A 75¢ SCIENCE AND MECHANICS HANDBOOK

FALL 1963

RADIO-TV EXPERIMENTER

PUBLISHED QUARTERLY

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SEE PAGE 30

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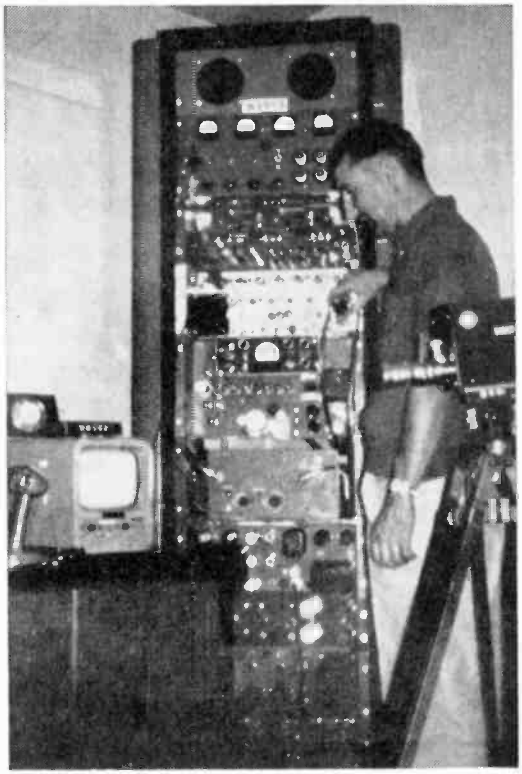

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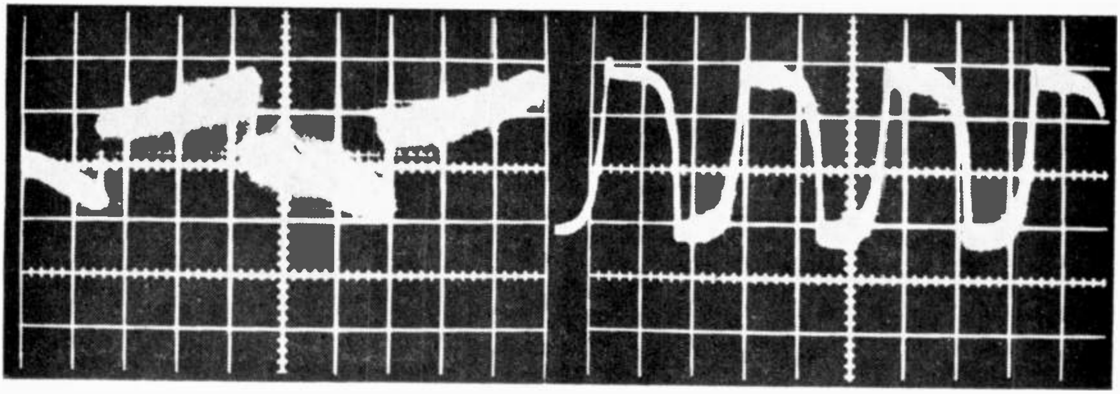

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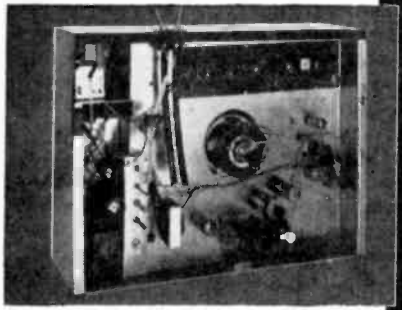
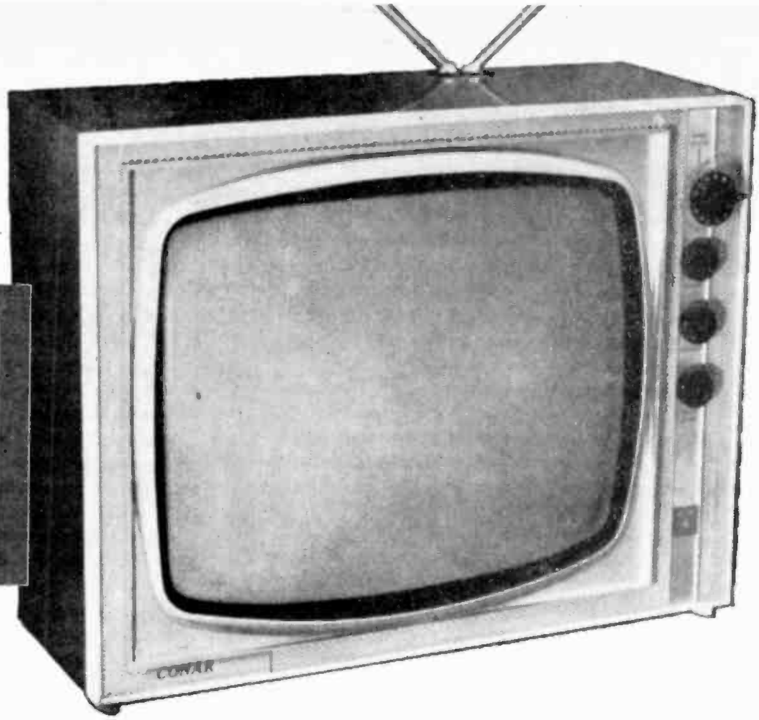
Conar Custom 70 Table Model Kit





The kit builder's newest showcase

Experienced do-it-yourselfer or unskilled novice, anyone would be pleased as punch to show off this set as his greatest triumph in the lively art of electronic kit building. The Conar Custom 70 is a top-quality television receiver . . . complete in every detail. It's fun to build and fun to watch, from the first construction step to the first proud turn of the on-off switch. The one low price includes everything . . . 206 sq. in. picture tube, attractively slim cabinet, the best American-made parts we could find, even a crayon for marking chassis connections. And if you have ever fumbled with loose kit parts in little brown envelopes, you'll appreciate Conar's cleverly-designed packaging arrangement.

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- Extremely stable, trouble-free circuit with transformer power supply which isolates chassis and cabinet from the power line. (Interior view above shows Custom 70 without rear cover, inter-lock power cord and shield can.)
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- Uses latest type multi-purpose tubes; has built-in rabbit-ear antenna, optional connections for outdoor antenna; cabinet is styled to match any decor, is only 22" high, 17" wide, 13½" deep over all, including tube curvature and rear cover projection.

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CP3C

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As an electrical trouble shooter the Model 161:

- Will test Toasters, Irons, Broilers, Heating Pads, Clocks, Fans, Vacuum Cleaners, Refrigerators, Lamps, Fluorescents, Switches, Thermostats, etc.
- *Will test all TV tubes (including picture tubes)* for open filaments. and burned out tubes.
- Measures A.C. and D.C. Voltages, (Both 110 Volt and 220 Volt lines).
- Will measure current consumption (amperes) *while the appliance under test is in operation.*
- Incorporates a sensitive direct-reading resistance range which will measure all resistances commonly used in electrical appliances, motors, etc.

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• Both 6 Volt and 12 Volt Storage Batteries • Generators • Starters • Distributors • Ignition Coils • Regulators • Relays • Circuit Breakers • Cigarette Lighters • Stop Lights • Condensers • Directional Signal Systems • All Lamps and Bulbs • Fuses • Heating Systems • Horns • Also will locate poor grounds, breaks in wiring, poor connections, etc.

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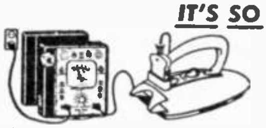
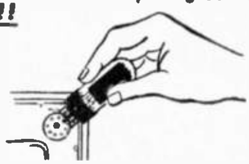
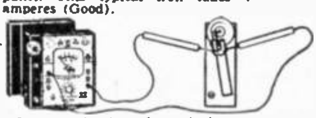


With tester's cord in outlet, current consumption of appliance is read direct on meter when line cord is connected to receptacle on panel. This typical iron takes 7 amperes (Good).



Simply insert tube in appropriate socket then follow procedure as outlined in our manual.



Control circuits of most furnaces use 24 volts obtained from step-down transformer. Here's how to check room thermostat to see if wires to it are live.

Small electric fan motor indicates 50 ohms (normal resistance).

Test Generators

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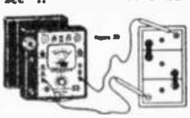

Test Storage Batteries

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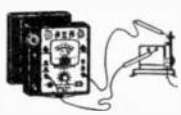

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• How to test all TV tubes; also simple procedure for determining which specific tube (or tubes) is causing the trouble.

• How to trace trouble in the electrical circuits and parts in automobiles and trucks.

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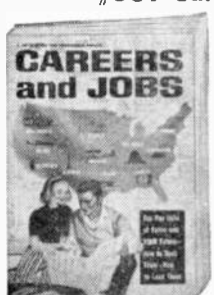
#639 Careers and Jobs



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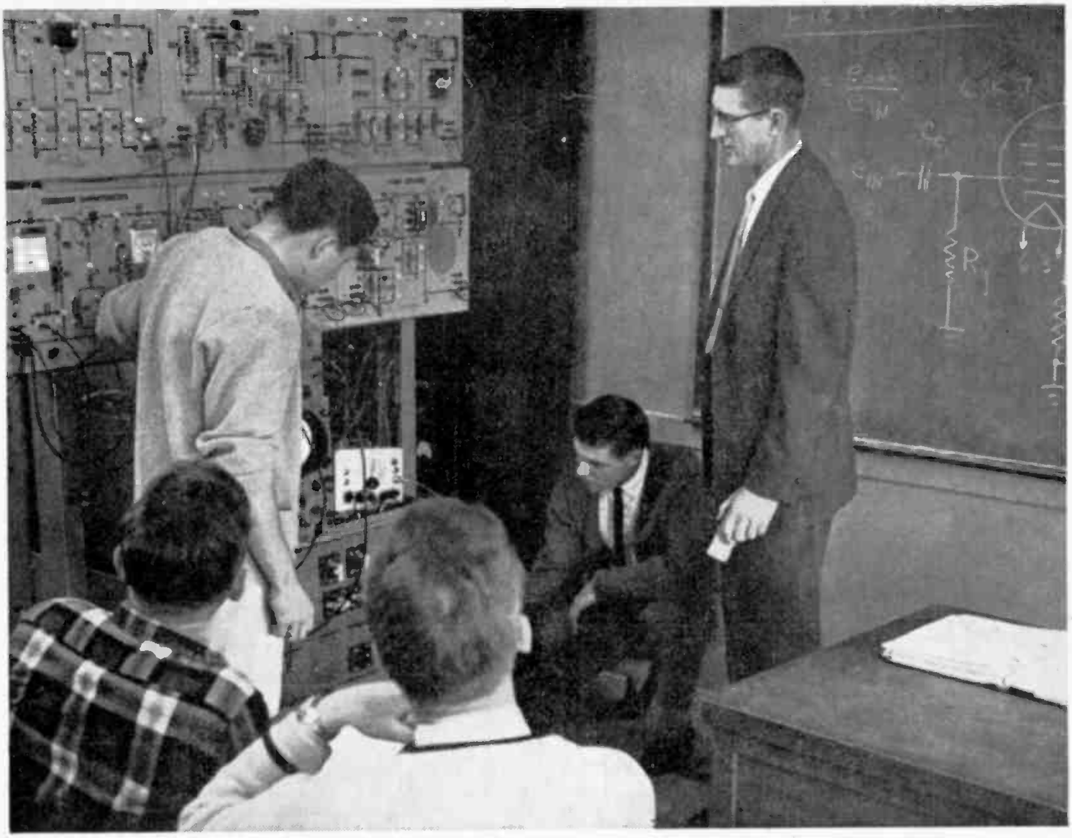

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*Source: Survey by Engineering Manpower Commission of Engineers Joint Council

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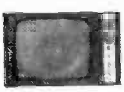
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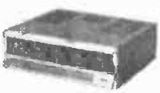
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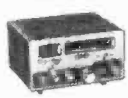
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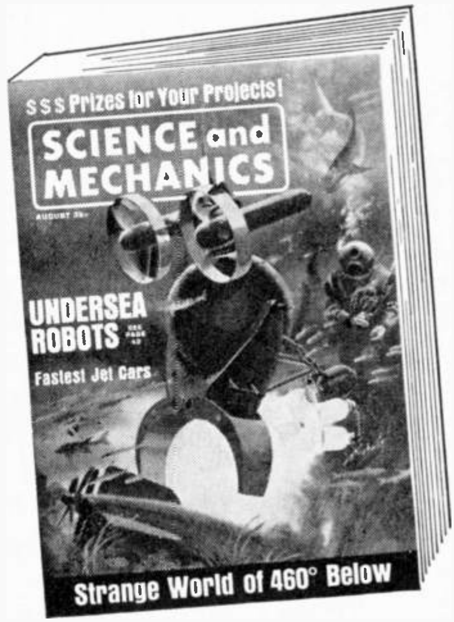

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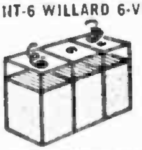

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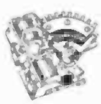
#SM5LS SPDT 8,000 ohm 1¹/₁₆" dia. x 1¹¹/₁₆" long. Approx. weight 1 oz. Hermetically sealed. Standard 7-pin miniature base. $2.00

MINOR SWITCH



10-position, 3-pole with stopper coil and reset coil 6-12 volts D.C. off-normal non-bridging wiper approx. dimensions: 4" long x 4½" high x 1⅝" wide, weight: 1 lb. $9.95

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Rechargeable thousands of times. Alkaline storage battery sintered-plate. Flat voltage curve during discharge. Will hold charge for long period of time. High discharge rate up to 50 amps. Spill-proof, may be used in any position. Approx. 6-ampere-hour capacity. Dimensions: 6" high; 2" wide; ½" thick. Approx. wt.: 6 oz. Uses potassium hydroxide (30% Electrolite). $1.95

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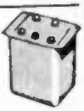
Extremely precise, rugged DC general-purpose sensitive relay. Balanced armature, single-pole, double-throw. Suitable for wide range of adjustments. Dimensions: 1¾"x1⁵/₁₆"x1¹¹/₁₆" high. Weight: 4¼ oz.
5F-10,000S: 10,000 coil ohms. Operates 1.0 ma DC $4.95
5F-16, 000-S: 16,000 coil ohms. Operates 0.5 ma DC $5.95

POWER TRANSFORMER



Output: 12, 24, 36 volts. Input: 100 volts, 60 cycles, single-phase. Will handle 2½ amps. Steel case is hermetically sealed. 3½"x2¾"x4⅛". Wt.: 3¼ pounds. $2.95

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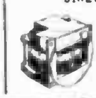

Full-floating card, compensating magnets, and dial light avail. In 6- or 12-v. bulb, luminous dial. Mfgd. by Bendix-Pioneer. 3¼" x 3½". 1¾ lbs. $8.50 post-paid.

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1N1446	.075	amp.	100 volts	.50
1N1447	.075	amp.	200 volts	.60
1N1448	.075	amp.	300 volts	.75
1N1449	.075	amp.	400 volts	.85
1N1450	5	amp	100 volts	1.00
1N1451	5	amp.	200 volts	1.25
1N1452	5	amp.	300 volts	1.50
1N1453	5	amp.	400 volts	2.00
1N1454	25	amp.	100 volts	3.00
1N1455	25	amp.	200 volts	3.50
1N1456	25	amp.	300 volts	4.50
1N1458	35	amp.	100 volts	3.50
1N1459	35	amp.	200 volts	4.00
1N05P7	50	amp.	50 volts	6.00
1N1462	50	amp.	100 volts	7.00
1N1466	75	amp.	100 volts	10.00
1N1467	75	amp.	200 volts	11.00
1N1468	75	amp.	300 volts	12.50
1N05V7	150	amp.	50 volts	16.50
1N1474	150	amp.	100 volts	17.00

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Brand new, in original packing, with accessories. Measures 10 to 30 dbm. 8700-9500 mc. $14.95

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YES...
Send______No. 104 S & M "Job-Tested" Polishing Kits. I am enclosing $7.95 for each. (Price in Canada is $8.80). No shipments outside U.S.A. and Canada.

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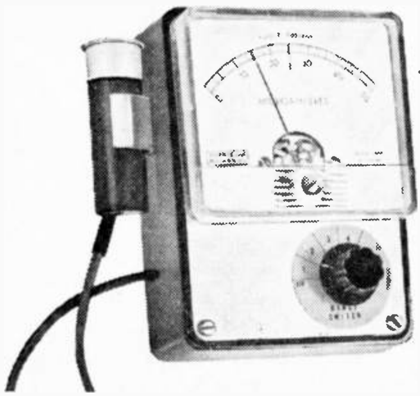
Address____________________

City__________Zone______State______

Answer to TV Crossword Puzzle on page 91

A	D	D	E	R	■	B	■	■	P	U	R	I	T	Y
■	I	■	D	■	B	L	U	E	■	■	E	■	■	O
F	L	A	G	■	■	O	■	■	P	■	V	■	■	K
■	U	■	I	■	C	O	M	B	I	N	E	R	■	E
■	T	O	N	E	■	M	A	■	N	■	R	■	P	■
P	I	■	G	A	T	I	N	G	■	■	S	■	A	■
■	O	■	■	C	■	N	■	A	N	T	E	N	N	A
P	N	P	■	H	■	G	■	M	■	R	■	A	■	P
E	■	■	S	■	■	■	■	M	■	I	■	B	■	E
D	C	■	C	H	R	O	M	A	■	A	C	■	V	R
E	■	■	A	■	A	■	O	■	■	D	■	D	■	T
S	O	O	T	■	T	R	I	■	■	■	■	O	■	U
T	■	■	T	V	I	■	R	E	G	I	S	T	E	R
A	I	E	E	■	N	■	E	■	U	■	A	■	■	E
L	C	■	R	■	G	M	■	■	N	■	T	O	P	■

Here is the NEW S&M Supersensitive PHOTO METER



Every photographer knows that the high quality of his photos depends on the accuracy of his equipment. Here is a precision instrument that meets the highest standards of any meter available. Modern Photography says "This is certainly one of the most unusual, most versatile and most sensitive exposure meters at any price today." U. S. Camera wrote "It is as sensitive as anything on the market. It's so adaptable—those 4 separate ranges of sensitivity have the effect of spreading the meter's scale."

Now, the S&M Supersensitive Photo Meter is better than ever! A new plastic cap protects the probe and permits diffused light to be read with the cap on. The probe can still be used to read direct light with the cap removed. A new positive meter-lock in the OFF position protects the meter's needle.

The S&M Supersensitive Photo Meter uses the newest cadmium sulfide light cell to measure light levels from 0 to 10,000 foot lamberts at ASA speeds of 3 to 25,000. It is successfully used with movie or still cameras, microscope, telescope—as well as a densitometer. The computer gives F stops from .7 to 90 and lists exposure time from 1/15,000 sec. to 8 hours. 43° angle of acceptance; 4 range selection; EV-EVS-LV settings; weighs only 10 ounces.

And yet—this all-inclusive kit can be assembled with soldering iron and screw driver in less than 2 hours. Step by step instructions make it easy—or, order your S&M Supersensitive Photo Meter, fully assembled and fully tested. Complete with attractive carrying case.

$24.95 in kit form No. 101 | **$29.95** assembled No. 102 | **$2.00** carrying case only No. 103

SCIENCE and MECHANICS—Kit Division/505 Park Avenue, New York 22, N. Y.

Please send the new S&M Supersensitive Photo Meter as checked below, complete with carrying case. I understand that if I am not completely satisfied, I may return the meter within 10 days for a complete refund.

- ☐ No. 101 $24.95—in kit form
- ☐ No. 102 $29.95—assembled
- ☐ No. 103 $2—Carrying case only

Add 10% for Canadian and foreign orders. New York City residents add 3% for N.Y.C. sales tax.

Name______________________________
(Please print)

Address______________________________

City________________ Zone______ State__________

- ☐ Check or money order enclosed, ship prepaid
- ☐ Enclosed is $3 deposit, ship COD for balance, plus postage and COD charges

Classified MARKET PLACE

For Information on Classified ads—to be included in our next RADIO-TV EXPERIMENTER HANDBOOK and other Handbooks—write C. D. Wilson, Mgr., Classified Advertising, SCIENCE and MECHANICS HANDBOOKS, 505 Park Ave., New York 22, N. Y.

ADDITIONAL INCOME

MAKE $25-$50 week, clipping newspaper items for publishers. Some clippings worth $5.00 each. Particulars free. National 81, Knickerbocker Station, New York 2.

$100 WEEKLY possible. Compile mailing lists and address envelopes for advertisers. Home-spare time. Particulars free. National Service 81, Knickerbocker Sta., New York City 2.

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INVESTIGATE Accidents. Earn $750.00 to $1,000 monthly. Men urgently needed. Car furnished. Business expenses paid. Pick own job location. Investigate full time. Or earn $6.44 hour spare time. Write for Free Literature. No obligation. Universal, CMH-3, 6801 Hillcrest, Dallas 5, Texas.

VENDING Machines—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 41, 715 Ensor St., Baltimore 2, Md.

ASSEMBLE Artificial Lures at home for stores. Materials supplied Free. Profitable! Write: Lures, Ft. Walton Beach, Fla.

PAWNBROKER. Be one. I'll teach you. Amazing profits. Pawnbroker Thayer, Bath, Maine.

I made $40,000.00 Year by Mailorder! Helped others make money! Start with $10.00—Free Proof. Torrey, Box 3566-T, Oklahoma City 6, Okla.

INCOME Opportunities—Dozens of successful ways to be your own boss or to conduct a small business profitably on a part-time basis. This Handbook reveals how many franchise operations work. Send $1 00 to Handbook Div., Science and Mechanics, 505 Park Ave., New York 22

BUY IT WHOLESALE

DEALERS Cost—all 1963 Cars—$1 00, Petros, 5404-S South Mozart, Chicago 22

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MATHEMATICS for Electricians only $1.00. Adem, 5412 East Washington, Indianapolis, Indiana.

ENGINEERING And Art Degrees earned through home study. Electronics, Mechanical. Liberal Arts. Major Accounting. When writing specify course desired. Pacific International College of Arts & Sciences, primarily a correspondence school. Resident classes also available. 5719-T Santa Monica Blvd., Hollywood, 38, Calif.

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LEARN to swim easily Teach others Safe, sure method Guaranteed system $1.00. Bertoncini, P.O. Box 753, Del Mar 1, California.

EDITORIAL

What's All This Noise?

By BYRON G WELS

RECENTLY, the Federal Trade Commission decided to protect the consumer against "unfair acts or practices in interstate commerce." The Federal Trade Commission Act also makes it "illegal for one to engage in Unfair methods of competition."

The question boils down to exactly what do the words "high fidelity" really mean, and when a manufacturer so labels his equipment, how can you tell if the public is being defrauded?

In order to establish good and proper standards, the FTC solicited comments from various groups and individuals. Among these was the manufacturer's organization, the Electronic Industries Assn. The EIA proposed a standard based on the following steps:

A questionnaire was sent to 1000 firms and individuals asking their definition of the term "high fidelity," with their suggestions for a practical certification procedure. One hundred and fifty-four replies were received.

An *ad hoc* committee was formed which invited the Institute of High Fidelity Manufacturers to form a parallel committee to meet with the group from EIA and try to resolve the problem.

When they received no response to this invitation, the committee informed the FTC that it would limit its endeavors to recommending minimum standards and certification solely for factory-assembled "packaged" phonograph units.

The first draft of these recommendations was circulated to the 154 firms who responded to the original questionnaire, for comments.

All in all, the standards proposed by the EIA are minimal, for they are indeed loose. Perhaps H. H. Scott, a long-time manufacturer of quality hi-fi and stereo equipment sums it up best: "Frankly, this definition of hi-fi sets the art back at least 30 years. . . . The adoption of the EIA proposed standards for high fidelity could do very serious harm indeed. . . . The set manufacturers almost certainly would trumpet that their equipment met 'government standards for high fidelity'. . . . Overall, this would be a cultural step backward, not forward."

Finally, the Federal Trade Commission was contacted and they make very clear indeed that their purpose is a conscientious one. While the EIA caused a good deal of hoop-la with their proposal, the FTC is not going to be browbeaten into a quick decision. Obviously, the EIA is doing their best to protect the mass of manufacturers whom they represent. The FTC on the other hand, is attempting to protect the buying public.

The FTC went on to say that they have received *several* constructive suggestions regarding this problem, and they invited RADIO-TV EXPERIMENTER to submit its thoughts on the matter. For your own consideration, here, in essence, is what we recommend:

High fidelity is a relative thing, and the only sure way to protect the consumer is with several categories for high fidelity equipment, not with the either "yes" or "no" label.

To set up standards, the equipment must be tested with a fixed load resistor, and tested at its full rated output. A standard range of frequencies must be applied to the input terminals, and the frequency response will be measured at the output terminals, across the load resistor.

Frequency response will be considered "flat" only. . . . No allowance will be made "so many *db* down" at the low or high end.

There should be perhaps five categories of equipment, each to be determined by the flat frequency range of the equipment at fixed loads and at full rated power.

These categories could be identified by letter prefix or roman numeral prefix.

In this way, the manufacturer is required by law to specifically state the area of quality into which his equipment falls. While the manufacturers today are inclined to like the present system (the only added cost now is for a label reading "hi-fi"), it will be found that quality and price will be closely related. We're sure that the public in general and the manufacturers of high quality equipment will appreciate this, but until some positive decision is reached and passed into law, the public must rely on careful purchasing and *caveat emptor!*

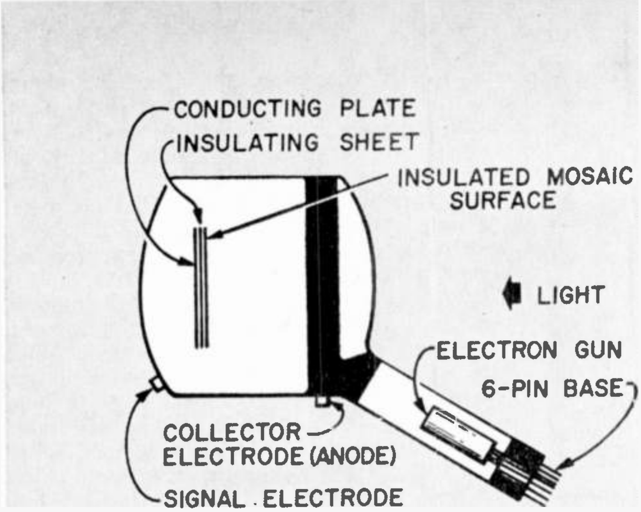
Amateur radio television needn't be terribly expensive. K6IPR operates modestly with surplus gear and does well.

Getting Started in

By FRED BLECHMAN K6UGT and PAUL MERRIMAN K6IPR

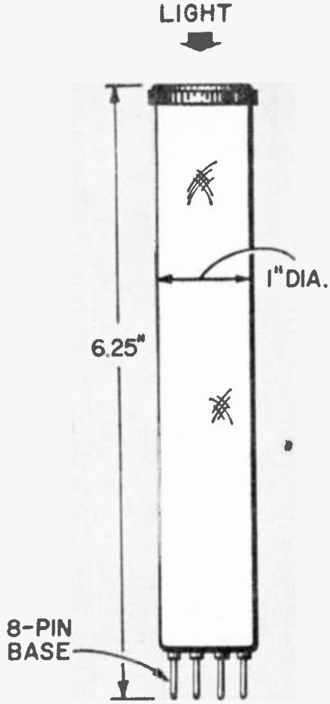
AMATEUR television is not new, but since the Federal Communications Commission approved the use of the 420-450 mc. band for amateur television in 1957, only a relatively small number of intrepid experimenters have put ham-TV stations on the air. However, some recent developments promise a new revival of interest in amateur television. For example, the FCC recently removed the 50-watt power limitation on the 420-450 mc. band except in some areas of the south and southwest. Even in those areas where the restriction remains, permission to transmit more than 50 watts may be requested on an individual basis. Also, equipment usable for ham-TV is becoming readily available at reasonable prices, with minimum "home-brewing" required to get a good picture on the air. It appears that all that's needed now is a realization among the more adventurous hams that amateur TV is no longer a franchise to be enjoyed only by the wealthy or especially brainy ham. This article will not only offer an elementary description of the major components of simple amateur television systems, but will suggest ways the average interested ham can get started in ham-TV, as well as listing sources for equipment and further information.

License Requirements and Band Allocations. What license do you need? Any licensed amateur radio operator, except Novice Class, is authorized by the FCC to transmit television signals in the assigned amateur bands above 420 mc. Specifically, these bands are 420-450 mc., 1215-1300 mc., 2300-2450 mc., 3500-3700 mc., 5650-5925 mc., 10000-10500 mc., 21000-22000 mc., and all frequencies above 30000 mc. As a practical matter, however, we will limit our discussion in this article to amateur TV in the 420-450 mc. band, since this is the most common usage, and offers the



SOME BASIC ELEMENTS OF THE ICONOSCOPE

FIG. 1



TYPICAL 1-INCH VIDICON

Ham-TV

You probably know that hams get on the air and chat half the night. Now XYL's (wives) must dress for the contact

maximum chance to use inexpensive, available system components.

Performance You Can Expect. As with any radio communication, performance is a result of, among other things, power, path and propagation. The power is the signal leaving the antenna, not all the energy wasted in power conversion, coupling, line losses and mismatching. With a 50-watt input transmitter, you might get 20 watts into the antenna at these frequencies. This 20 watts, effectively concentrated by your antenna gain, must find its way to a receiving antenna, and any natural or man-made obstructions will attenuate the signal. This attenuation, plus the normal reduction in strength with distance, constitute path loss. The propagation, or extension of the signal in space, is line-of-sight at these frequencies for all practical purposes; don't depend on skip transmissions. The receiving antenna must be high enough to see the transmitting antenna for dependable signal exchange. Also, in the

Fig. 2: The large iconoscope was used as a camera tube in surplus drone planes. Smaller vidicon does same job.

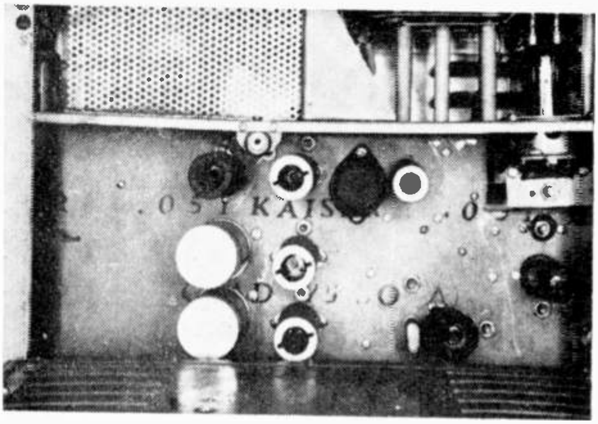


Fig. 3: The "guts" of the system can often be salvaged from military surplus materials and effect huge savings.

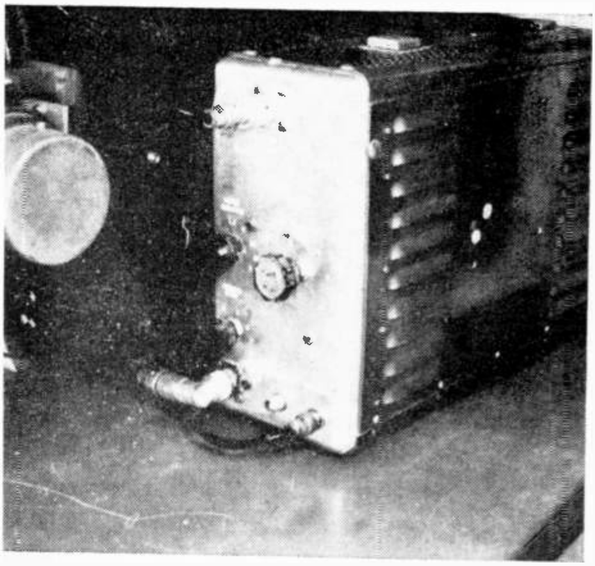


Fig. 4: A surplus selsyn is used to focus the camera lens remotely. Useful if camera is out of arms reach.

