
WROA	Gulfport, Miss.	1390
WROB	West Point, Miss.	1450
WROC	Rochester, N.Y.	1280
WROD	Daytona Beach, Fla.	1340
WROK	Rockford, Ill.	1440
WROL	Fountain City, Tenn.	1490
WROM	Rome, Ga.	710
WRON	Ronceverte, W.Va.	1400
WROS	Scottsboro, Ala.	1330
WROV	Roanoke, Va.	1240
WROW	Albany, N.Y.	590
WROX	Clarksdale, Miss.	1450
WROY	Carmi, Ill.	1460
WROZ	Evansville, Ind.	1400
WRPB	Warner Robbins, Ga.	1350
WRPM	Poplarville, Miss.	1530
WRR	Dallas, Tex.	1310
WRRR	Rockford, Ill.	1330
WRRZ	Clinton, N.C.	880
WRSA	Saratoga Sprgs., N.Y.	1280
WRSC	State College, Pa.	1390
WRSL	Stanford, Ky.	1520
WRST	Jackson, Mich.	1510
WRSW	Warsaw, Ind.	1480
WRTA	Altoona, Pa.	1240
WRTL	Rantoul, Ill.	250d
WRUF	Gainesville, Fla.	850
WRUM	Rumford, Maine	790
WRUN	Utica, N.Y.	1150
WRUS	Russellville, Ky.	610
WRVA	Richmond, Va.	1140
WRVK	Mt. Vernon, Ky.	1460
WRVM	Rochester, N.Y.	680
WRWD	Augusta, Ga.	1480
WRWH	Cleveland, Ga.	1380
WRWJ	Selma, Ala.	1570
WRXO	Roxboro, N.C.	1430
WRYM	New Britain, Conn.	840
WRYT	Pittsburgh, Pa.	1250
WSAC	Fort Knox, Ky.	1470
WSAF	Sarasota, Fla.	1220
WSAI	Cincinnati, Ohio	1360
WSAJ	Grove City, Pa.	1340
WSAL	Logansport, Ind.	1230
WSAM	Saginaw, Mich.	1400
WSAN	Allentown, Pa.	1470
WSAO	Sanitobia, Miss.	1550
WSAR	Fall River, Mass.	1480
WSAT	nr. Salisbury, N.C.	1280
WSAU	Wausau, Wis.	550
WSAV	Savannah, Ga.	630
WSAY	Rochester, N.Y.	1370
WSAZ	Huntington, W.Va.	930
WSB	Atlanta, Ga.	750
WSBA	York, Pa.	910
WSBB	New Smyrna Beach, Florida	1230
WSBC	Chicago, Ill.	1240
WSBS	Gt. Barrington, Mass.	860
WSBT	South Bend, Ind.	960
WSCM	Panama City Beach, Florida	1290
WSCR	Scranton, Pa.	1320
WSDB	Homestead, Fla.	1430
WSDC	Mocksville, N.C.	1560
WSDR	Sterling, Ill.	1240
WSEB	Sebring, Fla.	1340
WSEL	Pontotoc, Miss.	1440
WSEN	Baldwinsville, N.Y.	1050
WSER	Elkton, Md.	1550
WSET	Glen Falls, N.Y.	1410
WSEV	Sevierville, Tenn.	930
WSFB	Quitman, Ga.	1490
WSFC	Somerset, Ky.	1240
WSFR	Sanford, Fla.	1360
WSFT	Thomaston, Ga.	1220
WSGA	Savannah, Ga.	1400
WSGC	Elberton, Ga.	1400
WSGN	Birmingham, Ala.	610
WSGO	Oswego, N.Y.	1440
WSGW	Saginaw, Mich.	790
WSHF	Sheffield, Ala.	1290
WSHN	Fremont, Mich.	1550
WSHO	New Orleans, La.	1230
WSHP	Shippenburg, Pa.	1480
WSIB	Beaufort, S.C.	1490
WSIC	Statesville, N.C.	1400
WSID	Baltimore, Md.	1010
WSIG	Mount Jackson, Va.	790
WSIM	Prichard, Ala.	1270
WSIP	Paintsville, Ky.	1490
WSIR	Winter Haven, Fla.	1490
WSIV	Pekin, Ill.	1140
WSIX	Nashville, Tenn.	980
WSJC	Magee, Miss.	1280
WSJM	St. Joseph, Mich.	1400
WSJS	Winston-Salem, N.C.	600
WSKI	Montpelier-Barre, Vt.	1240
WSKP	Miami, Fla.	1450
WSKT	Colonial Village, Tennessee	1580
WSKY	Asheville, N.C.	1230
WSLB	Ogdensburg, N.Y.	1400
WSLG	Clermont, Fla.	1340
WSLI	Jackson, Miss.	930
WSLM	Salem, Ind.	1220
WSLS	Roanoke, Va.	610
WSM	Nashville, Tenn.	650
WSMA	Smyrna, Ga.	1550
WSMB	New Orleans, La.	1350
WSME	Sanford, Maine	1220
WSMG	Greenville, Tenn.	1450
WSMI	Litchfield, Ill.	1540
WSMN	Nashua, N.H.	1590
WSMT	Sparta, Tenn.	1050
WSNE	Cummings, Ga.	1410
WSNJ	nr. Bridgeton, N.J.	1240
WSNO	Barre, Vt.	1450
WSNT	Sandersville, Ga.	1490
WSNW	Seneca Twnshp., S.C.	1150
WSNY	Schenectady, N.Y.	1240
WSOC	Charlotte, N.C.	930
WSOK	Savannah, Ga.	1230
WSOL	Tampa, Fla.	1300
WSON	Henderson, Ky.	860
WSOO	Slt. Ste. Marie, Mich.	1230
WSOQ	No. Syracuse, N.Y.	1220
WSOR	Windsor, Conn.	1480
WSOY	Decatur, Ill.	1340
WSPA	Spartanburg, S.C.	950
WSPB	Sarasota, Fla.	1450
WSPD	Toledo, Ohio	1370
WSPN	Saratoga Sprgs., N.Y.	900
WSPR	Springfield, Mass.	1270
WSPT	Stevens Pt., Wis.	1010
WSPZ	Spencer, W.Va.	1400
WSRA	Milton, Fla.	1490
WSRC	Durham, N.C.	1410
WSRO	Marlborough, Mass.	1470
WSRW	Hillsboro, Ohio	1590
WSSB	Durham, N.C.	1490
WSSC	Sumter, S.C.	1340
WSSO	Starkville, Miss.	1230
WSSV	Petersburg, Va.	1240
WSTC	Stamford, Conn.	1400
WSTK	Woodstock, Va.	1230
WSTL	Eminence, Ky.	1600
WSTP	Salisbury, N.C.	1490
WSTR	Sturgis, Mich.	1230
WSTS	Massena, N.Y.	1050
WSTU	Suart, Fla.	1450
WSTV	Steubenville, Ohio	1340
WSUB	Groton, Conn.	980
WSUH	Oxford, Miss.	1420
WSUI	Iowa City, Iowa	910
WSUN	St. Petersburg, Fla.	620
WSUX	Seaford, Del.	1280
WSUZ	Palatka, Fla.	800
WSVA	Harrisonburg, Va.	550
WSVL	Shelbyville, Ind.	1520
WSVN	Valdese, N.C.	1490
WSVS	Crewe, Va.	800
WSWN	Belle Glade, Fla.	900
WSWV	Pennington Gap, Va.	1570
WSWW	Platteville, Wis.	1590
WSYB	Rutland, Vt.	1380
WSYD	Mt. Airy, N.C.	1300
WSYL	Sylvania, Ga.	1490
WSYR	Syracuse, N.Y.	570
WTAB	Tabor City, N.C.	1370
WTAC	Flint, Mich.	600
WTAD	Quincy, Ill.	930
WTAG	Worcester, Mass.	580
WTAL	Tallahassee, Fla.	1270
WTAN	Clearwater, Fla.	1340
WTAO	Cambridge, Mass.	740
WTAP	Parkersburg, W.Va.	1230
WTAQ	LaGrange, Ill.	1300
WTAR	Norfolk, Va.	790
WTAW	Bryan, Tex.	1150
WTAX	Springfield, Ill.	1240
WTAY	Robinson, Ill.	1570
WTBC	Tuscaloosa, Ala.	1230
WTBF	Troy, Ala.	970
WTBO	Cumberland, Md.	1450
WTCB	Flomaton, Ala.	990
WTCH	Shawano, Wis.	960
WTCJ	Tell City, Ind.	1230
WTCM	Traverse City, Mich.	1400
WTCN	Minneapolis, Minn.	1280
WTCO	Campbellsville, Ky.	1450
WTCR	Ashland, Ky.	1420
WTCS	Fairmont, W.Va.	1490
WTCW	Whitesburg, Ky.	920
WTGA	Thomaston, Ga.	1590
WTEL	Philadelphia, Pa.	860
WTGR	Charleston, W.Va.	1490
WTHG	Jackson, Ala.	1290
WTHI	Terre Haute, Ind.	1480
WTHM	Lapeer, Mich.	1530
WTHR	Panama City, Fla.	1480
WTHT	Hazleton, Pa.	1300
WTIC	Hartford, Conn.	1080
WTID	Newport News, Va.	1270
WTIF	Tifton, Ga.	1340
WTIG	Massillon, Ohio	900
WTIK	Durham, N.C.	1310
WTIL	Mayaguez, P.R.	1300
WTIM	Taylorville, Ill.	1410
WTIP	Charleston, W.Va.	1240
WTIX	New Orleans, La.	690
WTJH	East Point, Ga.	1260
WTJS	Jackson, Tenn.	1390
WTKM	Hartford, Wis.	1540
WTKO	Ithaca, N.Y.	1470
WTKY	Tompkinsville, Ky.	1370
WTLB	Utica, N.Y.	1310
WTLK	Taylorsville, N.C.	1570
WTLO	Somerset, Ky.	1480
WTLS	Tallasee, Ala.	1300
WTMA	Charleston, S.C.	1250
WTMB	Tomah, Wis.	1390
WTMC	Ocala, Fla.	1290
WTMJ	Milwaukee, Wis.	620
WTMP	Tampa, Fla.	1150
WTMT	Louisville, Ky.	620
WTNC	Thomasville, N.C.	790
WTND	Orangeburg, S.C.	920
WTNS	Coshocton, Ohio	1560
WTNT	Tallahassee, Fla.	1450
WTOB	Winston-Salem, N.C.	1380
WTOC	Savannah, Ga.	1290
WTOD	Toledo, Ohio	1560
WTOE	Spruce Pine, N.C.	1470
WTOJ	Tomah, Wis.	1460
WTOL	Toledo, Ohio	1230
WTON	Staunton, Va.	1240
WTOP	Washington, D.C.	1500
WTOR	Torrington, Conn.	1490
WTOT	Marianna, Fla.	980
WTPI	Cookville, Tenn.	1550
WTPR	Paris, Tenn.	710
WTRA	Latrobe, Pa.	1480
WTRB	Ripley, Tenn.	1570
WTRC	Elkhart, Ind.	1340
WTRL	Bradenton, Fla.	1490
WTRN	Tyrone, Pa.	1340
WTRO	Dyersburg, Tenn.	1330
WTRP	LaGrange, Ga.	620
WTRR	Sanford, Fla.	1400
WTRU	Muskegon, Mich.	1600
WTRW	Two Rivers, Wis.	1590
WTRX	Flint, Mich.	1330
WTRY	Troy, N.Y.	980
WTSA	Brattleboro, Vt.	1450
WTSB	Lumberton, N.C.	1340
WTSL	Hanover-Lebanon, New Hampshire	1400
WTSN	Dover, N.H.	1270
WTSV	Claremont, N.H.	1230
WTTB	Vero Beach, Fla.	1490
WTTC	Towanda, Pa.	1550
WTTF	Tiffin, Ohio	1600
WTTH	Port Huron, Mich.	1380
WTTL	Madisonville, Ky.	1310
WTTM	Trenton, N.J.	920
WTTN	Watertown, Wis.	1580
WTTR	Westminster, Md.	1470
WTTS	Bloomington, Ind.	1370
WTUF	Mobile, Ala.	840
WTUG	Tuscaloosa, Ala.	790
WTUP	Tupelo, Miss.	1490
WTUX	Wilmington, Del.	1290
WTVB	Coldwater, Mich.	1590
WTVL	Waterville, Maine	1490
WTVN	Columbus, Ohio	610
WTWA	Thomson, Ga.	1240
WTWB	Auburndale, Fla.	1570
WTWN	St. Johnsbury, Vt.	1340
WTXL	W. Spgfd., Mass.	1490
WTYC	Rock Hill, S.C.	1150
WTYM	East Longmeadow, Mass.	1600
WTYN	Tryon, N.C.	1550
WTYS	Marianna, Fla.	1340
WUFD	Amherst, N.Y.	1080
WULA	Eufaula, Ala.	1240
WUNE	Baton Rouge, La.	1550
WUNO	Rio Piedras, P.R.	1320
WUNS	Lewisburg, Pa.	1010
WUSJ	Lockport, N.Y.	1340
WUSM	Havelock, N.C.	1330
WUST	Bethesda, Md.	1120
WVAM	Altoona, Pa.	1430
WVAR	Richwood, W.Va.	1280
WVCG	Coral Gables, Fla.	1070
WVCH	Chester, Pa.	740
WVEC	Hampton, Va.	1490
WVGT	Mt. Dora, Fla.	1580
WVIM	Vicksburg, Miss.	1490
WVIP	Mt. Kisco, N.Y.	1310
WVJP	Caguas, P.R.	1110
WVJS	Owensboro, Ky.	1420
WVKO	Columbus, Ohio	1580
WVLD	Valdosta, Ga.	1450
WVLK	Lexington, Ky.	590
WVLN	Olney, Ill.	740
WVMC	Mt. Carmel, Ill.	1360
WVMI	Biloxi, Miss.	570
WVNA	Tuscumbia, Ala.	1590
WVNJ	Newark, N.J.	620
WVOE	Chadburn, N.C.	1590
WVOH	Hazelhurst, Ga.	920
WVOK	Birmingham, Ala.	690
WVOL	Berry Hill, Tenn.	1470
WVOM	Iuka, Miss.	1270
WVOP	Vidalia, Ga.	970
WVOS	Liberty, N.Y.	1240
WVOT	Wilson, N.C.	1420
WVOX	New Rochelle, N.Y.	1460
WVPO	Stroudsburg, Pa.	840
WVSC	Somerset, Pa.	990
WVVW	Grafton, W.Va.	1260
WWBC	Bay City, Mich.	1250
WWBD	Bamberg, S.C.	790
WWBZ	Vineland, N.J.	1360
WWCA	Gary, Ind.	1270
WWCC	Bremen, Ga.	1440
WWCH	Clarion, Pa.	1300
WWCO	Waterbury, Conn.	1240
WWDC	Washington, D.C.	1260
WWGP	Sanford, N.C.	1050
WWGS	Tifton, Ga.	1430
WWHG	Hornell, N.Y.	1320
WWHY	Huntington, W.Va.	1470
WWIL	Ft. Lauderdale, Fla.	1580
WWIN	Baltimore, Md.	1400
WWIS	Black River Falls, Wis.	1260
WWIT	Canton, N.C.	970
WWIZ	Lorain, Ohio	1380
WWJ	Detroit, Mich.	950
WWJB	Brooksville, Fla.	1450
WWKY	Winchester, Ky.	1380
WWL	New Orleans, La.	870
WWML	Portage, Wis.	1470
WWNC	Asheville, N.C.	570
WWNH	Rochester, N.H.	930
WWNR	Beckley, W.Va.	620
WWNS	Statesboro, Ga.	1240
WWNY	Watertown, N.Y.	790
WWOD	Lynchburg, Va.	1390
WWOK	Charlotte, N.C.	1480
WWOL	Buffalo, N.Y.	1120
WWOM	New Orleans, La.	600
WWON	Woonsocket, R.I.	1240

C.L.	Location	Kc.
WWOW	Conneaut, Ohio	1360
WWPA	Williamsport, Pa.	1340
WWPF	Palatka, Fla.	1260
WWRI	W. Warwick, R.I.	1450
WWRJ	White River Junc., Vt.	910
WWRL	Woodside, N.Y.	1600
WWRO	Caro, Mich.	1360
WWSC	Glens Falls, N.Y.	1450
WWSR	St. Albans, Vt.	1420
WWST	Wooster, Ohio	960
WWSW	Pittsburgh, Pa.	970
WWVA	Wheeling, W.Va.	1170
WWWB	Jasper, Ala.	1360
WWWF	Fayette, Ala.	990
WWWR	Russellville, Ala.	920
WWWW	Rio Piedras, P.R.	1520
WWXL	Manchester, Ky.	1450
WWYN	Erie, Pa.	1260
WWYO	Pineville, W.Va.	970
WXAL	Demopolis, Ala.	1400
WXGI	Richmond, Va.	950
WXIG	Windemere, Fla.	1480
WXLI	Dublin, Ga.	1230
WXLL	Big Delta, Alaska	980
WXLW	Indianapolis, Ind.	950
WXMT	Merrill, Wis.	730
WXOK	Baton Rouge, La.	1260
WXRF	Guayama, P.R.	1590
WXTN	Lexington, Miss.	1150
WXTR	Pawtucket, R.I.	550
WXVA	Charleston, W.Va.	1550
WXVW	Jeffersonville, Ind.	1450
WXXX	Hattiesburg, Miss.	1310
WXYJ	Jamestown, N.Y.	1340
WXYZ	Detroit, Mich.	1270
WYAL	Scotland Neck, N.C.	1280
WYAM	Bessemer, Ala.	1450
WYCL	York, S.C.	1580
WYDE	Birmingham, Ala.	850
WYGO	Corbin, Ky.	1330
WYHE	Bristol, Tenn.	1550
WYLD	New Orleans, La.	940
WYMB	Manning, S.C.	1410
WYND	Sarasota, Fla.	1280
WYNG	Warwick-East Greenwich, R.I.	1590
WYNK	Baton Rouge, La.	1380
WYNN	Florence, S.C.	540
WYNR	Chicago, Ill.	1390
WYOU	Tampa, Fla.	1550
WYPR	Danville, Va.	970
WYRE	Pittsburgh, Pa.	1080
WYRN	Louisburg, N.C.	1480
WYSE	Lakeland, Fla.	1330
WYSH	Clinton, Tenn.	1380
WYSI	Ypsilanti, Mich.	1480
WYSL	Buffalo, N.Y.	1400
WYSR	Franklin, Va.	1250
WYTH	Madison, Ga.	1250
WYTI	Rocky Mount, Va.	1570
WYVE	Wytheville, Va.	1280
WYZE	Atlanta, Ga.	1480
WZEP	DeFuniak Sprgs., Fla.	1460
WZKY	Albemarle, N.C.	1580
WZOB	Ft. Payne, Ala.	1250
WZOE	Princeton, Ill.	1490
WZOK	Jacksonville, Fla.	1320
WZOO	Spartanburg, S.C.	1400
WZRH	Zephyr Hills, Fla.	1400
WZRO	Jacksonville Beach, Florida	1010
WZYX	Cowan, Tenn.	1440

Canadian AM Stations By Call Letters

C.L.	Location	Kc.
CBA	Sackville, N.B.	1070
CBAF	Moncton, N.B.	1300
CBE	Windsor, Ont.	1550
CBF	Montreal, Que.	690
CBG	Gander, Nfld.	1450
CBH	Halifax, N.S.	790
CBI	Sydney, N.S.	1140
CBJ	Chicoutimi, Que.	1580
CBK	Regina, Sask.	540
CBL	Toronto, Ont.	740
CBM	Montreal, Que.	940
CBN	St. John's, Nfld.	640
CBO	Ottawa, Ont.	910
CBT	Grand Falls, Nfld.	990
CBU	Vancouver, B.C.	690
CBV	Quebec, Que.	980
CBW	Winnipeg, Man.	990
CBX	Edmonton, Alta.	1010
CBXA	Edmonton, Alta.	740
CBY	Corner Brook, Nfld.	990
CFAB	Windsor, N.S.	1450
CFAC	Calgary, Alta.	960
CFAM	Altona, Man.	1290
CFAR	Flin Flon, Man.	590
CFAX	Victoria, B.C.	870
CFBC	Saint John, N.B.	930
CFBM	Brochet, Man.	1450
CFBR	Sudbury, Ont.	550
CFCB	Corner Book, Nfld.	570
CFCF	Montreal, Que.	600
CFCH	North Bay, Ont.	600
CFCL	Timmins, Ont.	620
CFCN	Calgary, Alta.	1060
CFCO	Chatham, Ont.	630
CFCP	Courtenay, B.C.	1440
CFCW	Camrose, Alta.	1230
CFCY	Charlottetown, P.E.I.	630
CFDA	Victoriaville, Que.	1380
CFGB	Goose Bay, Nfld.	1340
CFGM	Richmond Hill, Ont.	1310
CFGP	Grande Prairie, Alta.	1050
CFGR	Gravelbourg, Sask.	1230
CFGT	St. Joseph d'Alma, Que.	1270
CFJC	Kamloops, B.C.	910
CFJR	Brockville, Ont.	1450
CFKL	Schefferville, Que.	1230
CFLM	LaTuque, Que.	1240
CFML	Cornwall, Ont.	1110
CFNB	Fredericton, N.B.	550
CFNS	Saskatoon, Sask.	1170
CFNW	Norman Wells, Northwest Territory	1240
CFOB	Fort Frances, Ont.	800
CFOR	Orillia, Ont.	1570
CFOS	Owen Sound, Ont.	560
CFOX	Pointe Claire, Que.	1470
CFPA	Port Arthur, Ont.	1230
CFPL	London, Ont.	980
CFPR	Prince Rupert, B.C.	1240
CFQC	Saskatoon, Sask.	600
CFRA	Ottawa, Ont.	560
CFRB	Toronto, Ont.	1010
CFRC	Kingston, Ont.	1490
CFRG	Gravelbourg, Sask.	710
CFRN	Edmonton, Alta.	1260
CFRS	Simcoe, Ont.	1560
CFRY	Portage la Prairie, Man.	920
CFSL	Weyburn, Sask.	1340
CFTK	Terrace, B.C.	1140
CFUN	Vancouver, B.C.	1410
CFWH	Whitehorse, Yukon T.	570
CFYK	Yellowknife, N.W.T.	1340
CFYT	Dawson, Yukon T.	1230
CHAB	Moose Jaw, Sask.	800
CHAD	Amos, Que.	1340
CHAT	Medicine Hat, Alta.	1270
CHCM	Marystown Nfld.	560
CHEC	Lethbridge, Alta.	1090
CHED	Edmonton, Alta.	630
CHEF	Granby, Que.	1450
CHEX	Peterborough, Ont.	980
CHFA	Edmonton, Alta.	680
CHFC	Churchill, Man.	1230
CHFI	Toronto, Ont.	1540
CHGB	St. Anne de la Pocatiere, Que.	1350
CHIC	Brampton, Ont.	1090
CHIQ	Hamilton, Ont.	1280
CHLN	Three Rivers, Que.	550
CHLO	St. Thomas, Ont.	680
CHLP	Montreal, Que.	1410
CHLT	Sherbrooke, Que.	630
CHML	Hamilton, Ont.	900
CHNC	New Carlisle, Que.	610
CHNO	Sudbury, Ont.	900
CHNS	Halifax, N.S.	960
CHOK	Sarnia, Ont.	1070
CHOV	Pembroke, Ont.	1350
CHOW	Welland, Ontario	1470
CHQM	Vancouver, BC.	1320
CHRC	Quebec, Que.	800
CHRD	Drummondville, Que.	1340
CHRL	Roberval, Que.	910
CHRS	St. Jean, Que.	1090
CHSJ	Saint John, N.B.	1150
CHUB	Nanaimo, B.C.	1570
CHUC	Port Hope, Ont.	1500
CHUM	Toronto, Ont.	1050
CHVC	Niagara Falls, Ont.	1600
CHWK	Chilliwack, B.C.	1270
CHWO	Oakville, Ont.	1250
CJAD	Montreal, Que.	800
CJAF	Cabano, Que.	1340
CJAT	Trail, B.C.	610
CJAV	Port Alberni, B.C.	1240
CJBC	Toronto, Ont.	860
CJBQ	Belleville, Ont.	800
CJBR	Rimouski, Que.	900
CJCA	Edmonton, Alta.	930
CJCB	Sydney, N.S.	1270
CJCH	Halifax, N.S.	920
CJCJ	Woodstock, N.B.	920
CJCS	Stratford, Ont.	1240
CJDC	Dawson Creek, B.C.	560
CJEM	Edmundston, N.B.	570
CJET	Smiths Falls, Ont.	630
CJFP	Riviere du Loup, Que.	1400
CJFX	Antigonish, N.S.	580
CJGX	Yorkton, Sask.	940
CJIB	Vernon, B.C.	940
CJIC	Sault Ste. Marie, Ont.	1050
CJJC	Langley Prairie, B.C.	850
CJKL	Kirkland Lake, Ont.	560
CJLM	Joliette, Que.	1350
CJLR	Quebec, Que.	1060
CJLS	Yarmouth, N. S.	1340
CJLX	Ft. Williams, Ont.	800
CJME	Regina, Sask.	1300
CJMS	Montreal, Que.	1280
CJMT	Chicoutimi, Que.	1420
CJNB	N. Battleford, Sask.	1460
CJNR	Blind River, Ont.	730
CJOB	Winnipeg, Man.	680
CJOC	Lethbridge, Alta.	1220
CJON	St. John's, Nfld.	930
CJOR	Vancouver, B.C.	600
CJOY	Guelph, Ont.	1460
CJQC	Quebec, Que.	1340
CJRH	Richmond Hill, Ont.	1310
CJRL	Kenora, Ont.	1220
CJRW	Summerside, P.E.I.	1240
CJSO	Sorel, Que.	1320
CJSP	Leamington, Ont.	710
CJSS	Cornwall, Ont.	1220
CJVI	Victoria, B.C.	900
CKAC	Montreal, Que.	730
CKAR	Huntsville, Ont.	590
CKAR-1	Parry Sound, Ont.	1340
CKBB	Barrie, Ont.	950
CKBI	Prince Albert, Sask.	900
CKBL	Matane, Que.	1250
CKBM	Montmagny, Que.	1490
CKBS	St. Hyacinthe, Que.	1240
CKBW	Bridgewater, N.S.	1000
CKCH	Hull, Que.	970
CKCK	Regina, Sask.	620
CKCL	Truro, N.S.	600
CKCN	Seven Iles, Que.	560
CKCQ	Quesnel, B.C.	570
CKCQ-1	Williams Lake, B.C.	1240
CKCR	Kitchener, Ont.	1490
CKCV	Quebec, Que.	1280
CKCW	Moncton, N.B.	1220
CKCY	Sault Ste. Marie, Ont.	920
CKDA	Victoria, B.C.	1220
CKDH	Amherst, N.S.	1400
CKDM	Dauphin, Man.	730
CKEC	New Glasgow, N.S.	1320
CKEK	Cranbrook, B.C.	570
CKEN	Kentville, N.S.	1350
CKEY	Toronto, Ont.	580
CKFH	Toronto, Ont.	1430
CKGB	Timmins, Ont.	680
CKGM	Montreal, Que.	980
CKGR	Galt, Ont.	1110
CKJL	St. Jerome, Que.	900
CKKW	Kitchener, Ont.	1320
CKLB	Oshawa, Ont.	1350
CKLC	Kingston, Ont.	1380
CKLD	Thetford Mines, Que.	1230
CKLG	N. Vancouver, B.C.	730
CKLM	Montreal, Que.	1570
CKLN	Nelson, B.C.	1390
CKLS	LaSarre, Que.	1240
CKLW	Windsor, Ont.	800
CKLY	Lindsay, Ont.	910
CKML	Mont Laurier, Que.	610
CKMP	Midland, Ont.	1230
CKMR	Newcastle, N.B.	790
CKNB	Campbellton, N.B.	950
CKNL	Ft. St. John, B.C.	970
CKNW	New Westminster, British Columbia	980
CKNX	Wingham, Ont.	920
CKOC	Hamilton, Ont.	1150
CKOK	Penticton, B.C.	800
CKOM	Saskatoon, Sask.	1250
CKOT	Tillsonburg, Ont.	1510
CKOV	Kelowna, B.C.	630
CKOX	Woodstock, Ont.	1340
CKOY	Ottawa, Ont.	1310
CKPC	Brantford, Ont.	1380
CKPG	Prince George, B.C.	550
CKPR	Fort William, Ont.	580
CKPT	Peterborough, Ont.	1420
CKRB	Ville St. Georges, Que.	1460
CKRC	Winnipeg, Man.	630
CKRD	Red Deer, Alta.	850
CKRM	Regina, Sask.	980
CKRN	Rouyn, Que.	1400
CKRS	Jonquiere, Que.	590
CKSA	Lloydminster, Alta.	1150
CKSB	St. Boniface, Man.	1050
CKSL	London, Ont.	1290
CKSM	Shawinigan, Quebec	1220
CKSO	Sudbury, Ont.	790
CKSW	Swift Current, Sask.	1400
CKTB	St. Catharines, Ont.	610
CKTR	Three Rivers, Que.	1150
CKTS	Sherbrooke, Que.	900
CKUA	Edmonton, Alta.	580
CKVD	Val d'Or, Que.	1230
CKVL	Verdun, Que.	850
CKVM	Ville Marie, Que.	710
CKWS	Kingston, Ont.	960
CKWX	Vancouver, B.C.	1130
CKX	Brandon, Man.	1150
CKXL	Calgary, Alta.	1140
CKY	Winnipeg, Man.	580
CKYL	Peace River, Alta.	630
VOAR	St. John's, Nfld.	1230
VOCM	St. John's, Nfld.	590
VOWR	St. John's, Nfld.	800

Mexican and Cuban AM Stations

Mexican stations audible in the Southwest; the more powerful Cuban stations

Mexico

BAJA CALIFORNIA

Location	C.L.	Kc.	W.P.
Cuervos	XEDY	1460	1000
El Saugal	XEDX	1010	500
Ensenada	XEPF	1400	250
	XEXK	920	250
Mexicali	XED	1050	5000
	XEAA	1340	250
	XEAO	910	250
	XECL	990	5000
	XEGE	1150	1000
Tijuana	XEC	1310	250
	XETRA	690	50000
	XEAU	1470	5000
	XEAZ	1270	500
	XEBG	1550	1000
	XEGM	950	2500
	XEMO	860	5000
	XEXX	1420	2000

CHIHUAHUA

Location	C.L.	Kc.	W.P.
Chihuahua	XEM	1390	500
	XEBU	620	1000
	XEBW	1280	1000
	XEFI	580	1000
	XERA	1490	250
Ciudad Camargo	XEHA	580	1000
Ciudad Delicias	XEBN	1240	250
	XEJK	1340	250
Ciudad Juarez	XEF	1420	250
	XEJ	970	5000
	XEP	1300	500
	XEFV	1240	250
	XELO	800	150000
	XEWG	1490	250
	XEYC	1460	1000
Hidalgo	XEJS	1150	500
N. Casas Grandes	XETX	1010	250

COAHUILA

Location	C.L.	Kc.	W.P.
Ciudad Acuna	XEKD	1010	1000
Monclova	XEMF	1260	250
Piedras Negras	XEMJ	920	1000
	XEMU	580	5000
Sabinas	XEBX	610	5000
Saltillo	XESJ	1250	500
	XESG	1510	1000
Torreon	XEBP	1310	5000
Villa Acuna	XEDH	1340	250
	XERF	1570	250000

DISTRITO FEDERAL

Location	C.L.	Kc.	W.P.
Mexico City	XEB	1220	100000
	XEDF	970	10000
	XEL	1260	5000
	XEN	690	20000
	XEQ	940	150000
	XEW	900	250000
	XEX	730	500000
	XEFR	1530	5000
	XEJP	1150	10000
	XELA	830	10000
	XELZ	1440	5000
	XEMX	1380	5000
	XENK	620	5000
	XEOY	1000	50000
	XEPH	590	5000
	XEQK	1350	1000
	XEQR	1030	10000
	XERC	790	1000
	XERG	690	250
	XERCN	1110	50000
	XERH	1500	50000
	XERPM	660	10000
	XESM	1470	10000
	XEUN	860	5000

DURANGO

Location	C.L.	Kc.	W.P.
Durango	XEDU	860	1000

NUEVO LEON

Location	C.L.	Kc.	W.P.
Linares	XER	1260	250
Monterrey	XEG	1050	150000
	XENL	860	5000
	XEH	1420	1000
	XET	990	5000
	XEAR	570	1000
	XEAW	1280	1000
	XEFB	630	5000
	XEMR	1370	500
	XEOK	920	500

SAN LUIS POTOSI

Location	C.L.	Kc.	W.P.
San Luis Potosi	XEWA	540	150000

SONORA

Location	C.L.	Kc.	W.P.
Agua Prieta	XEAQ	1490	250
	XEFH	1310	1000
Cananea	XEFQ	980	500
Ciudad Obregon	XEOX	1430	1000
Hermosillo	XEBH	920	5000
	XEDL	1250	500
	XEDM	1580	50000
	XEHQ	590	500
Magdalena	XEDJ	1450	100
Naco	XETM	1350	1000
Nogales	XEHF	1370	5000
San Luis	XECB	1450	250
Santa Ana	XEAB	1400	250

TAMAULIPAS

Location	C.L.	Kc.	W.P.
Cuidad Miquel	XEHI	1470	500
Aleman	XEWD	1430	2000
Cuidad Camargo	XEZD	1400	250
Matamoros	XEO	970	1000
	XEAM	1310	250
	XEMS	1490	250
	XEMT	1340	250
Nuevo Laredo	XEAS	1410	250
	XEBK	1340	100
	XEDF	790	1000
	XEFE	790	1000
	XEK	960	5000
	XEWL	1090	2500
	XEXO	1370	50000
Reynosa	XEOR	1390	1000
	XERI	810	500
	XERT	590	5000
Rio Bravo	XEFD	1170	1000
Rio Brava	XEOQ	1110	1000
Tampico	XEFW	810	50000
Valle Hermosa	XEVI	1450	1000

Cuba

Location	C.L.	Kc.	W.P.
Camaguey	CMJB	880	1000
	CMJL	920	5000
	CMJN	960	1000
	CMJE	680	1000
	CMFA	1110	1000
	CMJR	1030	1000
	CMJC	1000	1000
	CMJF	1340	1000
Camajuani	CMHD	890	1000
Ciego de Avila	CMJY	760	1000
	CMJT	700	1000
	CMSS	800	1000
	CMJV	900	1000
Cienfuegos	CMHN	680	1000
Consulacion Del Sur		880	1000
Cruces	CMAK	1210	1000
Guantanamo	CMKS	1070	1000
Habana	CMW	590	2500
	CMCY	550	15000
	CMQ	630	25000
	CMCU	660	1000
	CMBC	690	50000
	CMCD	760	10000
	CMCH	790	10000
	CMBZ	830	5000
	CMBL	860	15000
	CMCF	910	10000
	CMBF	950	5000
	CMCK	980	5000
	CMBQ	1010	5000
	CMCX	1060	10000
	CMCA	730	10000
	CMCB	1330	1000
Holguin	CMKJ	730	5000
	CMKP	670	1000
Holguin Orte	CMKM	560	5000
	CMKV	600	1000
	CMKD	970	1000
	CMDC	770	1000
Marianao	CMZ	1560	5000
Neuvitas	CMJO	1300	1000
Pinar del Rio	CMAB	740	5000
	CMAF	680	1000
	CMAN	840	1000
	CMAQ	920	1000
Sagua La Grande	CMHA	1280	1000
Santa Clara	CMHI	570	10000
	CMHG	670	1000
	CMHC	1410	1000
	CMHQ	640	15000
	CMHW	810	1000
	CMHO	1310	1000
	CMHM	1130	1000
Sancti Spiritus	CMHT	990	1000
Santiago	CMDA	1320	1000
	CMKC	770	1000
	CMDB	680	1000
	CMKL	800	2000
	CMKW	1000	2000
	CMKR	1090	1000
	CMKU	630	2000
	CMDL	1150	1000
	CMKN	930	1000
	CMKB	1170	1000
Victoria de las Tunas	CMDQ	840	1000
	CMKT	1520	1000

U. S. FM Stations by States

Abbreviations: Mc., megacycles; asterisk (*) indicates educational station

ALABAMA

Location	C.L.	Mc.
Albertville	WAVU-FM	105.1
Alexander City	WRFS-FM	106.1
Andalusia	WCTA-FM	98.1
Anniston	WHMA-FM	100.5
Athens	WJOF	104.3
Birmingham	WAPI-FM	99.5
	WBRC-FM	106.9
	WSFM	93.7
Clanton	WKLF-FM	100.9
Cullman	WFMH-FM	101.1
Decatur	WHOS-FM	102.1
Homewood	WJLN	104.7
Huntsville	WAHR	99.1
	WNDA	92.9
Mobile	WKRG-FM	99.9
Montgomery	WAJM	103.3
	WFMI	98.9
Sylacauga	WMLS-FM	98.3
Tuscumbia	WVNA	100.3
Tuscaloosa	WTBO-FM	95.7
	WUOA	*91.7

ALASKA

Location	C.L.	Mc.
Anchorage	KNIK	105.5
	KBYR-FM	102.1

ARIZONA

Location	C.L.	Mc.
Globe	KWJB-FM	100.3
Mesa	KBUZ-FM	104.7
Phoenix	KELE	95.5
	KFCA	*88.5
	KOOL-FM	94.5
	KITH	101.3
	KOY-FM	92.5
	KPHO-FM	96.9
	KTAR-FM	98.7
	KYEW	93.3
Tempe	KUPD-FM	97.9
Tucson	KFMM	99.5

ARKANSAS

Location	C.L.	Mc.
Blytheville	KLCN-FM	96.1
Ft. Smith	KFPW-FM	94.9
Jonesboro	KBTM-FM	101.9
	KASU	91.9
Little Rock	KARK	103.7
Mammoth Springs	KAMS	103.9
Osceola	KOSE-FM	98.1
Pine Bluff	KOTN-FM	92.3
Siloam Springs	KUOA-FM	105.7

CALIFORNIA

Location	C.L.	Mc.
Alameda	KJAZ	92.7
Anaheim	KEZR-FM	95.9
Arcata	KTOO	*90.5
Atherton	KPEN	101.3
Auburn	KAFI	101.1
Avalon	KBIQ	104.3
Bakersfield	KERN-FM	94.1
	KQXR	101.5
Berkeley	KPFA	94.1
	KPFB	*89.3
	KRE-FM	102.9
Bijou	KHUR	99.9
Claremont	KSPC	*88.9
Coachella	KCHQ-FM	93.7
El Cajon	KUFM	93.3
Eureka	KIEM	96.3
Fresno	KARM-FM	101.9
	KCIB-FM	94.5
	KMJ-FM	97.9
	KRFM	93.7
	KXQR	102.7
Garden Grove	KGGK	94.3
Glendale	KFMU	97.1
	KUTE	101.9
Hayward	KBBM	101.7
Inglewood	KTYM-FM	103.9
LaSierra	KSDA	*89.7
Lodi	KCVR-FM	97.7
Long Beach	KFOX-FM	102.3
	KLON	*88.1
	KNOB	97.9
Los Altos	KPGM	97.7
Los Angeles	KABC-FM	95.5
	KBBI	107.5
	KBCA	105.1
	KBMS	105.9
	KCBH	98.7
	KFAC-FM	92.3
	KFMU	
	KGLA	*103.5
	KHJ	101.1
	KMLA	100.3
	KNX-FM	93.1
	KPFK	*90.7
	KPOL-FM	93.9
	KRHM	94.7
	KRKD-FM	96.3
	KLAC-FM	102.7
	KUSC	*91.5
	KXLU	*88.7
	KHOF	99.5
Marysville	KMYC-FM	99.9
Modesto	KBEE-FM	103.3
	KTRB-FM	104.1
Monterey	KHFR	96.9
Mountain View	KFJC	*88.5
Newport Beach	KNBB	103.1
Oakland	KAFE	98.1
Oceanside	KUDE	102.1
Ontario	KASK-FM	93.5
Oxnard	KAAR	104.7
Pasadena	KPCS	89.3
Redondo Beach	KAPP	93.5
Redlands	KCHL FM	96.7
Ridgecrest	KLOA-FM	105.5
Riverside	KPLI	99.1
	KACE-FM	92.7
	KDUO	97.5
Sacramento	KCRA-FM	96.1
	KFBK-FM	96.9
	KEBR	100.5
	KHIQ	105.1
	KJML	95.3
	KRAK-FM	92.9
	KSFM	96.9
	KXRQ	98.5
	KXOA-FM	107.9
Salinas	KSBW-FM	102.5
San Bernardino	KVCR	*91.9
	KFMW	99.9
	KEBS	*89.5
San Diego	KOGO-FM	94.1
	KFMB-FM	100.7
	KFMX-FM	96.5
	KGB-FM	101.5
	KITT	105.3
	KJLM	98.1
	KLRO	94.9
	KPRI	106.5
	KSDS	*88.3
San Fernando	KVFM	94.3
San Francisco	KALW	*91.7
	KBAY-FM	104.5
	KBCO	105.3
	KCBS-FM	98.9
	KDFC	102.1
	KEAR	97.3
	KFRC-FM	106.1
	KGO-FM	103.7
	KNBC-FM	99.7
	KHIP	106.9
	KRON-FM	96.5
	KSFR	94.9
	KQBY-FM	95.7
	KYA-FM	93.3
San Jose	KSJO-FM	92.3
	KRPM	98.5
San Luis Obispo	KATY-FM	96.1
San Rafael	KTIM	100.9
San Mateo	KCSM	*90.9
Santa Ana	KWIZ-FM	96.7
	KFIL	106.3
Santa Barbara	KRCW	97.5
	KDB-FM	93.7
	KMUZ	103.3
Santa Clara	KSCU	*90.1
Santa Cruz	KSCO-FM	99.1
Santa Maria	KEYM	99.1
	KSMA-FM	102.5
Santa Monica	KCRW	*89.9
	KSRF	103.1
Sierra Madre	KMAX	107.1
Stockton	KCVN	*91.3
	KSTN-FM	107.3
	KWG-FM	105.7
Turlock	KHOM	92.9
Ventura-Oxnard	KVEN-FM	100.7
Visalia	KONG-FM	92.9
Walnut Creek	KWME-FM	92.1
West Covina	KDWC	98.3
Woodland	KATT	95.3

COLORADO

Location	C.L.	Mc.
Boulder	KRNW	97.3
Colorado Springs	KRCC	*91.3
	KFMH	96.5
	KSHS	*90.5
	KVOR-FM	92.9
Cortez	KZFM	94.1
Denver	KFML-FM	98.5
	KDEN-FM	99.5
	KLIR-FM	100.3
	KOA-FM	103.5
	KTGM	105.1
Grand Junction	KREX-FM	92.3
Manitou Springs	KCMS-FM	102.7

CONNECTICUT

Location	C.L.	Mc.
Bridgeport	WJZZ	99.9
Brookfield	WGHF	95.1
Danbury	WLAD-FM	98.3
Hartford	WHCN	105.9
	WDRC-FM	102.9
	WCCC-FM	106.9
	WSCH	93.7
	WRTC-FM	*89.3
	WTIC-FM	96.5
Manchester	WINF-FM	107.9
Meriden	WBMI	95.7
Middletown	WESU	88.1
New Haven	WNHC-FM	99.1
	WYBC-FM	94.3
Stamford	WSTC-FM	96.7
Storrs	WHUS	*90.5
Waterbury	WATR-FM	92.5

DELAWARE

Location	C.L.	Mc.
Dover	WDOV-FM	94.7
Wilmington	WDEL-FM	93.7
	WJBR	99.5

D. C.

Location	C.L.	Mc.
Washington	WASH-FM	97.1
	WAMU-FM	*88.5
	WFAN	100.3
	WGAY	99.5
	WGMS-FM	103.5
	WGTB	*90.1
	WMAL-FM	107.3
	WOL-FM	98.7
	WRC-FM	93.9
	WTOP-FM	96.3
	WWDC-FM	101.1

FLORIDA

Location	C.L.	Mc.
Coral Gables	WVCG-FM	105.1
Daytona Beach	WNDB-FM	94.5
Fort Lauderdale	WWIL-FM	103.5
	WFLM	105.9
	WMFP	100.7
Fort Pierce	WARN	98.7
Gainesville	WRUF-FM	*104.1
Jacksonville	WJAX-FM	95.1
	WMBR-FM	96.1
Miami	WKAT-FM	93.3
	WCKR-FM	97.3
	WGBS-FM	96.3
	WTHS	*91.7
	WWPB-FM	101.5
Miami Beach	WKAT-FM	93.1
	WAEZ-FM	94.9
	WMBM-FM	93.9
Ocala	WMOP-FM	93.7
Orlando	WDBO-FM	92.3
	WHOO-FM	96.5
	WKIS-FM	100.3
Palm Beach	WQXT-FM	97.9
Pensacola	WPEX-FM	94.4
St. Petersburg	WGNB	101.5
	WTCX	99.5
Sarasota	WYAK	102.5
Tallahassee	WFSU-FM	*91.5
	WBGM-FM	98.9
Tampa	WDAE-FM	100.7
	WFLA-FM	93.3
	WPKM	104.7
	WTUN	*88.9
Winter Park	WPRK	*91.5

GEORGIA

Location	C.L.	Mc.
Athens	WGAU-FM	102.5
Atlanta	WABE	*90.1
	WPLO-FM	103.3
	WGKA-FM	92.9
	WSB-FM	98.5
Augusta	WAUG-FM	105.7
	WBBQ-FM	103.7
Columbus	WRBL-FM	93.3
Gainesville	WDUN-FM	103.9
Lagrange	WLAG-FM	104.1
Macon	WMAZ-FM	99.1
Marietta	WBIE-FM	101.5
	WKLS	96.1
Newnan	WCOH-FM	96.7
Savannah	WTOC-FM	97.3
Swainsboro	WJAT-FM	101.7
Toccoa	WLET-FM	106.1

HAWAII

Location	C.L.	Mc.
Honolulu	KAIM-FM	95.5
	KVOK	*88.1
	KUOH	*90.5

IDAHO

Location	C.L.	Mc.
Boise	KBOI-FM	97.9
Lewiston	KOZE-FM	96.7

ILLINOIS

Location	C.L.	Mc.
Alton	WOKZ-FM	100.3
Anna	WRAJ-FM	92.7
Arlington Heights	WNWC	92.7
Aurora	WKKD-FM	95.9
Bloomington	WJBC-FM	101.5
Carbondale	WSIU	*91.9
Carmi	WROY-FM	97.3
Champaign	WDWS-FM	97.5
Chicago	WBBM-FM	96.3
	WBEZ	*91.5
	WCLM	101.9

Location	C.L.	Mc.
	WDHF	95.5
	WEBH	93.9
	WEFM	99.5
	WEHS	97.9
	WENR-FM	94.7
	WFMF	100.3
	WFMQ	107.5
	WFMT	98.7
	WKFM	103.5
	WMAQ-FM	101.1
	WMBI-FM	*90.1
	WNIB	97.1
	WSBC-FM	93.1
	WJJD-FM	104.3
Decatur	WSOY-FM	102.9
DeKalb	WNIC	*91.1
E. St. Louis	WBBR	101.1
Effingham	WSEI	95.7
	WELG	103.9
	WRMN-FM	94.3
Elgin	WEPS	*88.1
Elmwood Park	WXFM	105.9
Evanston	WEAW	105.1
	WNUR	*89.3
Galesburg	WYKC-FM	*88.1
Glen Ellyn	WELF-FM	107.1
Harrisburg	WEBQ-FM	99.9
Highland Park	WNSH-FM	103.1
Jacksonville	WLDS-FM	100.5
	WAJP	93.5
Joliet	WJOL-FM	96.7
Kankakee	WKAK-FM	99.9
Kewanee	WKSD	*91.9
Litchfield	WSMI-FM	106.1
Macomb	WWKS	*91.3
Mattoon	WLBH-FM	96.9
Morris	WRMI-FM	104.7
Mt. Carmel	WSAB	94.9
	WVMC-FM	101.1
Mt. Vernon	WMIX-FM	94.1
Oak Park	WOPA-FM	102.7
Olney	WVLN-FM	92.9
Paris	WPRS-FM	98.3
Park Forest	WRHS	*88.1
Park Ridge	WMTH	*88.5
Peoria	WMBD-FM	92.5
Quincy	WGEM-FM	105.1
	WTAD-FM	99.5
Rockford	WROK-FM	97.5
Rock Island	WHBF-FM	98.9
Springfield	WTAX-FM	103.7
Taylorville	WGGM	95.0
Urbana	WILL-FM	*90.9
Wheaton	WETN-FM	*88.1
Winnetka	WNTH	*88.1