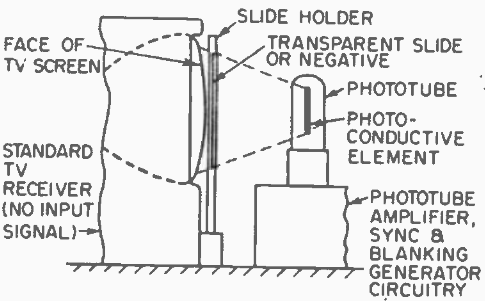


FIG. 5 FLYING-SPOT SCANNER SYSTEM

case of TV reception, the incoming signal must be considerably stronger than the just-above-the-noise signal tolerable with CW or voice communication; the TV signal contains synchronizing and blanking pulses and a complex spectrum of information that must get through. All this makes high gain antennas, which are quite small at these frequencies, almost a necessity.

With a 50-watt transmitter, good antenna, clear path and average receiving equipment, a range of 25 miles is not uncommon. With higher power and more exotic receiving units, this can certainly be increased. Ron Olney, W6VCF (Encino, Calif.) holds regularly scheduled two-way contacts with "Ace" Simpson (Azuza, Calif.) 40 miles away, both using antennas only 50 ft. above the ground. K6HXZ (Jim Kampschroer, Sunland, Calif.), K6IPR, and W6WPD (Bob Brown, Tujunga, Calif.) used to work each other regularly, until K6IPR moved over a mountain!

W6ZJU (Vern Thompson) and W6VCF are actively planning a TV repeater station to be installed on Mount Wilson, which should provide ham-TV contacts throughout the southern California area. Other areas can be expected to follow suit as the interest increases and more hams go video.

Programming. Only three things really limit your ham-TV programming: your imagination, your equipment, and FCC regulations. If you only use a flying spot scanner (we'll get to that later), transparent slides or photographic negatives are your limit. But with a live camera, you can show movies, cover local events (parades, sports, accidents), do magic tricks, or just plain make faces. Puppet shows are a natural. Video chess or checkers, panel shows, quiz games or just about anything except the transmission of music, profanity or obviously improper material, is possible. Your creative talents can leap the bounds of aural transmission and encompass the video spectrum. Lighting and background, for example, become important from both the technical and aesthetic viewpoint; weird effects can be achieved with both.

What Do You Need For HAM-TV? Just what is involved in an amateur TV system? Look at the block diagram of a basic system that allows transmission of live action programs. The equipment specified is that used by K6IPR-TV at his Burbank, Calif., station, and is representative of a low-budget system.

A much more elaborate system is used by W6VCF, involving two racks of equipment. A beginner in ham-TV should not be overcome by the apparent complexity of some systems, since they are all composed of fundamental blocks added together. Getting on the air can be accomplished for less than $50, if you salvage most of the parts from old TV sets.

Where To Get The Equipment

HAM-TV equipment is still relatively rare or expensive, but your local electronic surplus houses might have some. The following companies are among those that may be contacted for further specific information and prices. Don't just ask for all the information they have; specify your interest, such as surplus cameras, new cameras, transmitters, etc.

Denson Electronics Corp.
Longview St.
Rockville, Conn.

Cameras (new, used, surplus), lenses, surplus transmitters, vidicon tubes, etc.

U. S. #1 Electronics
1920 E. Edgar Rd.
Linden, N. J.

Surplus cameras, transmitters and power supplies.

Barry Electronics
512 Broadway
New York 12, N. Y.

Closed-circuit cameras and equipment.

Space Electronics Co.
218 W. Tremont Ave.
Bronx 53, N. Y.

T-179/ART-26 35 watt 300-600 mc. transmitter.

J. J. Glass Co.
1624 S. Main St.
Los Angeles 15, Calif.

APS-13 transceiver, other surplus.

FM Surplus Sales Co.
1100 Tremont St.
Roxbury 20. Mass.

Motorola T44A-6 450 mc. 18 watt mobile transmitter.

Closed Circuit Television Dept.
Radio Corporation of America
Building 15-6
Camden 2, N. J.

TV-Eye camera, power supply, controls and cables: $495.

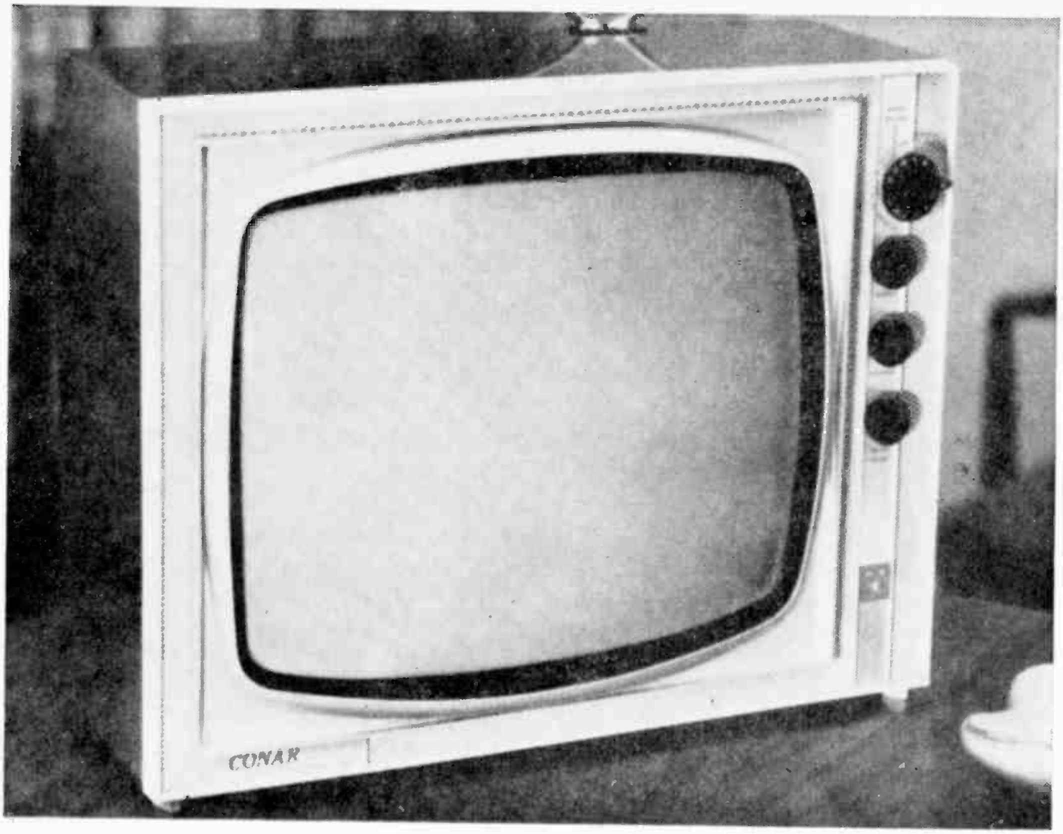
Packard-Bell Electronics
Industrial Products Dept.
1920 S. Figueroa St.
Los Angeles 7, Calif.

Complete high quality transistorized vidicon camera, including power supply, cables and control box: $695.

Columbia Electronics
4365 W. Pico Blvd.
Los Angeles 19, Calif.

Surplus cameras and transmitters.

Basic System Description. Briefly, the system at K6IPR-TV consists of a live-action surplus iconoscope camera and power supply which convert the viewed scene to video signals with a 4.5 mc. bandwidth and the standard synchronizing pulses. This complete composite video signal is fed through coaxial cable to a video amplifier and modulator which in turn is used to grid modulate the linear amplifier stage of a home-brew 438 mc. crystal-controlled transmitter. An external power supply furnishes the required B-plus, bias and filament power. The transmitter output is carried by coax to a transmit-receive relay (coaxial type), allowing the use of the same high gain antenna alternately for transmitting and receiving. From the coaxial relay the signal is fed through a balun coil (impedance matching transformer) and low-loss tubular twin-lead to the collinear 12-element UHF antenna. For receiving, a slightly modified tuned-line type Dumont UHF tuner is used to change the received signal to what-looks-like VHF Channel 6 to the standard TV receiver. Monitoring of the outgoing signal automatically appears on the TV receiver, due to signal proximity and relay switch leakage; alternately, the video signal can be fed directly to the TV set (with the slight modification of adding a video input jack) to allow tuneup and adjustment monitoring without broadcasting. *(Continued on page 136)*



Kit Parade–
The CONAR Custom Seventy Television Set

After this report was completed, it was sent to the manufacturer, Conar Instruments. Mr. Jack Thompson, manager, commented on the report, and his comments are reproduced with the article. They have been inserted in italics, following appropriate paragraphs

By BARNEY GERALDS

PERHAPS the nicest thing about this set is that when its finished, the handsome appearance looks like anything but what you'd expect a kit-type TV set to be! It isn't big or boxy, and it performs beautifully—but we're jumping the gun.

And we're blushing already!

Opening the Kit. When you get the kit, you find that almost all the small parts are packaged under plastic which is vacuum-sealed to corrugated cardboard. Each step in the construction is related to a package of parts, so you can put aside the later packages until you get to them. During the unpacking of the parts for the first steps, you will find a razor blade to be a handy accessory, for there's one heck of a job breaking through that tough plastic without one.

Our customers tell us the package is a whale of a lot better than a little brown envelope with parts dumped in. Its also an excellent way to use up old razor blades lying around the house.

We're happy to report that all of the parts were there, and we didn't have to go scampering down to the local radio emporium for such things as additional lengths of wire.

For customers who like to scamper, we'll arrange to leave out a few parts. There's a slight additional charge for this service.

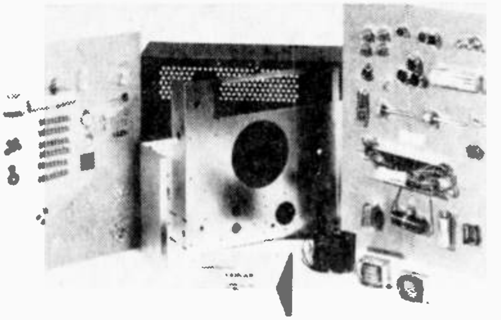


Fig. 1: When you get the boxes open, the vast array of parts might throw you, but follow instructions.

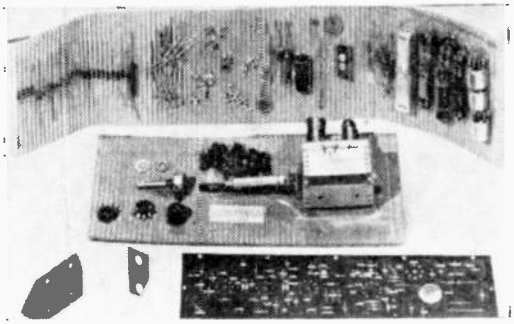


Fig. 2: Leave all components in place under the plastic on the corrugated cardboard sheets.

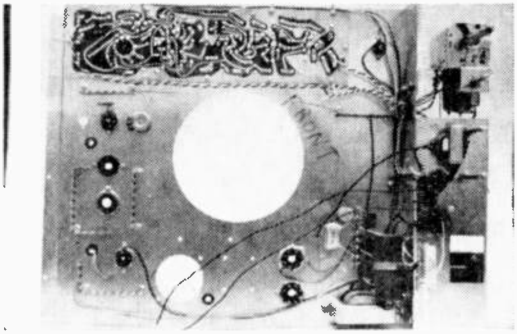


Fig. 3: The front of the chassis with most of the mechanical parts in place. Note crayon mark "Front."

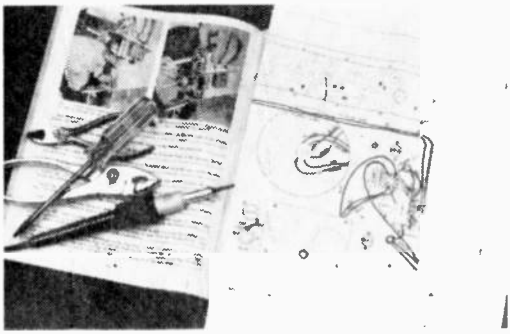


Fig. 4· Instruction book is supplemented by large, easy-to-read sheets. Simple tools are all you need.

The instruction manual is complete and easy to follow, even for a novice. Of course, the old hue and cry of "Read the Book" still applies.

Starting Construction. The secret of success is to work slowly and in small gulps. The enlarged diagrams are a tremendous help and should be referred to often.

Your author ran into one problem here, and this was the confusion regarding which is the front of the chassis, and which is the back.

Your author also failed to read the book. We supply a crayon for marking front and rear of chassis. You'll love our crayons.

This confusion was finally brought home during a later procedure, when it was found that some of the terminal strips had no wires to be connected to them, and on the other side of the chassis were lots of wires with no strips to connect 'em to. We had to remove a few screws and replace several parts before we got straightened out. To avoid future errors, the chassis was plainly marked.

Or better yet, follow instructions.

The only area of difficulty that was encountered in the wiring was making the connection to the high voltage socket corona ring.

Some customers thought the corona ring was a cigar band. We revised the manual to clear this up.

The set works, so apparently the problem was overcome despite many misgivings when it came time to throw the switch.

Test Results: When we got the set working, alignment was an easy problem. The instructions are clear and concise on this score. There are a few negative comments, and these will be reflected on now.

We'd rather you stick to positive comments but go ahead.

The back of the set is marked with certain screws that can be removed so that the back comes off and leaves the chassis attached to the cabinet. As the holes were all the same size the screws must ALL be removed in order to open the back, and of course, when the screws are all removed, the chassis slips away from the cabinet. We corrected this obvious fault by taking a tapered reamer to two of the mounting holes on the back cover, and with these holes larger than the screw heads, these two screws remain in place and keep the chassis on the cabinet regardless of the other screws holding the back.

Ah ha—caught you again! The book clearly tells which screws to remove. Maybe we should supply a tapered reamer for kit builders who don't like to read

While the seldom used controls are easily accessible on the back of the set, there is one that seems to be missing, and this is the horizontal hold, or lock. It is located inside the

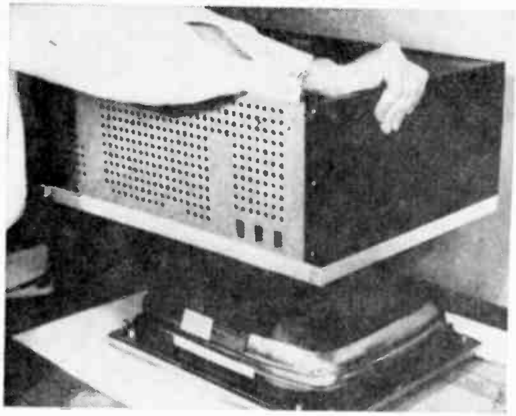


Fig. 5: Picture tube is assembled to cabinet, sandwich style. Tube and cabinet are one after assembly.

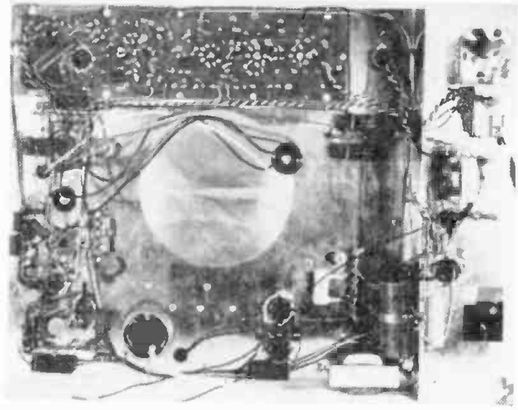


Fig. 6: Rear view of chassis shows printed circuit board that saves lots of hard labor. Hole is for tube.

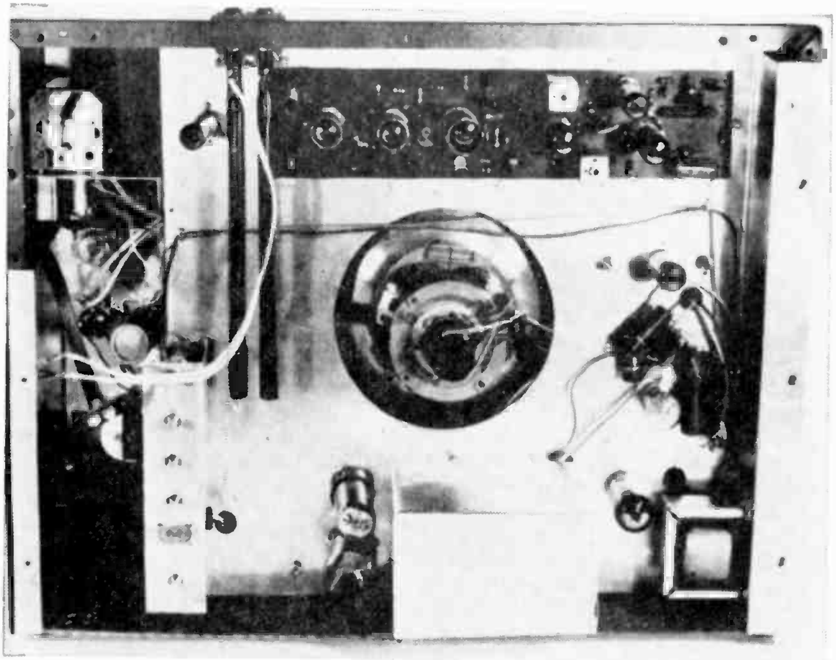


Fig. 7: The rear of the set with the back cover removed, shows clean layout. All tubes are accessible.

back of the set, near the ringing coil with which it is associated. Here again, we did a minor modification by drilling an access hole in the back and extending the shaft of this control with a shaft coupler.

Normally—in a properly assembled set—you adjust the horizontal hold once and forget it.

While you assemble your set, watch out for the wires associated with the speaker and output transformer. Use ample spaghetti where its called for. At one point, after a minor service problem that had nothing whatever to do with audio, we restored the chassis to the cabinet only to find that sound was missing. Turned out that a bare wire from the output transformer to the speaker was shorted to ground when the chassis was slipped into the cabinet. Redressing and tape restored sound.

—See—you saved yourself a $7.50 service charge right there.

On the whole, the set looks beautiful and the performance is every bit as beautiful. The unit operates completely free of trouble, except for the troubles that you WANT de-

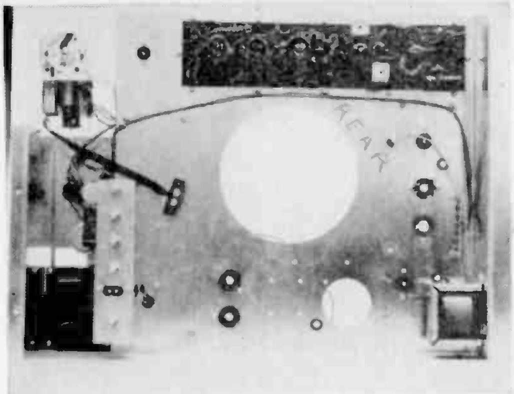


Fig. 8: Rear of chassis, partially wired. Dog-house will be installed over high voltage section later on.

Fig. 9: Servicing is simply a matter of removing back, sliding chassis toward rear for accessibility.

veloped! We've learned more about how to set up a yoke and make basic adjustments that are usually factory-performed on commercial sets. The instruction book is educational, and this is to be expected, for Conar (COmpany NAtional Radio) is a division of the National Radio Institute.

—Too bad there's not more about technical design of the Custom 70. Transformer power supply, bonded pic tube, 3 stages of video I.F., new high-gain tuner and one full year guarantee are features hard to find in commercially manufactured sets priced under $200. Anyhow, that's our opinion.

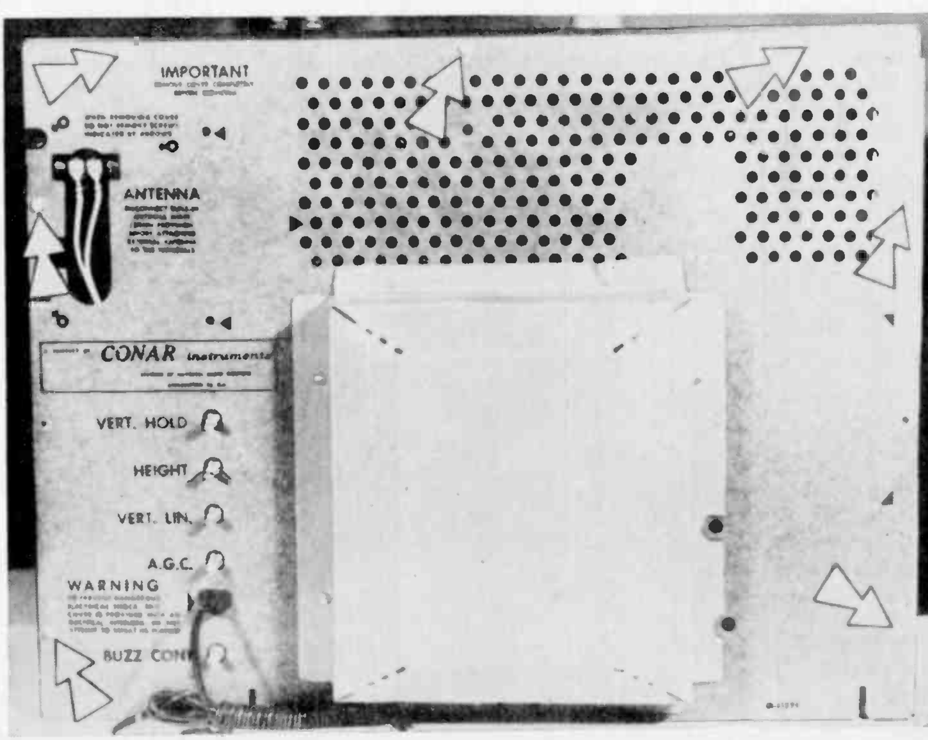
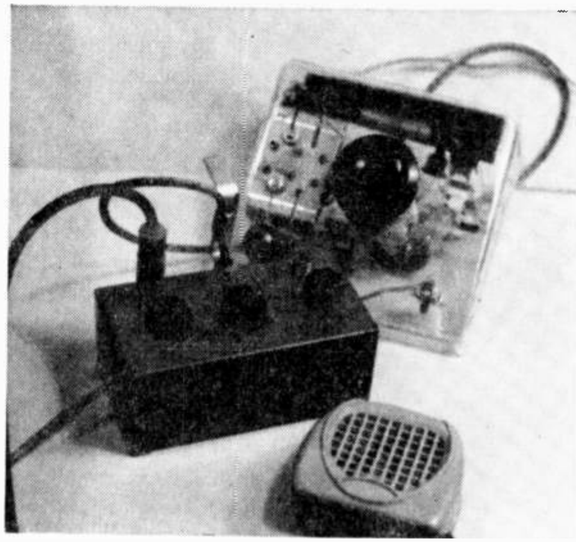


Fig. 10: Arrows on back of set indicate screws to remove to gain access to interior. Note rear controls.

Recorder Amplifier Mixer



By FORREST H. FRANTZ Sr.

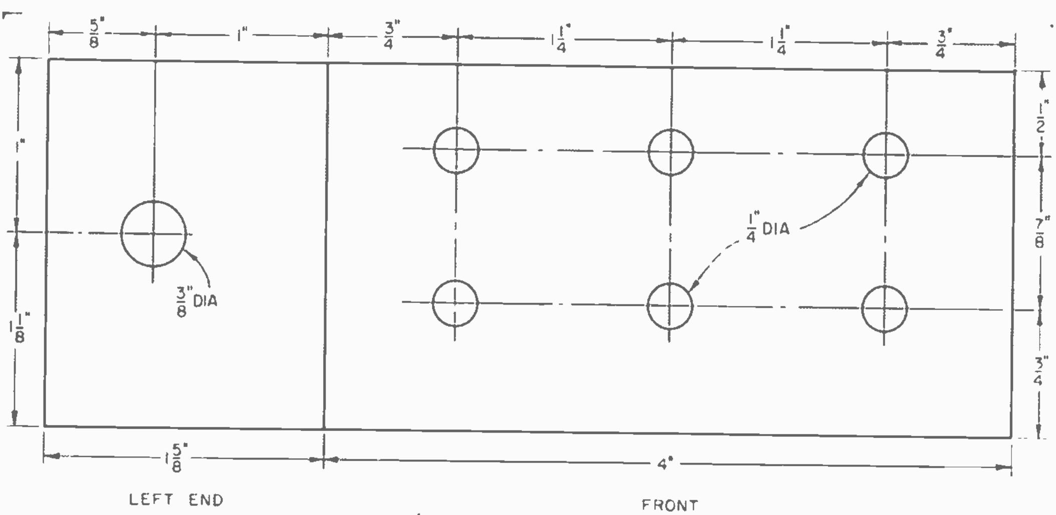
Blend and control three separate inputs into a single output

WANT to feed more than one input into a tape recorder or an amplifier that only has one input? It's easy. This unit provides the capability. You may wish to use two mikes and a record player, or one mike and two record players to secure dramatic sound effects and narration set to music.

This mixer can be built from parts costing around $5, in a matter of a few hours. It's very compact (1⅝ x 2⅛ x 4-in.), and it's housed in an aluminum case.

Why Use a Mixer? Suppose you want to connect three input devices such as a microphone, a radio tuner, and a record player to a tape recorder that has only one input jack. The first thought might be to connect everything in parallel. The trouble with this though, is that unless each of the input devices has its own volume control, you have no control of the sound level between the individual units. Although the tape recorder volume control will control the conglomerated input of the three devices, there's no way to fade or increase the volume of one relative to the others.

The next thought then, might be to go to



3 DRILLING LAYOUT

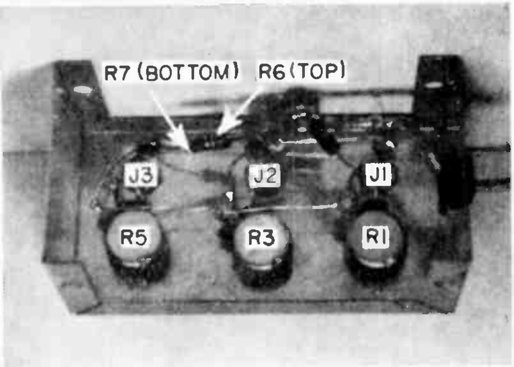


Fig. 1: With the bottom cover removed, the simple wiring and facile parts placement becomes obvious.

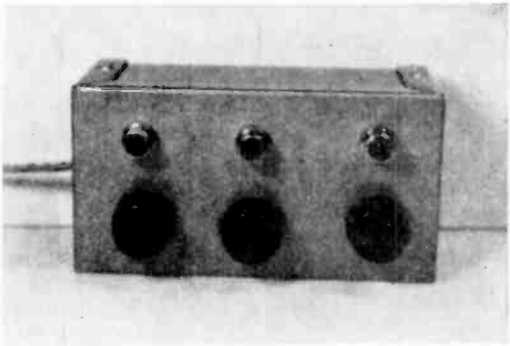


Fig. 2: The completed unit presents a handsome appearance and doesn't take much space. Finish with decals.

a circuit in which each of the input devices has its own volume control. But, the controls interact.

You can get around interaction by using the mixer circuit of Fig. 4. A volume control is provided for each of the inputs. The 220K series resistors (R2, R4, and R6) isolate the controls from each other and minimize this interaction. The one megohm mixing resistor (R7) completes the circuit to ground. The series resistors cause a small loss in signal strength. But the loss for all practical purposes is negligible.

With the mixer then, you can control the volume for each input channel separately.

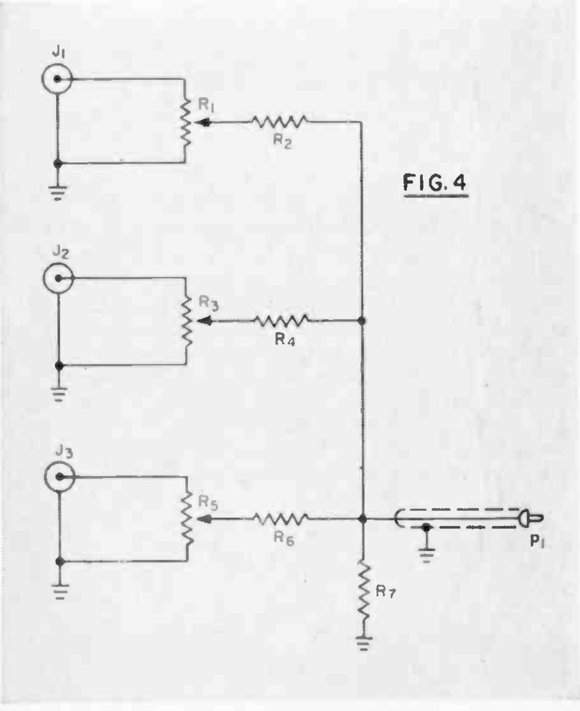


FIG. 4

You can control the volume of the entire signal combination with the volume control on the tape recorder or the amplifier.

The mixer must be thoroughly shielded to prevent stray hum pick-up. And it should be housed in a sturdy case to withstand rough handling.

Construction: The mixer case is a standard purchase item. Use Fig. 3 as a guide for drilling the holes. A total of seven holes is required. Mark the hole positions with a punch. Leave the case assembled to drill. Drill ⅛-in. starter holes and enlarge to size with suitable drills or a taper reamer. Clean off burrs and remove chips from the case.

Cut the potentiometer shafts to a length of ⅜-in. Place the part of the shaft to be discarded in a vise, cut with a hacksaw, and catch the control as it falls free. Mount the volume controls and the jacks on the case. Use Fig. 2 as a guide. Bend and solder the single lug tie-down point to the ground lug on J2. Use rosin core solder and a clean soldering iron.

Proceed with the Wiring: Use Figs. 2 and 4 for guidance. Connect the grounded sides of the volume controls and jacks with a piece of bare wire. Connect the center terminals of the jacks to the high terminals of the respective volume controls. Connect a 220K resistor from each of the volume control center terminals to the insulated (not grounded!) tie-down lug. Connect a one megohm resistor between this point and ground. Connect the center wire of the shielded conductor to the junction of R2, R4, R6, and R7. Use a solid piece of wire to connect the shield to ground.

Use about 3 ft. of Belden No. 8401-shielded wire. Be careful not to overheat the shield while you're soldering, or you may melt the insulation and end up with a short.

Connect the phono plug (or a plug to match the particular recorder or amplifier that you wish to connect to) on the other end of the shielded wire. Center wire connects to center pin and shield connects to plug shell. Fasten the back of the case and the knobs and you're ready to go.

The jacks are mounted directly above the respective controls, so there shouldn't be any identification problems. If you wish, you can label the jacks (input 1, 2, 3, phono, radio, mike or whatever you wish) and you can scribe pointer lines in the knobs. You can mark directly on the case with India ink, you can use commercial decals, or you can type on white paper and fasten to the case with cellophane tape. Make pointer lines on the knobs by making a recessed line with the corner of a triangular file and filling with white India ink.

Reminder: This mixer is designed to take inputs which do not contain dc voltages. Dynamic and crystal microphones and phonograph cartridges have outputs that are free of dc voltage. Most radio tuners have outputs that do not contain dc voltages. If a radio tuner which you intend to use with a mixer has dc in the output, connect a .1 mfd., 600 v. capacitor in series with the high side of the mixer input. The presence of dc can be determined by checking to see if an output capacitor has been incorporated in the tuner or by checking the tuner output with a dc voltmeter.