INDIANA

Location	C.L.	Mc.
Anderson	WAFM	97.9
Bloomington	WFIU	*103.7
	WTTV-FM	92.3
Columbus	WCSI-FM	98.3
Connersville	WCNB-FM	100.3
Crawfordsville	WBBS-FM	106.3
Elkhart	WCMR-FM	95.1
	WTRC-FM	100.7
Evansville	WIKY-FM	104.1
	WEVC	*91.5
	WPSR	90.7
Franklin	WFCI	*89.3
Fort Wayne	WPTH	95.1
Gary	WGVE	*88.1
Goshen	WGCS	91.1
Greencastle	WGRE	*91.7
Hammond	WYCA	92.3
Hartford City	WHCI	*91.9
Huntington	WVSH	*91.9
Indianapolis	WAJC	*104.5
	WISH-FM	107.9
	WAIV	105.7
	WFBM-FM	94.7
	WFMS	95.5
	WIAN	*90.1
	WIBC-FM	93.1
Jasper	WITZ-FM	104.7
Madison	WORX-FM	96.7
Marion	WMRI-FM	106.9
	WBST	*90.7
Muncie	WMUN	104.1
	WWHI	*91.5
New Albany	WNAS	*88.1
New Castle	WCTW-FM	102.5
	WYSN	*91.1
Princeton	WRAY-FM	98.1
Richmond	WGLM	96.1
Salem	WSLM-FM	98.9
Seymour	WJOD	93.7
South Bend	WETL	*91.9
Terre Haute	WTHI-FM	99.9
	WVTS	100.7(s)
Wabash	WSKS	*91.3
Warsaw	WRSW-FM	107.3
Washington	WFML	106.5
West Lafayette	WBAA-FM	99.1

IOWA

Location	C.L.	Mc.
Ames	WOI-FM	*90.1
Boone	KFGQ	*99.3
Cedar Falls	KTCF	*88.1
Cedar Rapids	KHAK-FM	98.1
Clinton	KROS-FM	96.1
Davenport	WOC-FM	103.7
Des Moines	KDPS	*88.1
	KDMI	97.3
	KSO	98.5
	WHO-FM	100.3
Iowa City	KSUI	*91.7
Muscatine	KWPC-FM	99.7
Sioux City	KDVR	97.9
Storm Lake	KAYL-FM	101.5
Waverly	KWAR	89.1

KANSAS

Location	C.L.	Mc.
Emporia	KSTE	*88.7
Kansas City	KCJC	98.1
Lawrence	KANU	*91.5
Manhattan	KSDB-FM	*88.1
Newton	KJRG-FM	92.1
Ottawa	KTJO-FM	*88.1
Parsons	KPPS-FM	*91.1
Salina	KAFM	99.9
Topeka	KTOP-FM	100.3
Wichita	KFH-FM	100.3
	KMUW	*89.1
	KCBM-FM	107.3

KENTUCKY

Location	C.L.	Mc.
Ashland	WCMI-FM	93.7
Central City	WNES-FM	101.9
Fulton	WFUL-FM	104.9
Glasgow	WGGC	95.1
Hazard	WKIC-FM	96.5
Henderson	WSON-FM	99.5
Hopkinsville	WRLX	98.7
	WKOF	100.3
Lexington	WBKY	*91.3
	WLAP-FM	94.5
Louisville	WFPK	*91.9
	WFPL	*89.3
Madisonville	WFMW-FM	93.9
	WNGO-FM	94.7
Owensboro	WOMI-FM	92.5
	WVJS-FM	96.1
Paducah	WPAD-FM	96.9
	WKYB-FM	93.3

LOUISIANA

Location	C.L.	Mc.
Alexandria	KALB-FM	96.9
Baton Rouge	WJBO-FM	98.1
Monroe	KMLB-FM	104.1
New Orleans	WBEH	89.3
	WDSU-FM	105.3
	WRCM	97.1
	WMMT	95.7
Shreveport	KRMD-FM	101.1
	KBCL-FM	96.5
	KWKH-FM	94.5

MAINE

Location	C.L.	Mc.
Augusta	WFAU-FM	101.3
Bangor	WABI-FM	97.1
Brunswick	WBOR	*91.1
Caribou	WFST-FM	97.7
Lewiston	WCOU-FM	93.9
	WRJR	91.5
Poland Springs	WMTW-FM	94.9
Portland	WLOB-FM	97.9

MARYLAND

Location	C.L.	Mc.
Annapolis	WNAV-FM	99.1
	WANN-FM	107.9
	WXTC	107.9
	WAQE-FM	101.9
Baltimore	WBJC	*88.1
	WCAO-FM	102.7
	WCBM-FM	106.5
	WFMM-FM	93.1
	WRBS	95.1
	WSID	92.3
	WBAL-FM	97.9
	WITH-FM	104.3
	WSID-FM	92.3
Bethesda	WJMD	106.3(s)
	WHFS-FM	102.5
Bradbury Heights	WPGC	95.5
Cumberland	WCUM-FM	102.9
Frederick	WFMD-FM	99.9
Hagerstown	WJEJ-FM	104.7
	WARK-FM	106.9
Havre de Grace	WASA-FM	103.7
Oakland	WBUZ	95.5
Takoma Park	WGTS-FM	*91.9
Waldorf	WSMD	104.1
Westminster	WTTR-FM	100.7

MASSACHUSETTS

Location	C.L.	Mc.
Amherst	WAMF	*88.1
	WFCR	*88.5
	WMUA	*91.1
Boston	WBUR	*90.9
	WBCN	104.1
	WBZ-FM	106.7
	WCOP-FM	100.7
	WEEI-FM	103.3
	WERS	*88.9
	WHDH-FM	94.5
	WRKO-FM	98.5
	WXHR	96.9
Brockton	WBET-FM	97.7
Brookline	WBOS-FM	92.9
Cambridge	WGBH-FM	*89.7
	WHRB-FM	95.3
	WTBS	88.1
Fitchburg	WFGM-FM	104.7
Framingham	WKOX-FM	105.7
Greenfield	WHAI-FM	98.3
Haverhill	WHAV-FM	92.5
Lawrence	WGHJ	93.7
Lowell	WLLH-FM	99.5
Lynn	WUPI-FM	105.3
Medford	WISK	107.9
New Bedford	WBSM-FM	97.3
	WNBH-FM	98.1
Plymouth	WPLM-FM	99.1
S. Hadley	WMHC	*88.5
Springfield	WHYN-FM	93.1
	WEDK	*91.7
	WSCB	*88.9
	WMAS-FM	94.7
Waltham	WCRB-FM	102.5
W. Yarmouth	WOCB-FM	94.3
Williamstown	WCFM	*90.1
Winchester	WHSR-FM	*91.9
Worcester	WAAB	107.3
	WTAG-FM	96.1

MICHIGAN

Location	C.L.	Mc.
Ann Arbor	WUOM	*91.7
Bay City	WBCM-FM	96.1
	WNEM-FM	102.5
Benton Hrbr.	WHFB-FM	99.9
Birmingham	WHFI	94.7
Coldwater	WTVB-FM	98.3
Dearborn	WKMH-FM	100.3
Detroit	WDET-FM	*101.9
	WBFG-FM	98.7
	WCHD	105.9
	WDTM	106.7
	WABX	99.5
	WDTR	*90.9
	WGPM	107.5
	WJBK-FM	93.1
	WMUZ	103.5
	WMZK	97.9
	WJR-FM	96.3
	WOMC-FM	104.3
	WQRS-FM	105.1
	WRMK-FM	98.7
	WWJ-FM	97.1
	WXYZ-FM	101.1
E. Lansing	WKAR-FM	*90.5
	WSWM	99.1
Flint	WFBE	*95.1
Grand Rapids	WFUR-FM	102.9
	WJEF-FM	93.7
	WLAV-FM	96.9
	WMAX-FM	101.3
	WOOD-FM	105.7 (s)
	WVGA-FM	104.1
	WXTO-FM	97.9
	WKLW-FM	95.7
Greenville, Mich.	WPLB-FM	107.3
Highland Pk.	WHPR	*88.1
Holland	WJBL-FM	94.5
Houghton Lake	WJGG	98.5
Interlochen	WGYA	*103.1
Jackson	WBBC	94.1
Kalamazoo	WMCR	*102.1
Lansing	WJIM-FM	97.5
	WMRT-FM	100.7
Midland	WQDC-FM	99.7
Mount Clemens	WBRB-FM	102.7
Oak Park	WLDM	95.5
Royal Oak	WOAK	*89.3
	WOMC	104.3
Saginaw	WSAM-FM	98.1
Sturgis	WSTR-FM	103.1

MINNESOTA

Location	C.L.	Mc.
Brainerd	KLIZ-FM	95.7
Mankato	KYSM-FM	103.5
Minneapolis	KTIS-FM	*98.5
	KWFM	97.1
	WLOL-FM	99.5
	WPBC-FM	101.3
	WAYL	96.1
St. Cloud	KFAM-FM	104.7
St. Paul	KNOF	95.3
Worthington	KWDA-FM	94.9

MISSISSIPPI

Location	C.L.	Mc.
Jackson	WJDX-FM	102.9
Laurel	WNSL-FM	100.3
Meridian	WMMI	*88.1

MISSOURI

Location	C.L.	Mc.
Clayton	KFUO-FM	99.1
Joplin	WMBH-FM	96.1
	KSYN	92.5
Kansas City	KCMO-FM	94.9
	KBEY	104.3
	KTSR	*90.1
	WDAF-FM	102.1
	KCMK	93.3
	KCUR-FM	89.3
	KXTR	96.5
Kennett	KBOA-FM	98.9
Poplar Bluff	KWOC-FM	94.5
St. Louis	KCFM	93.7
	KADI	96.5
	WAMV-FM	101.1
	WIL-FM	92.3
	KSLH	*91.5
	KSTL-FM	98.1
	KWIX	102.5
	KRFD	106.9
Springfield	KTTS-FM	94.7
	KTXR	101.5
West Plains	KWPM-FM	93.9

NEBRASKA

Location	C.L.	Mc.
Kearney-Holdrege	KRNY-FM	98.9
Lincoln	KFMQ	95.3
Omaha	KQAL-FM	94.3
	KFAB-FM	99.9
	WOW-FM	92.3
	KICN	96.1
Scottsbluff	KNEW-FM	94.1

NEVADA

Location	C.L.	Mc.
Las Vegas	KORK-FM	97.1
Reno	KNEV	95.5

NEW HAMPSHIRE

Location	C.L.	Mc.
Berlin	WMOU-FM	103.7
Claremont	WTSV-FM	106.1
Manchester	WKBR-FM	95.7
Mt. Washington	WMTW-FM	94.9
Nashua	WOTW-FM	106.3

NEW JERSEY

Location	C.L.	Mc.
Asbury Park	WJLK-FM	94.3
Bridgeton	WSNJ-FM	107.7
Camden	WKDN-FM	106.9
Dover	WOHA-FM	105.5
E. Orange	WFMU	*91.1
Eatontown	WHTG-FM	105.3
Hackettstown	WNTI	*91.9
Long Branch	WRLB	107.1
Millville	WMVB-FM	97.3
Newark	WJRZ-FM	94.7
	WVNJ-FM	100.3
	WBGO	*88.3
New Brunswk.	WCTC-FM	98.3
Paterson	WPAT-FM	93.1
Princeton	WPRB	103.9
Red Bank	WFHA-FM	106.3
South Orange	WSOU	*89.5
Trenton	WTDA	97.5
Wildwood	WCMC-FM	100.7
Zarephath	WAWZ-FM	99.1

NEW MEXICO

Location	C.L.	Mc.
Albuquerque	KANW	*89.1
	KHFM	96.3
(s) Aztec	KNDE-FM	94.9
Los Alamos	KRSN-FM	98.5
Mountain Park	KMFM	97.9
Roswell	KBIM-FM	97.1

NEW YORK

Location	C.L.	Mc.
Albany	WAMC	*90.3
Auburn	WMBO-FM	96.1
Babylon	WTFM	103.5
	WBAB-FM	102.3
Binghamton	WNBF-FM	98.1
	WKOP-FM	95.3
Brooklyn	WNYE	*91.5
Buffalo	WBEN-FM	106.5
	WBFO	*88.7
	WEBR	94.5
	WGR-FM	96.9
	WBUF	92.9
	KWOL-FM	104.1
	WIFE-FM	103.3
Central Square	WCSQ	*89.3
Cherry Valley	WJIV	101.9
Corning	WCLI-FM	106.1
Cortland	WKRT-FM	99.9
DeRuyter	WOIV	105.1
Elmira	WECW	*88.1
Floral Park	WSHS	*90.3
Garden City	WLIR	92.7
Hempstead	WHLI-FM	98.3
	WVHC	*88.7
Hornell	WWHG-FM	105.3
Ithaca	WHCU-FM	97.3
	WICB	*91.7
	WEIV	103.7
	WVBR-FM	101.7
Jamestown	WJTN-FM	93.3
Kenmore	WYSL-FM	103.3
Mt. Kisco	WRNW	107.1
New Rochelle	WVOX-FM	93.5
New York	WABC-FM	95.5
	WBAI	99.5
	WBFM	101.9
	WCBS-FM	101.1
	WEVD-FM	97.9
	WFUV	*90.7
	WHDM-FM	92.3
	WKCR-FM	*89.9
	WNCN	104.3
	WNEW-FM	102.7
	WNYC-FM	93.9
	WNYE	91.5
	WOR-FM	98.7
	WQXR-FM	96.3
	WNBC-FM	97.1
	WRFM	105.1
	WRVR	106.7
Niagara Falls	WHLD-FM	98.5
Olean	WHDL-FM	95.7
Plattsburgh	WEAV-FM	99.9
Patchogue	WALK-FM	97.5(s)
	WPAC-FM	106.1
Peekskill	WLNA-FM	100.7
Poughkeepsie	WKIP-FM	104.7
	WEOK-FM	101.5
Riverhead	WAPC-FM	103.9(s)
Rochester	WHFM	98.9
	WBBF-FM	100.1
	WCMF	96.5
	WIRQ	*90.9
	WROC-FM	97.9
Schenectady	WGFM	99.5
South Bristol	WMIV	95.1
Springville	WSPE	*88.1
Syracuse	WAER	*88.1
	WDDS-FM	93.1
	WONO	100.9
	WSYR-FM	94.5
Troy	WFLY	92.3
	WRPI	*91.5
Utica	WRUN-FM	105.7
Wethersfield	WBIV	105.7
White Plains	WFAS-FM	103.9

NORTH CAROLINA

Location	C.L.	Mc.
Albemarle	WABZ-FM	100.9
Asheboro	WGWR-FM	92.3
Asheville	WLOS-FM	104.3
Burlington	WBBB-FM	101.1
	WFNS-FM	93.9
Burlington-Graham	WBAG-FM	92.9
Chapel Hill	WUNC	*91.5
Charlotte	WSOC-FM	103.5
	WYFM	104.7
Clingman's Pk.	WMIT	106.9
Concord, N.C.	WEGD-FM	97.9
Durham	WDNC-FM	105.1
Elkin	WIFM-FM	100.9
Fayetteville	WFNC-FM	98.1
Forest City	WBBO-FM	93.3
	WAGY-FM	105.3
Gastonia	WGNC-FM	101.9
Goldsboro	WEQR	96.9
Greensboro	WMDE	98.7
	WQMG-FM	97.1
Greenville	WWWS	*91.3
Henderson	WHNC-FM	92.5
	WHKP-FM	102.5
Hendersonville	WHKP-FM	102.5
Hickory	WHKY-FM	102.9
High Point	WHPE-FM	95.5
	WHPS	*89.3
	WMFR-FM	99.5
	WNOS-FM	100.3
Laurinburg	WEWO-FM	96.5
Leaksville	WLOE-FM	94.5
Lexington	WBUY-FM	94.3
Lumberton	WTSB-FM	95.7
Raleigh	WKIX-FM	96.1
	WPTF-FM	94.7
	WRAL-FM	101.5
Reidsville	WREV-FM	102.1
Rocky Mount	WEED-FM	92.1
	WFMA	100.7
Roxboro	WRXO-FM	96.7
Salisbury	WSTP-FM	106.5
Sanford	WWGP-FM	105.5
Shelby	WOHS-FM	96.1
Statesville	WFMX	105.7
Tarboro	WCPS-FM	104.3
Thomasville	WTNC-FM	98.3
Wilmington	WPRV	93.9
Wilson	WVOT-FM	106.1
Winston-Salem	WAIR-FM	93.1
	WYFS	107.5
	WFDD-FM	*88.1
	WSJS-FM	104.1

OHIO

Location	C.L.	Mc.
Akron	WAKR-FM	97.5
	WAPS	*89.1
	WCUE-FM	96.5
Alliance	WFAH-FM	101.7
Ashland	WNCO-FM	101.3
Ashtabula	WREO-FM	103.7
Athens	WOUB-FM	*91.5
Barberton	WDBN	94.9
Bellaire	WOMP-FM	100.5
Berea	WBWC	*88.3
Bowling Green	WBGU	*88.1
Canton	WHBC-FM	94.1
	WCNO	106.9
	WTOF-FM	98.1
Celina	WMER-FM	94.3
Chillicothe	WBEX-FM	93.3
Cincinnati	WCPO-FM	105.1
	WAEF-FM	104.3
	WGUC	*90.9
	WAKW-FM	93.3
	WKRC-FM	101.9
	WSAI-FM	102.7
Cleveland	KYW-FM	105.7
	WXEN-FM	106.6
	WBOE	*90.3
	WCRF	103.3
	WDGO	95.5
	WDOK-FM	102.1
	WERE-FM	98.5
	WGAR-FM	99.5
	WHK-FM	100.7
	WJW-FM	104.1
	WNOB	107.9
Cleveland Hts.	WCUY-FM	92.5
Columbus	WCBE	*90.5
	WBNS-FM	97.1
	WCOL-FM	92.3
	WOSU-FM	*89.7
	WTVN-FM	96.3
	WVKO	94.7
Dayton	WHIO-FM	99.1
	WONE	104.7
Delaware	WSLN	*91.1
East Liverpool	WOHI-FM	104.3
Eaton	WCTM	92.9
Elyria	WEOL-FM	107.3
Findlay	WFIN-FM	100.5
Fostoria	WFOB	96.7
Fremont	WFRO-FM	99.3
Gallipolis	WJEH-FM	101.5
Granville	WDUB-FM	91.3
Greenville	WDRK-FM	106.5
Hamilton	WQMS	96.7
	WHOH	103.5
Hamilton	WFDL-FM	94.9(s)
Kent	WKSU-FM	*88.1
Lancaster	WHOK-FM	95.5
Lima	WIMA-FM	102.1
Marietta	WCMO	*89.3
Marion	WMRN-FM	106.9
Miamisburg	WFCJ	93.9
Middletown	WPFB-FM	105.9
Mt. Vernon	WMVO-FM	93.7
New Concord	WMCO-FM	*91.9
Newark	WCLT-FM	100.3
Oxford	WMUB	*88.5
	WOXR	97.7
Piqua	WPTW-FM	95.7
Port Clinton	WRWR-FM	94.5
Portsmouth	WPAY-FM	104.1
Salem	WSOM-FM	105.1
Sandusky	WLEC-FM	102.7
Springfield	WBLY-FM	103.9
	WEEC-FM	100.7
Steubenville	WSTV-FM	103.5
Toledo	WSPD-FM	101.5
	WMHE	92.5
	WTDS	*91.3
	WTOL-FM	104.7
	WTRT	99.9
Westerville	WOBN	*91.5
Wooster	WWST-FM	104.5
Worthington-Columbus	WRFO-FM	97.9
Xenia	WHBM-FM	103.9
Yellow Springs	WYSO	*91.5
Youngstown	WKBN-FM	98.9
	WBBW-FM	93.3
	WRED	101.1
Zanesville	WHIZ-FM	102.5

OKLAHOMA

Location	C.L.	Mc.
Durant	KSEO-FM	107.3
Norman	WNAD-FM	*90.9
Oklahoma City	KOKH	*88.9
	KIOO	100.5
	KEFM	94.7
	KYFM	98.9
Shawnee	KBGC	*89.9
Stillwater	KOSU-FM	*91.7
	KSPI-FM	93.9
Tulsa	KWGS	*90.5
	KIHI	95.5
	KOCW	97.5
	KOGM-FM	92.9

OREGON

Location	C.L.	Mc.
Eugene	KRVM	*91.9
	KEED-FM	93.1
	KFMY	97.9
	KUGN-FM	99.1
	KWAX	*91.1
Grants Pass	KGPO	96.9
Medford	KBOY-FM	95.3
Oretech	KTEC	*88.1
Portland	KOAP-FM	92.3
	KGMG	95.5
	KOIN-FM	101.1
	KPDQ-FM	105.3
	KPFM	97.1
	KPOJ-FM	98.7
	KQFM	100.3
	KRRC	*89.3

PENNSYLVANIA

Location	C.L.	Mc.
Allentown	WFMZ	100.7
	WAEB-FM	104.1
Altoona	WVAM-FM	100.1
	WFBG-FM	98.1
Beaver Falls	WBVP-FM	106.7
Bethlehem	WGPA-FM	95.1
Bloomsburg	WHLM-FM	106.5
Boyertown	WBYC-FM	107.5
Braddock	WLOA-FM	96.9
Butler	WBUT-FM	97.7
Carlisle	WHYL-FM	102.3
Chambersburg	WCHA-FM	95.1(s)
Dubois	WCED-FM	102.1
Easton	WEST-FM	107.9
	WEEX-FM	99.9
Erie	WWYN-FM	99.9
Gettysburg	WGET-FM	107.7
Glenside	WIFI	92.5
Harrisburg	WHP-FM	97.3
	WMSP	94.9
Havertown	WHHS	*89.3
Hazleton	WAZL-FM	97.9
Jenkintown	WIBF	103.9
Johnstown	WARD-FM	92.1
	WJAC-FM	95.5
Lancaster	WGAL-FM	101.3
	WDAC	94.5
	WLAN-FM	96.9
Lebanon	WLBR-FM	100.1
Meadville	WMGW-FM	100.3
Montrose	WPEL-FM	96.5
Oil City	WDJR	98.5
Palmyra	WJWR	92.1
Philadelphia	WCAU-FM	98.1
	WPBS-FM	105.3
	WDAS-FM	105.3
	WFIL-FM	102.1
	WFLN	95.7
	WHAT-FM	96.5
	WHYY	*90.9
	WIFI	92.5
	WIBG-FM	94.1
	WIP-FM	93.3
	WPEN-FM	102.9
	WPWT	*91.7
	WQAL	106.1
	WRTI-FM	*90.1
	WXPN	*88.9
Pittsburgh	KDKA-FM	92.9
	WAMO	105.9
	WRYT-FM	96.1
	KQV-FM	102.5
	WDUQ	*91.5
	WYRE-FM	107.9
	WILY	105.9
	WJAS-FM	99.7
	WKJF	93.7
	WPIT-FM	101.5
	WWSW-FM	94.5
Pottsville	WPPA-FM	101.9
Red Lion	WGCB-FM	96.1
Scranton	WGBI-FM	101.3
	WUSV	*88.9
Sharon	WPIC-FM	102.9
State College	WDFM	*91.1
Sunbury	WKOK-FM	94.1
Towanda	WTTC-FM	92.7
Tyrone	WGMR-FM	101.1
Warren	WRRN	92.3
Washington	WJPA-FM	104.3
Waynesboro	WAYZ-FM	101.5
Wilkes-Barre	WBRE-FM	98.5
	WYZZ	103.3
Williamsport	WLYC-FM	105.1
	WRAK-FM	100.3
York	WNOW-FM	105.7