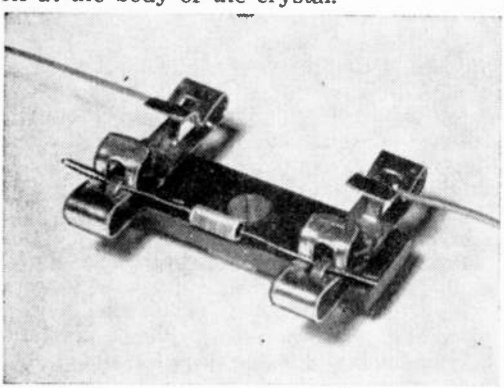
MATERIALS LIST—RECORDER/AMPLIFIER MIXER

Desig.	Size and Description
R2, R4, R6	220 K, ½ watt resistors
R7	1 M, ½ watt resistors
R1, R3, R5	1 megohm miniature potentiometers (Lafayette VC-38)
J1, J2, J3	phono jack, single hole mounting (Lafayette MS-568)
P1	phono plug (Lafayette MS-373)
	single lug tie down strip (Lafayette MS-231)
	three miniature knobs (Lafayette MS-185)
	single conductor shielded wire (see text)
	1⅝ x 2⅛ x 4" grey hammertone miniature case (Premier PMC-1002)

Parts for this project may be obtained from:
Lafayette Radio, 111 Jericho Tpke., Syosset, L. I., N. Y.

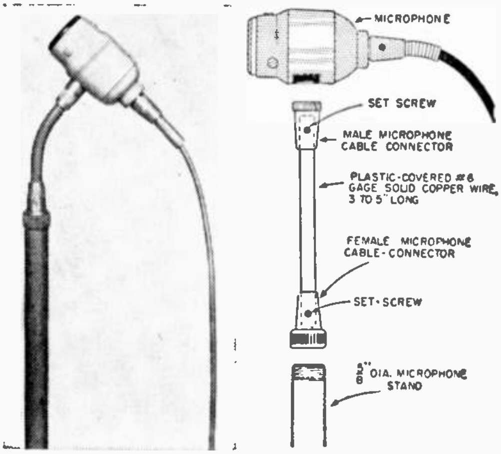
Germanium Crystal Diode Connector for Experimenters

• With the increasing popularity of germanium crystal diodes, radio experimenters and crystal set builders are continually changing these crystals around from one circuit to another. The wire leads become shorter and shorter from continual nicking, bending, or soldering, and sometimes the leads break off at the body of the crystal.



To avoid these troubles, make a connector consisting of a pair of twin Fahnestock clips mounted on a strip of Bakelite (see photo). Insert the crystal diode in one side of the clips and make connections to the diode on the other side of the clips as shown. This device also allows two crystals to be connected in parallel, as is sometimes done to increase the current-carrying capacity of germanium diodes. If you do not have a pair of twin clips, simply fasten four clips to a Bakelite or wood base. To insert a crystal into the clips simply press both clips at once and slip the leads into the clips one at a time. This method makes it unnecessary to bend the leads at all.

Tilting-Head for Microphone



• If your small- or medium-size mike is not equipped with a tilting device, make this simple, neat looking tilting-head which will hold it securely at any desired angle without need for turning thumb-nuts or screws. Remove the cord-protecting springs from the cable connectors, force a connector onto each end of the #6 gage copper wire for a snug fit, and tighten the set-screws on the connectors. The ⅝ in.-27 threads on the connectors are standard mike threads which will fit the tops of standard microphone stands, and also the sockets on the bottoms of all microphones made in the United States except RCA, which uses a special thread. Actual tests have shown that #6 copper wire can be bent over 200 times before it will break. When the wire shows signs of breaking, simply replace with another piece.—ARTHUR TRAUFFER.

Mini-Magic

By FRED BLECHMAN, K6UGT

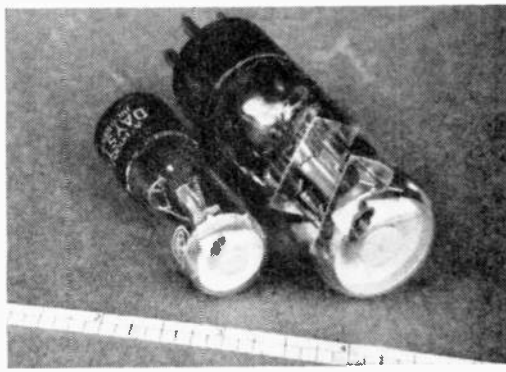
IN THESE days of increased FM broadcasting, and especially FM multiplex stereo, it is particularly important to properly tune your FM radio or tuner. Many FM radios are being produced without tuning indicators, and a good percentage of these sets use ac-dc power supplies, which do not allow the use of the familiar "magic-eye" tube for tuning indication. Recently, however, a miniature version of the popular 6E5 "magic-eye" tube has been produced in Japan, with certain electrical characteristics allowing its use in ac-dc circuitry. Designated the 6ME5, this new tube is available in this country.

With the addition of a standard socket and two or three resistors (for a total cost of about $2.50), you can take advantage of the small size, sensitivity and convenient operating voltages of this tube, and add it to virtually any radio or tuner.

Before launching off into a sample installation, let's see what makes this new miniature tube so different from the old 6E5. The most obvious difference is the smaller physical size of the 6ME5, which is 70% the length and 70% the diameter of the 6E5. In other words, the 6ME5 can be tucked away in about one-third the space required for the 6E5! The 6ME5 has a standard 7-pin miniature base pin arrangement, with a bakelite shell at the base to allow clamp-mounting without crushing the glass envelope. The 6ME5 is more sensitive than the 6E5, which means that less control voltage is needed to close the eye (Fig. 5). Consequently, weaker stations will be indicated by closure of the "eye."

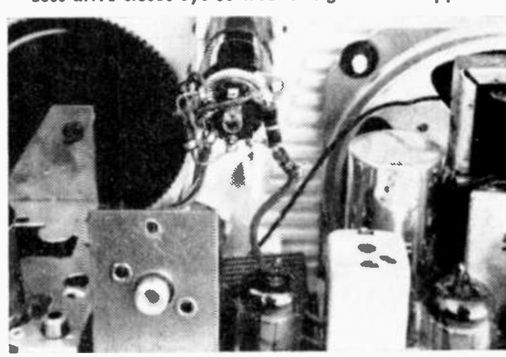
The operating voltages of the 6ME5 are of particular interest; as little as 125 volts is adequate for the target and plate, and a standard 6.3 volts is used for the filament. Perhaps most important is the filament current rating of 150 milliamperes, allowing the 6ME5 to be used in standard 150 milliampere series-string ac-dc radios!

Using the Tube: How do you use the 6ME5? To best illustrate a practical application, the schematic (Fig. 2) and the photos show the 6ME5 installed in a Granco FM radio. Normally, a bracket and clamp arrangement would be used to mount the tube; here, two conveniently placed unused plastic supports behind the front panel are utilized. The 6ME5 projects slightly through a hole cut in the panel, and is cemented to the plastic supports after it is properly oriented as described later. The tube may be mounted vertically if more convenient, but this might lead to a viewing problem. (A small mirror mounted at an angle above the eye can be used for viewing from the front, if necessary.)



Almost one-third less space is required for the 6ME5.

Less drive closes eye so weaker signals now appear.



Ac-dc sets can have tuning eyes. Small size does it.

The 7-pin miniature socket plugs onto the base of the 6ME5. A five-wire harness carries the required voltages. The added resistors (three, in this case) are mounted right at the tube socket for convenience.

Electrically, the connections are straightforward. Since, as previously described, this tube has a 6.3 volt 150 milliampere filament

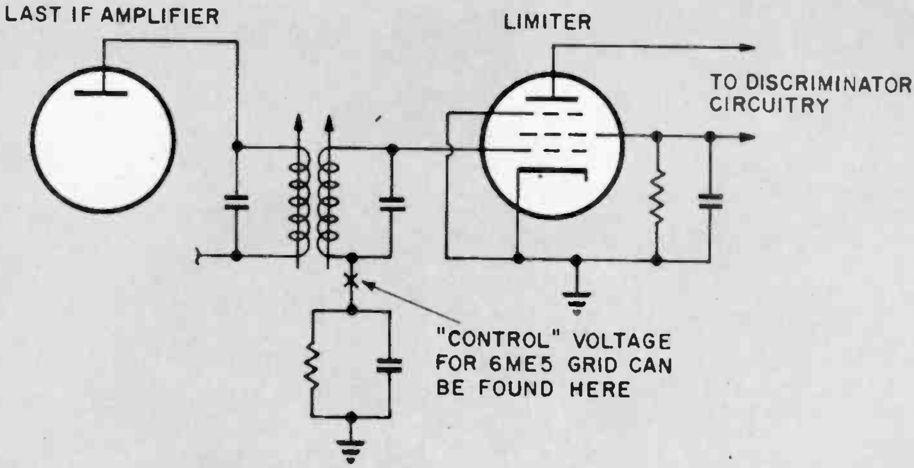


FIG. 3 FINDING MAGIC-EYE CONTROL VOLTAGE IN AN FM LIMITER-DISCRIMINATOR CIRCUIT

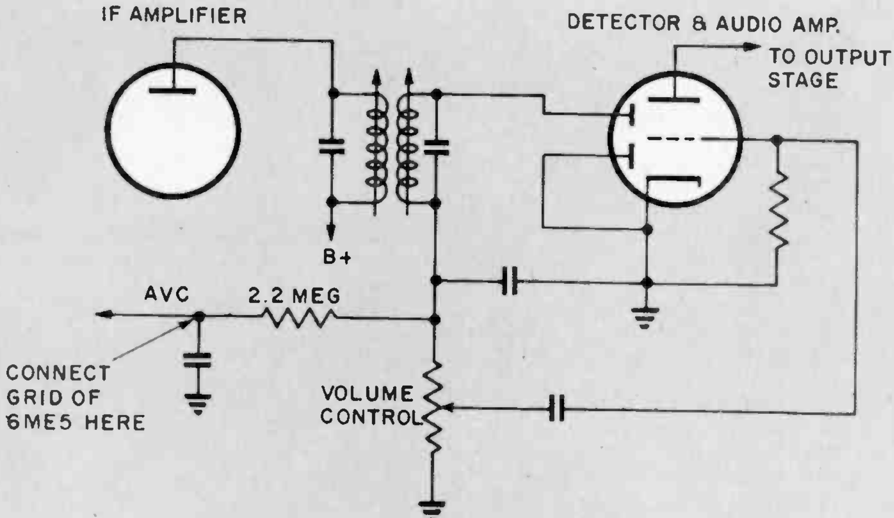


FIG. 4 IN AN AM RADIO THE AVC VOLTAGE MAY BE USED TO CONTROL THE MAGIC-EYE TUBE

rating, it may be used in series with the existing tube filaments. In the Granco, it was most convenient to break the series-string at its beginning (pin 4 of the 50C5). Since the 6ME5 filament (pins 3 and 4) is isolated from the cathode, it is not necessary for either side of the filament to be grounded, and it may be placed in the series-string at any convenient point. Although the voltage across the existing tube filaments is reduced about 5%, there is no effect on performance. (Most circuits are designed to work at line voltages down to almost 100 volts on a "normal" 117 volt line. This is a greater variation than the 6ME5 introduces.)

The B-plus voltage in typical ac-dc sets is sufficient to supply the necessary plate (pin 2) and target (pin 5) voltages to the 6ME5.

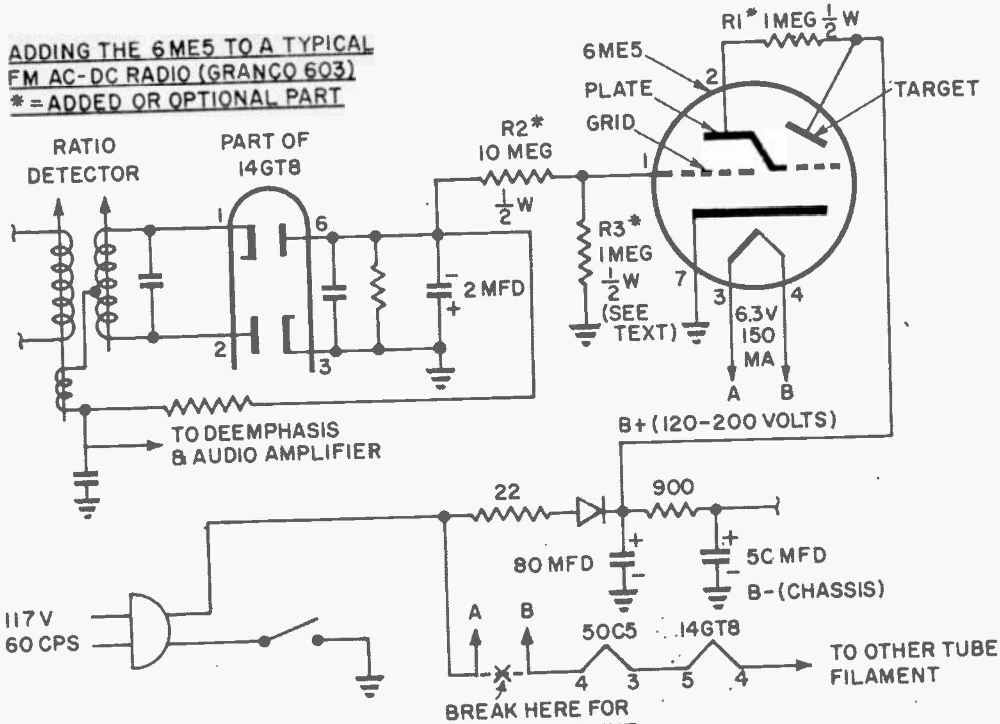


FIGURE 2

It can usually be found at the B-plus side of the output transformer, or at the rectifier cathode. A 1 megohm, ½ watt resistor (R1) must always be wired between the plate and target of the 6ME5.

The cathode (pin 7) of the 6ME5 must be grounded. In ac-dc sets, this is the B-minus (negative) side of the large-value electrolytic capacitors in the power supply. In most ac-dc sets, the chassis itself is not B-minus; in the Granco units, however, chassis is B-minus.

The control voltage fed to the grid (pin 1) of the 6ME5 must be negative. In an FM tuner or radio, the ratio detector circuitry includes a 2-10 microfarad electrolytic capacitor; the voltage across this capacitor is a measure of the signal strength of the received station. Simply connect the negative side of this capacitor to the 6ME5 grid through a 10 megohm resistor (R2). If the voltage is too high and closes the eye, add R3 (Fig. 2) as required to form a voltage divider, thus feeding only a portion of the voltage to the 6ME5 grid.

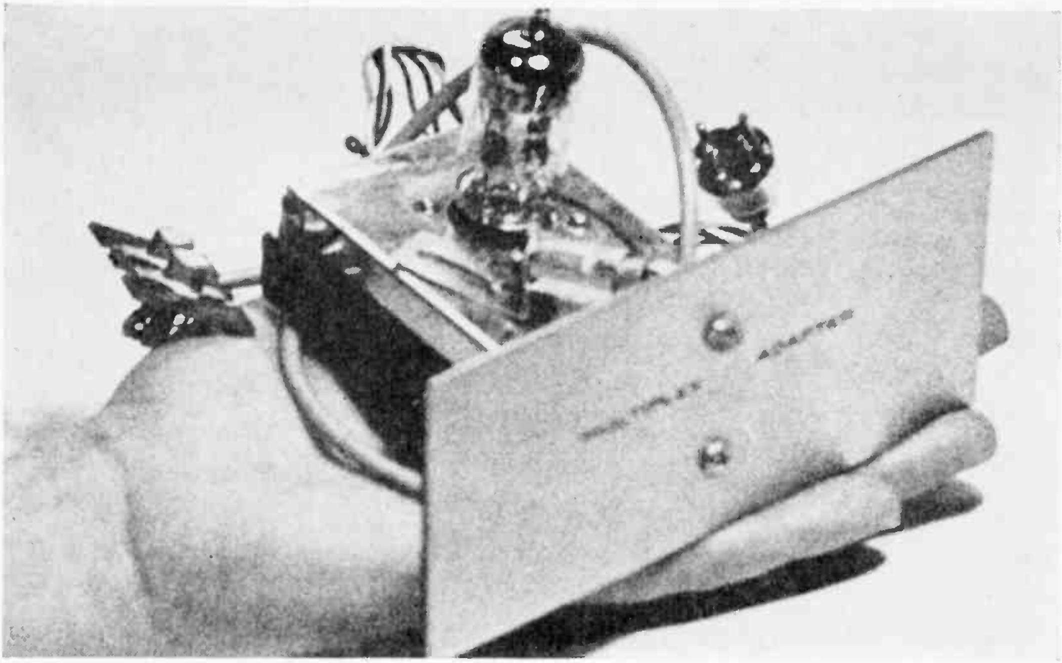
If your FM set uses a discriminator instead of a ratio detector, the control voltage can be found at the point shown in Fig. 3. The limiter tube follows the last IF amplifier, and precedes the discriminator tube.

In the case of AM receivers, the AVC (Automatic Volume Control) voltage, as shown in Fig. 4, should be used to control the grid of the 6ME5. The top of the volume control in the receiver may also be used to sense the incoming signal strength.

Before cementing or clamping the mini-magic-eye into its final position, turn the radio on and note the position of the shadow in the eye. Rotate the 6ME5 until the shadow is at the desired position and then cement or clamp.

The use of the 6ME5 in other applications can follow the same general procedure. Determine a location for the tube, and a means for holding it in position. Follow the sample schematic (Fig. 2) for wiring connections. In transformer-operated sets, of course, the 6ME5 filament is merely put in parallel with the existing tube filaments, and the B-plus (up to 200 volts maximum) can be found at the plate or screen grid pins of just about any tube. Ground, as already described, may or may not be the chassis; the surest spot to use is the negative side of the power supply filter capacitors.

The versatility of the 6ME5 leaves very little to be desired, and the small effort of adding it to existing equipment, or designing it into new equipment, is well worth the modest investment of time and money. Try your hand at some Mini-Magic and see.



An FM Stereo Indicator

by LEONARD FELDMAN

ALMOST every major population area in the United States now has one or more FM stations broadcasting stereophonic programs during all or part of their "on-the-air" time. If you consider the fact that FM stereo is less than two years old, this new dimension in broadcasting is enjoying an even more rapid growth and acceptance than did TV in the late 1940's.

Usually, some announcement is made by a station, telling you that a given program is being transmitted in FM stereo. In most cases, however, the statement is made at the very beginning of the program, and perhaps once, at the end. While many stereo recordings have a great deal of stereo "effect," still more are often more subtle in their "spatial" or "dimension" effects. It is often difficult for the casual listener, quickly tuning across the FM dial, to tell whether a given program is in stereo or not. To solve this problem, many manufacturers of FM stereo receivers and stereo adapters have incorporated some sort of indicator on their equipment which instantly tells the user whether or not a station is, in fact, broadcasting stereo. In most cases the device is a small indicator light which is automatically illuminated when an FM stereo station is tuned in.

If you own FM stereo equipment which is not equipped with such an indicator, this project is for you. For less than five dollars worth of material, you can build a separate stereo indicator which is easily connected to any existing FM stereo receiver or tuner. Power requirements for the stereo indicator are quite low, since the entire unit consists of one dual-triode (12AX7) tube which draws about one milliampere of current at a B+ voltage of approximately 200 volts, dc and a filament current of 300 milliamperes at 6.3 volts, ac. These voltages are almost always available from your present amplifier or receiver; a glance at the schematic of your present equipment will indicate where to wire in for the necessary power.

A photograph of the completed stereo indicator is shown in Figure 1 and a schematic diagram of the device is shown in Figure 2. In order to understand how the device is able to sense the presence of a stereo broadcast and indicate that fact by lighting a neon light, a brief explanation is needed concerning the nature of the broadcast stereo signal.

How the Unit Works: Whenever stereo is broadcast, part of the signal is a steady, low level tone having a frequency of 19,000 cycles. While most people cannot hear so

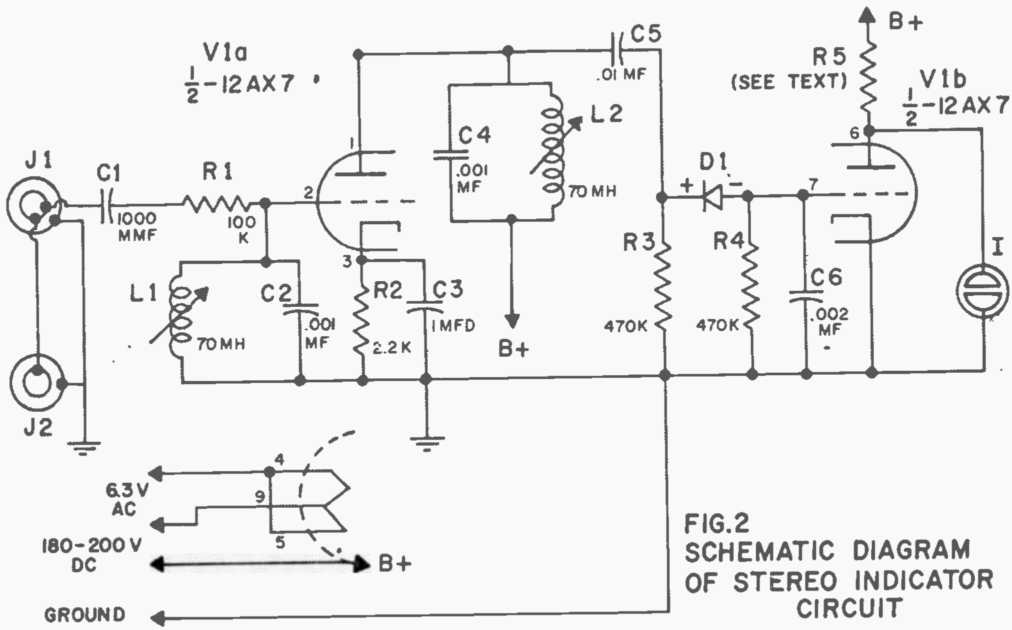


FIG. 2
SCHEMATIC DIAGRAM OF STEREO INDICATOR CIRCUIT

high-pitched a tone, most dogs and some young ladies can barely perceive its presence in a quiet room. Accordingly, there are circuits in an FM set which ultimately attenuate this steady tone so that it never reaches the loudspeaker. Nevertheless, this 19KC signal is a very important element in the unscrambling circuitry which separates the complex incoming signal into separate left and right channels. Since this tone is only on the air when stereo is being broadcast, it will be used to supply the trigger circuit which results in the lighting of the indicator.

Examining Figure 2, the input jack to the indicator (J1), is connected to the multiplex output of your FM tuner, where the total audio signal (including the low level 19,000 cycle tone, in the case of a stereo broadcast) is present. (Those of you who have all-in-one FM stereo sets don't despair—we'll tell you where to hook in later.) The network consisting of C1, R1, L1 and C2 serves to reject the normal musical frequencies and accept the low amplitude, 19,000 cycle tone. The parallel combination of L1 and C2 is a parallel resonant circuit tuned to 19,000 cycles exactly. Thus, only frequencies at or about 19,000 cycles will be passed to the grid of the first triode for further amplification. The plate of this first triode is connected to a second parallel resonant circuit which is again responsive to 19KC (and which further discriminates against or attenuates all other, audible frequencies). The amplified signal is then passed through a coupling capacitor C-5 and applied to the 1N34 diode. The diode is polarized in such a way that a negative rectified voltage will appear at the grid of the second triode whenever a 19KC signal is present. Capacitor C6 filters this rectified voltage, rendering it ripple free, negative dc voltage.

Triggering of the neon indicator bulb is accomplished by the action of the second triode tube. Assume, for the moment, that no stereo signal is tuned in. There will then be no negative voltage at the grid of the second triode. Since the cathode of this tube is connected to chassis ground, the tube is operating with no bias at all. Under these circumstances, the tube will attempt to conduct heavily. As it attempts to do so, a very great voltage drop will take place across the plate load resistor, R5, resulting in very low plate voltage. In the circuit shown, these conditions stabilize so that the measured plate voltage at pin 6 of the tube is around 45-50 volts dc. The neon indicator lamp is connected from pin 6 of the tube to ground and therefore has the same 45-50 volts dc across its terminals. It is characteristic of small neon lamps that they will only glow when voltages of around 60-65 volts or more are applied across the terminals. Therefore, when no stereo signal is tuned in, the lamp will remain dark.

Next, consider what happens when a 19KC signal is present. As mentioned earlier, such a signal will result in a negative biasing voltage at pin 7 (grid) of the triode. This negative bias results in decreased current flow through the tube, which in turn results in less voltage drop across R5 and higher plate

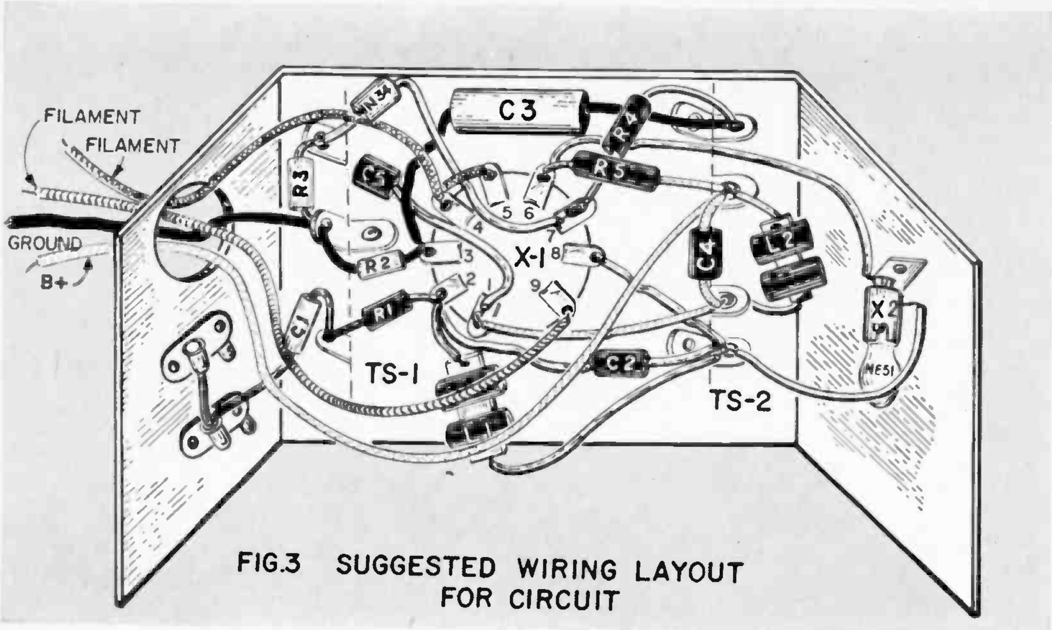


FIG.3 SUGGESTED WIRING LAYOUT FOR CIRCUIT

voltage. As soon as the plate voltage reaches 60-65 volts, the neon tube fires or glows, indicating the presence of an FM stereo signal.

Construction Hints: We built our indicator on a small chassis, measuring about 1x2x3-in. deep, but would suggest something a bit larger for the inexperienced builder. A good wiring layout is shown in Fig. 3, but none of the layout is critical and if you feel you need room to spread out a bit, do so. If you are now using a separate FM tuner in conjunction with a separate FM stereo multiplex adapter, use two phono jacks (JI and J2) as shown in the wiring diagram. This will enable you to connect one short shielded cable from the MX jack of tuner to indicator jack J1, and another cable from J2 to the input of your multiplex adapter. (It would hardly do to connect the indicator where the adapter was, and have no place to connect the adapter input......) If you plan to tap into a complete stereo receiver, only one cable con-

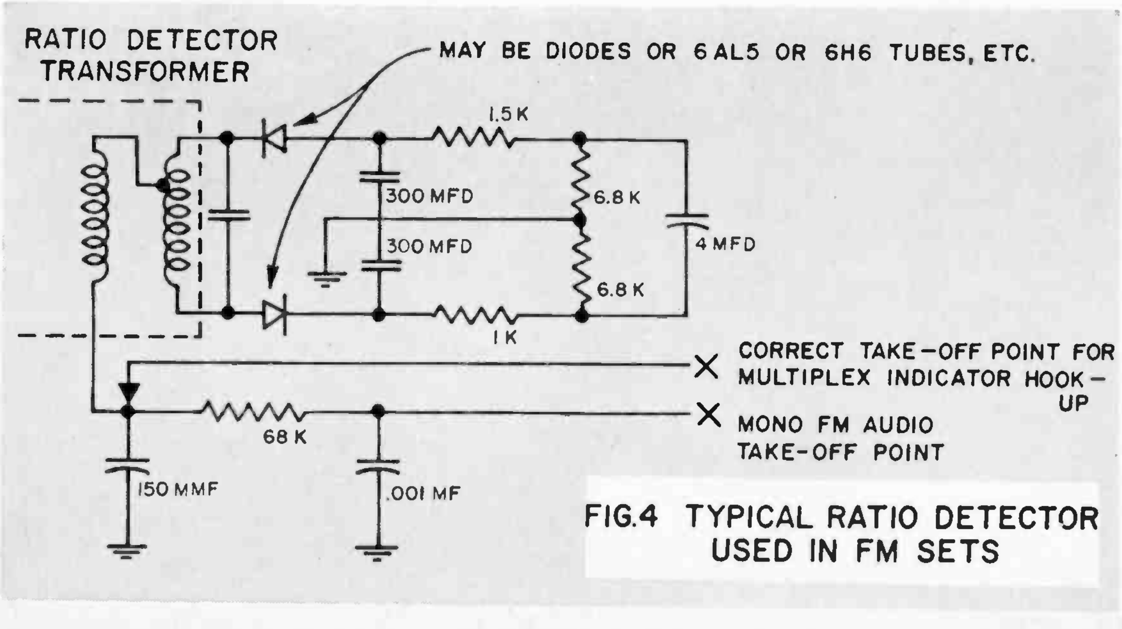


FIG.4 TYPICAL RATIO DETECTOR USED IN FM SETS

nected to J1 will be required. Use shielded cables in all cases. In this latter case the other end of the cable is connected to the output of the FM detector of your present receiver, ahead of any de-emphasis networks. Typical connection points for receivers using ratio detectors are shown in Fig. 4 whereas Fig. 5 indicates a typical hook-up where a discriminator type of detector is used.

The choice of L1, L2, C2 and C4 is extremely important. Since the two parallel resonant circuits must be tuned to exactly 19,000 cycles, C2 and C4 should be 5% tolerance capacitors if you use Miller Coil #992. If you can purchase Miller Coils #22A682RB1, which are themselves tunable over a wide range, then the choice of C2 and C4 is less critical and 10% tolerance units can be used. In the latter case, however, it will be necessary to adjust L1 and L2 under actual operating conditions, for which you will need an ac voltmeter (preferably a vacuum tube type). With the ac meter connected between the cathode end of the diode (+) and chassis, adjust both L1 and L2 in the presence of a known stereo signal for a maximum indication on the meter (at least 1 volt ac).

If you followed the circuit explanation given above, you will realize that the plate voltage appearing at pin 6 of the triode is quite critical, for the entire on-off action of the indicator depends upon a shift of only about 15 volts (from 45 to 60 or so). R5, nominally shown in the schematic as 470K, may have to be adjusted to some other value if the B+ voltage available differs substantially from the 200 volts in the diagram. If more voltage is available conveniently, R5 should be higher than 470K in value. If available supply voltage is less than 180 volts, the value of R5 should be less than 470K (perhaps 390K). Once the indicator is installed, you can check on this selection as follows: If the indicator tends to light at all times (even in the absence of a stereo broadcast), B+ voltage is too high (or R5 is too low). If the lamp fails to glow in the presence of a stereo signal (or just barely glows, flickeringly), B+ voltage is too low (or the choice of R5 is on the high side).

The Indicator in Use: Once the indicator has been connected to the rest of your system, you need merely tune across your FM tuner dial slowly, until the indicator lamp remains illuminated on a given station—a stereo station. Occasionally, if you spin your tuning dial too rapidly, you may see an instantaneous flash of the neon indicator as you pass from station to station. This is caused by noise pulses, strong enough to momentarily trigger the circuit and are not indicative of stereo reception. Only when the light stays lit are you tuned to a stereo broadcast.

MATERIALS LIST—STEREO INDICATOR

Desig.	Size and Description
C1, C2, C4	.001 mfd 200 v disc capacitor
C3	1 mfd, 6 volt electrolytic capacitor
C6	.002 mfd 400 v disc capacitor
C5	.01 mfd 400 v disc capacitor
J1, J2	Jack, phono
L1, L2	70 mh coil Miller #22A682RB1 or 992
R1	100K ½ watt resistor
R2	2.2K ½ watt resistor
R3, R4	470K ½ watt resistor
R5	½ watt resistor (see text for value)
D1	1N34 or 1N541 diode
I1	NE-51H neon tube
V1	12AX7 tube

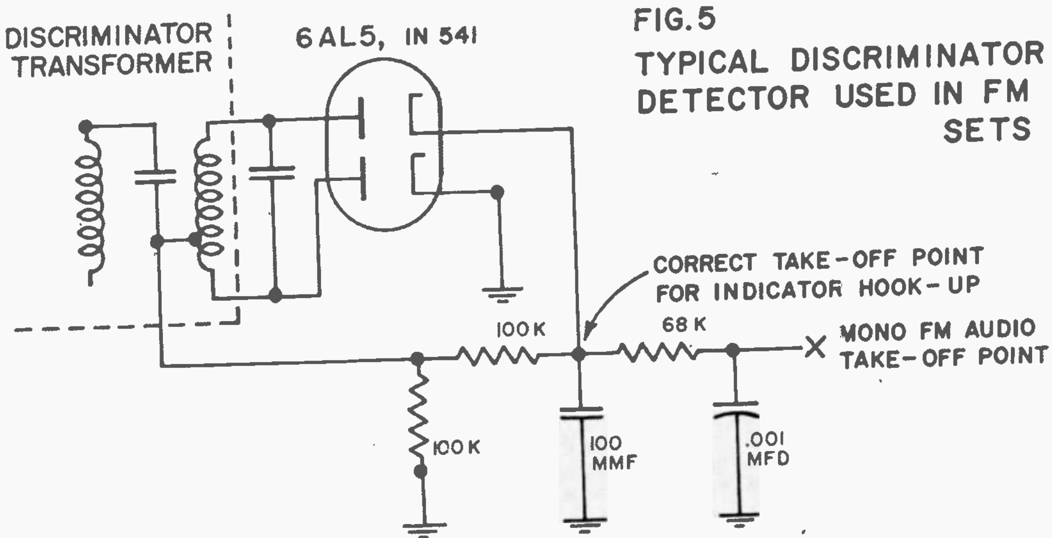
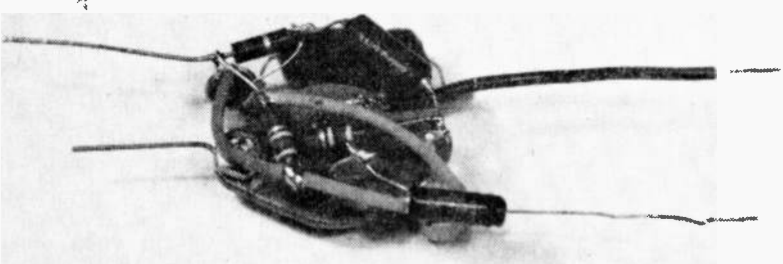


FIG. 5
TYPICAL DISCRIMINATOR DETECTOR USED IN FM SETS



PARTS group right on the power transistor. This handy handful takes up little room, does big job.

Power Amplifier Module

Did you ever wish you had a small, inexpensive amplifier so you could try out those little signal circuits that need some boost?

By FRANK WOODS, JR.

THE power output capability here depends on the voltage supply, the amount of heat sink provided, and the value of resistor R4 (Fig. 2). The flexibility of the amplifier module becomes apparent later on.

Construction: Construct the amplifier on the output power transistor Q3. Make connections by twisting component pigtails together and soldering. Some of the pigtails are insulated with spaghetti.

Wire Q2, R4, and Q3 together as a first step. Connect end of R4 to the case of Q3 with a nut and bolt. Connect the other end of R4 temporarily so that you can change to another value later if necessary. Proceed with the remainder of the soldering and wiring, using Figures 1 through 3 for guidance. Go easy with the soldering heat on transistor connections.

Punch two holes in each end of the case with a hot ice pick. Place the amplifier in the plastic case.

The variables: The amplifier is ready to use with a 6-volt power supply and an 8-ohm speaker or a 3-volt power supply and a 3.2-Ohm speaker in the connection arrangement. The arrangement with a 6-volt power supply may also be used without changing the value of R4. The power output capability is around ¼ watt with these arrangements.

To use an 8-ohm speaker in the direct connection with 3 volts or any speaker with the transformer connection and 3 volts of power supply, you may have to lower the value of R4 to 390K. In any event, check the case temperature of Q3 with your finger. *If, after a few minutes of operation, the case becomes too hot to touch, the value of R4 should be increased.*

To operate the module at higher power out-

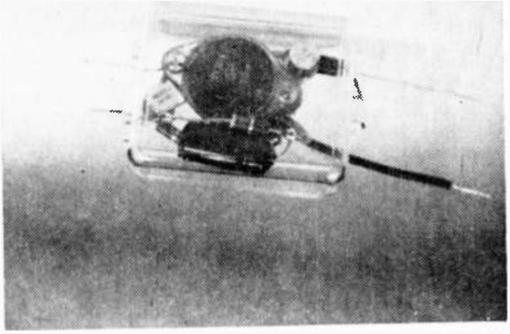


Fig. 1: Fitted into a miniature plastic case, the unit is insulated from other equipment, presents nice appearance.

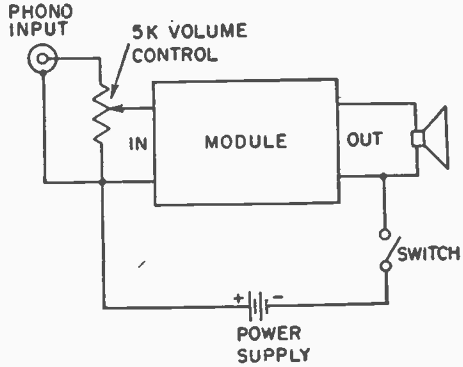
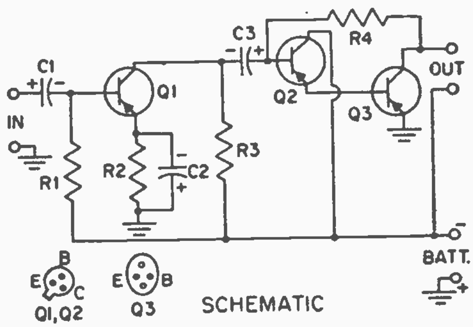


FIG. 3



SCHEMATIC

FIG. 2

MATERIALS LIST—POWER AMPLIFIER MODULE

Desig.	Size and Description
R2	470 Ohms, ½ Watt Resistor
R3	2.7 K, ½ Watt Resistor
R1, R4	470 K, ½ Watt Resistor (see text on R4)
C1, C3	8 mfd., 6 v. Ultraminiature Electrolytic Capacitor (Lafayette CF-102)
C2	100 mfd., 6 v. Ultraminiature Electrolytic Capacitor (Lafayette CF-106)
Q1, Q2	2N1381 Transistor (TI)
Q3	2N307 Transistor (Sylvania or RCA)
	1⅝ x 2⅛ x 1 inch Plastic Case (Lafayette MS-156)

Parts Source: Lafayette Radio
111 Jericho Turnpike, Syosset, L. I., N. Y.

put capability, transistor Q3 requires heat sinking and ventilation, and the value of R4 must be lowered. Use a 6-volt power supply. One simple heat sink approach is to use long bolts through the mounting holes on Q3 and to fasten several nuts to each of the bolts. Another approach is to bolt radiating fins made of sheet metal to Q3. In any event, be careful not to short portions of the circuit with the heat sink attachments. Then, with a current meter connected in one of the battery supply leads, select a value of R4 that makes the current rise to about 0.4 ampere. Watch the current closely. If it tends to continue to rise after the connection is made, disconnect the power supply and increase the amount of heat sinking.

Use: Figure 3 shows the amplifier module hooked up with a volume control for general purpose use as a phono amplifier, PA amplifier, signal tracer, etc. Another use for the amplifier is to raise the available power output from a transistor portable for picnic and beach party use.

If you use two amplifier modules and speakers, you can operate stereo. The volume controls may be ganged or separate as you wish.

This module can be used in any of the many applications for audio amplifiers. The power supply may be flashlight batteries, a 6-volt automobile battery, or an operated power supply with 6 volts output and a capability of supplying 250 ma. for the higher power output arrangements. If you use a battery power supply, connect a 160 mfd., 6V. electrolytic capacitor across the power leads with correct polarity.

You've probably thought of several applications where this handy unit would serve you, so don't procrastinate . . . start soldering!

Perk Up Banjo with Electronic

By ROY L. CLOUGH JR.

ONE of the biggest booms in years is the swing to folk music and the comeback of banjo and guitar-twanging minstrels. Up in the front of the parade is the American classic, or long-necked "folk banjo" out of style for a couple of decades, but now in big demand. Nothing seems quite as well suited to accompany the bawled ballad as the chuckling, sobbing strings of the plucked banjo.

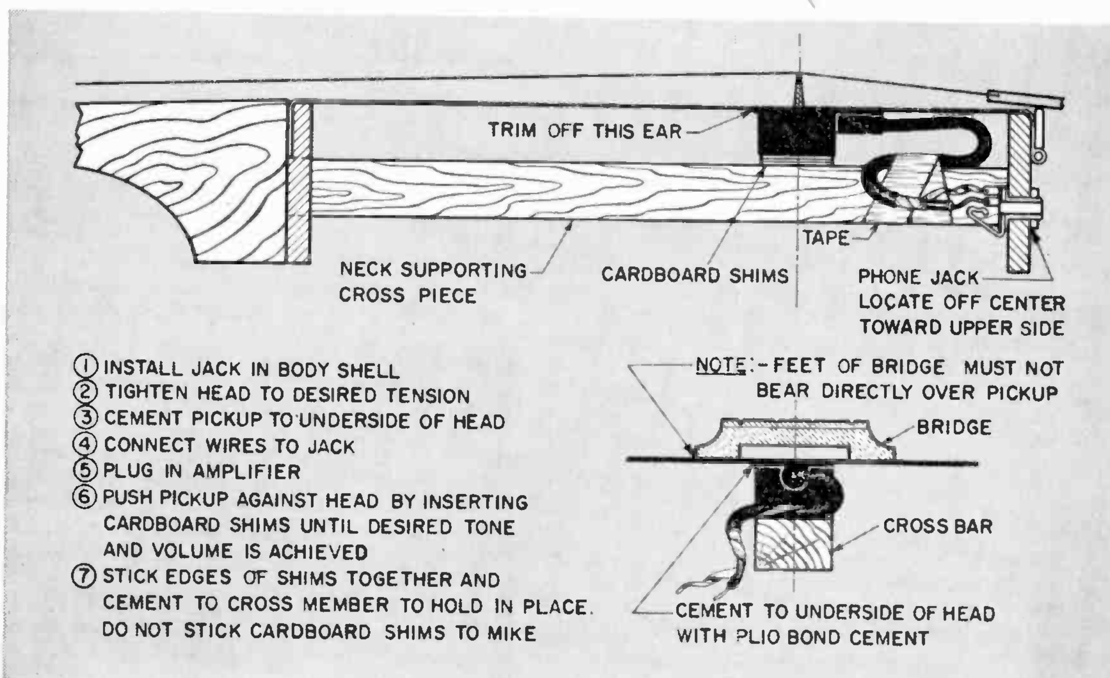
While the banjo has been away things have happened to the other instruments: the electronically amplified guitar can fill a concert hall with ringing chords at the twiddle of a volume control, the four string bass can boom out its beat like muted thunder. The soft voiced volume of the old banjo just isn't in the same league anymore.

It is not difficult to amplify a guitar with an electronic pickup. The characteristic sound of this instrument depends mainly upon the characteristic sound of a taut steel string. The structure of the instrument is mainly to hold the string in such a fashion that it can be played.

It's different with a banjo. The distinctive tone of this instrument is produced by the interaction of the vibrating string with a taut drumhead like arrangement upon which it's supported by a little wooden wedge—the bridge. When a banjo string is plucked the resultant tone, the timbre of the instrument, is caused by the interferences and reinforcements of harmonics between the string and flexible head. If we try to amplify a banjo by attaching a guitar pickup to it we find we lose the banjo tone entirely—the result sounds like a weak-voiced guitar. This has discouraged many who have tried it. An alternative method, to attach a crystal mike to the body of the instrument works fairly well, but this arrangement tends to pick up noise.

Solving The Problem: A satisfactory way to do the job is with a special type of magnetic contact microphone. This sounds like a banjo, it yields plenty of volume with even a small amplifier and it isn't noisy.

We recommend the make of mike shown in the drawings. Trim off one of its mounting ears and cement it to the underside of the



1. INSTALL JACK IN BODY SHELL
2. TIGHTEN HEAD TO DESIRED TENSION
3. CEMENT PICKUP TO UNDERSIDE OF HEAD
4. CONNECT WIRES TO JACK
5. PLUG IN AMPLIFIER
6. PUSH PICKUP AGAINST HEAD BY INSERTING CARDBOARD SHIMS UNTIL DESIRED TONE AND VOLUME IS ACHIEVED
7. STICK EDGES OF SHIMS TOGETHER AND CEMENT TO CROSS MEMBER TO HOLD IN PLACE. DO NOT STICK CARDBOARD SHIMS TO MIKE

Amplification

When you amplify a banjo by ordinary means, you lose the "twangy-tone". Here's a way to amplify and lose no voice or tone color

calfskin head between the feet of the string supporting bridge. Allow time for the cement to dry, then plug the mike in to an amplifier and voice the instrument by inserting strips of cardboard between the back of the mike and the top of the neck brace until you get the pressure required for the tone you want. This pressure will be moderate—just enough to keep the face of the mike fairly tight against the head. Stick the edges of the cardboard shims together with airplane cement and stick them to the neck brace so they won't fall out. It isn't necessary or desirable to stick them to the back of the mike.

You can still play the banjo without amplification, but installation of the mike will make it a bit quieter—and this is an advantage when practicing. If it is desirable that the mike cord be detachable, install a phone jack in the body of the instrument and a phone plug on the end of the cable. Then you won't have to have a long cord dangling from the instrument when you're not using the amplifier. Don't use more than eight feet of cable with this high-impedance arrangement—but this is about the maximum you should use for any electronic pickup. Sticking the mike to the head does not interfere with tightening the head brackets from time to time because the actual movement of the skin is small.

While the familiar strident voice of the banjo has been quieted by its amplified brethren, the electric guitar and electric bass, a new era can down for this neglected folk instrument. Now it will add its ring with a voice as loud as it was in unamplified days!

Fig. 1: Rubber-covered pickup is mounted on underside of head, beneath bridge. Cardboard shims hold in place.

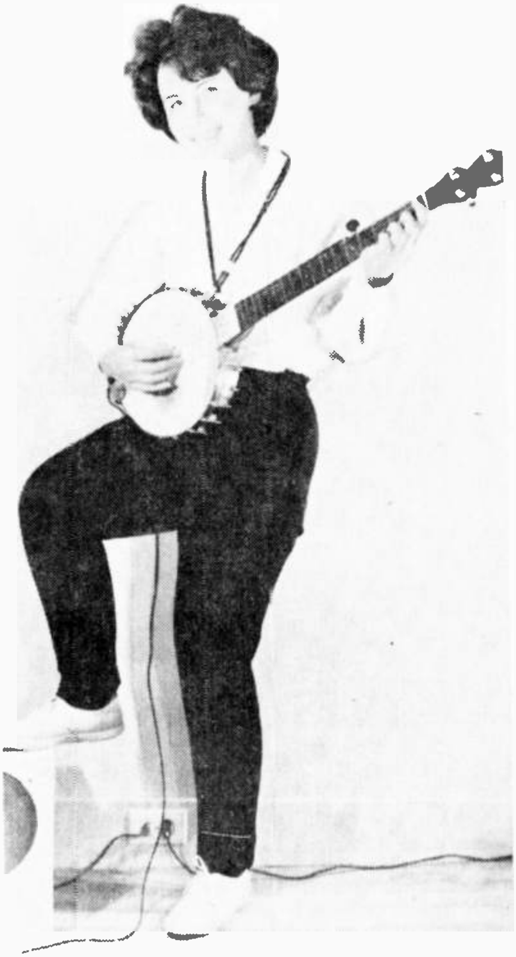
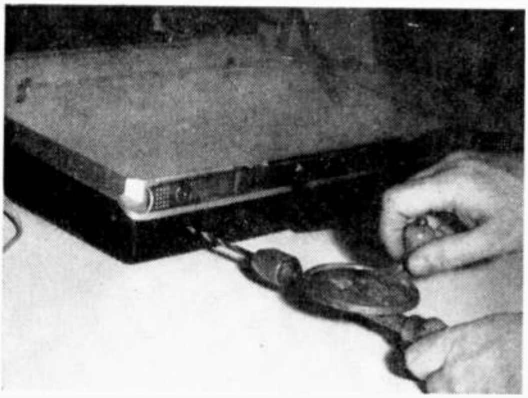
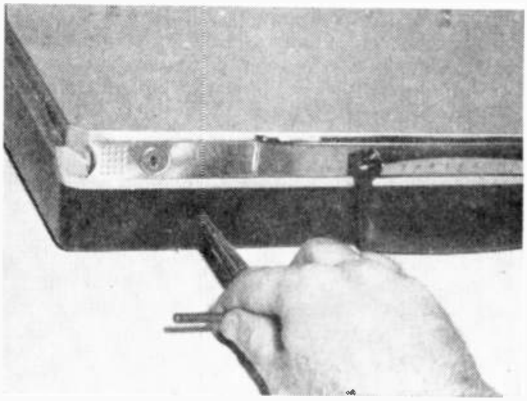


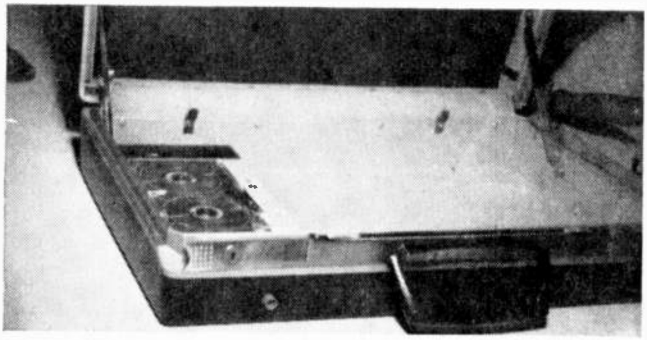
Fig. 2: With proper amplification, banjo is restored to its place with guitar and bass in folk-song combos.

Dispatch Case Tape Recorder

By BYRON G. WELS







Start the modification by (gulp) drilling a pilot hole in the dispatch case. Next, enlarge the hole by using a tapered reamer. Install the tape recorder and run an extension cord to a mating jack which is mounted in the hole. Should you ever decide to revert to a tape-less dispatch case, restoration consists only of removing the tape machine and installing a ⅜-in. chromium plated snap-hole plug cover.

THE dispatch case has gained great popularity recently, and in fact has been described as the masculine answer to the pocket-book! In a survey taken by the Samsonite Corporation, it was found that tape recorders (the small, portable type) figured prominently in the contents of the average dispatch case.

Starting from there, we mounted a Phono-Trix portable in a Samsonite dispatch case, and drilled a ⅜-in. hole to accommodate an extension cord that runs from the tape recorder directly to the front edge of the case. As the microphone controls start and stop on the tape recorder, a business man visiting another office, or dictating on board a train or plane, need not open the case to get at the tape recorder. He simply plugs the microphone into the dispatch case and presses the switch to on. When the business is concluded, he unplugs the mike, and the entire conference is on tape.

Should you decide to restore the case at a future date, insert a small chrome-plated hole plug, and press some cloth Mystic tape on the inside.

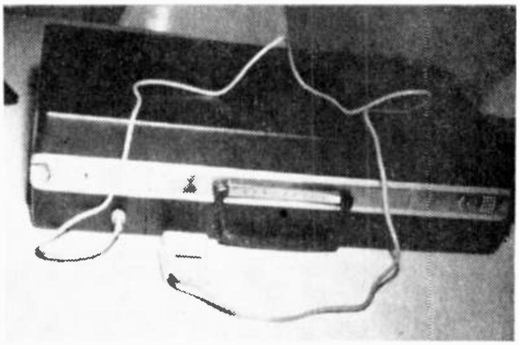


Fig. 4: When you are ready to record, simply plug the microphone into the dispatch case. Mike switches deck.

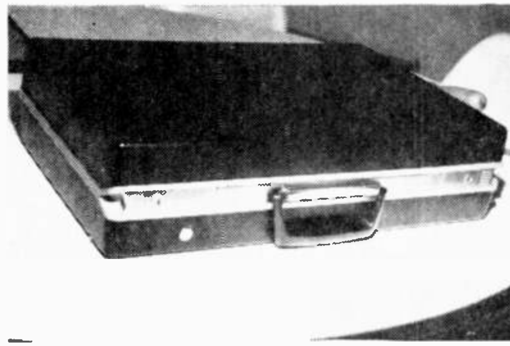


Fig. 5: The chrome-plated snap-hole plug doesn't mar the appearance of the case. Mystic tape hides inside hole.

KNOW YOUR ELECTRONIC NUMBERS?

Match the number in the column at the left below, with the corresponding answer in the column at the right. If you make a score of 15—excellent; 12—very good; anything less, failure!

1. 1N652	1. Width of color-TV channel (mc).
2. 746	2. Power line frequency (cps).
3. 6	3. Tape recorder tape speed (ips).
4. 60	4. AM radio if frequency (kc).
5. 27MP4	5. Record player speed (rpm).
6. 16⅔	6. TV picture tube.
7. 45	7. Tunnel diode.
8. 300	8. Electrical equivalent of one-horsepower (watts).
9. 455	9. Impedance of ribbon TV lead (ohms).
10. 22	10. Total number of Citizen's Band channels.
11. 80	11. Vacuum tube.
12. 0.637	12. Voltage of transistor battery (Eveready 216) (volts).
13. 1,000	13. Amateur radio band (meters).
14. 50FE5	14. Number of cycles in 1 kc.
15. 9	15. Factor by which average ac voltage is multiplied to obtain peak voltage.

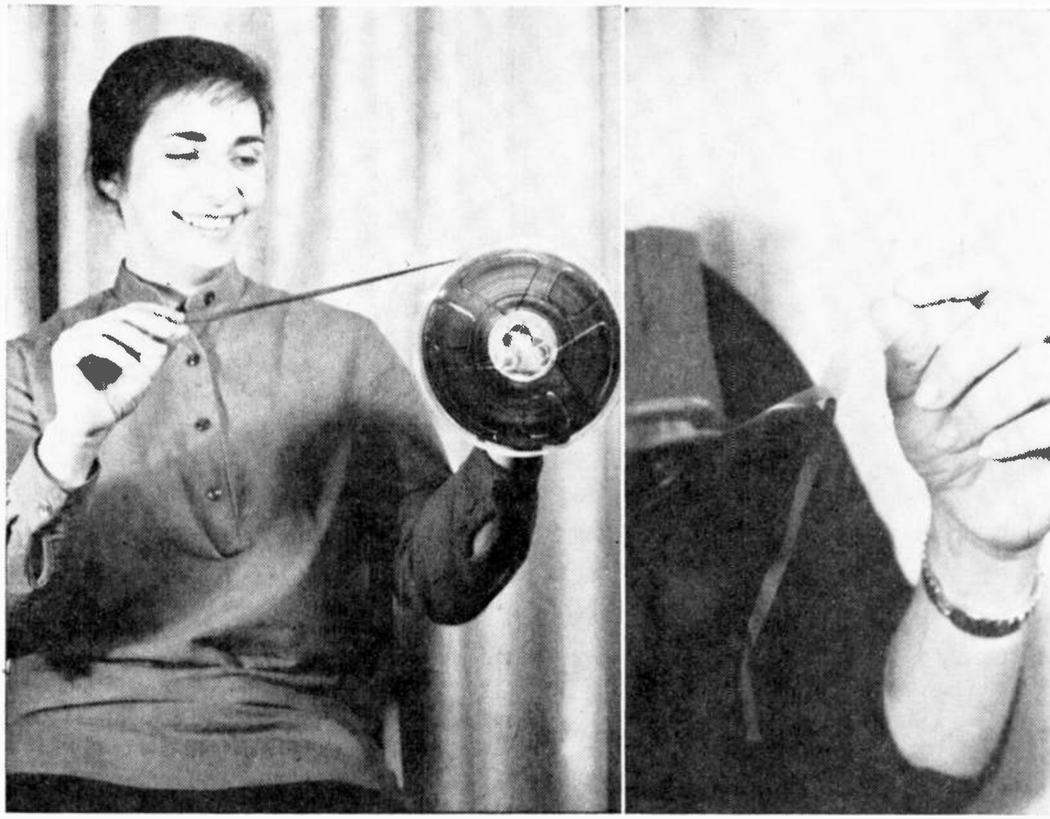
ANSWERS TO KNOW YOUR ELECTRONIC NUMBERS

1. — 7
2. — 8
3. — 1
4. — 2
5. — 6
6. — 3
7. — 5
8. — 9
9. — 4
10. — 10
11. — 13
12. — 15
13. — 14
14. — 11
15. — 12

Keep Your Tape in Shape

No tape recorder is any better than the tape used on the machine. You can guarantee the best possible results by using the best tape wisely

By ART ZUCKERMAN



Figs. 1, 2: Pull tape from a reel held in place by a pencil. The more easily the tape unwinds, the easier it will flow from reel to reel on the recorder. Press cellophane tape to oxide coating on tape (dull side), and quickly yank the cellophane tape off. If any of the oxide sticks to tape, tape sheds and is useless.

YOUR tape recorder is a pretty wonderful gadget, and if it is one of the newer, quarter-track machines, that makes it twice as wonderful. You'll never enjoy the full pleasure this marvelous device can deliver unless you use the right tape for the right job—and keep that tape in good condition.

As tracks have gotten narrower, head gaps finer, and full-fidelity speeds lower, new demands have been put on these magnetic memory ribbons, demands that tape manufacturers would once have considered outlandish and impossible.

Today's tapes must be coated densely and uniformly enough to capture high frequencies in ridiculously short lengths. They must provide a loud, clear signal unmuddied by noise, even though the source of that signal is a track only half the width that was available to the old, double-track recorders. They must get thinner and thinner, so more program can be packed on the same old reel size, yet they must be strong enough to cope with normal operating tension.

The increasingly-critical requirements of modern home recording boil down to the fact that you can't just go out, buy any old tape, and expect to get the results you want. An inferior tape, chosen purely on the basis of price, will very likely rob you. It can create unnecessary maintenance problems for your recorder by shedding its oxide—and even particles of its plastic base—on the heads, capstan, and tape guides. Then you'll wonder why your recorder's frequency response has suddenly taken a nosedive, why musical pitches don't ring true, why you've been developing an insufferable amount of wow or flutter.

When you want to try a new brand of tape, you can avoid many of these problems simply by inspecting it carefully. See whether the edges of the tape are smooth and unbroken. The side of the reel will have a glossy look if they are. Frayed or torn edges on a reel can indicate tape rippage in your tape recorder.

Obviously, you're not going to do too well with a tape if its layers stick to one another on the reel, preventing it from unwinding freely. You can check this simply by putting a pencil through the spindle hole of the reel and watching how smoothly the tape unwinds as you pull out a length.

Few things are more essential for good quarter-track operation, especially at low speed, than a smooth and even oxide coating. Under these operating conditions, particles that are too widely spaced, or actually missing, will cause "drop-out," the literal disappearance of small hunks of sound. A poor coating will also come a cropper on those higher frequencies. If its thickness is uneven as well, you can expect noisy recordings with poor dynamic range—no combinations of crescendos and pianissimos with that kind of tape!

You can get a good clue to the smoothness of a tape's oxide coating by sighting down a length of it at a slight angle, and under a strong light. If you see marks, the coating is uneven. Or you may see bumps, holes, crushed particles, or splices, all screaming warnings not to buy.

Finally, beware the tape that tends to cup or curl, so that it humps in the middle. It won't wind well, and it won't make proper contact with the tape head, either. If you lay a stretch of tape out on a flat surface, and then find that it stands straight and stiff when you pull out about five inches, you know it's cupped.

So much for problem tapes. They aren't your only buying consideration. You'll find that today's market contains a variety of different kinds of tape, to suit different needs. To start with, there are now two basic types of plastic backing.

One is the familiar cellulose acetate. It is the less expensive kind, yet it is smooth, flexible, hugs heads lovingly for topnotch frequency response, and cuts cleanly. For these reasons, it is the favorite of tape editors and the workhorse of the recording industry.

But acetate breaks relatively easily, tends to expand and go limp under extreme humidity and heat, gets brittle in excessive cold. It also tends to dry out and thereby acquire a bad friction characteristic which can lead to a nasty, irritating mechanical squeal as it passes through a recorder. While modern, high-quality acetate tapes fight this friction with a silicone lubricant incorporated in the coating, the lubricant may eventually wear away.

The other tape backing is the newer polyester, better known by DuPont's *Mylar* brand name. It is extremely strong, so strong that the standard 1½-mil thickness will hardly ever break in normal usage. Polyesters are also impervious to climatic conditions and never dry out, so they require no lubricating additive to fight off squeal or sticking.

But even polyester has its disadvantages. If it is subjected to a very severe stress—and that usually means more stress than it takes to break an acetate tape of comparable thickness—it will stretch out of shape. Under really severe conditions, even polyester will break. When it does, it breaks into ragged strips instead of parting cleanly. It is also somewhat harder to cut cleanly. For this reason, it is seldom used when tape must be edited extensively.

Polyester comes into its own in extra-play and long-play tapes. A 7-in. reel of conventional, 1½-mil tape contains only 1200 ft. But an extra-play reel, using 1-mil tape, contains 1800 ft. and, therefore, offers 50% more playing time. And double-play tape, only ½-mil thick, permits the winding of 2400 ft. on a 7-in. reel, for double the old standard playing time.

Because a thinner base is obviously a weaker one, polyester backing is used exclusively for ½-mil tape and is dominant in the 1-mil field.

If you want to make a continuous recording of a very long program—especially if you want to use the highest speed your machine can deliver—these thin tapes will fill the bill. (For example, the 45 to 48 minutes you get from a straight, 7½-*ips* pass of 1-mil tape from a 7-in. reel equals both sides of most long playing records.) But the ½-mil variety, though it offers a non-stop hour of recording at 7½-*ips*, is very fragile and requires extreme care in rapid winding. Furthermore, both ½-mil and 1-mil tapes are particularly susceptible to the print-through malady.

This is the tendency of a recorded strong signal to "print" a magnetic ghost image of itself on the adjoining layers, thereby creating both a pre-echo and a post-echo effect. Obviously, the thinner the insulation pro-

Fig. 3: Mylar tapes .5 mil thick double playing time of normal 1-mil tape. Small reel from 3-M provides ½-hour, at 3¾ ips. Audiotape reel plays 1 hour.