RHODE ISLAND

Location	C.L.	Mc.
Cranston	WLOV	99.9
Providence	WPJB-FM	105.1
	WICE-FM	107.7
	WPFM	95.5
	WPRO-FM	92.3
	WXCN	101.5
Woonsocket	WWON-FM	106.3

SOUTH CAROLINA

Location	C.L.	Mc.
Anderson	WCAC	101.1
Charleston	WCSC-FM	96.9
	WTMA-FM	95.1
Clemson	WSBF-FM	*88.1
Columbia	WCOS-FM	97.9
	WNOK-FM	104.7
	WUSC-FM	*89.9
Dillon	WDSC-FM	92.9
Greenville	WESC-FM	92.5
	WFBC-FM	93.7
	WMVU-FM	94.5
Laurens-Clinton	WLBG-FM	100.5
Rock Hill	WRHI-FM	98.3
Seneca	WSNW-FM	98.1
Spartanburg	WSPA-FM	98.9
Sumter	WFIG-FM	101.3

TENNESSEE

Location	C.L.	Mc.
Bristol	WOPI-FM	96.9
Chattanooga	WDOD-FM	96.5
	WLON	106.5
Cleveland	WCLE-FM	100.7
Collegedale	WSMC-FM	*88.1
Franklin	WFLT-FM	100.1
Gallatin	WFMG	104.5
Greeneville	WGRV-FM	94.9
Jackson	WTJS-FM	104.1
Johnson City	WJCW-FM	100.7
Kingsport	WKPT-FM	98.5
Knoxville	WBIR-FM	93.3
	WKCS	*91.1
	WUOT	*91.9
Memphis	WMC-FM	99.7
	WMPS-FM	97.1
	WDIA-FM	102.7
Nashville	WFMB	105.9
	WSIX-FM	97.5
Sevierville	WSEV-FM	102.1

TEXAS

Location	C.L.	Mc.
Abilene	KACC-FM	*91.1
	KFMN	99.3
Alvin	KAJC-FM	102.1
Amarillo	KGNC-FM	93.1
Austin	KHFI	98.3
	KAZZ	95.5
	KTBC-FM	93.7
	KUT-FM	*90.7
Beaumont	KHCB-FM	105.7
	KAYD-FM	97.5
Big Spring	KFNE-FM	95.3
Brownwood	KHPC	88.1
Cleburne	KCLE-FM	94.9
Corpus Christi	KMFM	95.5
Dallas	KIXL-FM	104.5
	KNER	*88.1
	KRLD-FM	92.5
	KLIF-FM	98.7
	WFAA-FM	97.9
	WRR-FM	101.1
	KVTT	*91.7
	KQRO	102.9
Denton	KDNT-FM	106.3
DiBoll	KSPL-FM	95.5
Dumas	KDDD-FM	95.3
El Paso	KVOF-FM	*88.5
	KTSM-FM	99.9
	KHMS	94.7
Ft. Worth	WBAP-FM	96.3
	KXFM	99.5
	KFJZ-FM	97.1
	KJIM-FM	102.1
Gainesville	KGAF-FM	94.5
Harlingen	KELT	94.5
Highland Pk.	KUIL-FM	103.7
Hillsboro	KHBR-FM	102.3
Houston	KHGM	102.9
	KHCB-FM	105.7
	KHUL	95.7
	KFMK	97.9
	KODA-FM	99.1
	KARO	94.5
	KOST	100.3
	KQUE	102.9
	KRBE	104.1
	KXYZ-FM	96.5
	KTRH-FM	101.1
	KUHF	*91.3
Killeen	KLEN-FM	93.3
Lubbock	KSCL-FM	93.7
	KBFM	96.3
	KTXT-FM	*91.9
Marshall	KMHT-FM	97.3
Midland	KNFM	92.3
Mt. Pleasant	KIMP-FM	96.1
Odessa	KQIP	96.7
	KWMO	99.1
Pampa	KBMF-FM	100.3
Pasadena	KLVL-FM	92.5
Plainview	KHBL	*88.1
Port Arthur	KFMP	93.3
San Antonio	KISS	99.5
	KEEZ	97.3
	KAKI-FM	98.1
	KITY	92.9
Sinton	KTOD-FM	101.3
Texarkana	KTAL-FM	98.1
Tyler	KSLT	93.1
Waco	KEFC	95.5(s)
	WACO	99.9

UTAH

Location	C.L.	Mc.
Ephraim	KEPH	*88.9
Logan	KUSU-FM	*88.1
Provo	KBYU-FM	*88.9
Salt Lake City	KCPX-FM	98.7
	KLUB-FM	97.1
	KSL-FM	100.3

VIRGINIA

Location	C.L.	Mc.
Arlington	WAVA-FM	105.1
	WCCV-FM	97.5
Charlottesville	WINA-FM	95.3
	WTJU	91.3
Crewe	WSVS-FM	104.7
Farmville	WFLO-FM	95.7
Fredericksburg	WFVA-FM	101.5
Gretna	WMNA-FM	103.3
Hampton	WVEC-FM	101.3
Harrisonburg	WEMC	*91.7
	WSVA-FM	100.7
Lynchburg	WWOD-FM	100.1
Manassas	WPRW-FM	106.7
Marion	WMEV-FM	93.9
Martinsville	WMVA-FM	96.3
Newport News	WGH-FM	97.3
Norfolk	WMTI	*91.5
	WRVC	102.5
	WTAR-FM	95.7
	WYFI-FM	99.7
Portsmouth	WAVY-FM	96.9
Richmond	WCOD	98.1
	WRFK	91.1
	WRVA-FM	94.5
	WRNL-FM	102.1
Roanoke	WDBJ-FM	94.9
	WLRJ	92.3
	WROV-FM	103.7
	WSLS-FM	99.1
South Boston	WHLF-FM	97.5
South Norfolk	WFOS	*90.5
Staunton	WSGM-FM	93.5
Williamsburg	WCWM	89.1
Winchester	WRFL	92.5
Woodbridge	WXRA	105.9

WASHINGTON

Location	C.L.	Mc.
Bellingham	KGMI-FM	92.9
Cheney	KEWC-FM	*89.9
Edmunds	KGFM	105.3
Lynden	KLYN-FM	106.5
Opportunity	KZUN-FM	96.1
Seattle	KING-FM	98.1
	KETO-FM	101.5
	KGMJ	95.7
	KIRO-FM	100.7
	KISW	99.9
	KLSN	96.5
	KMCS	98.9
	KOL-FM	94.1
	KUOW	94.9
Spokane	KREM-FM	92.9
	KXLY-FM	99.9
	KHQ-FM	98.1
Tacoma	KCPS	90.9
	KLAY-FM	106.3
	KTNT-FM	97.3
	KTOY	*91.7
	KTWR	103.9
Yakima	KNDX-FM	106.3

WEST VIRGINIA

Location	C.L.	Mc.
Beckley	WBKW	99.5
Charleston	WKAZ-FM	97.5
	WKNA	98.5
Huntington	WKEE-FM	100.5
	WMUL	*88.1
Martinsburg	WEPM-FM	94.3
Morgantown	WAJR-FM	99.3
Oak Hill	WOAY-FM	94.1
Wheeling	WKWK-FM	97.3
	WWVA-FM	98.7

Location	C.L.	Mc.
WISCONSIN		
Appleton	WLFM	*91.1
Chilton	WHKW	*89.3
Colfax	WHWC	*88.3
Delafield	WHAD	*90.7
Eau Claire	WIAL	94.1
Fort Atkinson	WFAW	107.3
Green Bay	WBAY-FM	101.1
Greenfield Twp.	WWCF	94.9
Highland	WHHI	91.3
Highland Twp.	WHSA	*89.9
Janesville	WCLO-FM	99.9
La Crosse	WHLA	*90.3
Madison	WHA-FM	*88.7
	WIBA-FM	101.5
	WISM-FM	98.1
	WMFM	104.1(s)
	WRVB-FM	102.5
Merrill	WLIN	100.7
Milwaukee	WFMR	96.5
	WMIL-FM	95.7
	WISN-FM	97.3
	WRIT-FM	102.9
	WMKE	102.1
	WQFM	93.3
	WTMJ-FM	94.1
Monroe	WEKZ-FM	93.7
Racine	WRJN-FM	100.7
Rice Lake	WJMC-FM	96.3
Sparta	WCOW-FM	97.1
Stevens Point	WSPT-FM	97.9
Watertown	WTTN-FM	104.7
Waukesha	WAUX-FM	106.1
Wausau	WHRM	*91.9
Wauwatosa	WTOS	103.7
West Bend	WBKY-FM	92.5
Wisc. Rapids	WFHR-FM	103.3
WYOMING		
Cheyenne	KVOW-FM	106.3

U. S. FM Stations by Call Letters

Abbreviation: (s)—broadcasts stereo

C.L.	Location
KAAR	Oxnard, Calif.
KABC-FM	Los Angeles, Calif.
KACE-FM	Riverside, Calif.
KADI	St. Louis, Mo.
KAFE	Oakland, Calif.
KAFI	Auburn, Calif.
KAFM	Salina, Kans.
KAIM-FM	Honolulu, Hawaii
KAJC-FM	Alvin, Tex.
KAJS	Newport Beach, Calif.
KAKC	Tulsa, Okla.
KAKI	San Antonio, Tex.
KALB-FM	Alexandria, La.
KALH	Denver, Colo.
KALW	San Francisco, Calif.
KAMS	Mammoth Spring, Ark.
KANG	St. Louis, Mo.
KANT-FM	Lancaster, Calif.
KANU	Lawrence, Kans.(s)
KANW	Albuquerque, N.Mex.
KAPP	Redondo Beach, Calif.
KARK	Little Rock, Ark.
KARM-FM	Fresno, Calif.
KARO	Houston, Tex.
KASK-FM	Ontario, Calif.
KASU	Jonesboro, Ark.
KATT	Woodland, Calif.
KATY-FM	San Luis Obispo, Calif.
KAYD	Beaumont, Tex.
KAZZ	Austin, Tex.
KBAY	San Francisco, Calif.
KBBI	Los Angeles, Calif.
KBBL	Wichita, Kans.
KBBM	Hayward, Calif.
KBBW	San Diego, Calif.
KBCA	Los Angeles, Calif.
KBCL-FM	Shreveport, La.
KBCO	San Francisco, Calif.
KBEE-FM	Modesto, Calif.
KBEY	Kansas City, Mo.
KBFI	Boise, Idaho
KBFM	Lubbock, Tex.
KBIM-FM	Roswell, N.Mex.
KBIQ	Los Angeles, Calif.
KBMF	Pampa, Tex.
KBMS	Los Angeles, Calif.
KBOA-FM	Kennett, Mo.
KBOI-FM	Boise, Idaho
KBOY-FM	Medford, Oreg.
KBTM-FM	Jonesboro, Ark.
KBUZ-FM	Mesa, Ariz.
KBYR-FM	Anchorage, Alaska(s)
KBYU-FM	Provo, Utah
KCAL-FM	Redlands, Calif.
KCBH	Beverly Hills, Calif.(s)
KCBS-FM	San Francisco, Calif.
KCFM	St. Louis, Mo.(s)
KCHO-FM	Amarillo, Tex.(s)
KCHQ-FM	Conchella, Calif.(s)
KCIB-FM	Fresno, Calif.
KCJC	Kansas City, Kans.
KCLE-FM	Cleburne, Tex.
KCMB-FM	Wichita, Kans.
KCMI	Los Angeles, Calif.
KCMK	Kansas City, Mo.
KCMO-FM	Kansas City, Mo.(s)
KCMS-FM	Manitou Springs, Colo.
KCOM	Omaha, Nebr.
KCPS	Tacoma, Wash.
KCPX-FM	Salt Lake City, Utah
KCRA-FM	Sacramento, Calif.
KCRW	Santa Monica, Calif.
KCSM	San Mateo, Calif.
KCUI	Pella, Ia.
KCUR-FM	Kansas City, Mo.
KCVN	Stockton, Calif.
KCVR-FM	Lodi, Calif.
KDB-FM	Santa Barbara, Calif.
KDDD-FM	Dumas, Tex.
KDEF-FM	Albuquerque, N.Mex.
KDEN-FM	Denver, Colo.
KDFC	San Francisco, Calif.
KDKA-FM	Pittsburgh, Pa.
KDMC	Corpus Christi, Tex.
KDMI	Des Moines, Iowa(s)
KDNT-FM	Denton, Tex.
KDPS	Des Moines, Iowa
KDUD	Riverside, Calif.(s)
KDVR	Sioux City, Ia.
KDWC	West Covina, Calif.
KEAR	San Francisco, Calif.
KEAX	National City, Calif.
KEBJ	Phoenix, Ariz.
KEBR	Sacramento, Calif.
KEBS	San Diego, Calif.
KEED-FM	Springfield-Eugene, Oregon
KEEN-FM	San Jose, Calif.
KEEZ	San Antonio, Tex.(s)
KEFC	Waco, Tex.(s)
KEFM	Oklahoma City, Okla.
KEFW	Honolulu, Hawaii
KELE	Phoenix, Ariz.
KELT	Harlingen, Tex.
KEMO	St. Louis, Mo.
KERN-FM	Bakersfield, Calif.
KETO-FM	Seattle, Wash.(s)
KEYM	Santa Maria, Calif.(s)
KEZE	Anaheim, Calif.
KFAB-FM	Omaha, Nebr.
KFAC-FM	Los Angeles, Calif.
KFAM-FM	St. Cloud, Minn.
KFBK-FM	Sacramento, Calif.
KFCA	Phoenix, Ariz.
KFGQ-FM	Boone, Iowa
KFH-FM	Wichita, Kans.
KFIL	Santa Ana, Calif.
KFJC	Mountainview, Calif.
KFJZ	Fort Worth, Tex.
KFMB-FM	San Diego, Calif.
KFMC	Portland, Oreg.
KFMH	Colorado Springs, Colo.
KFMK	Houston, Tex.(s)
KFML-FM	Denver, Colo.
KFMM	Tucson, Ariz.
KFMN	Abilene, Tex.
KFMP	Port Arthur, Tex.(s)
KFMQ	Lincoln, Nebr.
KFMU	Los Angeles, Calif.(s)
KFMV	Minneapolis, Minn
KFMW	San Bernardino, Calif.
KFMX	San Diego, Calif.
KFMY	Eugene, Oreg.(s)
KFNB	Oklahoma City, Okla.
KFNE	Big Springs, Tex.
KFOX-FM	Long Beach, Calif.
KFRC-FM	San Francisco, Calif.
KFUO-FM	Clayton, Mo.
KGAF-FM	Gainesville, Tex.
KGB-FM	San Diego, Calif.(s)
KGBN-FM	Caldwell, Idaho
KGFM	Edmonds, Wash.
KGGK	Garden Grove, Calif.(s)
KGLA	Los Angeles, Calif.
KGMG	Portland, Oreg.(s)
KGMI	Bellingham, Wash.
KGNC-FM	Amarillo, Tex.
KGO-FM	San Francisco, Calif.
KGPO	Grants Pass, Oreg.
KGUD-FM	Santa Barbara, Calif.
KHAK-FM	Cedar Rapids, Iowa
KHBL	Plainview, Tex.
KHBR-FM	Hillsboro, Tex.
KHCB	Houston, Tex.
KHFI	Austin, Tex.
KHFM	Albuquerque, N.Mex.(s)
KHFR-FM	Monterey, Calif.
KHGM	Beaumont, Tex.(s)
KHIP	San Francisco, Calif.
KHIQ	Sacramento, Calif.(s)
KHJ-FM	Los Angeles, Calif.
KHMS	El Paso, Tex.
KHOF	Los Angeles, Calif.
KHOM-FM	Turlock, Calif.
KHPC	Brownwood, Tex.
KHQ-FM	Spokane, Wash.
KHSC	Arcata, Calif.
KHUL	Houston, Tex.
KHVR	Bijou, Calif.
KHYI	Fremont, Calif.
KICN	Omaha, Nebr.
KIEM	Eureka, Calif.
KIHI	Tulsa, Okla.
KIMP-FM	Mt. Pleasant, Tex.
KING-FM	Seattle, Wash.
KIOO	Oklahoma, Okla.
KIRO-FM	Seattle, Wash.
KISS	Kansas City, Mo.
KISS	San Antonio, Tex.
KISW	Seattle, Wash.(s)
KITH	Phoenix, Ariz.
KITT	San Diego, Calif.
KITY	San Antonio, Tex.
KIXL-FM	Dallas, Tex.(s)
KJAZ	Alameda, Calif.
KJEM-FM	Okla. City, Okla.
KJIM	Ft. Worth, Tex.
KJLM	San Diego, Calif.
KJML	Sacramento, Calif.
KJPO	Fresno, Calif.
KJRG	Newton, Kans.
KJSB	Houston, Tex.
KLAC-FM	Los Angeles, Calif.
KLAY-FM	Tacoma, Wash.
KLCN-FM	Blytheville, Ark.
KLEN-FM	Killeen, Tex.
KLFM	Beverly Hills, Calif.
KLIR-FM	Denver, Colo.
KLIZ-FM	Brainerd, Minn.
KLOA-FM	Ridgecrest, Calif.
KLON	Long Beach, Calif.
KLRO	San Diego, Calif.
KLSN	Seattle, Wash.(s)
KLUB-FM	Salt Lake City, Utah
KLVL	Pasadena, Tex.
KLYD-FM	Bakersfield, Calif.
KLYN-FM	Lynden, Wash.
KMAK-FM	Fresno, Calif.
KMAX	Sierra Madre, Calif.
KMCP	Portland, Oreg.
KMCS	Seattle, Wash.
KMER	Fresno, Calif.
KMFM	Tularosa, N. Mex.
KMHT	Marshall, Tex.
KMJ-FM	Fresno, Calif.
KMLA	Los Angeles, Calif.(s)
KMLB-FM	Monroe, La.
KMMK	Little Rock, Ark.
KMOX-FM	St. Louis, Mo.
KMUW	Wichita, Kans.
KMYC-FM	Marysville, Calif.
KMUZ	Santa Barbara, Calif.(s)
KNBC-FM	San Francisco, Calif.
KNDE-FM	Aztec, N.Mex.
KNDX	Yakima, Wash.
KNEB-FM	Scottsbluff, Nebr.
KNER	Dallas, Tex.
KNEV	Reno, Nev.
KNEW-FM	Scottsbluff, Nebr.
KNFM	Midland, Tex.
KNIK-FM	Anchorage, Alaska
KNOB	Long Beach, Calif.
KNOF	St. Paul, Minn.
KNX-FM	Los Angeles, Calif.
KOA-FM	Denver, Colo.
KOAP-FM	Portland, Ore.
KOCW	Tulsa, Okla.
KODA-FM	Houston, Tex.
KOGM-FM	Tulsa, Okla
KOGO	San Diego, Calif.
KOIN-FM	Portland, Oreg.
KOKH	Oklahoma City, Okla.
KOL-FM	Seattle, Wash.
KONG-FM	Visalia, Calif.(s)
KOOL-FM	Phoenix, Ariz.
KORK	Las Vegas, Nev.
KOSE-FM	Osceola, Ark.
KOST	Dallas, Tex.
KOSU-FM	Stillwater, Okla.
KOTN-FM	Pine Bluff, Ark.
KOY-FM	Phoenix, Ariz.
KOZE-FM	Lewiston, Idaho
KPAT	Albuquerque, N. Mex.
KPCS	Pasadena, Calif.
KPDQ-FM	Portland, Ore.
KPEN	Atherton, Calif.(s)
KPFA	Berkeley, Calif.
KPFB	Berkeley, Calif.
KPFK	Los Angeles, Calif.
KPFM	Portland, Oreg.(s)
KPGM	Los Altos, Calif.
KPLR-FM	St. Louis, Mo.
KPOI-FM	Honolulu, Hawaii
KPOJ-FM	Portland, Oreg.
KPOL-FM	Los Angeles, Calif.
KPPS-FM	Parsons, Kans.
KPRI	San Diego, Calif.(s)
KPRN	Seattle, Wash.
KPSD	Dallas, Tex.
KQAL-FM	Omaha, Nebr.(s)
KQBY-FM	San Francisco, Calif.
KQFM	Portland, Oreg.
KQIP	Odessa, Tex.
KQRO	Dallas, Tex.
KQUE	Houston, Tex.
KQV-FM	Pittsburgh, Pa.
KQXR	Bakersfield, Calif.
KRAK-FM	Stockton, Calif.
KRAM-FM	Las Vegas, Nev.
KRBE	Houston, Tex.(s)
KRCC	Colorado Springs, Colo.
KRCW	Santa Barbara, Calif.
KRE-FM	Berkeley, Calif.
KREM-FM	Spokane, Wash.
KREX-FM	Grand Junction, Colo.
KRFM	Fresno, Calif.
KRHM	Los Angeles, Calif.(s)
KRKD-FM	Los Angeles, Calif.
KRKH-FM	Lubbock, Tex.
KRKY	Denver, Colo.
KRLD-FM	Dallas, Tex.
KRMD-FM	Shreveport, La.
KRNW	Boulder, Colo.
KRNY-FM	Kearney-Holdrege, Nebraska
KRON-FM	San Francisco, Calif.
KROS-FM	Clinton, Iowa
KROW	Santa Barbara, Calif.
KROY-FM	Sacramento, Calif.
KRPM	San Jose, Calif.
KRRC	San Jose, Calif.
KRSI	Minneapolis, Minn.(s)
KRSN-FM	Los Alamos, N.Mex.
KRVM	Eugene, Oreg.
KSCO	Santa Cruz, Calif.
KSBW-FM	Salinas, Calif.
KSDA	La Sierra, Calif.
KSDB-FM	Manhattan, Kans.
KSDS	San Diego, Calif.
KSEA	San Diego, Calif.
KSEO-FM	Durant, Okla.
KSFM	Dallas, Tex.(s)
KSFR	San Francisco, Calif.
KSFV	San Fernando, Calif.
KSFX	San Francisco, Calif.
KSHE	Crestwood, Mo.
KSHS	Colorado Springs, Colo.
KSJO-FM	San Jose, Calif.(s)
KSL-FM	Salt Lake City, Utah(s)
KSLA	Seattle, Wash.(s)
KSLH	St. Louis, Mo.
KSLT	Tyler, Tex.
KSMA-FM	Santa Maria, Calif.
KSO-FM	Des Moines, Iowa
KSPC	Claremont, Calif.
KSPI-FM	Stillwater, Okla.
KSPL-FM	Diboll, Tex.
KSRF	Santa Monica, Calif.
KSTE	Emporia, Kans.
KSTL-FM	St. Louis, Mo.
KSTN-FM	Stockton, Calif.
KSUI	Iowa City, Iowa
KSWI-FM	Omaha, Nebr.
KSYN	Joplin, Mo.(s)
KTAL	Texarkana, Tex.
KTAP	Tucson, Ariz.
KTAR-FM	Phoenix, Ariz.
KTBC-FM	Austin, Tex.(s)
KTCF	Cedar Falls, Iowa
KTEC	Oretech, Oreg.
KTGM	Denver, Colo.
KTIM	San Rafael, Calif.
KTIS-FM	Minneapolis, Minn.
KTJO-FM	Ottawa, Kans.
KTNT-FM	Tacoma, Wash.
KTOD	Mt. Pleasant, Tex.
KTOP-FM	Topeka, Kans.
KTOY	Tacoma, Wash.
KTRB-FM	Modesto, Calif.
KTRH-FM	Houston, Tex.
KTSM-FM	El Paso, Tex.
KTSR	Kansas City, Mo.
KTTS-FM	Springfield, Mo.
KTWR	Tacoma, Wash.
KTXR-FM	Springfield, Mo.
KTXT-FM	Lubbock, Tex.
KTYM-FM	Inglewood, Calif.
KUDE-FM	Oceanside, Calif.
KUDU-FM	Ventura-Oxnard, Calif.
KUER	Salt Lake City, Utah
KUFM	El Cajon, Calif.
KUFY	Redwood City, Calif.
KUGN-FM	Eugene, Oreg.
KUHF	Houston, Tex.
KUMD-FM	Duluth, Minn.
KUOA-FM	Siloam Springs, Ark.
KUOH	Honolulu, Hawaii
KUOW	Seattle, Wash.
KUPD-FM	Tempe, Ariz.
KUSC	Los Angeles, Calif.
KUT-FM	Austin, Tex.
KUTE	Glendale, Calif.
KVCR	San Bernardino, Calif.
KVEC-FM	San Luis Obispo, Calif.
KVEN-FM	Ventura, Calif.
KVFM	San Hernando, Calif.
KVIL	Highland Pk., Tex.
KVOF-FM	El Paso, Tex.
KVOK	Honolulu, Hawaii
KVDP-FM	Plainview, Tex.
KVOR-FM	Colorado Springs, Colo.
KVSC	Logan, Utah
KVTT	Dallas, Tex.
KWAR	Waverly, Iowa
KWAX	Eugene, Oreg.
KWFM	Minneapolis, Minn.(s)
KWG-FM	Stockton, Calif.
KWGS	Tulsa, Okla.
KWIX	St. Louis, Mo.
KWIZ-FM	Santa Ana, Calif.
KWJB-FM	Globe, Ariz.
KWKH-FM	Shreveport, La.
KWME	Walnut Creek, Calif.(s)
KWMO	Odessa, Tex.
KWOA-FM	Worthington, Minn.
KWOC-FM	Poplar Bluff, Mo.
KWPC-FM	Muscatine, Iowa