Fig. 4: Threading tape onto take-up reel is always a problem for neophytes. Robins' crank-type threader solves the problem for the "all-thumbs" tyro.

Fig. 5: Leader tape, an uncoated polyester saves end wear when threading, prevents valuable taped information from being lost. Also used for timing.

Fig. 6: Using 3-M tape clips will keep the tape end on the reel where it belongs. Keep tape from spilling during storage or transit. Removes easily to use.

vided by the plastic base, the likelier this is to happen. The best solution is to use a light touch on the recording level, even if this means a slight increase in background noise. Storage in a cool spot also seems to reduce the print-through effect.

Double-play tapes really shine when they're spooled onto the 3¼-in. reels used on tiny, battery-operated recorders and for sending through the mail. At 3¾-*ips*, such a reel of ½-mil tape delivers a half hour of continuous recording or, depending on whether you use a half- or quarter-track machine, up to a total of one or two hours.

Regardless of your choice of tape, you'll find that several handy accessories available on the market will make it a lot easier to handle and maintain.

The most persistent minor nuisance identified with tape is the necessity of threading it onto the takeup reel. A tape threader made by Robins Industries takes most of the trouble out of this basic operation. It is a crank-like device slotted to fit over the recorder's takeup spindle. A finger on the end of the threader's base plate presses the end of the tape against the reel hub. You simply crank the handle to rotate the takeup reel until the tape is wound on securely, then slip off the threader.

Of course, when you've wound the tape onto the takeup reel, you've taken it out of use as part of the recordable total. But even end lengths can be used for recording if you splice leader to them for threading purposes. Because leader tape is calibrated in 7½-in. segments, it can also be spliced between program elements on a tape to provide exactlytimed intervals of silence. Audio Devices and Scotch are two of the better-known leader brands.

Another minor irritant recordists could do without is the tape end that flaps around when you remove a reel from its container. Tape clips will eliminate this. They are offered under both Robins and 3-Ms Scotch brands.

A number of tape units, particularly European makes, use electrical contacts to turn off the transport at the end of the reel—or even to make it rewind and replay. This calls for a special, metallized sensing tape to bridge the contacts and complete the switching circuit. Scotch provides such a tape, with an adhesive backing, in a dispenser pack. It can be applied to either leader or magnetic recording tape.

Splicing is performed not only to add leader to tapes but also to repair breaks and to edit programs by deleting some sections and piecing others together. The process involves cutting the tape and then cementing segments together in perfect, gap-free alignment. While the job can be done free-hand with a pair of scissors, this is a pretty difficult operation. Using a splicer is much easier and more accurate. It is one accessory every tape user should have.

There are simple, mitre-block types that hold the tape in place and provide channels for a knife to follow. But for effortless splicing, it is hard to beat the Robins *Gibson Girl,* a unit that resembles a stapler.

Clamps on the Gibson Girl hold both tape ends firmly in place below a cutting arm. One adjustment makes the arm's built-in blades make a diagonal cut when it is depressed. The excess is then blown away, and splicing tape is applied to the butted tape ends. Then the arm is set for trimming and pushed down again. This makes concave cuts on the top and bottom of the joint, to remove overlapping adhesive that could gum up the tape heads. These trimming cuts are very shallow so as not to hurt a quarter-track recording. Their hour-glass shape gives the Gibson Girl its name.

Only special splicing tape should be used—*never* ordinary cellophane tape. This will bleed and gum up a reel.

In time, you're bound to collect a few tapes that have been used over and over, and contain nothing you want to keep. Constant reuse may have made them so noisy that an erase head can no longer cope with them satisfactorily. Or you may want to put something on such an overworked tape without fear that a spurious old recording will come blaring out at the end of a valued new program.

You can clear a reel of tape completely of all old program material—even reduce background noise to a level lower than its virgin state—with the help of a bulk eraser, such as several models made by Robins. This device is essentially a large induction coil in a box surmounted by a removable spindle. It usually has a pressure-type switch. All you have to do is put a reel of tape on the spindle and rotate it slowly as you hold down the button. Then, even more slowly, you remove the reel and inch it away from the eraser until it is at least an arm's length, at which time you release the button, flip the reel, and repeat the process on the other side.

A certain amount of care is necessary to keep your tapes in good shape. For one thing, regardless of the kind of backing they have, you want to avoid curling and excessive wear. If you hear rubbing when a tape is played, the fault may very well lie in the reels. You can find out simply by lining up your eyes with the reels and running the recorder. If the side of a reel appears to rise and fall, it is warped and ready for retirement.

While modern acetate tapes have built-in lubrication, you may have older reels produced before the silicone additive was

Fig. 7: Rubber reel holders made by Robins lock reel to spindles so that machine can be operated in a vertical position. Skirt holds tape ends in place.

Fig. 8: Scotch sensing tape is a metallic foil tape with an adhesive backing. It is pressed to shiny side of tape, for end-of-reel signal or auto slides.

Fig. 9: Robins splicer has two locking levers that hold tape firmly in place during editing and splicing operations. When tape ends are in position . . .

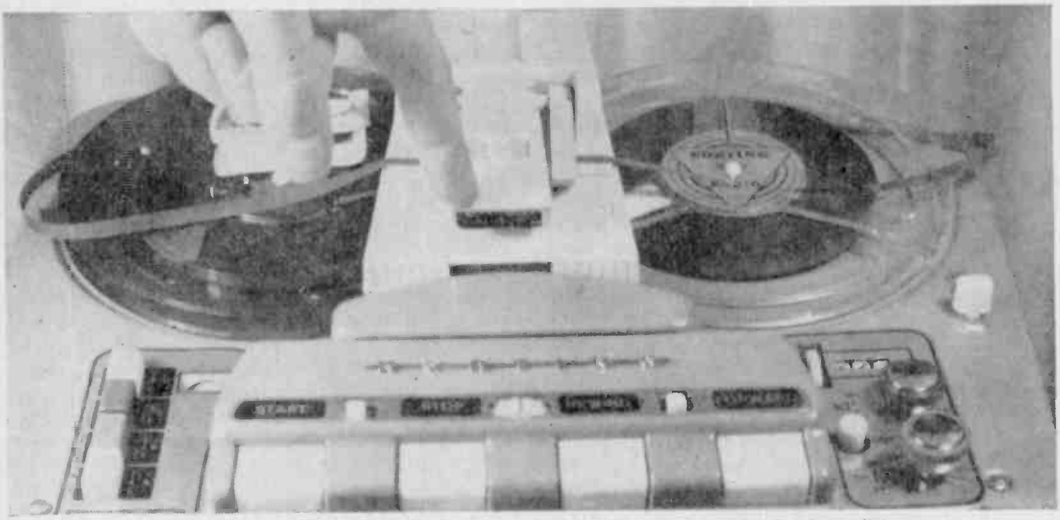


Fig. 10: Cut! The splicer cuts a 45° diagonal, in both pieces of tape. Apply the splicing tape over the cut, move the cutter head to trim, and press again. Result is "waist" cut, hence name "Gibson Girl."

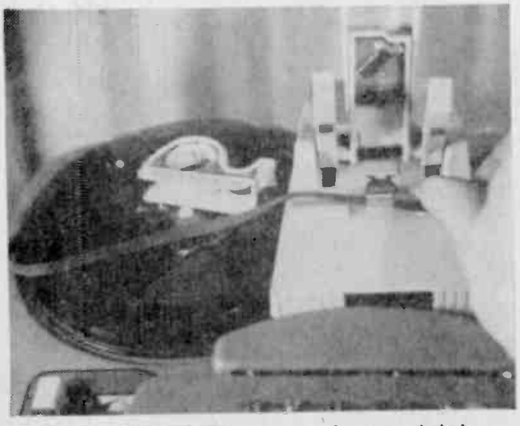


Fig. 11: Note shallow curve above and below splice. This waist prevents possible ooze from adhesive. Previous and subsequent layers won't stick.

Fig. 12: Bulk tape eraser is necessity for serious recordist. Completely removes any signal from reel in one operation. Many audiophiles use on tape!

adopted. These may have acquired squeal or other friction-cheated problems, but don't throw them away before you try treating them with a silicone-impregnated jockey cloth. Simply run the tape through a section of the cloth and see if the film of lubricant it deposits doesn't improve performance.

Performance also depends on the way you store your tape. Obviously, it must be kept away from any possible source of magnetic influence. This even includes hi-fi amplifiers and speakers. It should never be wound too tightly before storing. You ought to make sure none of your tapes sit too long without being played. A run-through on a transport gives strains and adhesions a chance to work out. If a reel has been stored for six months or more, it's a good idea to rewind it before using, to make sure all the kinks have worked free.

A storage temperature of about 70°F will best guarantee tape health, even for polyester tapes. Acetate tapes should be stored in about 40°-60° humidity if possible.

Just about the safest way to store tape, particularly if it will have to stand for a number of years, is in metal, film-type cans. A seven-inch tape reel will fit perfectly in a can designed for a 400-ft. reel of 8-*mm* movie film. In addition to keeping out dust, such a can gives good protection from stray magnetic fields by acting as a sort of shunt or shield.

One final note about choosing tape. When you get right down to it, the well-known national brands are pretty reliable sources of quality. But there are variations from manufacturer to manufacturer in oxide formula, coating thickness, and so on. There are also variations in tape heads. So, for a given head, one tape brand may give better results than another.

If you think it worth your while to search out the ultimate tape for your recorder, you can buy reels of several different brands and splice long lengths from each together. Leader tape can be used to separate and identify each segment.

Then you simply record the same musical passage at the same input level on each tape segment. You should use a passage with wide variations in both tonal and dynamic range.

Now assemble family and/or friends—or trust your own ears if you prefer to work solo—for a playback test. May the winning brand enjoy your permanent and satisfied patronage.

When you finally settle on the one "right" brand, stick with it for the life of your machine, and unless your eye falls on one of the premium types, don't bother re-testing. Of course, there's always the possibility that recorder characteristics will change, as well as tape qualities and prices. Maybe you'd better just keep on looking . . . . .

Fig. 13: Check for reel-warpage at eye level while reel turns. Any warp will quickly become obvious, reel eliminated before it could damage tape.

Fig. 14: Silicone jackey cloth can restore freshness to older, dried-out acetate base tapes. Simply make a loose fold over tape as it travels in machine.

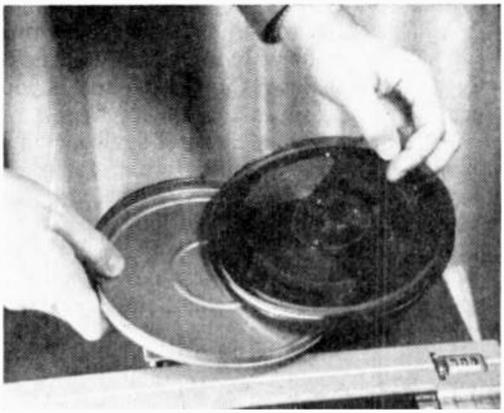
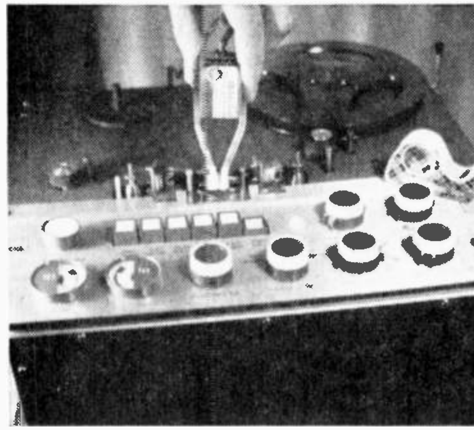
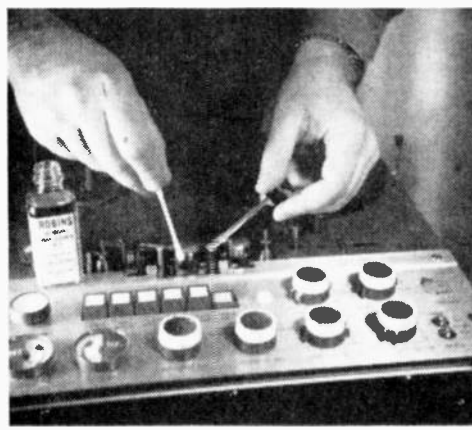


Fig. 15: Film cans, designed for 8-mm movie film make excellent protective tape storage containers. The metal can helps shield out stray magnetic fields.

First Aid for Tape Recorders



1 Use a demagnetizer such as this one from Audio Devices to remove unwanted residual magnetism from tape heads. Tape on pole pieces saves heads.



4 Clean heads periodically with commercial solvent such as Robins Industries head cleaner. Use soft cotton swab dampened with liquid. Do not drench.

Got some noise in your tape recorder? Getting sounds you didn't record? Maybe all you need is a general clean-up!

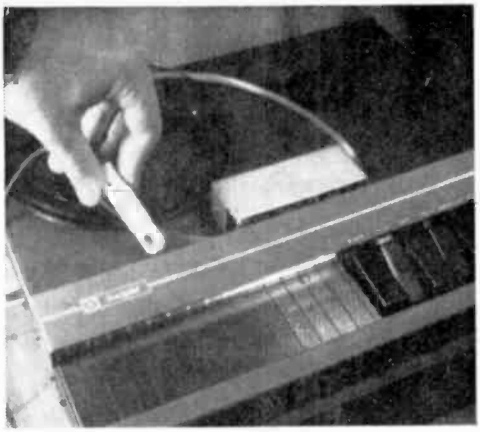
By ART ZUCKERMAN

WHEN it starts to get balky, all your pleasure in your recorder can quickly go straight down the drain—unless you can set things right.

Like any other mechanical device, a tape machine will treat you only about as well as you treat it. So, just as you give your car periodic checkups and indulge it with preventive maintenance, you should give your recorder a good, regular once-over and catch minor problems before they become major ones.

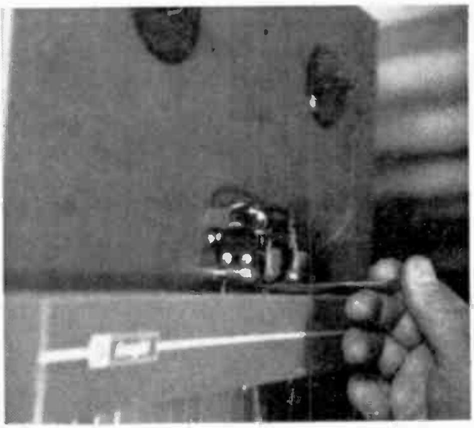
Fortunately, some of the most annoying things likely to plague your unit are also the most easily fixed. Often, no more than a thorough cleaning job is required. As for a number of the more demanding problems, you can often correct them yourself, too, with just a little care and patience.

One of the commonest is too much tape hiss and background noise. This can generally be traced to a record head—sometimes a playback head, too—that has become permanently magnetized. A tape head, of course, is an electromagnet that should be pristine pure except when a signal is going through it. Residual magnetism is often left, however, when a particularly heavy surge of signal current is generated, especially if the machine is abruptly switched out of record mode before the signal subsides. Carelessly bringing magnetized tools near the heads can also do the damage.

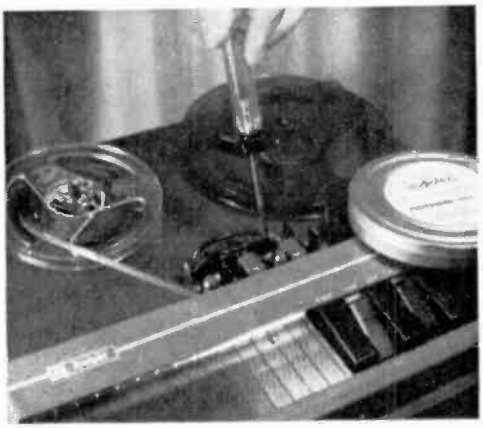


2 Stroboscope tape from Robins Industries appears to stand still when viewed under neon lamp provided speed is accurate. Speed changes also show.

3 For more stringent test, splice sections of the strobe tape into beginning, middle and end of a reel, so you can test speed under full-load conditions.



5 Use nail file with caution and you can fluff up a tired pressure pad. This treatment also takes oxide coat off pad surface. Do not scratch the heads.



6 Align playback head by using Audiotex alignment tape. Carefully rotate adjusting screw until level reaches peak. Use non-magnetic driver.

Such permanent magnetism impresses itself on the passing tape and is thenceforth inscribed as noise—and/or hiss. If head magnetization continues to build up, it can even erase the high frequencies from your tapes during playback!

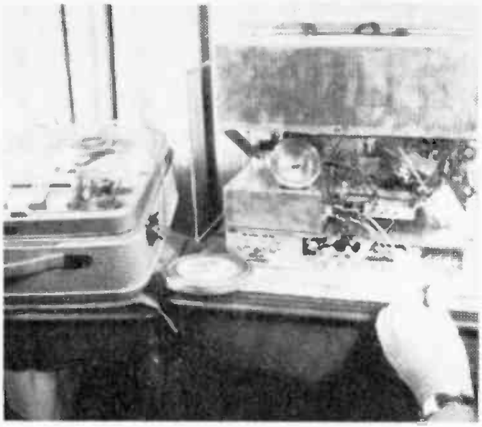
The best way to fight this problem is to prevent it. If you must stop the tape just as a strong signal is being recorded, use the pause control and wait until the signal level drops appreciably before going into full "stop" mode. If you have no pause control, turn down the record level before going to stop. But if the damage has already been done, the services of a demagnetizer are in order.

Recorders are also subject to a pair of ills named wow and flutter. These are speed variations. Wow is a low-frequency speed shift that stretches sound out like taffy, and flutter is a rapid fluctuation that can put vibrato where it hadn't ought to be. There are times when you think you've got a case of these pests but aren't certain. Your doubts can be resolved with the aid of a handy little *Robins* strobe kit.

Wow is often caused by slippage, which can frequently be traced to a buildup of tape oxide and lubricant on the capstan assembly. This is the finely-machined post that revolves to pull the tape past the heads at exact speed, plus the rubber idler wheel that presses the tape to it.

Dirt buildup, this time on the heads and

7 While recording the alignment tape from another machine, adjust head for maximum while monitoring. Can be done with S.O.S.



8 Adjust recording bias by recording alignment tape as it is played from a second machine. Again for maximum volume level during monitor.

11 If unit fails to record, bridge terminals of record head with a pair of earphones to isolate the trouble. You should hear the program material.

12 You can by-pass tape recorder's preamplifier and clip-lead connect directly to the phono input of your amplifier to check out tape preamp.

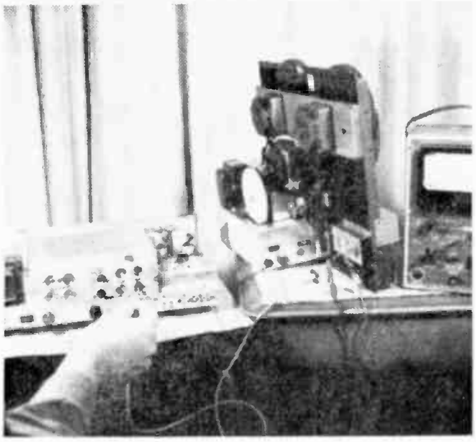
pressure pads, often produces friction that creates flutter.

A simple cleaning operation is the solution to either problem. For the purpose, Robins makes a special tape-head cleaning fluid that comes in an applicator-type bottle. On some machines, pure alcohol may serve, if the manufacturer's instructions so indicate.

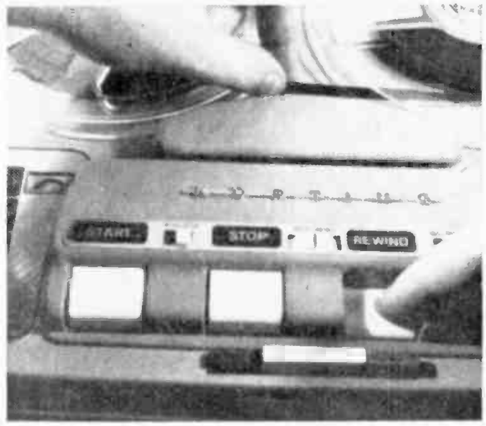
Wait until the cleansed parts are thoroughly dry before running tape through the machine. If the problem persists, clean the motor pulley if you can get to it easily, and check the drive belt for defects that require a replacement. Should all this fail, the repair shop is in order.

Another cause of high-frequency loss is head misalignment. It is usually noticeable immediately on three-head machines but may only show up on two-head recorders when you play an old tape or one recorded on another unit. For proper recording and playback, the head gaps must be positioned precisely at right angles to the tape edge.

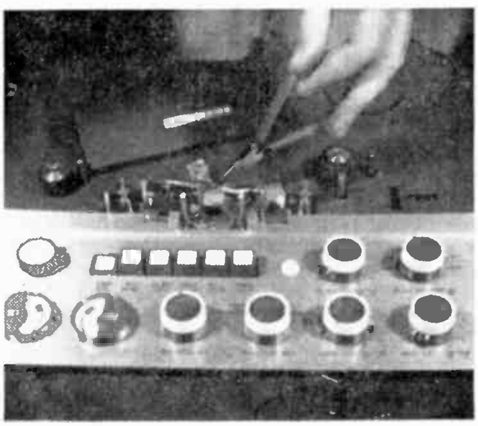
Alignment can readily be corrected on most recorders by a simple screw adjustment. The trick is to figure out how much to turn that screw. *Audio Devices* and *Audiotex* both offer alignment tapes for this purpose. Recorded on a precisely-adjusted machine, they consist of a series of steady tone signals. All you do is adjust the playback head gingerly until the tone



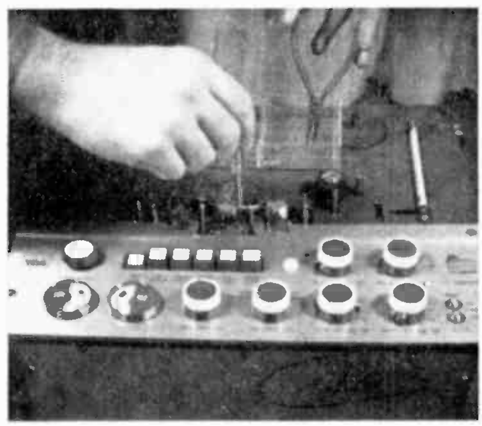
9 If you have a VTVM, you can connect a 100 ohm resistor in the ground leg and measure the voltage drop between the head and record amplifier.



10 Unless you have tape lifters, by-pass the slot during rapid wind and rewind to save wear and tear on your head surfaces. Trip end-of-tape lever.



13 If it becomes necessary to disconnect head leads, label leads with small strip of cellophane tape and numbers or letters to identify.



14 Fastener assemblies, those complex little parts and screws often become lost during service work. Place small parts in plastic boxes to save.

is at its loudest. Then you're on the nose. If you can get hold of a good volt-ohm-meter (VTVM), you can make this job easier by plugging it into the recorder's output and watching for maximum needle deflection.

Suppose all your recently-made tapes sound badly distorted, but your erase head is working properly. Chances are that your bias oscillator, which provides current to the record head, is out of adjustment. As long as you can reach the bias-adjust trimming screw, you can rectify this situation. Incidentally, on stereo recorders there is an adjustment screw for each channel.

The setup is pretty much the same as for aligning heads. Using a borrowed machine as source, you should copy the continuous tone from an alignment tape. As you make the copy on a three-headed machine, you simply monitor the tape and very slowly turn the bias-adjust screw until the tone is at peak loudness. Once again, a VTVM attached to the recorder's output gives a much more reliable indication than your ears. But for this purpose, it must be able to read down to 0.01 volt or less.

If you take the time to perform routine preventive maintenance on your tape recorder, you will have little trouble with it. Catch those little things before they require the aid of a professional (and expensive) serviceman.

Phono Amp Plays

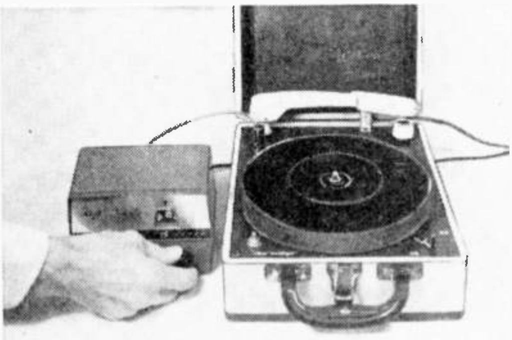


FIG. 1: A small FM tuner plugged into a portable record player gives dance music when the crowd tires of records. The wire barely visible at left of tuner is a "built-in" antenna. FM plug cuts out crystal pickup and SPST switch idles turntable motor.

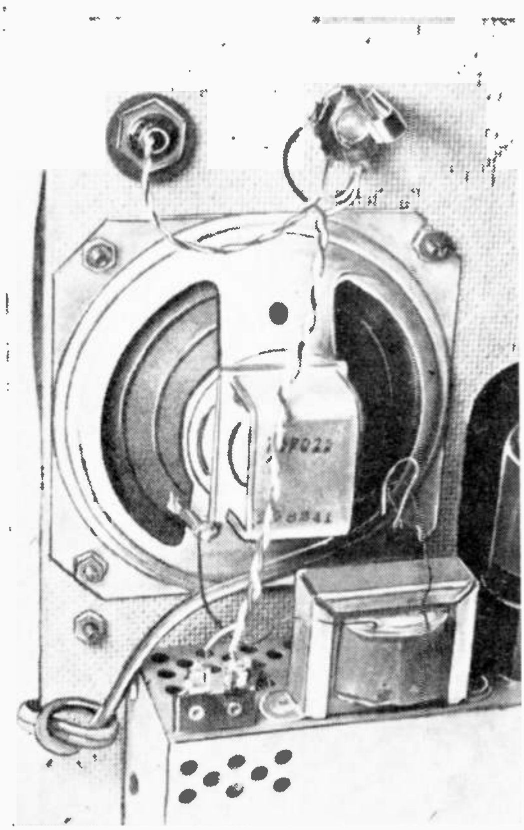


FIG. 2: Closed-circuit jack is wired into pickup leads and is mounted as close as possible to the pickup.

By ART TRAUFFER

FM TUNERS have been connected to radios, public address systems, and tape recorder and hi-fi amplifiers, but this article describes a simple way to play small economical FM tuners through portable record players. When you want a change from your discs, simply tune in an FM station and enjoy yourself. Audio quality will not be hi-fi, but should sound as good as the average FM table radio. The better the record player the better the FM quality.

To work an FM tuner through the amplifier and speaker of a typical portable record player, mount a standard closed-circuit phone jack onto the motor panel close to the crystal pickup leads, (Figs. 1 and 2) then wire the jack into the pickup leads (Figs. 2 and 3).

The FM tuner connects to the record player through a dual cord and a standard phone plug (Figs. 3 and 4). Thus when you plug in the tuner the phono pickup is cut out of the circuit—pull out the tuner plug and the phono pickup is back in the circuit.

When the tuner is connected to the record player it's best to cut off the motor. Mount a SPST push switch or toggle switch in a hole on the motor board close to the motor, (Figs. 1 and 5) and wire the switch in series with the motor leads (Fig. 6). The joints should be well soldered and taped.

Some portable record players use a special phono motor which is connected in series with the amplifier circuit. In this case you cannot cut out the motor because you will disable the amplifier, but you can shift the speed lever to neutral to idle the turntable.

Small economical FM tuners such as the Granco model T-300 (used here), and the Blonder-Tongue model T-89, both under $20, use capacitors in their outputs to make them shock-proof.

If the portable record player has a "hot" chassis, reverse the power cord plug in the outlet so the chassis is on the ground side of the power lines, or install a .1 *mfd* 400-volt fixed capacitor in series with the phono pickup ground lead (Fig. 3).

The connecting leads between the tuner and the record player should not be longer than necessary, and it isn't necessary to use shielded phono cable or mike cable unless the leads pick up AC hum.

If desired, you can use a miniature closed-circuit jack and matching plug (Fig. 3) instead of the standard sizes used by the writer.

Besides using the record player amplifier

FM Tuner

and speaker with an FM tuner, you can also use it with AM/FM tuners, or use it as a low-power utility amplifier. You can also test crystal and ceramic phono cartridges by plugging them into the "tuner" jack.

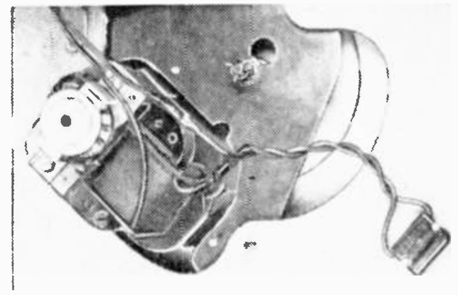


FIG. 5 The SPST motor cut-off switch mounted in a hole in the panel and wired in series with motor.

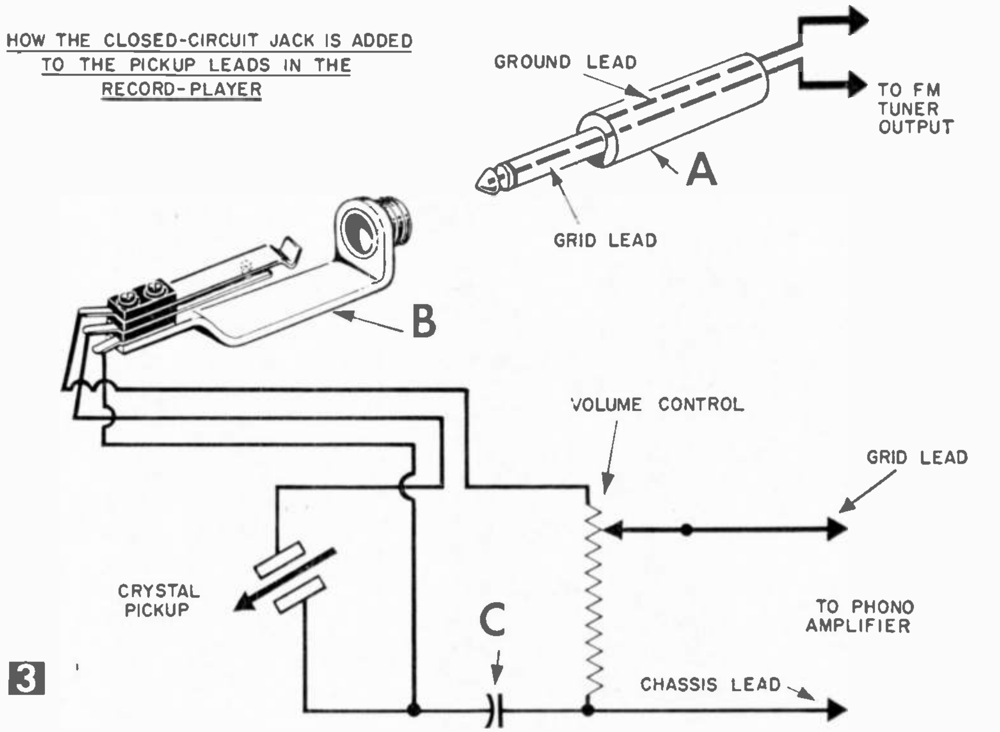


FIG. 3: Method of attaching closed-circuit jack to the pickup leads. Standard phone plug (A) is Switchcraft type 40, Allied Catalog 41 H 557 or Sub-miniature type 740, Catalog 41 H 518. Standard phone plug socket (B) is Switchcraft single-closed-circuit jack type 12A, Catalog 41 H 624 or Sub-miniature plug type 42A, Catalog 41 H 517. Blocking capacitor (C) is Cornell-Dubilier WMF "Mylar" tubular, .1 mfd., 400 volt, type 4PIE, Catalog 16 L 838. The black end generally goes to the chassis or "ground."