C.L.	Location
KWPM-FM	West Plains, Mo.
KXFM	Fort Worth, Tex.
KXJK-FM	Forrest City, Ark.
KXLU	Los Angeles, Calif.
KXOA	Sacramento, Calif.
KXQR	Fresno, Calif.(s)
KXRQ	Sacramento, Calif.
KXTR	Kansas City, Mo.(s)
KXYZ-FM	Houston, Tex.
KYA-FM	San Francisco, Calif.
KYEW	Phoenix, Ariz.
KYFM	Oklahoma City, Okla.
KYSM-FM	Mankato, Minn.
KYW-FM	Cleveland, Ohio
KZAM	Seattle, Wash.
KZFM	Cortez, Colo.
KZOM	Oklahoma City, Okla.
KZUN-FM	Opportunity, Wash
WAAB-FM	Worcester, Mass.
WAAM-FM	Parkersburg, W.Va.
WABC-FM	New York, N.Y.
WABE	Atlanta, Ga.
WABI-FM	Bangor, Maine
WABQ	Cleveland, Ohio
WABX	Detroit, Mich.
WABZ-FM	Albemarle, N.C.
WACO	Waco, Tex.
WAEB-FM	Cincinnati, Ohio
WAEF	Syracuse, N.Y.
WAER	Syracuse, N.Y.
WAEZ	Miami Beach, Fla.
WAHR-FM	Miami Beach, Fla.
WAIC	San Juan, P.R.
WAIR-FM	Winston-Salem, N.C.
WAIV	Indianapolis, Ind.
WAJC	Indianapolis, Ind.
WAJM	Montgomery, Ala.
WAJP	Joliet, Ill.
WAJR-FM	Morgantown, W.Va.
WAKR-FM	Akron, Ohio
WAKW-FM	Cincinnati, Ohio
WALK-FM	Patchogue, N.Y.
WAMC	Albany, N.Y.
WAMF	Amherst, Mass.
WAMO	Pittsburgh, Pa.
WAMU-FM	Washington, D.C.
WAPC-FM	Riverhead, N.Y.
WAPI-FM	Birmingham, Ala.
WAPS	Akron, Ohio
WAQE-FM	Towson, Md.(s)
WARD-FM	Johnstown, Pa.
WARK-FM	Hagerstown, Md.
WARL-FM	Arlington, Va.
WARN-FM	Fort Pierce, Fla.
WASA-FM	Havre De Grace, Md.
WASH	Washington, D.C.(s)
WATR-FM	Waterbury, Conn.
WAUG-FM	Augusta, Ga.
WAUX-FM	Waukesha, Wis.
WAVI-FM	Dayton, Ohio
WAVQ	Atlanta, Ga.
WAVU-FM	Albertville, Ala.
WAVY-FM	Portsmouth, Va.
WAWZ-FM	Zarephath, N.J.
WAYL	Minneapolis, Minn.(s)
WAYZ-FM	Waynesboro, Pa.
WAZL-FM	Hazelton, Pa.
WBAA-FM	W. Lafayette, Ind.
WBAB-FM	Babylon, N.Y.
WBAI	New York, N.Y.
WBAP-FM	Ft. Worth, Tex.
WBAY-FM	Green Bay, Wis.
WBBB-FM	Burlington, N.C.(s)
WBBC	Jackson, Mich.
WBBF-FM	Rochester, N.Y.
WBBM-FM	Chicago, Ill.
WBBO-FM	Forest City, N.C.
WBBQ-FM	Augusta, Ga.
WBBR-FM	E. St. Louis, Ill.
WBBS	Crawfordsville, Ind.
WBBW-FM	Youngstown, Ohio
WBCB-FM	Levittown-Fairless Hills, Pa.
WBCI-FM	Williamsburg, Va.
WBCM-FM	Bay City, Mich.
WBCN	Boston, Mass.
WBEN-FM	Buffalo, N.Y.
WBET-FM	Brockton, Mass.
WBEX-FM	Chillicothe, Ohio
WBEZ	Chicago, Ill.
WBFG	Detroit, Mich.
WBFM	New York, N.Y.
WBFO	Buffalo, N.Y.
WBGM	Tallahassee, Fla.
WBGO	Newark, N.J.
WBGU	Bowling Green, Ohio
WBIE-FM	Marietta, Ga.
WBIR-FM	Knoxville, Tenn.
WBIV	Wethersfield, N.Y.
WBJC	Baltimore, Md.
WBKV-FM	West Bend, Wis.
WBKW	Beckley, W.Va.
WBKY	Lexington, Ky.
WBLY-FM	Springfield, Ohio
WBMI	Meridan, Conn.(s)
WBNS-FM	Columbus, Ohio (s)
WBOE	Cleveland, Ohio
WBOR	Brunswick, Maine
WBOS-FM	Brookline, Mass.
WBRB-FM	Mt. Clements, Mich.
WBRC	Birmingham, Ala.
WBRE-FM	Wilkes-Barre, Pa.
WBSM-FM	New Bedford, Mass.
WBST	Muncie, Ind.
WBT-FM	Charlotte, N.C.(s)
WBUF	Buffalo, N.Y.
WBUR	Boston, Mass.
WBUT-FM	Butler, Pa.
WBUY-FM	Lexington, N.C.
WBVA	Woodbridge, Va.
WBVP-FM	Beaver Falls, Pa.
WBWC	Berea, Ohio
WBZ-FM	Boston, Mass.
WCAC	Anderson, S.C.
WCAO-FM	Baltimore, Md.
WCAU-FM	Philadelphia, Pa.
WCBC-FM	Anderson, Ind.
WCBE	Columbus, Ohio
WCBM-FM	Baltimore, Md.
WCBS-FM	New York, N.Y.
WCCC-FM	Hartford, Conn.
WCCV-FM	Charlottesville, Va.
WCED-FM	Dubois, Pa.
WCFM	Williamstown, Mass.
WCHA-FM	Chambersburg, Pa.(s)
WCHD	Detroit, Mich.
WCKR-FM	Miami, Fla.
WCLE-FM	Cleveland, Tenn.
WCLI-FM	Corning, N.Y.
WCLM	Chicago, Ill.
WCLO-FM	Janesville, Wis.
WCLT-FM	Newark, Ohio
WCMC-FM	Wildwood, N.J.
WCME-FM	Brunswick, Maine
WCMF-FM	Rochester, N.Y.(s)
WCMI-FM	Ashland, Ky.
WCMO	Marietta, Ohio
WCMR-FM	Elkhart, Ind.
WCNB-FM	Connersville, Ind.
WCNO	Canton, Ohio(s)
WCOD	Richmond, Va.
WCOH-FM	Newnan, Ga.
WCOL-FM	Columbus, Ohio
WCOP-FM	Boston, Mass.
WCOS-FM	Columbia, S.C.
WCOU-FM	Lewiston, Maine
WCOW-FM	Sparta, Wis.
WCPO-FM	Cincinnati, Ohio
WCPS-FM	Tarbor, N.C.
WCRB-FM	Waltham, Mass.(s)
WCRF-FM	Cleveland, Ohio
WCRT-FM	Birmingham, Ala.(s)
WCSC-FM	Charleston, S.C.
WCSI-FM	Columbus, Ind.
WCSQ	Central Square, N.Y.
WCTA-FM	Andalusia, Ala.
WCTC-FM	New Brunswick, N.J.
WCTM	Eaton, Ohio
WCTW-FM	New Castle, Ind.
WCUE-FM	Akron, Ohio
WCUM-FM	Cumberland, Md.
WCUY-FM	Cleveland Hts., Ohio
WCWM	Williamsburg, Va.
WDAC	Lancaster, Pa.
WDAE-FM	Tampa, Fla.
WDAF-FM	Kansas City, Mo.
WDAS-FM	Philadelphia, Pa.
WDBJ-FM	Roanoke, Va.
WDBO-FM	Orlando, Fla.
WDBQ-FM	Dubuque, Iowa
WDDE	Hamden, Conn.
WDDS-FM	Syracuse, N.Y.
WDEL-FM	Wilmington, Del.
WDET-FM	Detroit, Mich.
WDFM	State College, Pa.
WDGO	Cleveland, Ohio(s)
WDHA-FM	Dover, N.J.(s)
WDHF	Chicago, Ill.
WDIA-FM	Memphis, Tenn.
WDJK	Atlanta, Ga.
WDJR	Oil City, Pa.
WDMB-FM	Statesville, N.C.
WDNC-FM	Durham, N.C.
WDOC-FM	Prestonsburg, Ky.
WDOD-FM	Chattanooga, Tenn.
WDOK-FM	Cleveland, Ohio
WDOV-FM	Dover, Del.
WDRC-FM	Hartford, Conn.
WDRK-FM	Greenville, Ohio
WDSC-FM	Dillon, S.C.
WDSU-FM	New Orleans, La.
WDTM	Detroit, Mich.(s)
WDTR	Detroit, Mich.
WDUB	Granville, Ohio
WDUN-FM	Gainesville, Ga.
WDUQ	Pittsburgh, Pa.
WDUZ-FM	Green Bay, Wis.
WDWS-FM	Champaign, Ill.
WEAV-FM	Plattsburgh, N.Y.
WEAW-FM	Evanston, Ill.
WEBH	Chicago, Ill.
WEBQ-FM	Harrisburg, Ill.
WEBR-FM	Buffalo, N.Y.
WECW	Elmira, N.Y.
WEDK	Springfield, Mass.
WEEC	Springfield, Ohio
WEED-FM	Rocky Mount, N.C.
WEEI-FM	Boston, Mass.
WEEP-FM	Pittsburgh, Pa.
WEEX-FM	Easton, Pa.
WEFA	Waukegan, Ill.
WEFM	Chicago, Ill.(s)
WEGO-FM	Concord, N.C.
WEHS	Chicago, Ill.
WEIV	Ithaca, N.Y.
WEKZ-FM	Monroe, Wis.
WELF	Glen Ellyn, Ill.
WELG	Elgin, Ill.
WEMC	Harrisonburg, Va.
WEMP-FM	Milwaukee, Wis.
WENR-FM	Chicago, Ill.
WEOK-FM	Poughkeepsie, N.Y.
WEOL-FM	Elyria, Ohio
WEPM-FM	Martinsburg, W.Va.
WEPS	Elgin, Ill.
WEQR	Goldsboro, N.C.
WERC-FM	Erie, Pa.
WERE-FM	Cleveland, Ohio
WERI-FM	Westerly, R.I.
WERS	Boston, Mass.
WESC-FM	Greenville, S.C.
WEST-FM	Easton, Pa.
WETL	South Bend, Ind.
WETN	Wheaton, Ill.
WEVC	Evansville, Ind
WEVD-FM	New York, N.Y.
WEWO-FM	Laurinburg, N.C.
WFAA-FM	Dallas, Tex.
WFAH-FM	Alliance, Ohio
WFAN	Washington, D.C.
WFAS-FM	White Plains, N.Y.
WFAU-FM	Augusta, Maine
WFAW	Fort Atkinson, Wis.
WFBC-FM	Greenville, S.C.
WFBE	Flint, Mich.
WFBG-FM	Altoona, Pa.
WFBM-FM	Indianapolis, Ind.
WFBS-FM	Winston-Salem, N.C.
WFCI	Franklin, Ind.
WFCJ	Miamisburg, Ohio
WFCR	Amherst, Mass.
WFDS-FM	Baltimore, Md.
WFFM	Cincinnati, Ohio
WFGM-FM	Fitchburg, Mass.
WFHA-FM	Red Bank, N.J.
WFHR-FM	Wisconsin Rapids, Wis.
WFID	Rio Piedras, P.R.
WFIG	Sumter, S.C.
WFIL-FM	Philadelphia, Pa.
WFIN-FM	Findlay, Ohio(s)
WFIU	Bloomington, Ind.
WFLA-FM	Tampa, Fla.
WFLM	Ft. Lauderdale, Fla.(s)
WFLN-FM	Philadelphia, Pa.(s)
WFLO	Farmville, Va.
WFLT-FM	Franklin, Tenn.
WFLY	Troy, N.Y.
WFMA	Rocky Mount, N.C.
WFMB	Nashville, Tenn.
WFMD-FM	Frederick, Md.
WFME	Detroit, Mich.
WFMF	Chicago, Ill.
WFMG	Gallatin, Tenn.
WFMH-FM	Cullman, Ala.
WFMI	Montgomery, Ala.
WFML	Washington, Ind.
WFMM-FM	Baltimore, Md.
WFMQ	Chicago, Ill.(s)
WFMS	Indianapolis, Ind.
WFMT	Chicago, Ill.(s)
WFMU	East Orange, N.J.
WFMW-FM	Madisonville, Ky.
WFMX	Statesville, N.C.
WFMZ	Allentown, Pa.
WFNC-FM	Fayetteville, N.C.
WFNS-FM	Burlington, N.C.
WFOB-FM	Fostoria, Ohio
WFOL	Hamilton, Ohio(s)
WFOS	South Norfolk, Va.
WFPK	Louisville, Ky.
WFPL	Louisville, Ky.
WFQM	San Juan, P.R.
WFRO-FM	Fremont, Ohio
WFST-FM	Caribou, Maine
WFSU-FM	Tallahassee, Fla.
WFUL-FM	Fulton, Ky.
WFUR-FM	Grand Rapids, Mich.
WFUV	New York, N.Y.
WFVA-FM	Fredericksburg, Va.
WGAL-FM	Lancaster, Pa.
WGAR-FM	Cleveland, Ohio
WGAU-FM	Athens, Ga.
WGAY	Silver Spring, Md.
WGBH-FM	Cambridge, Mass.
WGBI-FM	Scranton, Pa.
WGBS-FM	Miami, Fla.
WGCB-FM	Red Lion, Pa.
WGCS	Goshen, Ind.
WGEM-FM	Quincy, Ill.(s)
WGET-FM	Gettysburg, Pa.
WGFM	Schenectady, N.Y. (s)
WGGC	Glasgow, Ky.
WGGM	Taylorville, Ill.
WGH-FM	Newport News, Va.
WGHF	Newton, Conn.(s)
WGHJ	Lawrence, Mass.
WGKA-FM	Atlanta, Ga.
WGLM	Richmond, Ind.
WGMR	Tyrone, Pa.
WGMS-FM	Washington, D.C.
WGNB	St. Petersburg, Fla.
WGNC-FM	Gastonia, N.C.
WGPA-FM	Bethlehem, Ga.
WGPM	Detroit, Mich.
WGPS	Greensboro, N.C.
WGR-FM	Buffalo, N.Y.
WGRE	Greencastle, Ind.
WGRV-FM	Greenville, Tenn.
WGTB-FM	Washington, D.C.
WGTS-FM	Takoma Park, Md.
WGUC	Cincinnati, Ohio
WGVE	Gary, Ind.
WGWR-FM	Asheboro, N.C.
WGYA	Interlochen, Mich.
WHA-FM	Madison, Wis.
WHAD	Delafield, Wis.
WHAI-FM	Greenfield, Mass.
WHAT-FM	Philadelphia, Pa.(s)
WHAV-FM	Haverhill, Mass.
WHBC-FM	Canton, Ohio
WHBF-FM	Rock Island, Ill.(s)
WHBM-FM	Xenia, Ohio
WHCI	Hartford City, Ind.
WHCN	Hartford, Conn.
WHCU-FM	Ithaca, N.Y.
WHDH-FM	Boston, Mass.
WHDL-FM	Allegheny, N.Y.
WHEN-FM	Syracuse, N.Y.
WHFB-FM	Benton Harbor, Mich.
WHFI	West Paterson, N. J.
WHFM	Rochester, N.Y.
WHFS	Bethesda, Md.(s)
WHHI	Highland, Wis.
WHHS	Havertown, Pa.
WHIM-FM	Providence, R.I.
WHIO-FM	Dayton, Ohio
WHIZ-FM	Zanesville, Ohio
WHK-FM	Cleveland, Ohio
WHKP-FM	Hendersonville, N.C.
WHKW	Chilton, Wis.
WHKY-FM	Hickory, N.C.
WHLA	Holmen, Wis.
WHLD-FM	Niagara Falls, N. Y.
WHLI-FM	Hempstead, N.Y.
WHLM-FM	Bloomsburg, Pa.
WHMA-FM	Anniston, Ala.
WHNC-FM	Henderson, N.C.
WHO-FM	Des Moines, Iowa
WHOH	Hamilton, Ohio
WHOK-FM	Lancaster, Ohio
WHOM-FM	New York, N.Y.
WHOO-FM	Orlando, Fla.(s)
WHOS-FM	Decatur, Ala.
WHP-FM	Harrisburg, Pa.
WHPE-FM	High Point, N.C.
WHPR	Highland Park, Mich.
WHPS	High Point, N.C.
WHRB-FM	Cambridge, Mass.
WHRM	Wausau, Wis.
WHSA	Highland Twp., Wis.
WHSR-FM	Winchester, Mass.
WHTG-FM	Eatontown, N.J.
WHUS	Storrs, Conn.
WHWC	Colfax, Wis.
WHYL-FM	Carlisle, Pa.
WHYN-FM	Springfield, Mass.
WHYY	Philadelphia, Pa.
WIAL	Eau Claire, Wis.
WIAN	Indianapolis, Ind.
WIBA-FM	Madison, Wis.
WIBC-FM	Indianapolis, Ind.
WIBG-FM	Philadelphia, Pa.
WICB	Ithaca, N.Y.
WIFE	Buffalo, N.Y.
WIFI	Glenside, Pa.
WIFM-FM	Elkin, N.C.
WIKY-FM	Evansville, Ind.
WIL-FM	St. Louis, Mo.
WILL-FM	Urbana, Ill.
WIMA-FM	Lima, Ohio
WINA-FM	Charlottesville, Va.
WINE-FM	Kenmore, N.Y.
WINF-FM	Manchester, Conn.
WINZ-FM	Miami, Fla.
WIP-FM	Philadelphia, Pa.
WIPR-FM	San Juan, P.R.
WIRA-FM	Ft. Pierce, Fla.
WIRQ	Rochester, N.Y.
WISH-FM	Indianapolis, Ind.(s)
WISK	Medford, Mass.
WISN-FM	Milwaukee, Wis.
WISZ-FM	Madison, Wis.
WITA-FM	San Juan, P.R.
WITH-FM	Baltimore, Md.
WITZ-FM	Jasper, Ind.
WIUS	Christiansted, V.I.
WJAC-FM	Johnstown, Pa.(s)
WJAS-FM	Pittsburgh, Pa.
WJAX-FM	Jacksonville, Fla.
WJBC-FM	Bloomington, Ill.
WJBK-FM	Detroit, Mich.
WJBL-FM	Holland, Mich.
WJBO-FM	Baton Rouge, La.
WJBR	Wilmington, Del.(s)
WJCD-FM	Seymour, Ind.
WJDX-FM	Jackson, Miss.
WJEF-FM	Grand Rpds., Mich.(s)
WJEH-FM	Gallipolis, Ohio
WJEJ-FM	Hagerstown, Md.
WJGG	Houghton, Mich.
WJHL-FM	Johnson City, Tenn.
WJIM-FM	Lansing, Mich.
WJIV	Cherry Valley, N.Y.
WJJD-FM	Chicago, Ill.
WJLK-FM	Asbury Park, N.J.
WJLN	Birmingham, Ala.
WJMC-FM	Rice Lake, Wis.
WJMD	Bethesda, Md.(s)
WJDF	Athens, Ala.
WJOL-FM	Joliet, Ill.
WJR-FM	Detroit, Mich.
WJRZ	Newark, N.J.
WJTN-FM	Jamestown, N.K.
WJW-FM	Cleveland, Ohio
WJWR	Palmyra, Pa.
WJZZ	Bridgeport, Conn.
WKAK	Kankakee, Ill.
WKAQ-FM	San Juan, P.R.
WKAR-FM	E. Lansing, Mich.
WKAT-FM	Miami, Fla.
WKAY-FM	Glasgow, Ky.
WKAZ-FM	Charleston, W.Va.
WKBC-FM	Winston-Salem, N.C.
WKBN-FM	Youngstown, Ohio
WKBR-FM	Manchester, N.H.
WKBV-FM	Richmond, Ind.
WKCQ	Berlin, N.H.
WKCR-FM	New York, N.Y.
WKCS	Knoxville, Tenn.
WKDN-FM	Camden, N.J.
WKEE-FM	Huntington, W.Va.
WKFM	Chicago, Ill.(s)
WKIC-FM	Hazard, Ky.

C.L.	Location
WKIP-FM	Poughkeepsie, N.Y.
WKIS-FM	Orlando, Fla.
WKIX-FM	Raleigh, N.C.
WJKF	Pittsburgh, Pa.(s)
WKLF-FM	Clanton, Ala.
WKLS	Marietta, Ga.
WKLW-FM	Grand Rapids, Mich.
WKMH-FM	Dearborn, Mich.
WKNA	Charleston, W.Va.(s)
WKOF	Hopkinsville, Ky.
WKOK-FM	Sunbury, Pa.
WKOP-FM	Binghamton, N.Y.
WKOX-FM	Framingham, Mass.
WKPT-FM	Kingsport, Tenn.(s)
WKRC-FM	Cincinnati, Ohio
WKRG-FM	Mobile, Ala.
WKRT-FM	Cortland, N.Y.
WKSD	Kewanee, Ill.
WKSU-FM	Kent, Ohio
WKTM-FM	Mayfield, Ky.
WKWK-FM	Wheeling, W.Va.
WKYB-FM	Paducah, Ky.
WLAD-FM	Danbury, Conn.
WLAG-FM	LaGrange, Ga.
WLAN-FM	Lancaster, Pa.
WLAP-FM	Lexington, Ky.
WLAV-FM	Grand Rapids, Mich.
WLBG-FM	Laurens-Clinton, S.C.
WLBH-FM	Mattoon, Ill.
WLBR-FM	Lebanon, Pa.
WLDM	Oak Park, Mich.(s)
WLDS-FM	Jacksonville, Ill.
WLEC-FM	Sandusky, Ohio
WLET-FM	Toccoa, Ga.
WLFM	Appleton, Wis.
WLIN	Merrill, Wis.
WLIR	Hicksville, N.Y.(s)
WLLH-FM	Lowell, Mass.
WLNA-FM	Peekskill, N.Y.
WLOA-FM	Braddock, Pa.(s)
WLOB-FM	Portland, Maine
WLOE-FM	Leaksville, N.C.
WLOL-FM	Minneapolis, Minn.
WLOM	Chattanooga, Tenn.
WLOS-FM	Asheville, N.C.
WLOV	Cranston, R.I.
WLRJ	Roanoke, Va.
WLVL	Louisville, Ky.
WLYC-FM	Williamsport, Pa.
WMAL-FM	Washington, D.C.
WMAM-FM	Marinette, Wis.
WMAQ-FM	Chicago, Ill.(s)
WMAS-FM	Springfield, Mass.
WMAX-FM	Grand Rapids, Mich.
WMAZ-FM	Macon, Ga.
WMBD-FM	Peoria, Ill.
WMBI-FM	Chicago, Ill.
WMBM	Miami Beach, Fla.
WMBO-FM	Auburn, N.Y.
WMBR-FM	Jacksonville, Fla.
WMCF	Memphis, Tenn.
WMCO	New Concord, Ohio
WMCR	Kalamazoo, Mich.
WMDE	Greensboro, N.C.(s)
WMER	Celina, Ohio
WMEV-FM	Marion, Va.
WMFM	Madison, Wis.(s)
WMFP	Ft. Lauderdale, Fla.
WMFR-FM	High Point, N.C.
WMGW-FM	Meadville, Pa.
WMHC	South Hadley, Mass.
WMHE	Toledo, Ohio
WMIL-FM	Milwaukee, Wis.
WMIT	Marion, N.C.
WMIV	S. Bristol, N.Y.
WMIX-FM	Mt. Vernon, Ill.
WMLS-FM	Sylacauga, Ala.
WMLW	Milwaukee, Wis.
WMNA-FM	Gretna, Va.
WMPS-FM	Memphis, Tenn.
WMRI-FM	Marion, Ind.
WMRN-FM	Marion, Ohio
WMRO-FM	Aurora, Ill.
WMRT	Lansing, Mich.
WMSP	Harrisburg, Pa.
WMTK	Park Ridge, Ill.
WMTI	Norfolk, Va.
WMTW-FM	Mt. Washington, N.H.
WMUA	Amherst, Mass.
WMUB	Oxford, Ohio
WMUL	Huntington, W.Va.
WMUN	Muncie, Ind.
WMUU-FM	Greenville, S.C.
WMUZ	Detroit, Mich.
WMVA-FM	Martinsville, Va.(s)
WMVB-FM	Millville, N.J.
WMVO-FM	Mount Vernon, Ohio
WMZK	Detroit, Mich.
WNAD-FM	Norman, Okla.
WNAS	New Albany, Ind.
WNAV-FM	Annapolis, Md
WNBC-FM	New York, N.Y.
WNBF-FM	Binghamton, N.Y.
WNBH-FM	New Bedford, Mass.
WNCN	New York, N.Y.
WNCO-FM	Ashland, Ohio
WNDA	Huntsville, Ala.(s)
WNBD-FM	Daytona Beach, Fla.
WNEM-FM	Bay City, Mich.(s)
WNES-FM	Central City, Ky.
WNEW-FM	New York, N.Y.
WNEX-FM	Macon, Ga.
WNGO-FM	Mayfield, Ky.
WNHC-FM	New Haven, Conn.
WNIB	Chicago, Ill.
WNIC	DeKalb, Ill.
WNNJ-FM	Newton, N.J.
WNOB	Cleveland, Ohio (s)
WNOK-FM	High Point, N.C.
WNOS-FM	High Point, N.C.
WNOW-FM	York, Pa.
WNSH	Highland Park, Ill.
WNSL-FM	Laurel, Miss.
WMTH	Winnetka, Ill.
WNTI	Hackettstown, N.J.
WNUR	Evanston, Ill.
WNWC-FM	Arlington Hts., Ill.
WNYC-FM	New York, N.Y.
WNYE	New York, N.Y.
WOAK	Royal Oak, Mich.
WOAY-FM	Oak Hill, W.Va.
WOBN	Westerville, Ohio
WOC-FM	Davenport, Iowa
WOCB-FM	W. Yarmouth, Mass.
WOHS-FM	Shelby, N.C.
WOI-FM	Ames, Iowa
WOIO	Cincinnati, Ohio
WOIV	De Ruyter, N.Y.
WOKZ-FM	Alton, Ill.
WOL-FM	Washington, D.C.
WOMC	Royal Oak, Mich.(s)
WOMI-FM	Owensboro, Ky.
WOMP-FM	Bellaire, Ohio
WONO	Syracuse, N.Y.
WOOD-FM	Grand Rapids, Mich.
WOPA-FM	Oak Park, Ill.
WOPI-FM	Bristol, Tenn.
WOR-FM	New York, N.Y.
WORA-FM	Mayaguez, P.R.
WORX-FM	Madison, Ind.
WOSC-FM	Fulton, N.Y.
WOSJ-FM	Atlantic City, N.J.
WOSU-FM	Columbus, Ohio
WOTW-FM	Nashua, N.H.
WOUB-FM	Athens, Ohio
WOW-FM	Omaha, Nebr.
WOXR	Oxford, Ohio
WPAC-FM	Patchogue, N.Y.(s)
WPAD-FM	Paducah, Ky.
WPAT-FM	Paterson, N.J.
WPAY-FM	Portsmouth, Ohio (s)
WPBC-FM	Minneapolis, Minn.
WPBS	Philadelphia, Pa.
WPCA-FM	Philadelphia, Pa.
WPEL-FM	Montrose, Pa.
WPEN-FM	Philadelphia, Pa.
WPEX-FM	Pensacola, Fla.(s)
WPFB-FM	Middletown, Ohio (s)
WPFM	Providence, R.I.(s)
WPGO-FM	Bradbury Hts., Md.
WPGI	Pittsburgh, Pa.
WPIC-FM	Sharon, Pa.
WPIT-FM	Pittsburgh, Pa.
WPJB-FM	Providence, R.I.
WPKM	Tampa, Fla.
WPLB	Greenville, Mich.
WPLM-FM	Plymouth, Mass.
WPLO-FM	Atlanta, Ga.
WPPA-FM	Pottsville, Pa.
WPRB	Princeton, N.J.
WPRK	Winter Park, Fla.
WPRM	San Juan, P.R.
WPRO-FM	Providence, R.I.
WPRS-FM	Paris, Ill.
WPRW-FM	Manassas, Va.
WPSR	Evansville, Ind.
WPTF-FM	Raleigh, N.C.
WPTH	Fort Wayne, Ind.
WPTW-FM	Piqua, Ohio
WPWT	Philadelphia, Pa.
WQAL	Philadelphia, Pa.
WQDC-FM	Midland, Mich.
WQFM	Milwaukee, Wis.
WQMG	Greensboro, N.C.
WQMS	Hamilton, Ohio
WQRS-FM	Detroit, Mich.
WQXI-FM	Atlanta, Ga.
WQXR-FM	New York, N.Y.(s)
WQXT-FM	Palm Beach, Fla.
WRAJ-FM	Anna, Ill.
WRAK-FM	Williamsport, Pa.
WRAL-FM	Raleigh, N.C.
WRAY-FM	Princeton, Ind.
WRBL-FM	Columbus, Ga.
WRBS	Baltimore, Md.
WRC-FM	Washington, D.C.
WRCM	New Orleans, La.
WRED	Youngstown, Ohio
WREO-FM	Ashtabula, Ohio
WREV-FM	Reidsville, N.C.
WRFD-FM	Worthington-Columbus, Ohio
WRFK	Richmond, Va.
WRFL	Winchester, Va.
WRFM	Woodside, N.Y.
WRFS-FM	Alexander City, Ala.
WRHS	Park Forest, Ill.
WRIT-FM	Milwaukee, Wis.
WRJN-FM	Racine, Wis.
WRJR	Lewiston, Maine
WRKO-FM	Boston, Mass.
WRLB	Long Branch, N.J.(s)
WRLX	Hopkinsville, Ky.
WRLD-FM	Lanett, Ala.
WRMI-FM	Morris, Ill.
WRNJ	Atlantic City, N.J.
WRNL-FM	Richmond, Va.
WRNW	Mount Kisco, N.Y.
WROC-FM	Rochester, N.Y.
WROK-FM	Rockford, Ill.
WROW-FM	Albany, N.Y.
WROY-FM	Carmi, Ill.
WRPI	Troy, N.Y.
WRPN-FM	Ripon, Wis.
WRR-FM	Dallas, Tex.
WRRN	Warren, Pa.
WRSW-FM	Warsaw, Ind.
WRTC-FM	Hartford, Conn.
WRTI-FM	Philadelphia, Pa.
WRUF-FM	Gainesville, Fla.
WRUN-FM	Utica, N.Y.
WRVA-FM	Richmond, Va.
WRVB-FM	Madison, Wis.
WRVC	Norfolk, Va.
WRVP	New York, N.Y.
WRWR	Port Clinton, Ohio(s)
WRXO-FM	Roxboro, N.C.
WRYT	Pittsburgh, Pa.
WSAB	Mt. Carmel, Ill.
WSAI-FM	Cincinnati, Ohio
WSAM-FM	Saginaw, Mich.
WSB-FM	Atlanta, Ga.
WSBC-FM	Chicago, Ill.(s)
WSBF-FM	Clemson, S.C.
WSCB	Springfield, Mass.
WSCH	Hartford, Conn.
WSEI	Effingham, Ill.
WSEV-FM	Sevierville, Tenn.
WSFM	Birmingham, Ala.(s)
WSHS	Floral Park, N.Y.
WSID	Baltimore, Md.
WSIU	Carbondale, Ill.
WSJG	Hallandale, Fla.
WSJS-FM	Winston-Salem, N.C.
WSKS	Wabash, Ind.
WSIX-FM	Nashville, Tenn.
WSLM-FM	Salem, Ind.
WSLN	Delaware, Ohio
WSLS-FM	Roanoke, Va.
WSMC-FM	Collegedale, Tenn.
WSMD-FM	Waldorf, Md.
WSMI-FM	Litchfield, Ill.
WSNJ-FM	Brigeton, N.J.
WSNW-FM	Seneca, S.C.
WSOC-FM	Charlotte, N.C.
WSOM	Salem, Ohio
WSON-FM	Henderson, Ky
WSOU	S. Orange, N.J.
WSOY-FM	Decatur, Ill.
WSPA-FM	Spartanburg, S.C.(s)
WSPD-FM	Toledo, Ohio
WSPE	Springville, N.Y.
WSPT-FM	Stevens Point, Wis.
WSRW-FM	Hillsboro, Ohio
WSTC-FM	Stamford, Conn.
WSTP-FM	Salisbury, N.C.
WSTR-FM	Sturgis, Mich.
WSTV-FM	Steubenville, Ohio
WSVA-FM	Harrisonburg, Va.
WSVS-FM	Crewe, Va.
WSWM	East Lansing, Mich.(s)
WSYR-FM	Syracuse, N.Y.(s)
WTAD-FM	Quincy, Ill.
WTAG-FM	Worcester, Mass.
WTAR	Norfolk, Va.(s)
WTAX-FM	Springfield, Ill.
WTBC-FM	Tuscaloosa, Ala.
WTBO-FM	Cumberland, Md.
WTBS	Cambridge, Mass.
WTCX	St. Petersburg, Fla.
WTDS	Toledo, Ohio
WTFM	Babylon, N.Y.
WTHI-FM	Terre Haute, Ind.
WTHS	Miami, Fla.
WTIC-FM	Hartford, Conn.
WTJS-FM	Jackson, Tenn.
WTJU	Charlottesville, Va.
WTMA-FM	Charleston, S.C.
WTMJ-FM	Milwaukee, Wis.
WTNC-FM	Thomasville, N.C.
WTOA	Trenton, N.J.
WTOC-FM	Savannah, Ga.
WTOF	Canton, Ohio
WTOL-FM	Toledo, Ohio
WTOP-FM	Washington, D.C.
WTOS	Wauwatosa, Wis.
WTRC-FM	Elkhart, Ind.
WTRT	Toledo, Ohio
WTSB-FM	Lumberton, N.C.
WTSV-FM	Claremont, N.H.
WTTC-FM	Towanda, Pa.
WTTR-FM	Westminster, Md.
WTTV-FM	Bloomington, Ind.
WTUN	Tampa, Fla.
WTVB-FM	Coldwater, Mich.
WTVN-FM	Columbus, Ohio
WUCB-FM	Chicago, Ill.
WUFM	Utica, N.Y.(s)
WULX-FM	Richmond, Ind.
WUNC	Chapel Hill, N.C.
WUOA	Tuscaloosa, Ala.
WUOM	Ann Arbor, Mich.
WUOT	Knoxville, Tenn.
WUPI	Lynn, Mass.
WUSC-FM	Columbia, S.C.
WUST-FM	Bethesda, Md.
WUSV	Scranton, Pa.
WVAM-FM	Altoona, Pa.
WVBR-FM	Ithaca, N.Y.
WVCG-FM	Coral Gables, Fla.
WVEC-FM	Hampton, Va.
WVGR-FM	Grand Rapids, Mich.
WVHC	Hempstead, N.Y.
WVJS-FM	Owensboro, Ky.
WVKC-FM	Galesburg, Ill.
WVKO-FM	Columbus, Ohio
WVLN-FM	Olney, Ill.
WVMC-FM	Mt. Carmel, Ill.
WVNA-FM	Tuscumbia, Ala.
WVNJ-FM	Newark, N.J.
WVOT-FM	Wilson, N.C.
WVOX-FM	New Rochelle, N.Y.
WVSH	Huntington, Ind.
WVST	St. Petersburg, Fla.
WVTS	Terre Haute, Ind.(s)
WWCF	Greenfield, Wis.
WWCO-FM	Waterbury, Conn.
WWDC-FM	Washington, D.C.
WWGP-FM	Sanford, N.C.
WWHG-FM	Hornell, N.Y.
WWHI	Muncie, Ind.
WWIL-FM	Ft. Lauderdale, Fla.
WWJ-FM	Detroit, Mich.
WWKS	Macomb, Ill.
WWMT	New Orleans, La.
WWOD-FM	Lynchburg, Va.
WWOL-FM	Buffalo, N.Y.
WWON-FM	Woonsocket, R.I.
WWPB	Miami, Fla.(s)
WWST-FM	Wooster, Ohio
WWSW-FM	Pittsburgh, Pa.
WWTV-FM	Cadillac, Mich.
WWVA-FM	Wheeling, W.Va.
WWWS	Greenville, N.C.
WWYN	Erie, Pa.
WXCN	Providence, R.I.
WXFM	Elmwood Park, Ill.
WXHR	Cambridge, Mass.
WXPN	Philadelphia, Pa.
WXTC	Annapolis, Md.
WXTO-FM	Grand Rapids, Mich.
WXUR-FM	Media, Pa.
WXYZ-FM	Detroit, Mich.
WYAK	Sarasota, Fla.(s)
WYBC-FM	New Haven, Conn.
WYCA	Hammond, Ind.
WYCE	Warwick, R.I.
WYCR	York-Hanover, Pa.
WYFI	Norfolk, Va.(s)
WYFM	Charlotte, N.C.
WYFS	Winston-Salem, N.C.
WYRE-FM	Pittsburgh, Pa.
WYSO	Yellow Springs, Ohio
WYZZ	Wilkes-Barre, Pa.
WZIP-FM	Cincinnati, Ohio

Canadian FM Stations by Location

Location	C.L.	Mc.
Brampton, Ont.	CHIC-FM	102.1
Brantford, Ont.	CKPC-FM	92.1
Cornwall, Ont.	CJSS-FM	104.5
Edmonton, Alta.	CFRN-FM	100.3
	CJCA-FM	99.5
	CKUA-FM	98.1
Ft. William, Ont.	CKPR-FM	94.3
Halifax, N.S.	CHNS-FM	96.1
Kingston, Ont.	CFRC-FM	91.9
	CKLC-FM	99.5
	CKWS-FM	96.3
Kitchener, Ont.	CKCR-FM	96.7
Lethbridge, Alta.	CHEC-FM	100.9
London, Ont.	CFPL-FM	95.9
Montreal, Que.	CBF-FM	95.1
	CBM-FM	100.7
	CFCF-FM	106.5
Oshawa, Ont.	CKLB-FM	93.5
Ottawa, Ont.	CBO-FM	103.3
	CFMO-FM	93.9
Quebec, Que.	CHRC-FM	98.1
Rimouski, Que.	CJBR-FM	101.5
St. Catharines, Ont.	CKTB-FM	97.7
Sherbrooke, Que.	CHLT-FM	102.7
Timmins, Ont.	CKGB-FM	94.5
Toronto, Ont.	CBC-FM	99.1
	CFRB-FM	99.9
	CHFI-FM	98.1
	CJRT-FM	91.1
Vancouver, B.C.	CBU-FM	105.7
	CHQM-FM	103.5
Verdun, Que.	CKVL-FM	96.9
Victoria, B.C.	CKDA-FM	98.5
Windsor, Ont.	CKLW-FM	93.9
Winnipeg, Man.	CJOB-FM	97.5

Canadian FM Stations by Call Letters

C.L.	Location
CBC-FM	Toronto, Ont.
CBF-FM	Montreal, Que.
CBM-FM	Montreal, Que.
CBO-FM	Ottawa, Ont.
CBU-FM	Vancouver, B.C.
CFCF-FM	Montreal, Que.
CFPL-FM	London, Ont.
CFRA-FM	Ottawa, Ont.
CFRB-FM	Toronto, Ont.
CFRC-FM	Kingston, Ont.
CFRN-FM	Edmonton, Alta.
CHEC-FM	Lethbridge, Alta.
CHFI-FM	Toronto, Ont.
CHLT-FM	Sherbrooke, Que.
CHNS-FM	Halifax, N.S.
CHRC-FM	Quebec, Que.
CJBR-FM	Rimouski, Que.
CJCA-FM	Edmonton, Alta.
CJCB-FM	Sydney, N.S.
CJOB-FM	Winnipeg, Man.
CJRT-FM	Toronto, Ont.
CJSS-FM	Cornwall, Ont.
CKCR-FM	Kitchener, Ont.
CKDA-FM	Victoria, B.C.
CKGB-FM	Timmins, Ont.
CKLB-FM	Oshawa, Ont.
CKLC-FM	Kingston, Ont.
CKLW-FM	Windsor, Ont.
CKPC-FM	Brantford, Ont.
CKPR-FM	Ft. William, Ont.
CKSF-FM	Cornwall, Ont.
CKTB-FM	St. Catharines, Ont.
CKUA-FM	Edmonton, Alta.
CKVL-FM	Verdun, Que.
CKWS-FM	Kingston, Ont.

U. S. Television Stations

Territories and possessions follow states. Chan., channel number; asterisk (*) indicates educational station.

ALABAMA

Location	C.L.	Chan.
Andalusia	WDIQ	*2
Birmingham	WAPI-TV	13
	WBIQ	*10
	WBRC-TV	6
Decatur	WMSL-TV	23
Dothan	WTVY	4
Florence	WOWL	15
Huntsville	WAFG-TV	31
Mobile	WALA-TV	10
	WKRG-TV	5
Montgomery	WCOV-TV	20
	WSFA-TV	12
Munford	WCIQ	*7
Selma	WSLA	8

ALASKA

Location	C.L.	Chan.
Anchorage	KENI-TV	2
	KTVA	11
Fairbanks	KFAR-TV	2
	KTVF	11
Juneau	KINY-TV	8

ARIZONA

Location	C.L.	Chan.
Douglas	KCDA	3
Phoenix	KDOL-TV	10
	KAET	*8
	KPHO-TV	5
	KTVK	3
	KTAR-TV	12
Tucson	KGUN-TV	9
	KOLD-TV	13
	KVOA-TV	4
	KUAT	*6
Yuma	KIVA	11

ARKANSAS

Location	C.L.	Chan.
El Dorado	KTVE	10
Ft. Smith	KFSA-TV	5
Hot Springs	KFOY-TV	9
Little Rock	KARK-TV	4
	KTHV	11
	KATV	7
Texarkana	KCMC-TV	6

CALIFORNIA

Location	C.L.	Chan.
Bakersfield	KBAK-TV	29
	KERO-TV	10
	KLYD-TV	17
Chico	KHSL-TV	12
El Centro	XEM-TV	3
Eureka	KIEM-TV	3
	KVIQ-TV	6
Fresno	KFRE-TV	30
	KAIL	53
	KJEO	47
	KMJ-TV	24
Hanford	KDAS-TV	21
Los Angeles	KABC-TV	7
	KCOP	13
	KHJ-TV	9
	KMEX	34
	KNXT	2
	KRCA	4
	KTLA	5
	KTTV	11
Oakland	KTVU	2
Redding	KVIP-TV	7
Sacramento	KXTV	10
	KCRA-TV	3
	KVUE	40
	KVIE	*6
Salinas	KSBW-TV	8
San Bernardino	KCHU-TV	18
	KCVR-TV	*24
San Diego	KFMB-TV	8
	KOGO-TV	10
(Tijuana, Mex.)	XETV	6
San Francisco	KGO-TV	7
	KPIX	5
	KQED	*9
	KRON-TV	4
	KEZE-TV	20
San Jose	KNTV	11
San Luis Obispo	KSBY-TV	6
Santa Barbara	KEY-T	3
Stockton	KOVR	13
Vista	KICV-TV	12

COLORADO

Location	C.L.	Chan.
Colorado Springs	KKTV	11
	KRDO-TV	13
Denver	KBTV	9
	KLZ-TV	7
	KOA-TV	4
	KRMA-TV	*6
	KTVR	2
Grand Junction	KREX-TV	5
Montrose	KREY-TV	10
Pueblo	KCSJ-TV	5

CONNECTICUT

Location	C.L.	Chan.
Bridgeport	WICC-TV	43
Hartford	WTIC-TV	3
	WHCT-TV	18
New Britain	WHNB-TV	30
New Haven	WNHC-TV	8
Waterbury	WATR-TV	53

DIST. OF COLUMBIA

Location	C.L.	Chan.
Washington	WETA-TV	26
	WMAL-TV	7
	WRC-TV	4
	WTOP-TV	9
	WTTG	5

FLORIDA

Location	C.L.	Chan.
Daytona Beach	WESH-TV	2
Fort Pierce-Vero Beach	WTVI	19
Fort Myers	WINK-TV	11
Gainesville	WUFT	*5
Jacksonville	WFGA-TV	12
	WJCT	*7
	WJXT	4
Miami	WCKT	7
	WLBW-TV	10
	WTHS-TV	*2
	WTVJ	4
Orlando	WDBO-TV	6
	WLOF-TV	9
Palm Beach	WPTV	5
Panama City	WJDM-TV	7
Pensacola	WEAR-TV	3
St. Petersburg	WSUN-TV	38
Tallahassee	WFSU-TV	*11
Tampa	WFLA-TV	8
	WEDU	*3
	WTVT	13
W. Palm Beach	WEAT-TV	12

GEORGIA

Location	C.L.	Chan.
Albany	WALB-TV	10
Athens	WGTV	*8
Atlanta	WAGA-TV	5
	WSB-TV	2
	WETV	*30
	WLW-A	11
Augusta	WJBF	6
	WRDW-TV	12
Columbus	WRBL-TV	3
	WTVM	9
Macon	WMAZ-TV	13
Savannah	WSAV-TV	3
	WEGA-TV	*9
	WTOC-TV	11
Thomasville	WCTV	6
Waycross	WEGS-TV	*8

HAWAII

Location	C.L.	Chan.
Hilo	KHBC-TV	9
	KHJK	13
Honolulu	KGMB-TV	9
	KTRG-TV	13
	KONA	2
	KHVH-TV	4
Wailuku	KMAU	3
	KALA	7
	KMVI-TV	12