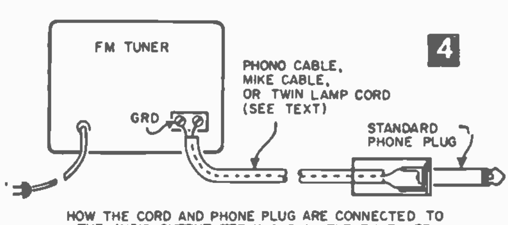


FIG. 4: Easy method of connecting the phone plug and cord to the audio output terminals on FM tuner.

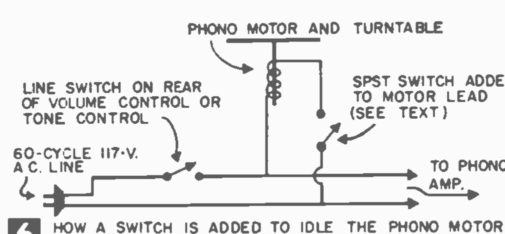


FIG. 6: Schematic shows location of SPST switch to idle motor when amplifier is used with FM tuner.

Make Your Own . . .

TV—RADIO CABINET

This one has class and dash . . . for small cash

By WILLIAM J. KIELY

A HIGH degree of elegance, the product of a fundamentally simple design, is the hallmark of this striking TV-radio console cabinet which also serves as a bookcase and record cabinet. However, it has been so planned that there is ample room for the subsequent installation of a stereo unit at a later date.

It's durable too. If your house, like ours, happens to be graced with a brood of rambunctious children you will appreciate the choice of Masonite Royalcote paneling on the cabinet instead of natural wood veneer. The Masonite has stood up to a good deal of bruising punishment from the kids without suffering the slightest scratch.

For the most part the cabinet was built with hand tools. The lack of power tools did not detract from the accuracy of the job but did make it more difficult and time consuming. If you have some power tools—a combination machine for instance—then making this cabinet will be a cinch.

The Top and Bottom Frames are of 1⅛ x 3½-in. #2 pine. The four vertical sections are of 1⅛ x 1¾-in. pine. The frame's top and bottom sections are identical, both being joined by lap joints. With these pieces cut to size, the sections are assembled and secured with epoxy glue (such as Elmer's Glue) applied to each joint. Clamp the joints until the glue sets.

For extra strength, drill two holes in each joint to accept ¼-in. dowels. Coat these dowels with glue and force them into the holes, then trim them flush and sand them.

The vertical end sections are also identical and joined with lap joints. The pieces for these sections are assembled in the same manner as the top and bottom sections. The two vertical center sections are *almost* identical to the end sections except that their depth is 1¼-in. less in order to permit the recess in the front for the door tracks.

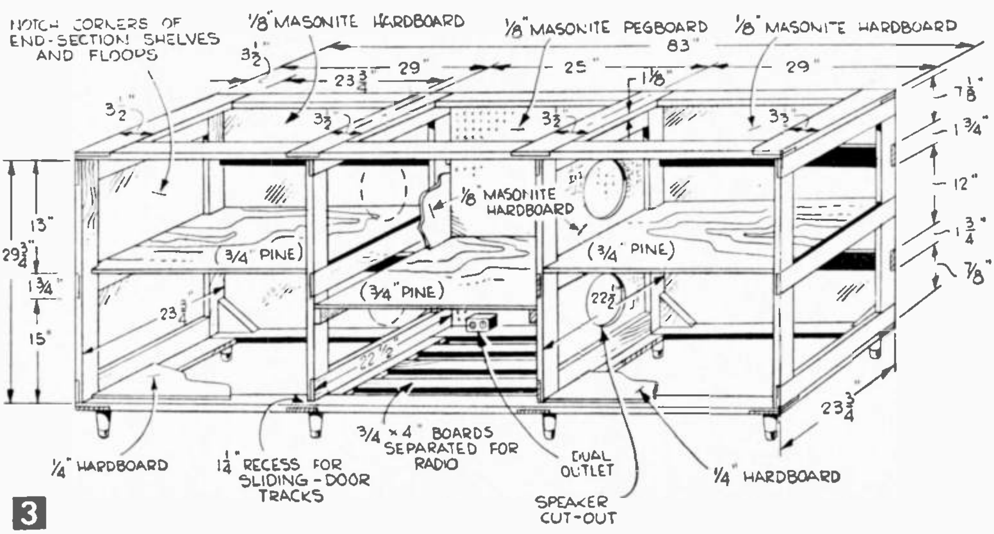
Assemble the four vertical sections and then assemble the top and bottom sections to them with glue. Clamp all six sections together until the glue sets. Then at each of these horizontal-to-vertical section joints drill holes for ⅜-in. dowels and install these in the manner described before (if you prefer, wood screws can be used instead of dowels for this reinforcing job). Further stability is achieved by installing triangular wood-block braces in the back corners formed by joining top and bottom sections to the end compartments.

The Area between the vertical center sections will depend on the size of the radio and TV units to be installed there. When this is determined cover the interior of this section with ⅛-in. Masonite hardboard in which holes have been drilled to accept the radio and TV speakers. The radio installs under the TV and both plug into an outlet secured to the rear base of the radio compartment. From this a wire cord leads to the live wall outlet. The radio compartment is left open on the bottom, the radio mounted on a pegboard which is bolted to the frame.

Secure a shelf brace to each side of the vertical center section to support the shelf for the TV. Three-quarter by 4-in. boards span these braces with space between them to permit air to circulate in this compartment. (Bear in mind that the arrangement of this compartment will depend on the type and size of the radio and TV units to be installed, so certain innovations may have to be made. These, however, will not affect the identicalness of the two end sections.)

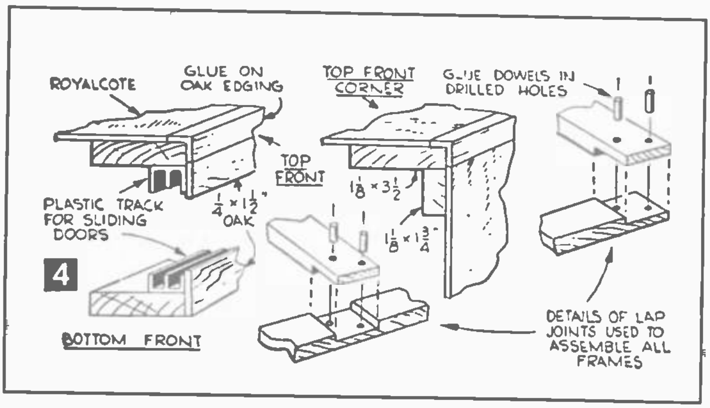
MATERIALS LIST—TV-RADIO CABINET

Amt. Req.	Size & Description	Cost
	LUMBER	
25 ft.	¾ x 4" #2 common pine	$2.00
120 ft.	1⅛ x 4" common pine	12.00
8 ft.	¾ x 4" oak for edging	1.50
8 ft.	1½x1½" oak for trim	1.00
½ panel	¼" x 4' x 4' A-D plywood	1.50
	MASONITE	
2 panels	4x8' Royalcote	15.00
1 panel	⅛" x 4' x 8' hardboard	1.75
½ panel	⅛" x 4' x 4' pegboard	1.50
	FITTINGS	
8	4" furniture legs	5.00
8 ft.	plastic door track	3.00
4	finger-insert door pulls	.25
	FASTENINGS	
var.	dowels or screws	1.00
var.	¾ x 1" finishing nails	.30
	glue	1.00
	MISC.	
Stain, varnish, 1 outlet box, 1 outlet, 10-ft. cord, plug		2.50
	Total	$49.30



3

CLOSED cabinet accentuates the modern symmetry of its styling.



The edges of *this* cabinet were trimmed by ripping the angular edging from a length of ¾-in. x 8-ft. oak to the same thickness as the Masonite Royalcote. This was done on a table saw. However, you will save a good deal of time and effort by buying your edging ready-cut. Apply it with glue and hold it in place with clamps; then sand it. Miter the two top front corners and butt the front vertical sections against the joint.

The Plastic Tracks for the ¼-in. sliding doors are tacked in place with small finishing nails. These tracks are easily cut to size with a hacksaw. Be sure to install the deep track on top and the shallow track on the bottom.

The trim or molding that flanks the track is ripped from 1½-in. oak to the same ¼-in. thickness as the edging and Royalcote. Glue and clamp the top and bottom strips to the exposed frame sections so that they cover the side of the track. Also glue the end pieces to the exposed frame.

Sand and stain the edging and molding to match the Royalcote paneling, then apply a satin varnish to these pieces when the stain is dry, taking care not to get the varnish on the exposed frame sections as this will prevent bonding of the glue when the panels are applied. Several coats of varnish should be applied with light sanding between coats.

Two 4x8-ft. sheets of Masonite Royalcote provide the material for paneling the cabinet. Cut the top panel from one sheet. There will be more than enough left over to cover the two end doors. Rip the sides and the two remaining doors from the second sheet. Rip the top and sides from different sheets; this will insure uniform patterns on the sides. Use the leftover pieces to trim the front of the TV and radio compartment.

Put On The Side Panels First. Glue and clamp these in place using scrap wood between clamps and panels to prevent damaging the Royalcote. Then secure the panels with fine finishing nails slightly countersunk with a nail set. Apply the top piece in the same manner.

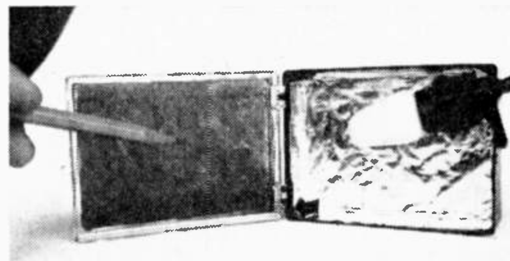
Each panel should overlap the rear of the cabinet by ⅛ in. to cover the edge of the back covering material. Use glue liberally in this operation as the Royalcote absorbs it. A helper will come in handy for this job too; the area is large and the panels must be clamped in place quickly before the glue sets. (This operation, not shown, is a simple matter of cutting and fitting the Royalcote to the frame. Complete instructions for its application come with the Royalcote.)

Now install the ¼-in. A-D plywood or Masonite hardboard floors of the storage compartments, and the ¾-in. pine shelves. These measurements must be exact so that the notches that must be cut will fit snugly around the frame members.

Measure the back of the storage compartments and cut out panels of ⅛-in. Masonite hardboard to cover them, tacking them in place with small finishing nails. Cover the center TV-radio compartment with a piece of ⅛-in. Masonite pegboard for ventilation purposes and secure it with small wood screws to permit access to this compartment. The inside may now be stained and varnished to suit.

When the doors are cut to size, mark them at their center heights and 2 in. in from each side. Then drill the ¾-in. holes to take the finger door pulls.

AUTOMATIC "ON-THE-AIR" INDICATORS



HERE are two inexpensive and effective ways to automatically let visitors know when you are "on the air," as well as alerting you if your transmitter is turned on, or left on, inadvertently. Either of these units can be built for less than 50c, which is a considerable saving over the available commercial units, which range from $6.95 to $8.95. Also, these units are small enough to allow mounting them almost anywhere.

The secret of the effectiveness of these units is in the construction. They use very little power, and operate automatically when you transmit.

The Smaller Unit: This could easily be added inside the transmitter with only the lettering exposed. The author's unit was built in a small, clear plastic box, such as the type used by Walsco and General Cement to merchandise electronic hardware. Coat the inside of one of the long sides of the box with red nail polish, which will roughen the surface and provide a translucent red effect when back-lighted. Cement aluminum foil to the remaining inside surfaces, including the top and bottom, with the shiny side of the aluminum foil facing the inside of the box. This will provide a heat shield, as well as reflect the light through the colored side.

On the outside of the box, roughen the surface of the side of the box that has the nail polish on the inside; steel wool or fine sandpaper will do the job nicely. Cover this side of the box with masking tape, and brush-coat or spray paint the outside of the box with a color to match the rest of your equipment. When the paint is dry, remove the masking tape and use a black felt-tip marking pen to carefully print on the air on the roughened surface. Outlining the lettering with Carter's white ink (available at your 5 & 10) will improve the appearance of the unit. If you prefer, of course, you can cement on black letters cut from newspaper headlines, or use the new dry transfer letters (Radio Shack 61N2160 Instant Lettering, $1.59 set of five sheets of different letters).

Wiring: The wiring is simple. Glue an NE-2H neon bulb (Lafayette Radio PL-123, 12c) to the bottom center inside of the box, and solder a ½-watt resistor to one of the leads of the NE-2H bulb. The value depends on the voltage with which it will be used. Solder an insulated wire to the free end of the resistor and solder another insulated wire to the remaining lead of the NE-2H. Run these wires through a notch in the back of the box, and connect them (using a plug and socket if desired) to the switched voltage source.

What voltage source? Well, this unit uses so little power that you can safely connect it to any ac or dc source from 100 to 300 volts. Of course, this voltage must be at a point that is energized only when transmitting. Many transceivers switch the B-plus with the transmit-receive switch. Some units use a change-over relay, and here the coil or the contacts might provide the required voltage.

When the voltage to the unit is sufficient the neon bulb lights, and the red glow appearing behind the black lettering is very eye-catching. The NE-2H bulb has two elements; only one will glow if you have it attached to dc voltage. Both elements will glow if attached to ac.

A Larger Display: A clear plastic box, approximately 1¼ x 2¾ x 3¾-in. is used to house a 7-watt night-light bulb. (Lafayette Radio's MS-159 plastic box, for 18¢, is ideal.) As described for the smaller unit, use red nail

Continued on page 115

How Short Wave Works

By C. M. STANBURY, II

SHORT waves, unlike other radio signals, readily reach out to distant points. In fact when conditions are right, such a station can be heard around the world. Why?

With a dropping sunspot count, the range of usable frequencies will narrow but rare DX (distance) will improve. Again, why?

These are questions every SWL (short wave listener) should be able to answer. If you can't, keep reading.

The Ionosphere: All reception beyond 100 miles on frequencies below 30 *mc* depends upon the Ionosphere, that region of gasses between 50 and 200 miles above the Earth. The Ionosphere is bombarded by ultraviolet radiation from the Sun which produce ionized layers. Speaking loosely, these layers "reflect" radio signals back to, and around the curvature of the Earth. Actually the process is not reflection at all but, as shown in Fig. 2, refraction. When a wave encounters increased ion density at the layer's lower limit, it is bent. Bending increases as the signal travels further into the layer. If bent enough, it will be returned to Earth and give the appearance of reflection. If however our signal reaches the height of maximum ion density in this particular layer without being bent to Earth, the bending process is then reversed and it will emerge from the top of the layer travelling in approximately the direction as when it entered. So for all practical purposes that term reflection is satisfactory and we'll stick with it.

Now, as shown in Fig. 1, the ionosphere consists of four layers. The F2 layer is at the top and is most highly ionized. Ionization decreases with each descending layer. Needless to say, the greater the ionization the more a wave will be bent. Also (Fig. 1), the more obliquely it enters a layer, the less bending is required. Obliqueness, i.e. the angle of incidence, is dependent upon the hop length. The longer your hop, the lower your angle of incidence and the less bending required. Look at the diagram carefully and you'll see what we mean. And when you do, you'll understand why a nearby signal may pass through all the layers of the ionosphere while a station farther away is reflected and heard. Incidentally, maximum hop length is limited by the curvature of the Earth, height of layer and geometry. When this limit is exceeded, more than one hop is required (Wave B in Fig. 3).

At night our view of the Ionosphere changes, The D "Region" (which we'll discuss in a moment) disappears while the F1 and F2 layers combine.

Absorption and Frequency: Disappearance of the D Region is particularly fortunate for distant reception. Because of its low altitude and unusual shape, the D Region does not reflect radio signals but instead "Absorbs" them.

In each layer there is some collision between ions. If an ion carrying (propagating) a tiny portion of the radio signal collides with another ion, that bit of energy is lost and the overall signal weakened. This process is absorption. It increases with ionization and with atmospheric pressure thus is worst at low altitudes and almost nil in the rarified F layers. Incidentally, if it were not for this collisional process, layers would not disappear nor even diminish at night.

Up until now, we have discussed two factors which determine the effect of ionization upon a radio signal—height of layer and angle of incidence (obliqueness). But there is a third, even more important, frequency. The higher the frequency the less it is effected by ionization. If a frequency is high enough it will escape absorption but if it is too high, the radio signal will not be reflected back to Earth, not even by the F2 Layer. Between these two extremes lies a range of "Optimum Working Frequencies" (OWF), a range of channels best for reception from a given area.

Which brings us back to that first question —Why are short waves readily heard at distant points? Because no matter the amount of ionization, height of the reflecting layer or angle of incidence, the OWF always falls within the realm of short wave. Of course just where it falls between 3 and 30 *mc* does depend upon other factors.

Cycles, the Sun and Sunspots: As both reflection and absorption are controlled by Ionization, those forces of nature which regulate this process are very important to the listener. As we've already told you, ionization is produced by ultra violet radiation from the sun and is therefore greatest a little past

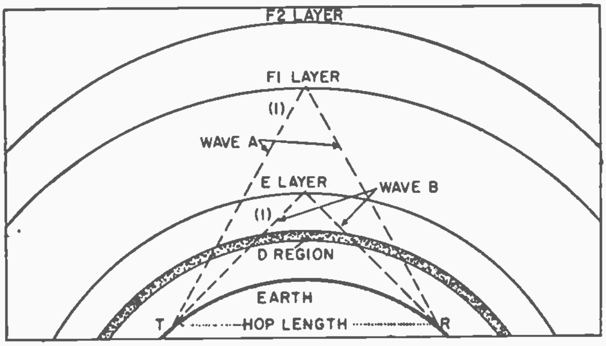


Fig. 1: Wave "A" requires too much bending to be returned to Earth by the E-Layer. The F-2 Layer, where ionization is greater, does the trick, effectively reflecting the signal. As wave "B" hits the E-Layer at a lower angle of incidence, it requires less bending and is therefore easily reflected by the E-Layer. (I=Angle of Incidence)

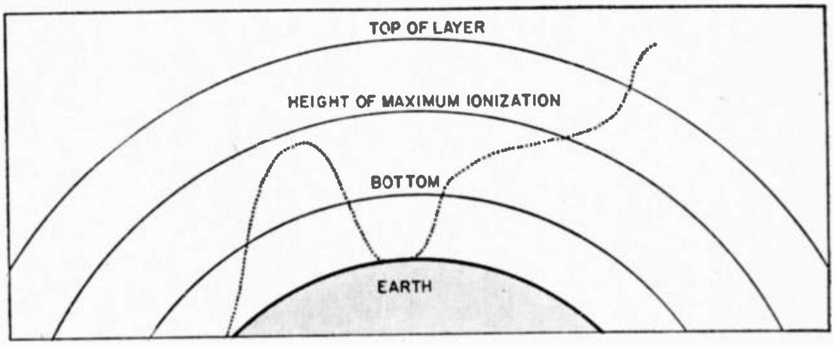


Fig. 2: Radio waves in an ionized layer.

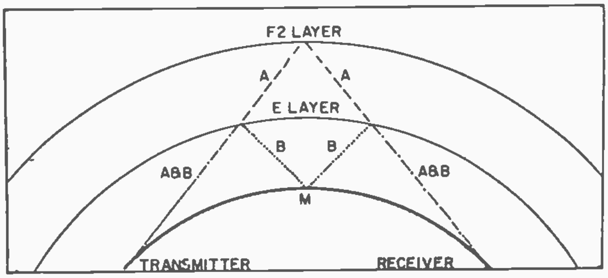


Fig. 3: This station is transmitting on two frequencies, A and B. A is the higher frequency which passes through the E-Layer where it is partially absorbed before being reflected back to Earth. Frequency B is reflected by the E-Layer and therefore suffers little in the way of absorption. It does suffer however, as it requires two hops. The strength of the received signals depends on what happens at point "M". SW Anyone?

midday and least just prior to sunrise. Logically it should also be at a higher level in summer than winter. This is true for all layers *except* the F2 which for some mysterious reason reaches a peak for brief periods around 1400 local time during winter.

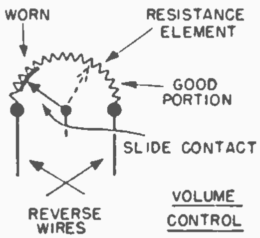
Ultra violet radiation also varies with the number of spots on the sun due probably not to the sunspots themselves but because of related phenomena on the solar surface. Sunspots follow a regular 11-year cycle. At its maximum, frequencies all the way up to 30 *mc* are reflected while channels below 7 *mc* are severely impaired by absorption even at night.

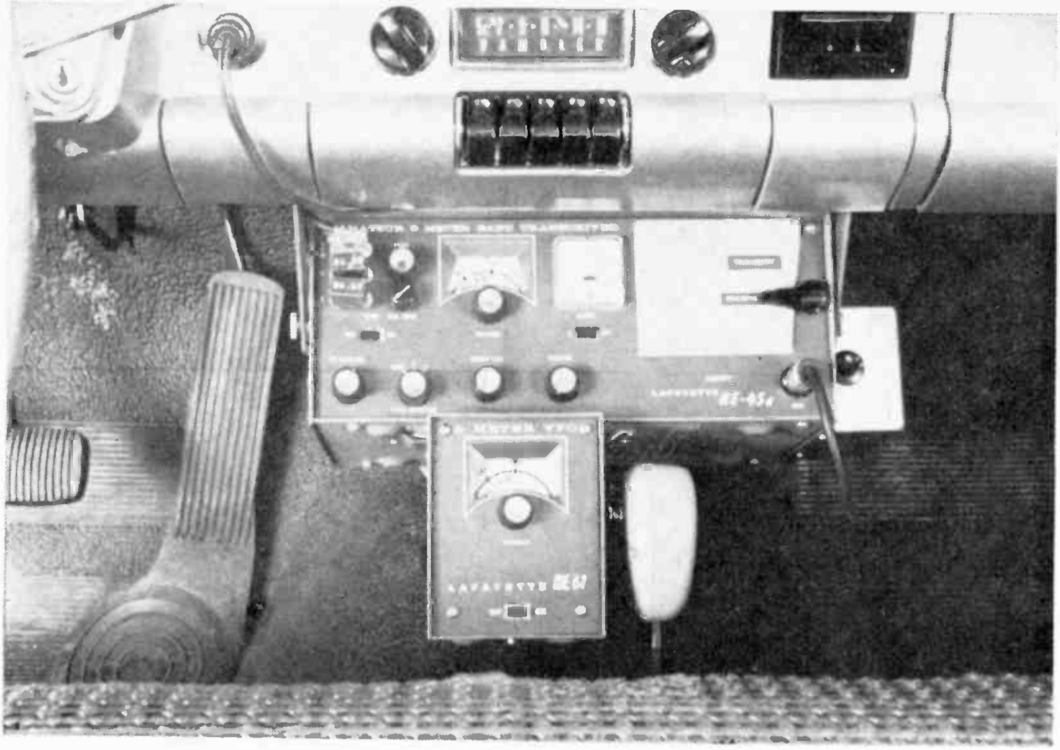
We are currently approaching a low in the cycle. Frequencies above 18 *mc* are now seldom useful but reception below 7 *mc* is tremendously improved. Generally speaking, the OWF range will be narrower resulting in crowding together of stations and a sharp rise in interference. But because the most revealing listening and rarest DX lies at the bottom of Short Wave, listening potential will be improved, especially on those nights when summer static is not too bad. Unfortunately, atmospheric static does not vary with the sunspot count.

We've answered that second question!

Salvaging Worn Radio-TV Control

• When a volume, tone, or other radio-TV variable resistance control becomes worn and gives spotty operation that can't be eliminated with control cleaner, try reversing the two outer wire connections (see sketch). This will put the operating range of the control on the least-used portion that is still serviceable and salvage the control for satisfactory use.—John A. Comstock.





No-Hole Mobile

INSTALLING a rig in a car is always a "custom" job, and examples only serve to illustrate possible solutions to *your* problem. The photos show how a Lafayette HE-45A 6-meter Transceiver was "strainlessly" installed in the author's 1963 Rambler *Classic*, complete with Squelcher, VFO and adjustable-from-inside antenna—without adding any obvious body holes!

Four things made it easy: (1) Built-in 12V power supply and cable furnished with the HE-45A; (2) Mobile mounting bracket supplied with the HE-45A; (3) Rambler cigarette lighter wiring; and (4) Buddy-Whip antenna.

Slipping the HE-45A under the dash involved drilling only one small hole to mount the bracket; one convenient hole already existed for some uninstalled accessory. Two thumb-screws hold the unit to the bracket at a very handy angle. The Lafayette HE-55 Squelcher ($10.95) mounts on the side of the HE-45A. This Squelcher is extremely effective in suppressing spark noise from other cars (the 1963 Rambler itself is very "quiet"), as well as providing the convenience of a very sensitive adjustable squelch; it is highly recommended for use with the HE-45.

To add to the pleasure of mobile QSO's, a VFO is almost a must. The Lafayette HE-61 ($19.95), designed for use with the HE-45, simply plugs into the HE-45A for power. It was mounted between two bent-sheet metal brackets added to the underside of the HE-45; right angle brackets added to the HE-61 simply slide into the added HE-45 brackets, which act as support rails.

The HE-45 mobile power cable plugs directly into the cigarette lighter. The Rambler cigarette lighter is conveniently wired through the ignition switch, so the rig automatically goes off when the ignition is turned off, a very desirable feature.

Mounting a mobile antenna usually involves drilling through the body of the car for a ball-mount, or settling for the lower height obtained with a bumper mount. The new 6-meter Buddy-Whip changes this situation. By drilling only 2 small, inconspicuous holes in the rain-gutter above the driver's seat, the Buddy-Whip is quickly and firmly mounted—and virtually theft-proof. The

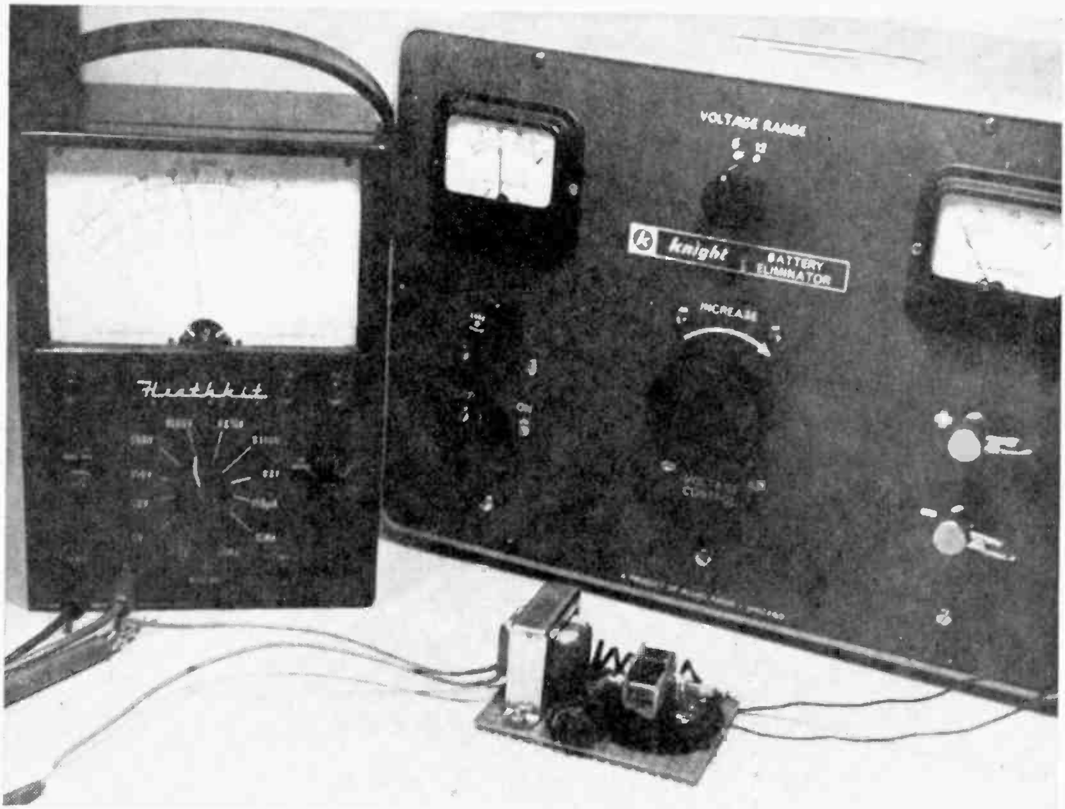
(well, only 3 small holes...)

By
FRED BLECHMAN, K6UGT

Buddy-Whip is supplied (Marina Communications, 11527 West Washington Blvd., Los Angeles 66, California or Utica Communications, 2917 West Irving Park Road, Chicago 18, Illinois, $24.50 postpaid) with extra-small diameter 52 ohm coaxial cable (cut to a 50.5 electrical full wave length) and window clips; these allow routing the transmission line from the antenna, down the left side of the windshield, through the hood into the engine compartment, and through any existing firewall hole to the transceiver. The clips push into the rubber gasket around the windshield to hold the cable in position.

The driver can position the antenna from horizontal to vertical, or anywhere in between, while driving, by merely reaching up through the side window. An adjustable-tension stopnut acts like a clutch if the antenna is hit by an overhead obstruction and allows the antenna to "fold," yet normal driving speed won't cause the antenna to bend back. If it does, tighten the nut!

The photos tell the story. Simple to install, quick and easy to remove, and a pleasure to operate . . . now, if it were only sideband!



Using a buzzer and transformer, we can simulate the manner in which a high voltage is generated from a low one.

Principles Of Transistorized

By FORREST H. FRANTZ, SR.

THE first application of the transistor was in the automobile radio. Operating on the low voltage of the automobile battery, the transistorized auto radio does not require the noisy high voltage vibrator power supply common to the vacuum tube radio.

Since the transistor does not require heat for operation, power requirements have been reduced about 15 watts, and space requirements about 60 cu. in., on the average.

The voltage required to fire an automobile spark plug is high—tens of thousands of volts. The starting point is a 6- or a 12-volt battery (Fig. 1). If the voltage of the battery is chopped by opening and closing the switch, a pulsating voltage—one that changes value with switch operation—is applied to the primary of transformer L. The primary of transformer L has few turns, and the secondary has many: consequently, the changing voltage in the primary is stepped up considerably in the secondary.

One of the fundamental rules of transformer action is that primary power is equal to or greater than secondary power. In a step-up transformer the primary current must be quite high. In the case of an auto ignition coil, primary current peaks are several amps.