IDAHO

Location	C.L.	Chan.
Boise	KBOI-TV	2
	KTVB	7
Idaho Falls	KID-TV	3
	KIFI-TV	8
Lewiston	KLEW-TV	3
Nampa	KCIX-TV	6
Twin Falls	KLIX-TV	11

ILLINOIS

Location	C.L.	Chan.
Carbondale	WSIU-TV	*8
Champaign	WCIA	3
	WCHU	33
Chicago	WBBM-TV	2
	WBKB	7
	WGN-TV	9
	WNBQ	5
	WTTW	*11
Danville	WICD	24
Decatur	WTVP	17
Harrisburg	WSIL-TV	3
La Salle	WEEQ-TV	35
Peoria	WEEK-TV	43
	WMBD	31
	WTVH	19
Quincy	WGEM-TV	10
Rockford	WREX-TV	13
	WTVO	39
Rock Island	WHBF-TV	4
Springfield	WICS	20
Urbana	WILL-TV	*12

INDIANA

Location	C.L.	Chan.
Bloomington	WTTV	4
Elkhart	WSJV-TV	28
Evansville	WFIE-TV	14
	WEHT	50
	WTVW	7
Ft. Wayne	WANE-TV	15
	WKJG-TV	33
	WPTA	21
Indianapolis	WFBM-TV	6
	WLWI	13
	WISH-TV	8
Lafayette	WFAM-TV	18
Muncie	WLBC-TV	49
South Bend	WNDU-TV	16
	WSBT-TV	22
Terre Haute	WTHI-TV	10

IOWA

Location	C.L.	Chan.
Ames	WDI-TV	5
Cedar Rapids	KCRG-TV	9
	WMT-TV	2
Davenport	WOC-TV	6
Des Moines	KRNT-TV	8
	KDPS-TV	*11
	WHO-TV	13
Fort Dodge	KQTV	21
Mason City	KGLO-TV	3
Ottumwa	KTVO	3
Sioux City	KTIV	4
	KVTV	9
Waterloo	KWWL-TV	7

KANSAS

Location	C.L.	Chan.
Ensign	KTVC	6
Garden City	KGLD	11
Goodland	KWHT-TV	10
Great Bend	KCKT	2
Hays	KAYS-TV	7
Hutchinson	KTVH	12
Pittsburg	KDAM-TV	7
Topeka	WIBW-TV	13
Wichita	KAKE-TV	10
	KARD-TV	3

KENTUCKY

Location	C.L.	Chan.
Lexington	WLEX-TV	18
	WKYT	27
Louisville	WAVE-TV	3
	WFPK-TV	*15
	WHAS-TV	11
	WQXL-TV	41
Paducah	WPSD-TV	6

LOUISIANA

Location	C.L.	Chan.
Alexandria	KALB-TV	5
Baton Rouge	WAFB-TV	9
	WBRZ	2
	KATC	3
Lafayette	KLFY-TV	10
Lake Charles	KPLC-TV	7
	KTAG-TV	25
Monroe	KNOE-TV	8
	KLSE	*13
New Orleans	WDSU-TV	6
	WVUE	13
	WWL-TV	4
	WYES	*8
Shreveport	KSLA-TV	12
	KTBS-TV	3

MAINE

Location	C.L.	Chan.
Augusta	WCBB	10
Bangor	WABI-TV	5
	WLBZ-TV	2
Poland Spring	WMTW-TV	8
Portland	WCSH-TV	6
	WGAN-TV	13
Presque Isle	WAGM-TV	8

MARYLAND

Location	C.L.	Chan.
Baltimore	WJZ-TV	13
	WBAL-TV	11
	WMAR-TV	2
Salisbury	WBOC-TV	16

MASSACHUSETTS

Location	C.L.	Chan.
Adams	WCDC	19
Boston	WBZ-TV	4
	WGBH-TV	*2
	WHDH-TV	5
	WNAC-TV	7
Greenfield	WRLP	32
Springfield	WHYN-TV	40
	WWLP	22
Worcester	WWOR-TV	14

MICHIGAN

Location	C.L.	Chan.
Bay City	WNEM-TV	5
Cadillac	WWTV	13
	WWUP-TV	10
Cheboygan	WTOM-TV	4
Detroit	WJBK-TV	2
	WTVS	*56
	WWJ-TV	4
	WXYZ-TV	7
(Windsor, Ont.)	CKLW-TV	9
Flint	WJRT	12
Grand Rapids	WOOD-TV	8
	WZZM-TV	13
Kalamazoo	WKZO-TV	3
Lansing	WJIM-TV	6
Marquette	WLUC-TV	6
Onondaga	WILX-TV/WMSB	10
Saginaw	WKNX-TV	57
Traverse City	WPBN-TV	7

MINNESOTA

Location	C.L.	Chan.
Alexandria	KCMT	7
Austin	KMMT	6
Duluth	KDAL-TV	3
	WDSM-TV	6
Mankato	KEYC-TV	12
Minneapolis	KMSP	9
	WCCO-TV	4
	WTCN-TV	11
Rochester	KROC-TV	10
St. Paul	KSTP-TV	5
	KTCA-TV	*2

MISSISSIPPI

Location	C.L.	Chan.
Columbus	WCBI-TV	4
Greenwood	WABG-TV	6
Jackson	WJTV	12
	WLBT	3
Laurel	WDAM-TV	7
Meridian	WTOK-TV	11
	WCOC-TV	30
Tupelo	WTWV	9

MISSOURI

Location	C.L.	Chan.
Cape Girardeau	KFVS-TV	12
Columbia	KOMU-TV	8
Hannibal	KHQA-TV	7
Jefferson City	KRCG-TV	13
Joplin	KODE-TV	12
Kansas City	KCMD-TV	5
	KCSD-TV	*19
	KMBC-TV	9
	WDAF-TV	4
Kirksville	KTVO	3
Poplar Bluff, Mo.	KPOB-TV	15
St. Joseph	KFEQ-TV	2
St. Louis	KETC	*9
	KMOX-TV	4
	KSD-TV	5
	KTVI	2
	KPLR-TV	11
Sedalia	KMOS-TV	6
Springfield	KTTS-TV	10
	KYTV	3

MONTANA

Location	C.L.	Chan.
Billings	KOOK-TV	2
	KGHL-TV	8
Butte	KXLF-TV	4
Glendive	KXGN-TV	5
Great Falls	KFBB-TV	5
	KRTV	3
Helena	KBLL-TV	12
Kalispell	KULR	9
Missoula	KMSO-TV	13

Location	C.L.	Chan.
NEBRASKA		
Grand Island	KGIN-TV	11
Hastings	KHAS-TV	5
Hay Springs	KDUH-TV	4
Hayes Center	KHPL-TV	6
Kearney	KHOL-TV	13
Lincoln	KOLN-TV	10
	KUON-TV	*12
McCook	KOMC	8
North Platte	KNOP	2
Omaha	KMTV	3
	KETV	7
	WOW-TV	6
Scottsbluff	KSTF	10
NEVADA		
Henderson	KLRJ-TV	2
Las Vegas	KLAS-TV	8
	KSHO-TV	13
Reno	KCRL	4
	KOLO-TV	8
NEW HAMPSHIRE		
Durham	WENH-TV	*11
Manchester	WMUR-TV	9
NEW JERSEY		
Newark	WNDT-TV	13
NEW MEXICO		
Albuquerque	KGGM-TV	13
	KNME-TV	*5
	KOAT-TV	7
	KOB-TV	4
Carlsbad	KAVE-TV	6
Clovis	KVER-TV	12
Roswell	KSWS-TV	8
NEW YORK		
Albany	WTEN	10
	WAST	13
	WTRI	35
	WCDA	41
Binghamton	WINR-TV	40
	WNBF-TV	12
Buffalo	WBEN-TV	4
	WNED-TV	*17
	WGR-TV	2
	WKBW-TV	7
Carthage	WCNY-TV	7
Elmira	WSYE-TV	18
New York	WABC-TV	7
	WUHF-TV	31
	WNEW-TV	5
	WCBS-TV	2
	WOR-TV	9
	WPIX	11
	WNBC-TV	4
Plattsburg	WPTZ-TV	5
Rochester	WHEC-TV	10
	WOKR-TV	13
	WROC-TV	5
	WVET-TV	10
Schenectady	WRGB	6
Syracuse	WHEN-TV	8
	WNYS	9
	WSYR-TV	3
Utica	WKTV	2
NORTH CAROLINA		
Asheville	WISE-TV	62
	WLOS-TV	13
Chapel Hill	WUNC-TV	*4
Charlotte	WBTV	3
	WSOC-TV	9
Durham	WTVD	11
Greensboro	WFMY-TV	2
Greenville	WNCT	9
Raleigh	WRAL-TV	5
Washington	WITN	7
Wilmington	WECT	6
Winston-Salem	WSJS-TV	12
NORTH DAKOTA		
Bismarck	KXMB-TV	12
	KFYR-TV	5
Dickinson	KDIX-TV	2
Fargo	WDAY-TV	6
	KXGO-TV	11
Grand Forks	KNOX-TV	10
Minot	KXMC-TV	13
	KMOT	10
Pembina, N.D.	KCND-TV	12
Valley City	KXJB-TV	4
Williston	KUMV-TV	8
OHIO		
Akron	WAKR-TV	49
Cincinnati	WCET	*48
	WCPO-TV	9
	WKRC-TV	12
	WLW-T	5
	WCIN-TV	54
Cleveland	KYW-TV	3
	WEWS	5
	WJW-TV	8
Columbus	WBNS-TV	10
	WLW-C	4
	WOSU-TV	*34
	WTVN-TV	6
Dayton	WHIO-TV	7
	WLW-D	2
Lima	WIMA-TV	35
Oxford	WMUB-TV	14
Steubenville	WSTV-TV	9
Toledo	WSPD-TV	13
	WGTE-TV	*30
	WTOL-TV	11
Youngstown	WFMJ-TV	21
	WKBN-TV	27
	WKST-TV	33
Zanesville	WHIZ-TV	18
OKLAHOMA		
Ada	KTEN	10
Ardmore	KXII	12
Enid	KOCO-TV	5
Lawton	KSWO-TV	7
Oklahoma City	KETA	*13
	KOKH-TV	25
	KWTV	9
	WKY-TV	4
Tulsa	KOTV	6
	KOED-TV	*11
	KTUL-TV	8
	KVOO-TV	2
OREGON		
Coos Bay	KCBY-TV	11
Corvallis	KOAC-TV	*7
Eugene	KVAL-TV	13
	KEZI-TV	9
Klamath	KOTI	2
Medford	KBES-TV	5
	KMED-TV	10
Portland	KGW-TV	8
	KOAP-TV	*10
	KATU-TV	2
	KOIN-TV	6
	KPTV	12
Roseburg	KPIC	4
PENNSYLVANIA		
Altoona	WFBG-TV	10
Erie	WICU	12
	WSEE-TV	35
Harrisburg	WHP-TV	21
	WTPA	27
Johnstown	WARD-TV	56
	WJAC-TV	6
Lancaster	WGAL-TV	8
Lebanon	WLVH-TV	15
Lockhaven	WBPZ-TV	32
New Castle	WKST-TV	33
Philadelphia	WCAU-TV	10
	WFIL-TV	6
	WHYY-TV	*35
	WPCA-TV	17
	WRCV-TV	3
Pittsburgh	KDKA-TV	2
	WIIC	11
	WQED	*13
	WTAE	4
Scranton	WNEP-TV	16
	WDAU-TV	22
Wilkes-Barre	WBRE-TV	28
York	WSBA-TV	43
RHODE ISLAND		
Providence	WJAR-TV	10
	WPRO-TV	12
SOUTH CAROLINA		
Anderson	WAIM-TV	40
Charleston	WCSC-TV	5
	WUSN-TV	2
Clemson	WSBF-FM	*88.1
Columbia	WIS-TV	10
	WCCA-TV	25
	WNOK-TV	67
Florence	WBTW	8
Greenville	WFBC-TV	4
Spartanburg	WSPA-TV	7
SOUTH DAKOTA		
Aberdeen	KXAB-TV	9
Deadwood	KDSJ-TV	5
Florence	KDLO-TV	3
Mitchell	KORN-TV	5
Rapid City	KOTA-TV	3
	KRSD-TV	7
Reliance	KPLO-TV	6
Sioux Falls	KELO-TV	11
	KSOO-TV	13
Vermilion	KUSD-TV	*2
TENNESSEE		
Chattanooga	WDEF-TV	12
	WRGP-TV	3
	WTVC	9
Jackson	WDXI-TV	7
Johnson City	WJHL-TV	11
Knoxville	WATE-TV	6
	WBIR-TV	10
	WTVK	26
Memphis	WHBQ-TV	13
	WKNO	*10
	WMCT	5
	WREC-TV	3
Nashville	WDCN-TV	*2
	WLAC-TV	5
	WSIX-TV	8
	WSM-TV	4
TEXAS		
Abilene	KRBC-TV	9
Alpine	KULF-TV	12
Amarillo	KFDA-TV	10
	KGNC-TV	4
	KVII	7
Austin	KTBC-TV	7
Beaumont	KFDM-TV	6
Big Spring	KEDY-TV	4
Bryan	KBTX-TV	3
Corpus Christi	KRIS-TV	6
	KZTV	10
Dallas	KRLD-TV	4
	KERA-TV	*13
	WFAA-TV	8
El Paso	KELP-TV	13
	KROD-TV	4
	KTSM-TV	9
(Ciudad Juarez, Mex.)	XEJ-TV	5
Ft. Worth	KTVT	11
	WBAP-TV	5
Harlingen	KGBT-TV	4
Houston	KPRC-TV	2
	KHOU-TV	11
	KTRK-TV	13
	KUHT	*8
Laredo	KGNS-TV	8
Lubbock	KCBD-TV	11
	KDUB-TV	13
Lufkin	KTRE-TV	9
Midland	KMID-TV	2
	KDCO-TV	18
Monahans	KVKM-TV	9
Odessa	KOSA-TV	7
Port Arthur-Beaumont	KPAC-TV	4
Richardson	KRET-TV	*23
San Angelo	KCTV	8
	KACB-TV	3
San Antonio	KUAL-TV	41
	KENS-TV	5
	KLRN	*9
	KONO-TV	12
	WOAI-TV	4
Sweetwater	KPAR-TV	12
Temple	KCEN-TV	6
Texarkana	KTAL-TV	6
Tyler	KLTV	7
Waco	KWTX-TV	10
Weslaco	KRGV-TV	5
Wichita Falls	KFDX-TV	3
	KSYD-TV	6
UTAH		
Ogden	KVOG-TV	9
	KWCS-TV	*18
Provo	KLOR-TV	11
Salt Lake City	KSL-TV	5
	KCPX-TV	4
	KUED	*7
	KUTV	2
VERMONT		
Burlington	WCAX-TV	3
VIRGINIA		
Bristol	WCYB-TV	5
Hampton	WVEC-TV	13
Harrisonburg	WSVA-TV	3
Lynchburg	WLVA-TV	13
Norfolk	WHRO-TV	15
	WTAR-TV	3
Petersburg	WXEX-TV	8
Portsmouth	WAVY-TV	10
Richmond	WRVA-TV	12
	WTVR	6
Roanoke	WDBJ-TV	7
	WSLS-TV	10
WASHINGTON		
Bellingham	KVOS-TV	12
Pasco	KEPR-TV	19
Pullman	KWSC-TV	*10
Richland	KNDD-TV	25
Seattle	KCTS-TV	*9
	KING-TV	5
	KIRO-TV	7
	KOMO-TV	4
Spokane	KHQ-TV	6
	KREM-TV	2
	KXLY-TV	4
Tacoma	KTNT-TV	11
	KPEC-TV	*56
	KTPS	*62
	KTVW	13
Yakima	KIMA-TV	29
	KNDO-TV	23
WEST VIRGINIA		
Bluefield	WHIS-TV	6
Charleston	WCHS-TV	8
Clarksburg	WBOY-TV	12
Fairmont	WJPB-TV	5
Huntington	WHTN-TV	13
	WSAZ-TV	3
Oak Hill	WOAY-TV	4
Parkersburg	WTAP-TV	15
Wheeling	WTRF-TV	7
WISCONSIN		
Eau Claire	WEAU-TV	13
Green Bay	WBAY-TV	2
	WFRV	5
	WLUK-TV	11
La Crosse	WKBT	8
Madison	WHA-TV	*21
	WISC-TV	3
	WKOW-TV	27
	WMTV	33
Marinette	WMBV-TV	11
Milwaukee	WISN-TV	12
	WITI-TV	6
	WMVS-TV	*10
	WTMJ-TV	4
	WXIX	18
Wausau	WSAU-TV	7
WYOMING		
Casper	KTWO-TV	2
Cheyenne	KFBC-TV	5
Riverton	KWRB-TV	10
PUERTO RICO		
Aguadilla	WOLE-TV	12
Caguas	WKBM-TV	11
Mayaguez	WORA-TV	5
	WIPM-TV	*3
Ponce	WRIK-TV	7
	WSUR-TV	9
San Juan	WAPA-TV	4
	WIPR-TV	6
	WKAQ-TV	2

Canadian Television Stations

Location	C.L.	Chan.
ALBERTA		
Burmis	CJLH-TV-3	3
Calgary	CHCT-TV	2
	CFCN-TV	8
Drumheller	CFCN-TV-1	8
	CBXT-TV	5
Edmonton	CFRN-TV	3
Lethbridge	CJLH-TV	7
Lloydminster	CHSA-TV	2
Medicine Hat	CHAT-TV	6
Pivot	CHAT-TV	4
Red Deer	CHCA-TV	6
	CHCA-TV-2	10
BRITISH COLUMBIA		
Ashcroft	CFCR-TV-2	10
Burnaby	CHAN-TV	8
Crescent Valley	CHMS-TV	5
Dawson Creek	CJDC-TV	5
Enderby	CHBC-TV-8	5
Kamloops	CFCR-TV	4
Kelowna	CHBC-TV	2
	CHGP-TV-1	72
	CABC-TV-4	
Keremeos	CHBC-TV-9	5
Lumby	CHBC-TV-4	5
Nelson	CBUAT-TV-7	9
Oliver	CHBC-TV-3	8
Peachland	CHBC-TV-10	5
Penticton	CHBC-TV-2	13
Prince George	CKPG-TV	3
Saddle Mountain	CHHC-TV-1	4
Salmon Arm	CHBC-TV-6	5
Trail	CBUAT	11
Vancouver	CBUT	2
Vernon	CHBC-TV-3	7
Victoria	CHEK-TV	6
LABRADOR		
Goose Bay	CFLA-TV	8
MANITOBA		
Baldy Mountain	CKOS-TV-1	8
Brandon	CKX-TV	5
Winnipeg	CBWT	3
	CBWFT	6
	CJAY-TV	7
NEW BRUNSWICK		
Campbellton	CRCD-TV	7
Moncton	CKAM-TV	2
	CBAFT	11
Saint John	CHSJ-TV	4
Upsalquitch Lake	CKAM	12
NEWFOUNDLAND		
Argentia	CJDX-TV	10
Corner Brook	CBYT	5
	CHEK-TV	6

Location	C.L.	Chan.
Grand Falls	CJCN-TV	4
St. John's	CJON-TV	6
Stephenville	CFSN-TV	8

NOVA SCOTIA

Location	C.L.	Chan.
Antigonish	CFXU-TV	9
Halifax	CBHT	3
	CJCH-TV	5
Inverness	CJCB-TV-1	6
Liverpool	CBHT-1	12
New Glasgow	CFCY-TV-1	7
Shelburne	CBHT-2	8
Sydney	CJCB-TV	4
Yarmouth	CBHT-3	11

ONTARIO

Location	C.L.	Chan.
Barrie	CKVR-TV	11
Cornwall	CJSS-TV	8
Elk Lake	CFCL-TV-2	2
Elliot Lake	CKSO-TV-1	3
Hamilton	CHCH-TV	11
Kapuskasing	CFCL-TV-1	3
Kenora	CBWAT	8
Kingston	CKWS-TV	11
Kitchener	CKCO-TV	13
London	CFPL-TV	10
North Bay	CKGN-TV	10
Parry Sound	CKVR-TV-1	11
Pembroke	CHOV-TV	5
Peterborough	CHEX-TV	12
Ottawa	CBOFT	9
	CBOT	4
	CJOH-TV	13
Port Arthur	CKPR-TV-1	2
Sault Ste. Marie	CJIC-TV	2
Sioux Lookout	CHSL-TV	9
Sturgeon Falls	CBFST	7
Sudbury	CKSO-TV	5
Timmins	CFCL-TV	2
Toronto	CBLT	6
	CFTO-TV	9
Windsor	CKLW-TV	9
Wingham	CKNX-TV	8

PRINCE EDWARD ISLAND

Location	C.L.	Chan.
Charlottetown	CFCY-TV	13

QUEBEC

Location	C.L.	Chan.
Carleton	CHAU-TV	5
	CJAO-TV-1	80
	CHSM-TV	7
Clermont	CFCV-TV-1	75
Estcourt	CJES-TV-1	70
Jonquiere	CKRS-TV	12
Matane	CKBL-TV	9
Montreal	CBFT	2
	CFCF-TV	12
	CFTM-TV	10
	CBMT	6
New Carlisle	CHAU-TV	5
Quebec	CFCM-TV	4
	CKMI-TV	5
Rimouski	CJBR-TV	3
Riviere du-Loup	CKRT-TV	7
Rouyn	CKRN-TV	4
Sherbrooke	CHLT-TV	7
Three Rivers	CKTM-TV	13

SASKATCHEWAN

Location	C.L.	Chan.
Carlyle Lake	CKDS-TV-2	7
East End	CJFB-TV	2
Moose Jaw	CHAB-TV	4
Nipawin	CKBI-TV-4	2
Prince Albert	CKBI-TV-1	2
Regina	CKCK-TV	2
Saskatoon	CFQC-TV	8
Swift Current	CFJB-TV	5
Val Marie	CJFB	2
Wanganui	CKBI-TV-2	7
Yorkton	CKOS-TV	3

World-Wide Short-Wave Stations

Most international broadcasting is done within frequency limits agreed upon at international conventions. These frequency ranges are listed here, at the right, expressed both in frequency and by meter bands (wave-length).

Reception in the various bands varies according to the time of day and season of the year. Reception in the 60, 49 and 41 meter bands is best at night during the winter months. Reception in the 31 and 25 M. bands is best at night, but all year. Reception in the 19, 16, 13 and 11 M. bands is best during the day, also at night during the summer in the 16 and 19 M. bands. This listing includes only SWBC often heard in the U.S. and Canada, exclusive of those in the continental U.S.

Abbr.: AIR—All India Radio; RAI—Radiotelevisione Italiana; RTF—Radiodiffusion Television Francaise; VOA—Voice of America; RFE—Radio Free Europe. • denotes stations beaming evening (U.S. time) broadcasts to the U.S., † morning or afternoon broadcasts, V—varies.