The buzzer-transformer combination (Figs. 2 and 3) is an interesting demonstration of the ignition system step-up principle that can be used for publicity, educational, and interest-catching purposes. The battery is a 6-v. battery. The buzzer L1-S acts as a voltage chopper. The points driven by a rotary cam do the chopping in an auto-ignition system. The transformer L2 is an output transformer with the low impedance winding receiving the chopped battery voltage and the high impedance winding functioning as the

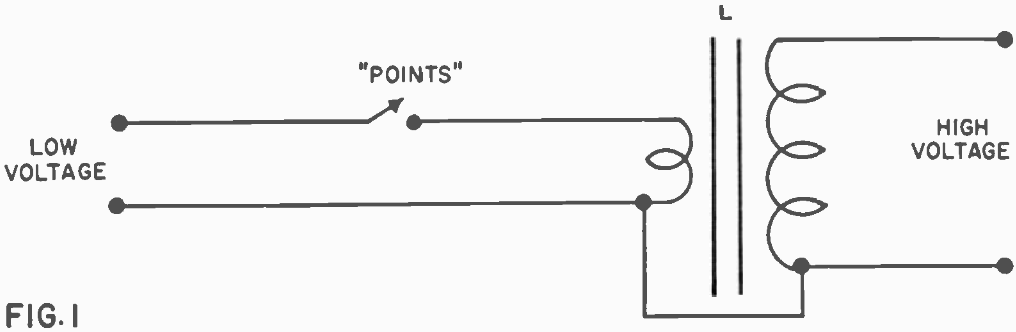


FIG. 1

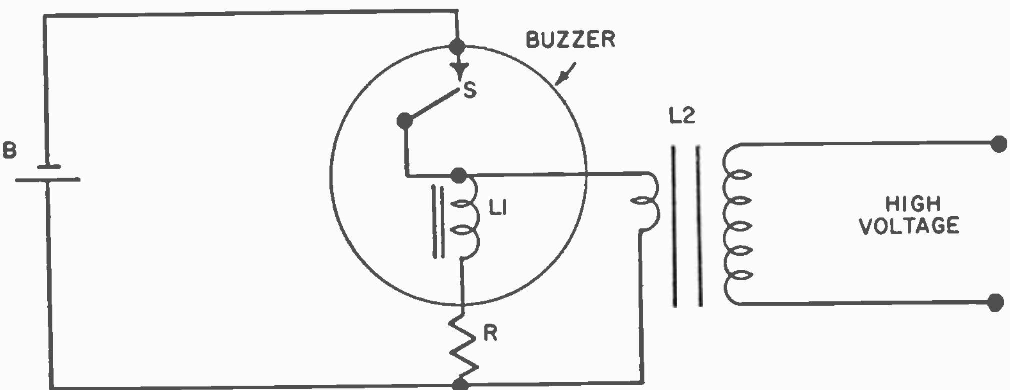


FIG. 2

Ignition

There's been lots of talk recently about transistor ignition systems. Here's the complete rundown on how they operate...

step-up winding. The output voltage will be several hundred volts and as high as a thousand volts. The resistor R is provided to limit current through the buzzer contact S. The high voltage ignition coil is the step-up transformer in the auto-ignition system.

With this circuit arrangement you will note a considerable amount of sparking at the buzzer contacts (S). This contact sparking is caused by the high current which the contacts must switch. In an automobile ignition system, current demands are considerably more severe and more sparking occurs.

The characteristic of the transistor which makes it a natural for reducing contact or "point" sparking is its current amplification characteristic. If the base input current is IB (Fig. 5), the collector output current will be IB times the current amplification of the transistor. The emitter current is also approximately equal to the base current, times the current amplification of the transistor.

Assume for the moment that the current which the points in an auto-ignition system switches is 10 amps. Suppose a transistor with an amplification factor of 40 is available. Assume the transistor is connected to supply ignition coil current from the emitter and the points are connected to switch current in the base circuit of the transistor as shown in Fig. 4. Then, if the emitter supplies 10 amps to the coil, only 10/40 or ¼ amp. must be switched by the points. This is a considerable reduction in the current handled by the contact.

If the importance of the reduction in current is not immediately apparent, consider the speed at which the points operate. A rough estimate is 200 times a second for highway driving. This high speed switching of a high current causes rapid deterioration of the points. As the points deteriorate, the

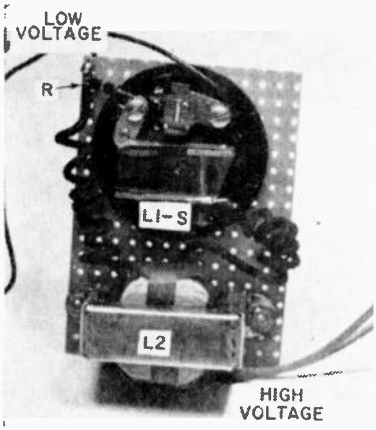


Fig. 3: Using the schematic (Fig. 4) and the photo above, build the unit on a small piece of perforated phenolic.

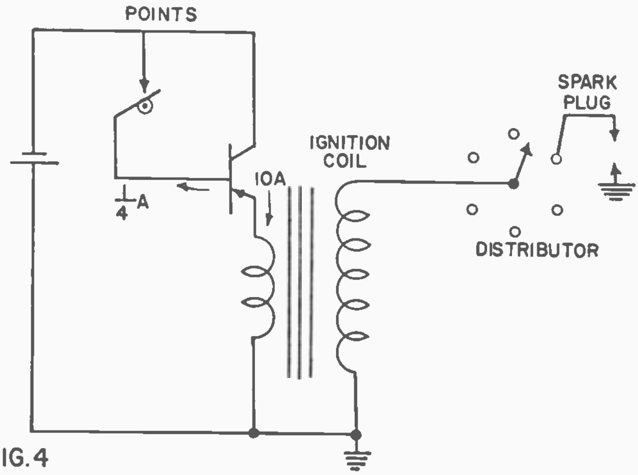


FIG.4

available voltage from the ignition coil diminishes. The voltage available from worn points is also a function of engine speed. Thus new points might make 30,000 volts available to the distributor for a wide range of engine speeds. But, after a considerable amount of use of this set of points, the available voltage will drop to something like 25,000 volts at 2000 *rpm* and about 15,000 volts at 4000 *rpm*.

A transistor ignition demonstration circuit which employs the buzzer and output transformer of the previously described ordinary ignition system demonstration unit is shown in Fig. 6. Note that the only additional component is an inexpensive power transistor. The decrease in current requirements for the contacts can be shown by comparing the transistor base current to the emitter current. Another indication of the improvement is the reduction of sparking at the buzzer contacts over the "no transistor" scheme.

But, there has been a problem. The induced voltage in the low voltage winding of the ignition coil resulting from make and break action is rather large. This poses a threat to the transistor and can cause it to break down. This factor has delayed transistorized ignition for quite a few years. Delco-Remy has developed a system that uses several transistors to circumvent the voltage breakdown problem.

Another disadvantage of a single transistor system is the inability to fire fouled spark plugs any better than present conventional systems. Further improvements in germanium transistors or the availability of more powerful transistors made from other materials, will pave the way for a single transistor ignition unit that will answer the problems of spark plug fouling. Looking down the road to the day when these transistors become available, Delco-Remy envisions the complete elimination of distributor contact points.

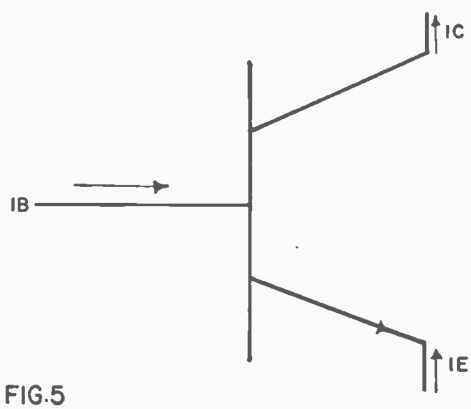


FIG.5

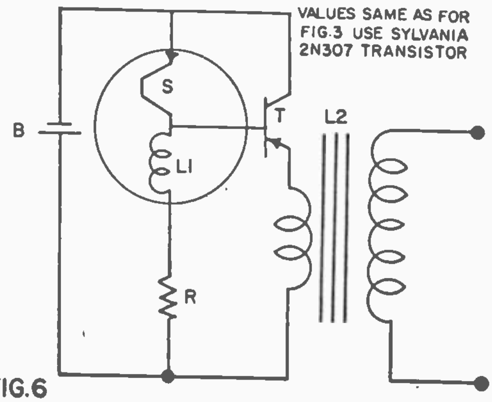


FIG.6

New Look in Electroluminescence

Those cool green night lights you see in the five and dime stores are only the beginning. New applications for EL units are found every day, and products follow

By GEORGE P. NICHOLAS

ELECTROLUMINESCENCE is a big word with a big meaning in electronics.

Called "EL" by engineers, electroluminescence is the light source that one day may brighten the way for space travel, dramatize radar and television pictures on wall-length screens, and provide a ceiling of cool, uniform, variable color light.

Right now, down at earth, EL is being used in such unique applications as a flashing belt that protects night workers from traffic.

EL is a direct way to convert electricity into light. Instead of bulbs or tubes, it uses panels consisting of crystallized phosphors sandwiched between two conductors, the front conductor being transparent.

These panels, only 1/32-in. thick, have some unusual advantages over conventional light sources:

Their power requirements are low.

The life of the panels exceeds that of most lamps.

As there are no filaments, tubes or vapor, there is almost no heat. There is no sudden failure—hence excellent quality.

The simplicity of these panels and their durability make them virtually indestructible in ordinary use.

Still other features of these panels are the absence of "hot" spots and their thinness which permits them to be installed almost anywhere, even to serve as part of an object's supporting structure.

Electroluminescence is already all around us.

EL panels are used in those flat night lights that plug right into the wall. The instrument panels in Ford tractors have pointer hands that are actually tiny EL panels. EL also makes telephone dials, wall switchplates,

(Continued on page 140)

Fig. 1. Illuminated house number does double duty. Makes house easy to find, also serves as doorbell.

Fig. 2. Wall switch glows for over five years for under five cents per year. Lights when switch is off.

Get That QSL

By C. M. STANBURY II

THE QSL—a card or letter verifying reception—this is the standard by which most DX'ers are judged. It represents proof for those rare catches and souvenirs of all his radio travels. When a beginner, the question is "How do I get them?", and for the advanced listener "How do I handle those stations who won't verify?" Here are at least some of the answers.

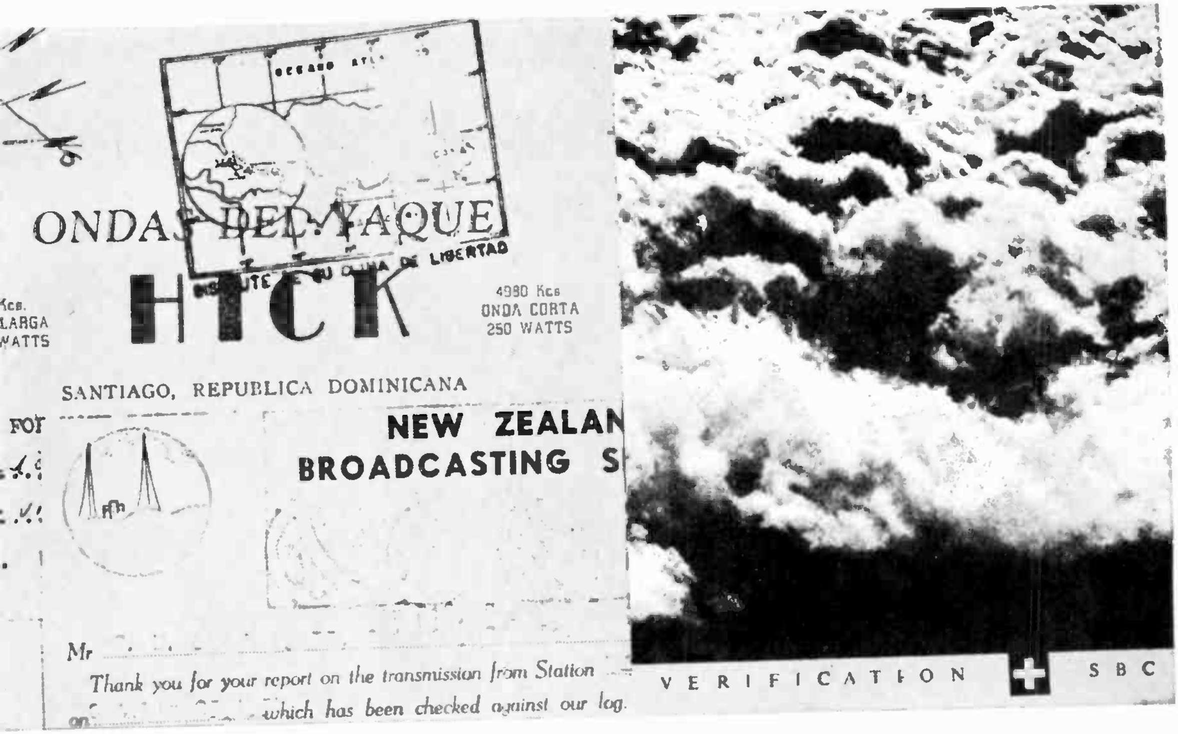
The Ground Rules: That first question can be answered in simple terms. After you hear the station, send it a reception report. For broadcast stations (SW, BCB etc.) such a report can be addressed to the station's name (B.B.C., Radio Rumbos) at the city in which it has studios. For Canadian and U. S. commercial stations use call letters instead of station name. Your report must contain date and time of reception, frequency, a description of the program(s) heard to authenticate the reception, a rundown or reception quality (signal strength, interference or any other pertinent factors) and your own equipment, then politely request a card or letter verifying reception. Unless you *know* the broadcaster has free postal privileges, always include return postage. International Reply Coupons are available at any post office for 15¢. And of course, don't forget your own name and address.

Reports to Utility stations should contain the same information minus *contents of the transmission*—it is illegal to repeat these. Exceptions to this rule are telephone test tapes (copy them word for word to prove your reception) and aeronautical messages to and from non-military aircraft involving purely technical matters such as position, weather etc. Ship positions are usually okay too but in other cases include name of station contacted or called to prove your reception.

Reports to aeradios may simply be addressed to the appropriate airport. Aircraft reports should be sent to the Communications Supervisor of the airline at the most convenient office along its route. If the flight heard has a U. S. terminus, this is the place to send your report because American stamps can be used as return postage. Telephone stations should be addressed by the name of the company or operating agency at the transmitter location. This information is usually included in the test tape.

The Prepared Card Technique: Okay, so much for those stations who verify to promote their cause or out of courtesy. Now we come to the stations who don't verify. After DXing a few years you will discover two facts of radio life. First, there is no absolutely sure fire solution to this problem but, secondly, there are few stations which cannot be verified if the DXer keeps at it long enough.

One of the most common weapons used by DXers is the self prepared QSL which someone at the station merely has to sign and drop in the mail. A typical prepared card is dec-



orated and made out by the DXer himself and is especially useful when reporting to Utilities where the operator may not have the slightest idea of what you want. Some DXers automatically include a prepared card with every utility report. When it comes to the non-military aeronautical, and telephone services this is not good practice because many of these will issue their own verifications. Some international telephone stations even have regular QSL cards printed up. Of course if the DXer sends numerous reports to the same airline office, he should include a prepared card after the first couple reports otherwise he is making a nuisance of himself.

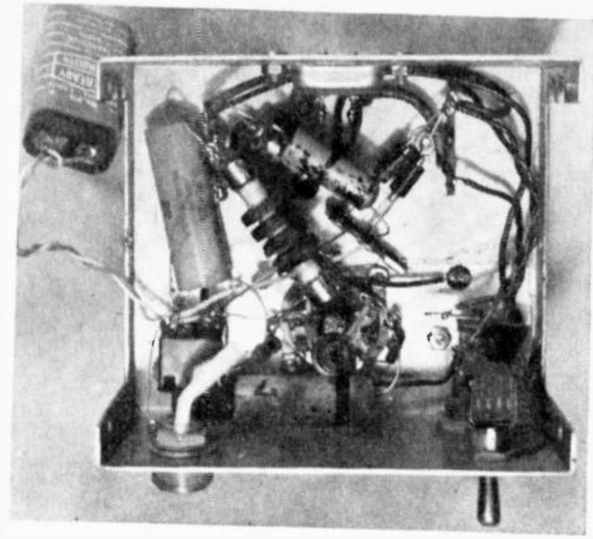
The prepared card should never be included with your first report to any broadcast station. A non-verifier may start issuing QSLs at any time and it's your duty toward other DXers to encourage such a policy. This is especially true of Latin America where verification policies are highly eratic and often depend upon the local political situation—just how unpopular were Norte Americanos the day your report arrived? If however after four months you have not received a reply and no one else you know has either, report again (if possible on a more recent logging) and include a prepared card. Incidentally, reports to stations outside the U. S. and Canada should be sent via air mail to avoid loss or theft (which is always a danger).

Special Situations: To list every special case would fill this book and three others like it. In a sense, every non-verifier is a special case. But one problem which often crops up is to find another address. If one airline office won't verify, try another. This can even be applied to manned space flights. NASA headquarters positively refuses to verify DX reports but operators at individual Capsule Communications Stations may do so (unofficially) if they wish. Thus your scribe heard SIGMA VII in contact with Guaymas and addressed his report along with a prepared card to Proyecto Mercurio, Guaymas, Sonora, Mexico (uncancelled Mexican stamps were obtained from a dealer).

This method can also be applied to broadcasters. A few years ago when Radiodiffusion-Television Francais on the island of Guadeloupe was not verifying, an imaginative DX'er addressed his report to RTF headquarters in Paris. This effort produced real dividends. Not only did he get his but the Guadeloupe office began issuing regular letter type QSLs to all who sent in correct reports.

Frankly, the matter of address demonstrates a final and most important point. The DX'er who blends ingenuity with common sense when dealing with non-verifiers is going to wind up on top. If you really want the QSL, keep inventing and trying new approaches until you get it. If that's "too much" effort then it wasn't worth going after in the first place. Every really rare catch is, after all, something special.

Now let's go after those big fish!



Dual Powered 100KC Crystal Oscillator

By JAMES A. FRED

THIS frequency standard operates from either a self contained nine-volt battery or the 117 volt ac line. This allows you to operate the oscillator either in your shop or out in the field. To provide power for ac operation a simple voltage doubler using two 1N34's or equivalent diodes are used to supply about fifteen volts dc from a 6.3 volt filament transformer. A series resistor of 1500 ohms is used to drop this down to nine volts.

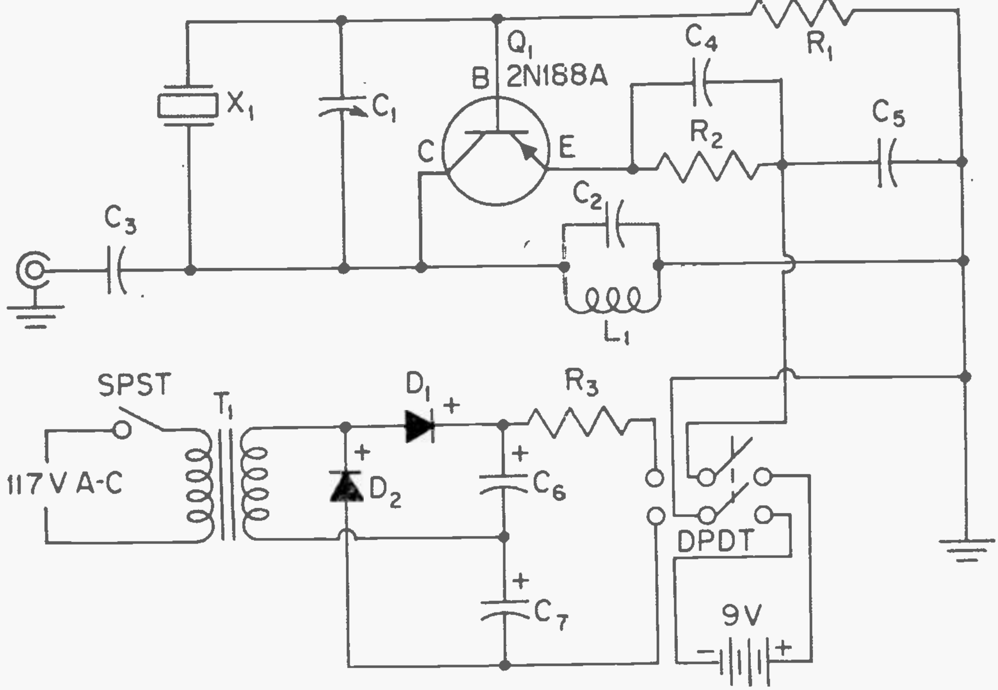
Assembly: All the components except the transformer, crystal, and trimmer capacitor are mounted inside the aluminum box. A 3 x 4 x 5-in. Bud *Mini-box* will provide plenty of room for the large size parts used. The oscillator pictured was built into an aluminum box that formerly held a war surplus inverter. The front of the box contains the output signal connector, a pilot light, an ac on-off switch, and a battery to ac power changeover switch. This latter switch can serve as a battery on-off switch too.

Remember that this is an RF device so keep all wires, except power supply wires, as short as possible and use sleeving wherever there is any likelihood of leads touching each other. The crystal used in this circuit is a war surplus type mounted in a metal tube, and plugs into an octal socket. This socket makes a convenient tie point for many of the components as well as providing tie points for the transistor. If you cannot find a 100 KC crystal of this type you will have to mount a socket suitable for the crystal that you are going to use. The transistor is quite sensitive to heat so hold the lead firmly with your long nose pliers when soldering the leads. Grasp the leads with the plier jaws between the solder joint and the transistor. If you use a different type filament transformer than that specified you may need to change the value of the 1500 ohm voltage dropping resistor so you get 9 volts supply voltage.

Using the Unit: After wiring and double checking every connection, plug in the battery and crystal and push the right hand switch to battery. If you have a standard broadcast band receiver turn it on and tune it to 700 KC. Run a lead wire from the signal output jack on the oscillator to the receiver antenna wire. You should now hear some kind of a whistle or audio tone if there is a station on this frequency. If you don't get a sound here tune the receiver to either 600 KC or 800 KC and see if you get a sound there. You can adjust the frequency of the oscillator a few cycles either side of 100 KC with the trimmer capacitor. This will enable you to correct for a crystal that may be off frequency.

There are many uses for a 100 KC crystal frequency standard of this type. Some of these uses are: checking the dial calibration of radio receivers, checking the accuracy of signal generators, and frequencies of radio transmitters.

FIG. 3 CIRCUIT-100KC FREQUENCY STANDARD

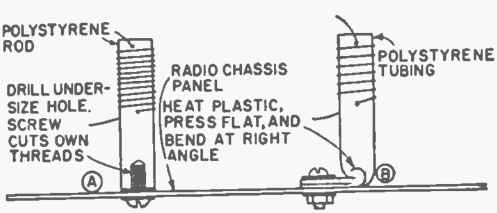


MATERIALS LIST—DUAL POWERED CRYSTAL OSCILLATOR

Desig.	Size and Description	Desig.	Size and Description
X1	100 KC crystal war surplus or Petersen Z-6A	C4	.1 mfd. capacitor, Mallory type 601
D1, D2	1N34 or equal	C5	.25 mfd. capacitor, Mallory type 6025
T1	6.3 volt, 1 amp. filament transformer	C6, C7	25 mfd., 25 vdc, Mallory type TC26
R3	1500 ohm, ½ watt resistor	L1	10 mh. RF choke, National R-50
R1	22,000 ohm, ½ watt resistor		9 volt battery, Burgess type 2U6
R2	470 ohm, ½ watt resistor		SPST toggle switch, Carling
Q1	2N188A transistor GE		DPDT toggle switch, Carling
C1	4-30 mmf. capacitor, Centralab 822-EN		The above parts can be bought from the Allied Radio Corporation, 100 North Western Ave., Chicago 80, Ill
C2	470 mmf. capacitor, Centralab DC471		
C3	620 mmf. capacitor, Centralab DC601		

Mounting Polystyrene *UHF* Coils

• Here are two methods for mounting home made polystyrene *UHF* coil forms. Drill an undersize hole in one end of a length of



polystyrene rod (A), and let the mounting screw cut its own threads. Use lock-washers when mounting. Heat one end of a length of polystyrene tubing, press the end flat, bend end at right-angles, and hold until cool (B). Drill a hole for mounting screw through the flat portion.—A. T.

Capacitor Pops TV Pix Tube Short

• There's no need to discard a TV set's picture tube just because there's an internal short circuit between some of the inner elements. More often than not, the short is caused by conductive "dandruff" that has flaked off from one or more of the elements and can be removed easily with a charged electrolytic filter capacitor connected to the outer base pins.

Select a healthy capacitor with a high value of capacitance and a high voltage rating (about 50 microfarads at 250 volts), and connect it momentarily to a *dc* source not exceeding the capacitor's voltage rating. (Be sure to observe polarity—plus to positive, minus to negative.) Now connect the charged capacitor to the two element pins that are shorted internally. The current from the capacitor will flow through the internal short and burn it out with a loud pop and flash from the inside neck of the tube.—J. A. C.

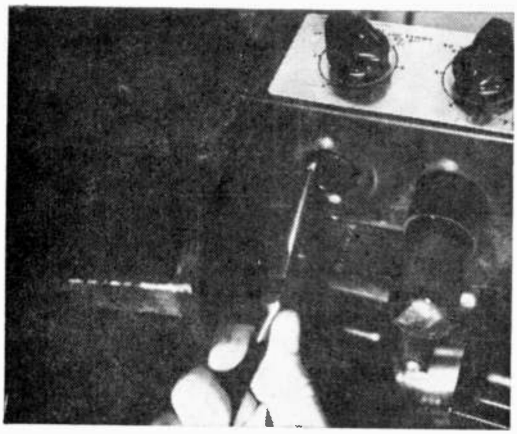


Fig. 1: After removing the old pin, it's a simple matter to slip a new pin in from the socket top.

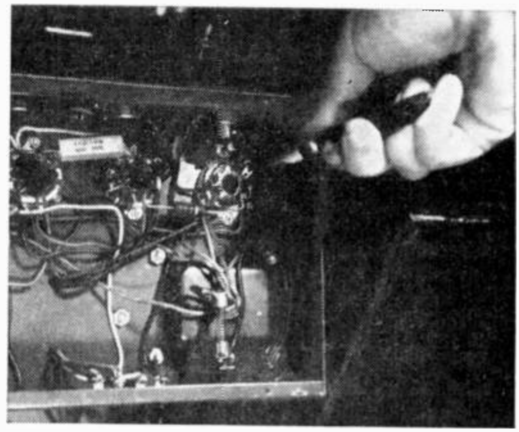


Fig. 2: Once the new pin has been positioned, reach in from under the chassis and pull it tight to lock.

Repairing Socket Pins

By WALTER G. SALM

YOU'RE repairing an old radio or building a kit with a lot of wires connected to the tube pins, and suddenly, without warning, one of the pins breaks off. What to do? Unsolder all the connections and replace the socket? That's a tremendous waste of time.

To Repair the Damage, all you need is a tube socket similar to the type with the broken pin, plus the usual hand tools. Here's what to do:

First step: remove the broken-off pin, being certain that the tube is out of the socket before you begin. If it's on a miniature (7- or 9-pin) socket, straighten the pin. If it's an octal socket, flatten the little diamond-shaped cutout and straighten. Clean off all of the solder, or as much of it as possible, keeping the chassis in a near-upright position, or tipped at a slight angle, so the solder will flow to the bottom end of the pin. Clip off the end of the pin with its accumulation of solder. Push the remaining part of the pin up through the slot in the socket using a long-nose pliers.

With the tip of a pocket knife, push the pin stub up into the slot of the Bakelite, as far as it will go. This should expose enough of the top of the pin (on the upper surface of the socket) for you to grab with a long-nose pliers. Pull the pin all the way through and out (Fig. 1).

Next find a suitable replacement. You should obtain a new pin from a spare socket of the same type that the broken one came from. Removing this pin will be easier. Flatten the portion of the pin that protrudes from the bottom of the socket with a long-nose pliers. Then push the pin up through the slot in the socket. Be sure to start with the tip of the pliers very close to the socket itself, or you'll bend the pin, making it much more difficult to remove. Such a bend will also weaken the pin, leaving it prone to breakage later on. Work the pin out of the socket a little at a time, until once again, enough of it protrudes above to make removal from the top side easy.

Before inserting the pin in the socket being repaired, crimp the upper part of the pin just a little, so it will make positive contact with the tube pin when the tube is plugged in. Insert the pin in the socket from the top with a straight motion—again to avoid bending the thin metal. Push the pin in just far enough so the long-nose pliers can grab it from underneath. Then pull, hard. Once it's in all the way, fasten it in place by twisting it slightly (the lower portion) if it's on a miniature tube socket, or by pushing out that diamond-cutout with a sharp tool and then bending a little, for octal sockets. If the octal socket pin doesn't have the diamond-cutout, give the pin a slight twist and bend (Fig. 2).

Solder the wires and components back in place and you're in business again. Total elapsed time shouldn't be more than five minutes and you've saved yourself a lot of needlessly wasted time and aggravation.

Surge Resistor

When a television or radio set quits, it's most probably a bad tube. The trouble with bad tubes is usually a filament.

By HARRIS EDWARD DARK

MOST filament materials have a much higher conductivity when cold than when hot. The surge-strain on TV, hi-fi and radio tubes is greatest during the first few milliseconds following switch-on. For the same reason, old light bulbs usually burn out at the time they are turned on, rather than a few minutes later.

When your picture-tube filament goes, you're in for some real expense. Because there are so many other tubes in a TV, it's worthwhile to protect them all from that high initial surge.

Such protection is not only possible but easy to provide because of a very happy characteristic of carbon. This element's conductivity-temperature ratio is inverse to that of tungsten and most other metals: Carbon's resistance is greater when cold, less when hot.

A carbon conductor in the ac line makes a good surge resistor, one that can double or triple the life of tubes that must be switched on and off frequently. The positive electrode from an old dry cell is ideal for this application (Fig. 1).

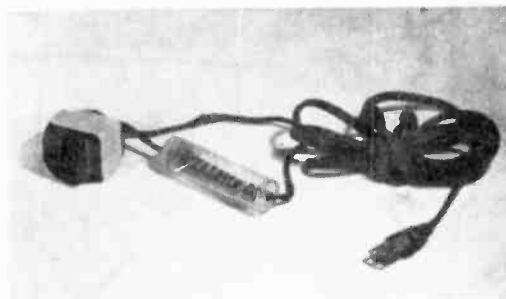


Fig. 1: The surge resistor takes the heavy current load caused by turning electronic gear on and off.

Crush an old flashlight battery carefully with pliers or a vise. Remove the carbon. Make five or six cross-cuts with a hacksaw, each about three-fourths of the way through the carbon (to increase the carbon's resistance). To each end, attach a tube cap or other suitable clamping device (you can't solder to carbon).

Housing: The carbon should be housed in a glass pill tube or something similar, rather than being merely wrapped with tape, because its temperature will rise 100 to 200 degrees in operation, depending on the TV's current draw.

Next, connect (preferably by soldering) the carbon into one side of the duplex line supplying the TV set, or insert it into one side of an extension cord (Fig. 2). Provide only one outlet, because if the carbon is already warmed by supplying another appliance, it will not have the desired surge resistance when a second power consumer is turned on.