METER BANDS

4750 to 5060 kc/s (60 meter band)
5950 to 6200 kc/s (49 meter band)
7100 to 7300 kc/s (41 meter band)
9500 to 9775 kc/s (31 meter band)
11700 to 11975 kc/s (25 meter band)
15100 to 15450 kc/s (19 meter band)
17700 to 17900 kc/s (16 meter band)
21450 to 21750 kc/s (13 meter band)
25600 to 26100 kc/s (11 meter band)

Kcs.	Call and Location
3245	YVKT, Caracas, Ven.
3255	ELBC, Monrovia, Liberia
	YVQL, El Tigre, Ven.
3265	ZFY Georgetown, Br. Guiana
3280	W.I.B.S., Grenada, Windward Is.
3285	HI7T, Santo Domingo, D.R.
3290	HJCQ, Bogota, Colombia
3295	YVOG, Trujillo, Ven.
3300	B.H.B.S., Belize, Br. Honduras
3305	YVKX, Caracas, Ven.
3315	Fort de France, Martinique
3316	Freetown, Sierra Leone
3325	HI5U, Santo Domingo, D.R.
3326	Kaduna, Nigeria
3355	YVLC, Valencia, Ven.
3366	Accra, Ghana
3375	HI5B, Santiago, D.R.
3395	YVOJ, Merida, Ven.
4630	HCGB1, Quito, Ecu.
4725	Rangoon, Burma
4765	HJEF, Cali, Col.
4770	ELWA, Monrovia, Lib.
4770	YVMW, Punto Fiji, Ven.
4780	YVLA, Valencia, Ven.
4790	YVQN, Puerto La Cruz, Ven.
4805	ZYS8, Manaus, Braz.
4810	YVMG, Maracaibo, Ven.
4830	YVOA, San Cristobal, Ven.
4835	HJKE, Bogota, Col.
4840v	Lourenco Marques, Moz.
4840	YVOI, Valera, Ven.
4845	HJGF, Bucaramanga, Col.
4850	YVMS, Barquisimeto, Ven.
4870	Cotonou, Dahomey Rep.
4880	YVKF, Caracas, Ven.
4895	Daker, Senegal
4895	ZYR22, Manaus, Braz.
4900	YVKE, Caracas, Ven.
4900v	HJAC, Barranquilla, Col.
4905	HRQN3, Puerto Cortes, Hon.
4910	HCIMI, Quito, Ecua.
4910	Conakry, Guinea
4915	Accra, Ghana
4920	VLM4, Brisbane, Aus.
4920	YVKR, Caracas, Ven.
4935	HJLF, Ibague, Col.
4940	HCXZ1, Guayaquil, Ecu.
4940	Abidjan, Ivory Coast
4940	YVMO, Barquisimeto, Ven.
4945	HJCW, Bogota, Col.
4945	Paradys, So. Afr.
4950	Dakar, Senegal
4950	YVMM, Coro, Ven.
4960	YVQA, Cumana, Ven.
4970	YVLK, Caracas, Ven.
4972	Yaounde, Cameroon
4985	Radio La Cruz del Sur, La Paz, Bolivia
4990	Lagos, Nigeria
4990	YVMQ, Barquisimeto, Ven.
4995	CR6RZ, Luanda, Angola
5010	HCRCX, Quito, Ecu.
5010	St. Georges, Windward Isl.
5020	HJFW, Manizales, Col.
5020	Niamey, Niger Rep.
5030	YVKM, Caracas, Ven.
5040	YVMA, Maracaibo, Ven.
5050	YVKD, Caracas, Ven.
5075	HJGC Bogota, Col.
5875	Tegucigalpa, Hond.
5952	TGNA, Guatemala, Guat.
5954	TIQ, Puerto Limon, C. R.
5960	HJCF, Bogota, Col.
5980v	TGAR, Guatemala, Guat.
5980	4VB, Port au Prince, Haiti
5985	Hilversum, Neth.
5990	TGJA, Guatemala
5990	Habana, Cuba
5995	Fort-de-France, Mart.
6000	Radio Americas
6005	RIAS, Berlin, Ger.
6010	XEOI, Mexico City, Mexico
6015	PRA8, Recife, Braz.
6015v	Habana, Cuba
6020	Hilversum, Neth.
6020	Khabarovsk, USSR
6025	Kuala Lumpur, Malaya
6025	Lisbon, Port.
6030	Baghdad, Iraq
6035	Rangoon, Burma
6035	HRTL, Tegucigalpa, Hond.
6037	TIFC, San Jose, C. R.
6040	HJLB, Ibague, Col.
6040	VOA, Munich, Germany
6045	HOU31, David, Pan.
6050	HCJB, Quito, Ecua.
6050	BBC, London, Eng.
6055	HJEX, Cali, Col.
6055	JOZ2, Tokyo, Japan
6060	RAI, Caltanissetta, It.
6060	YDF, Djakarta, Indonesia
6065	XEXG, Leon, Mex.
6065	Horby, Sweden
6070	Sofia, Bulgaria
6070	Biak, West Papua
6070	BBC, London, Eng.
6075	Osterloog, Ger.
6080	ZL7, Wellington, N.Z.
6080	Trans World Radio, Monaco
6082	OAX4Z, Lima, Peru
6085	Munich, Ger.
6090	VLI6, Sydney, Aus.
6090	Luxembourg, Lux.
6090	XECMT, C. El Mante, Mex.
6090	HI2U, Santo Domingo, D.R.
6095	ZYB7, Sao Paulo, Braz.
6100	Belgrade, Yugo.
6105	XEQM, Merida, Mex.
6105	Cologne, Ger.
6110	BBC, London, Eng.
6115	ZYC7, Rio de Jan., Braz.
6120	LRX1, Buenos Aires
6120	4VEH, Cap Haitien, Haiti
6120	BBC, Limassol, Cyprus
6130	Port Moresby, New Guinea
6135	HRMF, La Ceiba, Hond.
6135	Papeete, Tahiti
6140	VLW6, Perth, Aus.
6145	RTF, Allouis, France
6145v	PRL9, Rio de Jan., Braz.
6150	BBC, London, Eng.
6155	Wien, Austria
6155	FEN, Tokyo, Japan
6160	HJKJ, Bogota, Col.
6160	Algiers, Algeria
6160	Saigon, S. Vietnam
6165	HER3, Bern, Switz. •
6170	BBC, Limassol, Cyprus
6170	Singapore, Sing.
6170	VOA, Tangiers, Morocco
6175	RTF, Allouis, France
6175	Cayenne, Fr. Guiana
6185	Lisbon, Port.
6185	HJCT, Bogota, Col.
6195	HJEZ, Cali, Col.
6195	BBC, London, Eng.
6195	Pyongyang, N. Korea
6195	Andorra, Andorra
6200	4VHW, Port-au-Prince, Haiti
6305	Andorra, Andorra
7095v	Tehran, Iran
7105	Madrid, Spain
7110	VOA, Colombo, Ceylon
7110	BBC, London, England
7115	Rabat, Morocco
7120	BBC, London, England
7125	Warsaw, Poland
7135	Taipeh, Taiwan
7145	Bamako, Mali
7150	Moscow, U.S.S.R.
7155	VOA, Tangiers, Mor.
7160	RTF, Paris, France
7165	RFE, Germ.
7170	Algiers, Alg.
7180	Baghdad, Iraq
7180	Moscow, U.S.S.R.
7185	BBC, London, Eng.
7185	Paradys, So. Africa
7193	Bucharest, Roumania
7200	R. Malaya, Sing.
7205	VOA, Salonika, Gr.
7210	Dakar, Mali Fed.
7215	Trans World Radio, Monaco
7220	VLD7, Melbourne, Aus.
7220	Budapest, Hung.
7230	BBC, London, Eng.
7240	RTF, Paris, France
7250	BBC, London, Eng.
7255	Sofia, Bulg.
7265	Saigon, Vietnam
7270	Motola, Sweden
7275	RAI, Rome, It.
7285	Ankara, Turk.
7290	Singapore
7290	Moscow, U.S.S.R.
7290	RAI, Rome, It.
7295	Makassar, Celebes
7295	RFE, Ger.
7340	Moscow, U.S.S.R.
7398v	Damascus, U.A.R.
7480	Peking, China
7650	YNMS, Leon, Nic.
8016	Beirut, Lebanon
9009	Tel Aviv, Israel
9360	COBC, Habana, Cuba
9360v	Madrid, Spain •
9380v	Madrid, Spain
9410	BBC, London, Eng.
9440	CP38, La Paz, Bol.
9480	Peking, China
9485	HI3U, Santo Domingo, D.R.
9500	Magadan, U.S.S.R.
9500	Moscow, U.S.S.R.
9505	PRB22, Sao Paulo, Braz.
9505	Rabat, Mor.
9505	HOLA, Colon, Pan.
9505	NHK, Tokyo, Japan
9505	Belgrade, Yugoslavia
9510	London, England
9515	RAI, Caltanissetta, It.
9515	XEWW, Mexico, DF, Mex.
9520	VOA, Tangier, Mor.
9520	Copenhagen, Den. •
9520	Port Moresby, New Guinea
9520	OAX8E, Iquitos, Peru
9525	NHK, Tokyo, Japan
9525	Warsaw, Poland
9530	AIR, Delhi, India
9530	VOA, Courier, Rhodes
9530	YVMZ, Maracaibo, Ven.
9535	VOA, Manila, P.I.
9535	HER4, Bern, Switz. •
9540	ZL2, Wellington, N.Z.
9540	Warsaw, Poland
9540	Khabarovsk, U.S.S.R.
9545	ZYS43, Curitiba, Braz.
9545	HED5, Bern, Switz.
9550	Prague, Czecho. •
9555	BBC, London, Eng.
9555	YSS, San Salvador, E. S.
9555	XETT, Mexico City, Mex.
9560	RTF, Paris, Franco
9560	Colombo, Ceylon
9563	OAX4R, Lima, Peru
9565	ZYK3, Recife, Braz.
9565	Radio Liberty, Ger.
9570	RAI, Rome, Italy
9575	ZYZ27, Rio de Jan., Braz.
9580	VLA9, Melbourne, Aus.
9580	BBC, London, Eng.
9585	ZYR56, Sao Paulo, Braz.
9585	RTF, Allouis, France
9585	Djakarta, Indonesia
9590	Hilversum, Neth.
9590	ELWA, Monrovia, Liberia
9595	JOZ3, Tokyo, Japan
9600	Tashkent, U.S.S.R.
9600	BBC, London, Eng.
9600	XEYU, Mexico, DF, Mexico
9600	CE960v, Santiago, Chile
9605	Cologne, Ger.
9605v	Athens, Greece
9610	VLX9, Perth, Aus.
9610	ZYC8, Rio de Jan., Braz.
9610	Oslo, Norway •
9610	OAX8C, Iquitos, Peru
9615	VOA, Tangier, Morocco
9620	ZYR96, Sao Paulo, Braz.
9620	Moscow, U.S.S.R.
9620	Saigon, Vietnam
9625	BBC, London, Eng.
9625	OAX8K, Iquitos, Peru
9630v	CR6RL, Luanda, Ang.
9635	ZYR83, Aparecida, Braz.
9640	BBC, London, Eng.
9640	Cologne, Germany •

Kcs.	Call and Location
9640	Accra, Ghana
9640	HLK5, Seoul, Korea
9645	TIFC, San Jose, C.R.
9645	HVJ, Vatican City
9650	BBC, Limassol, Cyprus
9650	Moscow, U.S.S.R.
9650	Amman, Jordan
9655	Radio Free Europe, Ger.
9660	LRX, Buenos Aires, Arg.
9660	VLQ9, Brisbane, Aus.
9660	Radio Liberty, Ger.
9660	Moscow, U.S.S.R.
9667	Hargeisa, Somalia
9667v	TGNB, Guatemala, Guat. ●
9670	COCQ, Havana, Cuba
9675	BBC, London, Eng.
9675	NHK, Tokyo, Japan
9680	VLH9, Melbourne, Aus.
9680	XEQQ, Mexico City, Mex.
9680	Lisbon, Port.
9685	Havana, Cuba
9690	LRA32, Buenos Aires, Arg. ●
9690	BBC, London, Eng.
9690	BBC, Singapore
9700	Sofia, Bulgaria ●
9700	Leopoldville, Congo Rep.
9700	CE970, Santiago, Chile
9705	Kabul, Afghan.
9710	BBC, London, Eng.
9710	RAI, Rome, It.
9720	Moscow, U.S.S.R.
9725	Europe
9725	BBC, London, England
9730	Brazzaville, Congo Rep.
9730	Leipzig, E. Ger.
9730	DZH7, Manila, P.I.
9735	Cologne, Germany
9735	HI2T, Santo Domingo, D.R.
9740	Lisbon, Port.
9740	Khabarovsk, U.S.S.R.
9740v	LR57, Buenos Aires, Arg.
9745	Brussels, Belg.
9745	HCJB, Quito, Ecua. ●
9755	ZYW23, Goiania, Braz.
9755	RTF, Paris, France
9760	Habana, Cuba
9760	BBC, London, Eng.
9770	Brazzaville, Congo Rep.
9770	4VEH, Cap Haitien, Haiti
9772	Dario, Egypt
9785	Peking, China
9795	Cairo, U.A.R. ●
9800	Peking, China
9815	St. Georges, Windward Isl.
9825	BBC, London, Eng. ●
9833	Budapest, Hung. ●
9840	Hanoi, N. Vietnam
9865	Djakarta, Indonesia
9915	BBC, London, Eng.
9920	Peking, China
9940	Peking, China
9973	Peking, China
10530	Alma Ata, U.S.S.R.
10910	Ulan Bator, Outer Mongolia
11290	Peking, China
11600	Peking, China
11672	Karachi, Pakistan
11695v	Tashkent, U.S.S.R.
11700	TGQB, Quetzatenango, Gua.
11705	NHK, Tokyo, Japan
11705	Horby, Sweden
11710	VLB11, Melbourne, Aus. †
11710	AIR, Delhi, India
11710	Djakarta, Indonesia
11720	BBC, Limassol, Cyprus
11720	Brussels, Belgium
11725	Brazzaville, Congo Rep.
11725	VOA, Colombo, Ceylon
11725	Prague, Czecho.
11730	Hilversum, Neth. ●

Kcs.	Call and Location
11730	LRA35, Buenos Aries, Arg.
11735	Rabat, Morocco
11735	Khabarovsk, U.S.S.R. ●
11740	VLC11, Melbourne, Aus.
11740	HVJ, Vatican State
11740	CE1174, Santiago, Chile
11740	Peking, China
11745	RFE, Europe
11745	Cairo, Egypt
11750	BBC, London, Eng.
11750	BBC, Singapore
11750	FEN, Tokyo, Japan
11755	RFE, Europe
11755	Hilversum, Neth. ●
11755	Leopoldville, Congo Rep.
11760	VLB11, Melbourne, Aus.
11760	Lourenco Marques, Moz.
11765	ZYB8, Sao Paulo, Braz.
11765	CP39, La Paz, Bolivia
11765	Naven, E. Germany
11770	BBC, London, Eng.
11770	VOA, Munich, Germany
11775	ZYZ28, Rio de Jan., Braz.
11780	ZL3, Wellington, N. Z.
11780	NHK, Tokyo, Japan
11785	Djakarta, Indon.
11785	VOA, Melolos, P.I.
11795	Cologne, Ger. ●
11795	Djakarta, Indon.
11800	Accra, Ghana
11800v	Warsaw, Poland
11805v	RAI, Rome, It.
11810	VLC11, Melbourne, Aus. †
11810	Bucharest, Rom. ●
11815	Paradys, S. Africa
11820	Peking, China
11820	BBC, London, Eng.
11820	XEBR, Hermosillo, Mex.
11820	Abidjan, Ivory Coast
11825	ELWA, Monrovia, Lib.
11825	Papeete, Tahiti
11830	Algiers, Algeria
11830	VOA, Colombo, Ceylon
11830	Montevideo, Uru.
11830	Peking, China
11840	VOA, Tangier, Mor.
11840	Lisbon, Port. ●
11840	Hanoi, N. Vietnam
11845	RTF, Allouis, France
11845	Karachi, Pak.
11850	Sofia, Bulg.
11850	Brussels, Belgium
11850	Khabarovsk, U.S.S.R.
11850v	ZPA3, Asuncion, Paraguay
11855	Radio Free Europe, Ger.
11855	DZH8, Manila, P.I.
11855v	Omdurman, Sudan
11860	BBC, London, Eng.
11860	Moscow, U.S.S.R.
11865	PRA8, Recife, Braz.
11865	HER5, Bern, Switz. ●
11870	Moscow, U.S.S.R.
11875	Habana, Cuba
11875	NHK, Tokyo, Japan
11875	ZYN32, Salvador, Braz.
11880	XEHH, Mexico City, Mex.
11885	Karachi, Pak.
11885	Radio Free Europe, Ger.
11890	BBC, London, England
11895	Dakar, Mali Fed.
11895	Radio Free Europe
11895	VOA, Pore, Phil.
11900	CE1190, Valparaiso, Chile
11905	RAI, Rome, Italy ●
11910	Budapest, Hung. ●
11910	Bangkok, Thai.
11915	HCJB, Quito Ecua. ●
11915	Cairo, Egypt
11920	DXF2, Manila, P.I.
11920	AIR, Delhi, India
11925	ZYR78, Sao Paulo, Braz.

Kcs.	Call and Location
11925	HLK6, Seoul, Korea †
11925	Warsaw, Pol.
11925	Tashkent, U.S.S.R.
11930	BBC, London, Eng.
11935	Radio Liberty, Ger.
11940	ZPA5, Encarnation, Par.
11940	AFRTS, Munich, Ger.
11945	Peking, China
11945	BBC, London, Eng.
11945	Cologne, Germany ●
11950	Jidda, Saudi Arab.
11950	Hilversum, Neth.
11950	Saigon, S. Vietnam
11955	BBC, London, Eng.
11955	BBC, Singapore
11960	CE1196, Santiago, Ch.
11960	Conakry, Guinea
11965	Radio Liberty, Ger.
11975	Peking, China
11975	ELWA, Monrovia, Liberia
11980	Moscow, U.S.S.R.
11990	Prague, Czecho.
12030	Moscow, U.S.S.R.
12055	Peking, China
12080	Lisbon, Port.
12095	BBC, London, Eng.
15060	Peking, China
15070	BBC, London, Eng.
15080	Melbourne, Australia
15085	St. Georges, Windward Isl. BWI
15085	Paradys, So. Africa
15095	Peking, China
15105	AIR, Delhi, India
15110	XERR, Mexico, D. F., Mex.
15115	HCJB, Quito, Ecuador ●
15115	Peking, China
15120	Colombo, Ceylon
15120	RAI, Rome, Italy
15120	Warsaw, Poland †
15120	HVJ, Vatican City
15125	Seoul, Korea ●
15125	Lisbon, Portugal ●
15130	RTF, Allouis, France
15130	VOA, Melolos, P. I.
15135	PRB23, Sao Paulo, Braz.
15135	NHK, Tokyo, Japan
15135	Radio Free Europe, Port.
15140	Peking, China
15140	BBC, London, Eng.
15145	ZYK33, Recife, Brazil
15145	Radio Free Europe, Port.
15150	Peking, China
15153	OAX4T, Lima, Peru
15155	ZYB9, Sao Paulo, Brazil
15155	ELWA, Monrovia, Libe.
15155	Horby, Sweden
15155	VOA, Melolos, P. I.
15160	RTF, Allouis, France
15160	XEWW, Mexico City, Mex.
15160	Ankara, Turkey
15165	ZYN7, Fortaleza, Braz.
15165	Copenhagen, Denmark
15165	Damascus, Syria
15170	Tromso, Norway
15170	Radio Free Europe, Port.
15175	Luxembourg, Lux.
15175	Oslo, Norway ●
15180	Melbourne, Australia
15185	VOA, Poro, P. I.
15185	Radio Free Europe, Port.
15190	Brazzaville, Congo Rep.
15190	Helsinki, Finland †
15190	Moscow, USSR
15195	Radio Free Europe, Ger.
15205	XESC, Mexico City, Mex.
15210	VOA, Melolos, P. I.
15210	ZPA7, Asuncion, Paraguay
15215	Radio Free Europe, Port.
15215	VOA, Okinawa

Kcs.	Call and Location
15220	Hilversum, Neth. †
15225	Taipei, Taiwan, China
15230	VOA, Colombo, Ceylon
15230	BBC, London, Eng.
15235	Beirut, Lebanon
15235	NHK, Tokyo, Japan
15240	VLB15, Melbourne, Aus.
15240	Horby, Sweden
15240	Moscow, USSR
15240	Belgrade, Yugoslavia
15245	ZYE21, Belem, Brazil
15245	Leopoldville, Congo Rep.
15250	VOA, Melolos, P. I.
15250	Bucharest, Rumania ●
15255	Radio Free Europe, Port.
15260	FEN, Tokyo, Japan
15265	Colombo, Ceylon
15265	VOA, Munich, Ger.
15275	Cologne, Germany
15275	Warsaw, Poland ● †
15280	ZL4, Wellington, N.Z.
15285	Prague, Czecho.
15290	VOA, Tangiers, Mor.
15290v	Habana, Cuba
15295	Beirut, Lebanon
15295	PRL8, Rio de Jan., Brazil
15295	NHK, Tokyo, Japan
15295	Cologne, Germany
15300	BBC, London, Eng. †
15300	DZH9, Manila, P.I.
15300	Bucharest, Roumania
15300v	Lourenco, Marques, Moz.
15305	Radio Liberty, Ger.
15310	AIR, Delhi, India
15315	VLC15, Melbourne, Aus.
15315	HEU6, Bern, Switz. ●
15325	ZYR228, Sao Paulo, Braz.
15330	VOA, Munich, Germany
15330	VOA, Tangiers, Mor.
15335	VOA, Poro, P. I.
15340	Radio Liberty, Germany
15340v	Habana, Cuba
15345	Taipei, Taiwan, China
15345	Rabat, Morocco
15350	Luxembourg, Lux.
15355	Radio Free Europe, Port.
15370	ZYC9, Rio de Jan., Braz.
15370	Radio Liberty, Germany
15375	BBC, London, Eng.
15385	DZF3, Manila, P.I.
15385	CXA60, Montevideo, Urug.
15385	Lisbon, Port.
15385	VOA, Tangiers, Mor.
15390	NHK, Tokyo, Japan
15395	Radio Liberty, Germany
15400	RAI, Rome, Italy
15405	Cologne, Germany
15425	Hilversum, Neth.
15440	VOA, Munich, Germany
15460v	PZC, Paramariob. Surinam
15465	Paramaribo, Surinam
15475	Cairo, UAR
15555	Peking, China
17705	Luanda, Angola
17725	ZYR232, San Jose Dos Campos, Brazil
17740	Peking, China
17745	Accra, Ghana
17780	BBC, London, England
17790	BBC, London, Eng.
17845	Brussels, Belgium
17865	Brussels, Belgium
17875	Habana, Cuba
17880	Lisbon, Portugal
17890	HCJB, Quito, Ecuador
17895	Lisbon, Port.
17900	Cairo, Egypt
21620	Habana, Cuba

Canadian Short-Wave—Domestic and International

*Transmitter at Sackville, New Brunswick

Kc.	C.L.	Location
5970	CBNX	St. John's, Nfld.
5970	CKNA	Montreal, Que.*
5990	CHAY	Montreal, Que.*
6005	CFCX	Montreal, Que.
6010	CJCX	Sydney, N.S.
6030	CFVP	Calgary, Alta.
6060	CKRZ	Montreal, Que.*
6070	CFRX	Toronto, Ont.
6080	CKFX	Vancouver, B.C.
6090	CBFW	Montreal, Que.
6090	CKOB	Montreal, Que.*

Kc.	C.L.	Location
6130	CHNX	Halifax, N.S.
6160	CBUX	Vancouver, B.C.
6160	CHAC	Montreal, Que.*
9520	CBFR	Montreal, Que.
9585	CKLP	Montreal, Que.*
9610	CBFX	Montreal, Que.
9610	CHLS	Montreal, Que.*
9630	CBFO	Montreal, Que.
9630	CKLO	Montreal, Que.*
9710	CHLR	Montreal, Que.*
9740	CHFO	Montreal, Que.*

Kc.	C.L.	Location
11705	CBFY	Montreal, Que.
11705	CKXA	Montreal, Que.*
11720	CBFL	Montreal, Que.
11720	CHOL	Montreal, Que.*
11760	CBFA	Montreal, Que.
11760	CKRA	Montreal, Que.*
11900	CKEX	Montreal, Que.*
11945	CKEX	Montreal, Que.*
15090	CKLX	Montreal, Que.*
15105	CKUS	Montreal, Que.*
15190	CBFZ	Montreal, Que.

Kc.	C.L.	Location
15190	CKCX	Montreal, Que.*
15255	CKSR	Montreal, Que.*
15275	CKBR	Montreal, Que.*
15320	CKCS	Montreal, Que.*
17710	CHSB	Montreal, Que.*
17735	CHRX	Montreal, Que.*
17820	CKNC	Montreal, Que.*
17865	CHYS	Montreal, Que.*
21600	CKRP	Montreal, Que.*
21710	CHLA	Montreal, Que.*

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