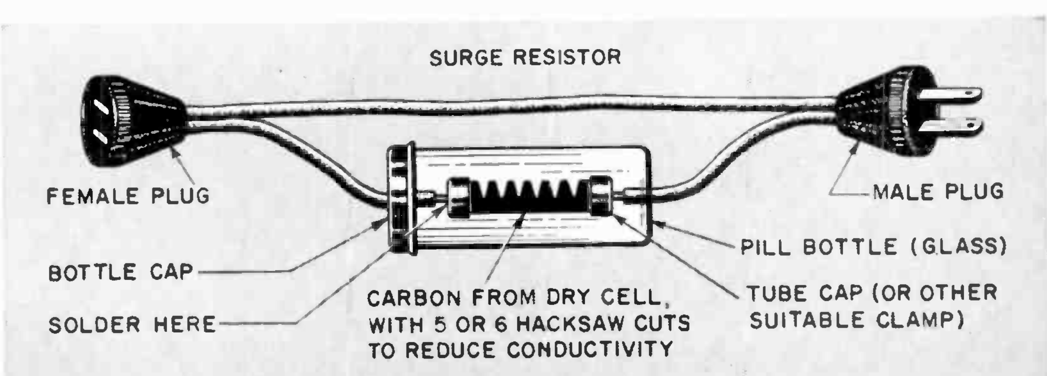


FIG. 2 – SCHEMATIC DIAGRAM

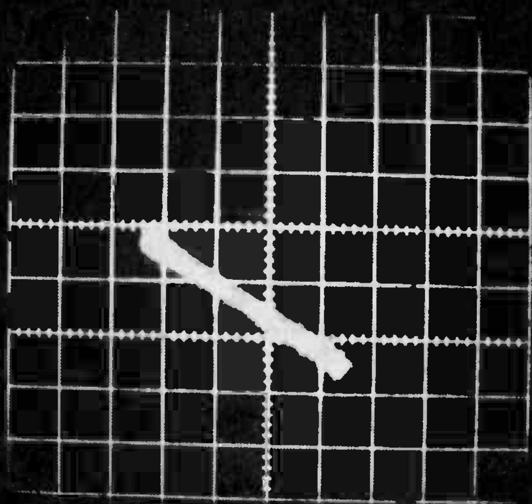


FIG. 1

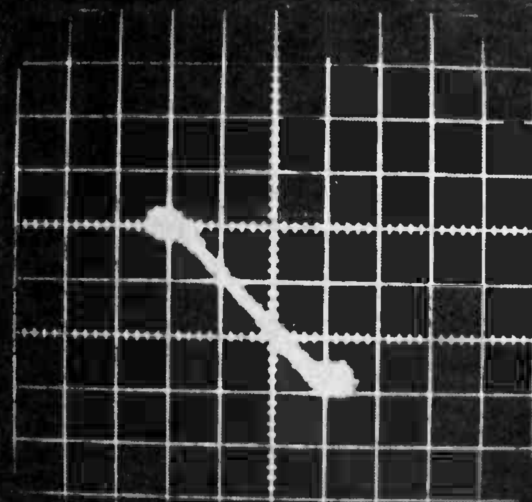


FIG. 2

THE MOST FROM YOUR

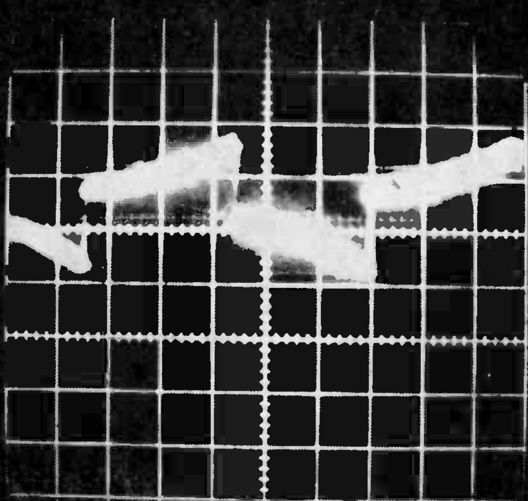


FIG. 4

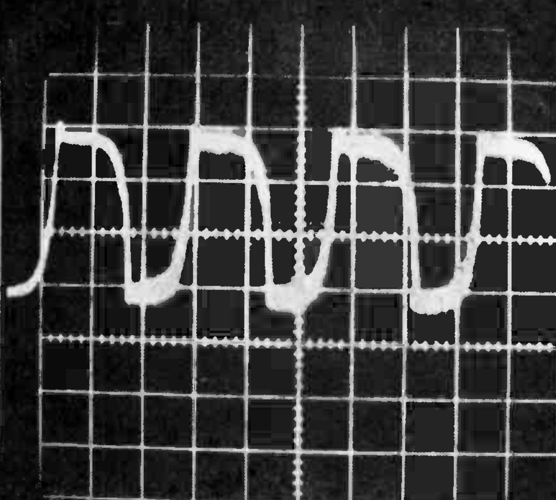


FIG. 5

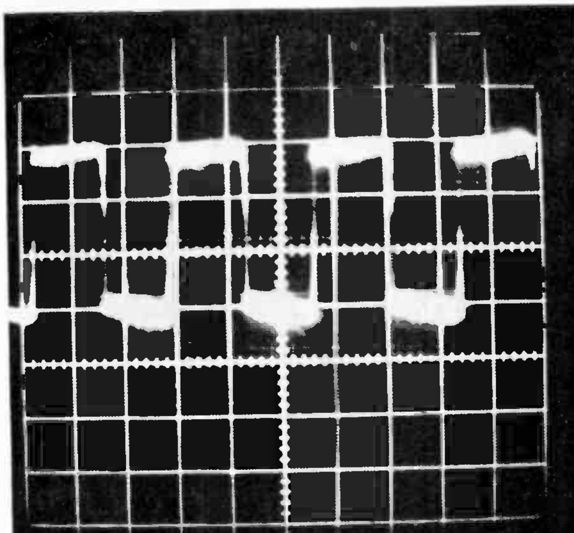


FIG. 3

SCOPE

By OTTO FRIED

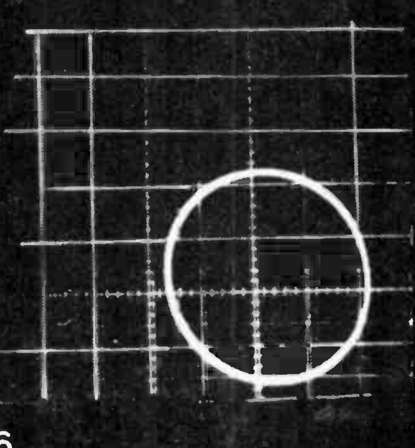


FIG. 6

THE oscilloscope is a highly versatile instrument, which is a helpful tool not only to an engineer or laboratory technician, but also to a serviceman, ham, and basement hobbyist. Very few of us take full advantage of the versatility available in one instrument, and the following will try to point out some of the more important but less understood applications, in which the oscilloscope is a true time-saving device.

Types of Scopes: There are highly specialized scopes available for many different applications, but a general purpose oscilloscope with a good frequency response is still the most popular "workhorse" of the industry. Most of these instruments available today are quite similar in features and performance, so that the following suggestions can be used with almost any oscilloscope the reader might already own or plan to purchase in the near future.

The rapid development and increased popularity of hi-fi and stereo amplifiers created new demands on the serviceman and home Mr. Fixit. It is no longer sufficient to measure a few voltages and decide whether the equipment operates properly or not. The effects of tone controls, equalizing circuits, special filters, can be analyzed only by actually observing the signal waveform, which when properly interpreted—will indicate any possible defects.

Using the Scope. To connect an amplifier for phase-shift and distortion indications, sine wave output of an audio generator is fed into the input of the amplifier under test, another set of leads is brought from the generator to the horizontal input terminals on the oscilloscope, while the internal sweep is disabled by setting the sweep-selector switch to "Hor. Input" position. The output of the amplifier is connected to a resistive load (4, 8, or 16 ohms) of sufficient wattage, so that these tests can be performed at the rated power level indicated by the manufacturer. Vertical input terminals are then connected across this load resistor; we are now ready to perform the tests.

Figure 3 shows an output of a perfect amplifier; a straight line indicates no phase shift between the input and output of the amplifier and no overload distortion. The sharp horizontal breaks shown in Fig. 4 indicate a severe clipping of the signal (overload distortion); in some cases the break can occur on one end only. This, usually, is an indication of malfunction in one channel of a push-pull stage. When a severe phase shift takes place in the amplifier, an ellipse or even a circle appears on the scope in place of the straight line.

A good frequency response is another important characteristic of audio equipment. An oscilloscope provides a simple and fast test

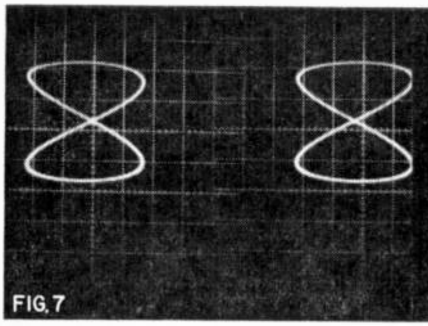


FIG. 7

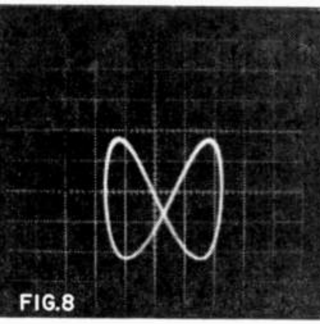


FIG. 8

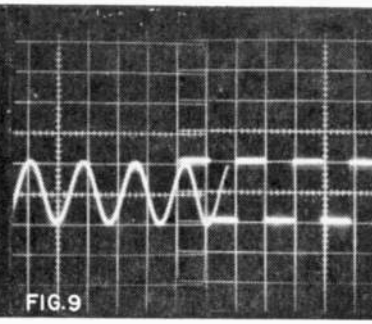


FIG. 9

whenever there is any doubt about the performance. Audio generator again is connected to the amplifier and the scope across the load resistor. The sweep selector switch is set to some convenient frequency (approximately 100 cps) in the audio spectrum. A good quality amplifier should have a fairly flat (± 1 db) response from 30 cps to 15 kc at the rated power level. It is always wise to consult the manufacturer's specifications, which usually state the frequency response at a given power output.

Starting with the lowest frequency setting on the audio generator we can go through the entire range, always watching the amplitude of the pattern on the screen of the scope. This amplitude (height of the sine wave) should stay constant within the frequency range specified by the manufacturer. Any sharp drop or rise in the height of the wave form indicates a deficiency at the frequency at which it occurs.

It is a good idea to check the frequency response of the audio generator itself directly on the scope, before performing these tests. In some instances these generators do not provide a flat output on all frequency bands, so that corrections must be made in order to obtain proper results with the amplifier tests.

A square wave generator in place of the audio oscillator provides a more detailed information about the condition of audio equipment. Figure 3 shows a typical square wave (1 kc) obtained from an amplifier. The slight tilt of the horizontal sections on the square wave is not excessive. The same amplifier tested at 200 cps shows a completely different picture (see Fig. 5): the large angular displacement of the horizontal sections indicates a poor low frequency response. Figure 4 was photographed with another amplifier, which exhibited an excellent low frequency response but had a pronounced deficiency at the high end. As can be seen from these actual photographs, the square wave method provides very definite answers with no room for any doubts. However, it should be kept in mind that a good reproduction of a square wave through an audio amplifier requires the best in the circuit and components design: reserve this test for the equipment of highest quality only.

Hum and oscillation are common defects in the audio systems, and the oscilloscope, again, is very helpful in locating the sources of both of them. Before you start trouble-shooting, ground the input of the amplifier, so that no hum is introduced into the system from an external source. The sweep selector is set to Line, ground terminal is connected to the chassis of the amplifier and the lead from the vertical input terminal is used for probing the circuit. Whenever 60 cps hum is present, a single ellipse or circle will be formed on the screen. 120 cycle hum (from a full-wave power supply) is indicated by a horizontal figure 8 (see Fig. 8).

In most of the cases, whenever the oscillation is present in the amplifier, the frequency reaches beyond the audible range. Sweep selector switch should be set to the highest range available, and the same technique can be used as for hum checking. The causes of both of these defects can be many and procedures for corrective measures are beyond the scope of this article.

Frequency Determination: The oscilloscope is also a very convenient tool for determination of an unknown frequency. The procedure is quite simple and the accuracy is limited only by the reference source available. The built in 60 cycle sweep is an excellent and very accurate frequency reference, when we wish to determine the exact frequency in the lower range (up to 500 cps). The sweep selector switch is set to Line and the unknown frequency signal is fed into the vertical input terminals. If this frequency is exactly 60 cps, a perfect circle is formed on the screen (Fig. 6). Figure 7 shows a configuration (Lissajous figure) which is obtained, when the unknown frequency is a second harmonic of the reference frequency. In our case, therefore, Figure 7 shows pattern obtained with 120 cps. If the unknown frequency is a subharmonic (½, ¼ etc.) of the reference, the loops will be stacked vertically, but the configuration will not change otherwise.

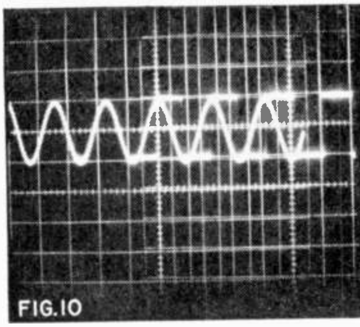


FIG.10

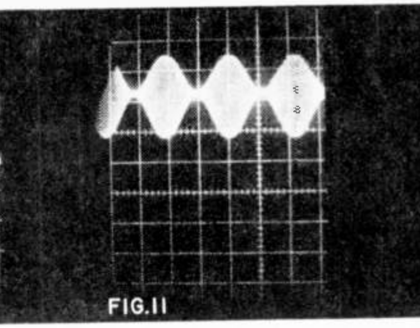


FIG.11

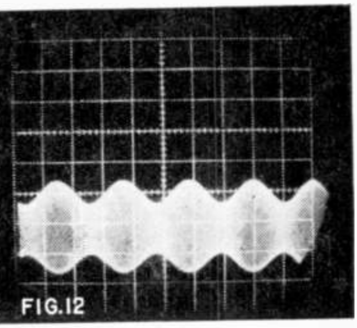


FIG.12

In cases where higher frequency is to be determined, a signal generator (audio or RF) should be used as the references source. The sweep selector switch is set to Hor. Input and the generator is connected to horizontal input terminals.

The general rule for determining frequencies from Lissajous figures is simple. Referring to Figure 7 it is obvious that the loops touch a vertical tangent in one point, a horizontal tangent in two points. This ratio of 1:2 expresses exactly the ratio of the reference source to the unknown frequency. The general formula for this type of frequency determination is, therefore,

number of loops tangent
to the horizontal line
Unkn. freq.* .... x freq. standard
(fed into vert. in.)   (fed into hor. in.)
number of loops tangent
to the vertical line

In our case

$$f = \frac{2 \times 60}{1} = 120 \text{ cps}$$

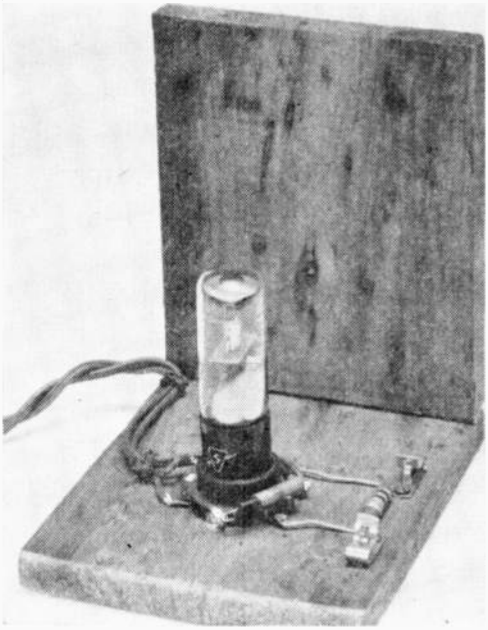
Ac voltages measured with a voltmeter are usually RMS (Root-mean-square) values, which in pure sine wave equal 0.354 times the peak-to-peak voltages. In many instances we are interested in peak-to-peak readings only, and once again, the scope comes to our rescue. The electron beam of the CRT in an oscilloscope records all the changes instantaneously, and therefore, reads peak-to-peak voltages of any ac signal. All we need is to measure the actual distance between positive and negative peaks, and compare our reading to some known source of ac voltage. By simple process of multiplication or division we find the value of the applied signal.

This procedure is simplified for our convenience, because the necessary calibrator is built-in on most of the modern oscilloscopes. The calibrating voltage (usually 1 v.) is available right on the front panel. A calibrated scale fitting over the face of the cathode ray tube is also included with the instrument. This scale is usually calibrated in inches or centimeters and each unit is divided in tenths, so that the reading can be made quickly and accurately. Connect the calibrated voltage to the vertical input terminal. Set the vertical input attenuator to the highest position (1) and center the pattern on the screen. Vertical gain is then adjusted so that the trace just touches the 1 inch- or cm-lines on the scale. DO NOT touch this control once the necessary adjustment is made! Disconnect the voltage calibrator from the vertical input terminal, and feed in the signal calibrator from the vertical input terminal, and feed in the signal you wish to measure. If this signal is too large (runs out of screen), switch the vertical input attenuator to the lower position. With .1 setting on the attenuator each unit on the scale is 10 volts peak-to-peak, with .01 setting one unit of deflection equals 100 volts peak-to-peak. In this manner any ac voltage can be measured on your oscilloscope more accurately than on most of the standard voltmeters. Figures 9 and 10 show composite photographs of a voltage calibrator square wave, 1 p-p (adjusted to cover 2 cm of the scale), and of a sinusoidal signal to be measured. In this case both amplitudes are the same; the unknown signal is 1 v. p-p or 0.354 v. RMS.

Modulation: An oscilloscope is a great help to any ham when he needs to check the modulation index on his transmitter. Two types of wave forms can be obtained with a scope of the cheapest variety. Vertical plates of the CRT are loosely coupled to the plate tank coil of the final amplifier in the transmitter. Horizontal plates are connected to the modulator. A potentiometer is necessary to reduce the modulating voltage, which might otherwise damage the instrument.

The wave envelope method (used generally by the broadcasting industry) can be applied to any general purpose scope with an internal sweep. Vertical plates are coupled the same way to the transmitter, but the sweep selector has to be set to some frequency close to the modulating frequency. Figures 11 and 12 illustrate the traces obtained by this method. In case the percentage of modulation can be found from this formula:

(*Continued on page* 146)



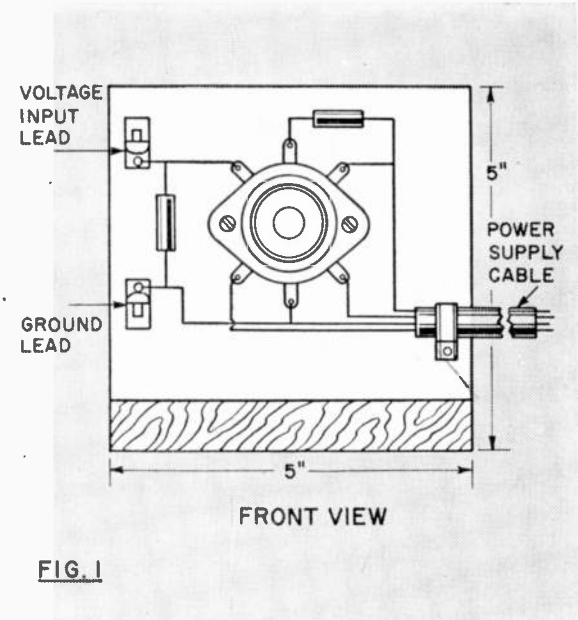


FIG. 1

The Magic Eye

Sees much, tells plenty. A cheap and handy testing instrument.

By C. F. ROCKEY

TIME was when every radio was equipped with a magic eye tuning indicator, which winked saucily as you tuned across the band. Although seen less often today, the 6E5 tube that fulfilled this function continues to be useful to the electronic trouble-shooter. For this is a combined vacuum-tube amplifier and cathode-ray indicator, both in the same envelope. Together, they form a dandy vacuum-tube voltmeter, at a cost of about two dollars.

All you need, basically, is a magic-eye tube, an Eby baseboard-mounting, six prong socket, and a few small parts. Of course, you also must have a power supply handy, but you can take the voltages necessary out of the piece of apparatus you're testing, if you have no other source. (100 to 300 volts dc at a couple of milliamperes, and 6.3 volts at 0.3 amp.)

The schematic diagram (Fig. 4) should be self-explanatory. None of the parts are critical, and may vary as much as 50% without serious difficulties being involved.

Two features make this instrument particularly handy:

1. It indicates, qualitatively at least, both dc and ac voltages, at frequencies well up into the high audio range.
2. It has a high internal resistance, disturbing the circuit being investigated very little. Only commercial vacuum-tube voltmeters, or very expensive volt-ohmmeters have as high an internal resistance as this simple gadget.

As it stands, the 6E5 is a 0 to 8 volt vacuum tube voltmeter. Its primary utility is as a qualitative voltage tester or signal indicator, and most of the applications to be described use it in this way. However, it may be broadly calibrated against a known dc voltage source, or by remembering that it requires eight volts between grid and cathode (grid negative) to exactly close the eye. Smaller closure angles are approximately proportional to voltages below eight volts.

Build the gadget on a simple little backboard and base of ¾-in. white pine (two pieces 5-in. square) as shown in Fig. 3.

Applications: *1. Signal tracing in a PA or amplifier.* Connect the *ground lead* to the chassis of the amplifier. Now, with a signal

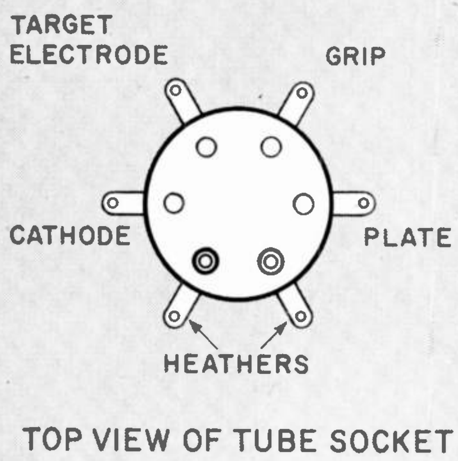


FIG. 2

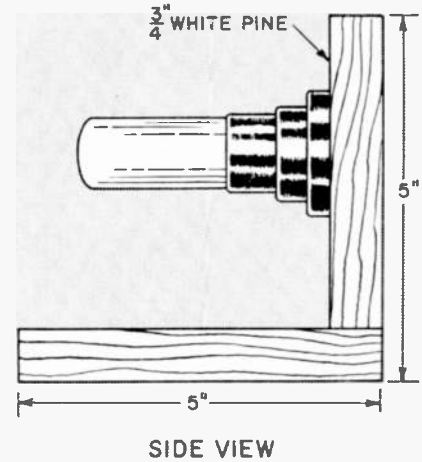


FIG. 3

being supplied to the input of the amplifier, from signal generator, record, or mike, touch the voltage input lead to each successive grid and plate, beginning near the input stages of the amplifier. If a signal is being transmitted this far, you will observe a continual flicker of the shadow, beyond that which occurs when you first touch the lead to the terminal. It is necessary to connect a capacitor (about 0.01 mfd, 400 W.V.) in series with the voltage input lead. With care and practice, a signal as small as 0.1 volt may be readily detected in this way.

2. *Checking the front-end performance of a radio.* Connect the ground lead to the chassis, or to the common ground bus of the receiver being tested. Connect the voltage input lead to the hot side of the audio volume control. Tuning the receiver across the band should cause the eye to close noticeably each time a signal is tuned in. To adjust the receiver for best performance, tune in a station at the high-frequency end (1400 KC, or higher) and carefully adjust each of the IF transformer trimmers for maximum closure of the eye. When the IF trimmers have been thus adjusted, then adjust the trimmers upon the tuning capacitor for maximum eye closure. When this has been done, you may be sure that your set has been adjusted for good performance. (Note: This procedure applies to a simple superheterodyne broadcast receiver only. Some large, expensive receivers, or communications receivers, require more equipment for proper alignment. Also, better try this on an older set first, for practice, before tackling your best radio.)

3. *Visual monitoring of Tape recorder.* Overloading of the tape, causing saturation of the magnetic oxide of the tape on a loud passage, is a frequent form of distortion in home recordings. Since many of the less-expensive tape recorders have inadequate level indicating indicators, if any at all, this overloading can easily occur.

Your 6E5 makes an effective visual monitoring device, or volume indicator. Connect it to your tape recorder as shown in the diagram below, which will apply to most of the home-recording machines. A schematic diagram of your particular machine, obtained at small cost from the manufacturer, will aid you in making these connections. Borrow an audio signal generator from a friend, or from your neighborhood service shop and, using a 1000 cycle signal, determine the overloading-level of your particular machine. Then adjust the potentiometer, so that the eye just closes. Now you can regulate the volume on recordings to keep the eye from completely closing on loud sound peaks. This will give your tapes lots of level without annoying distortion.

4. *Tuning and modulation indicator for the amateur transmitter.* Although the dc plate milliammeter employed in most amateur transmitters will tell you when your transmitter is running the correct power input, it can tell you nothing about the power output and little about the degree of modulation. If you use a coaxial cable to feed your antenna, you can use your magic eye to tune for the greatest signal output for a given power input; that is, for greatest efficiency. Refer-

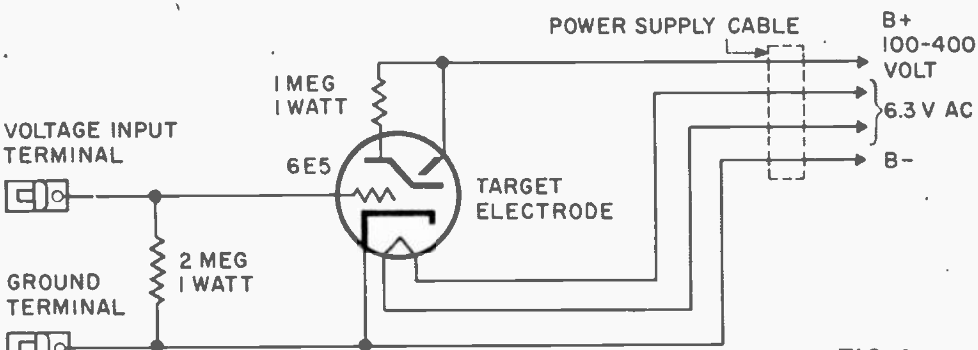


FIG. 4

ring to the diagram will show the connections, and it may be used with any amateur transmitter that employs coaxial cable output. The power consumed by this indicator is in the microwatts, and negligible by any ordinary standards, so it does not waste valuable RF watts. It also indicates relative degree of modulation.

If you have one of the more-powerful transmitters, and you find that the eye shadow "overlaps," try a 6G5 tube instead of the 6E5. All connections will remain the same.

These suggestions, drawn from a fairly wide range of applications, by no means limit the usefulness of this neat, widely-available little indicator. It's cheap, almost universal, and difficult to burn out.

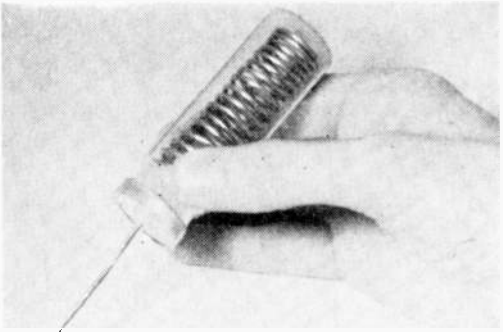
MATERIALS LIST—THE MAGIC EYE

Amt. Req.	Size and Description
1	6E5 tube.
1	Eby. or similar, base-mounting six-prong socket.
2	Fahnestock clips.
1	five foot length of cable, four wire. (May be shielded, but need not be.) May be two lengths of POSJ lamp cord twisted together.
1	2 megohm, 1 watt resistor.
1	1 megohm, 1 watt resistor.
2	pieces ¾ x 5 x 5" pine.
	Test leads.
	Wire screws, rosin-core solder, etc.
	Small piece of metal (from tin can) to clamp down cable. (Or you may use insulated staples.)

Power supply requirements:
Any small power supply providing anything between 100 and 400 volts, dc, and 6.3 volts ac will work. Or you may "steal" the power from any piece of radio-electronic gear using a transformer type power supply. The drain will be negligible.

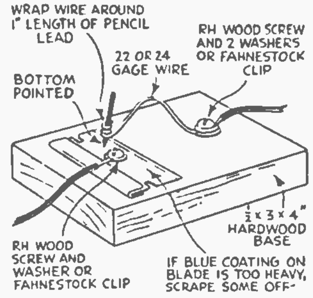
Shockproof Solder Holder

• Have you ever been shocked while soldering live wires in a "hot" circuit? This won't happen again if you wrap a length of solder



into a coil and place it in a plastic pill bottle (available at most drug stores). Punch a hole in the lid and thread one end of the coil through hole. Use this holder as you would a pen, pulling out more solder from the coil inside as needed.—JOHN A. COMSTOCK.

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 foxholes 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 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.—ART TRAUFFER.

COLOR-TV CROSSWORD

By JOHN H. COMSTOCK

Are you familiar with the many technical words and terms used in color TV? What better way is there to test your vocabulary than by working this crossword puzzle?

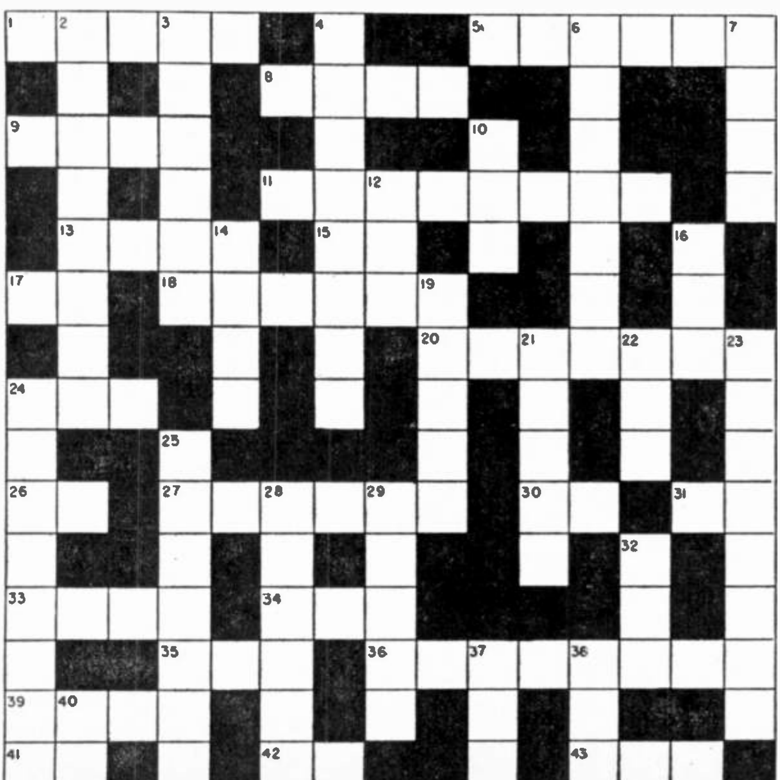
Nearly all the words and terms which you need to fill in, are directly or indirectly pertinent to color TV. Solution on page 22.

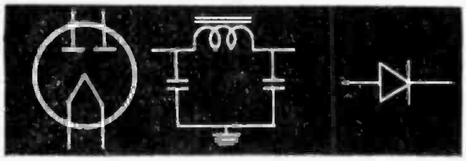
ACROSS

1. Circuits which amplify the primary colors from the matrix.
5. Freedom from mixture with white or any other color primaries not already present in the desired color.
8. One of the primary colors.
9. Sheet of metal or other material which shields a TV camera from extraneous light.
11. Color TV camera circuit which unites the luminance and chroma channels with the sync signals.
13. Audio term applicable to Color TV sound reproduction.
15. 1/1000 ampere (abbr.)
17. Network of three impedances—two across the line, the third in the line between the two.
18. The blanking pulse which applies voltage to the pix tube grid or cathode to sensitize it only during sweep time.
20. Often mounted on a mast.
24. Type of triode transistor.
26. One-direction current (abbr.).
27. The...... ....tron is a color TV pix tube employing only one electron gun.
30. When you are shocked, the "hang-on-to" type of electricity (abbr.).
31. Circuit which regulates voltage (abbr.).
33. This on a TV antenna causes much signal loss.
34. Two of the.......chromatic coefficients describe a color by its position in a chromaticity diagram.
35. Undesirable TV interference (abbr.).
36. Term applied when all color images are superimposed on each other.
39. Pre-Amalgamation Engicuit (letters symbol).
41. Inductive-capacitive circuit (letters symbol).
42. Mutual conductance (letters symbol).
43. Type of antenna loading.

DOWN

2. Reduction of color intensity when color is mixed with white light.
3. Spurious color at edges of different colored areas.
4. Often caused by insufficient high voltage.
6. Opposite of forward bias.
7. An open winding in this component results in no deflection horizontally or vertically.
10. Common connector.
12. People in general who will work this puzzle.
14. In the three-color TV pix tube, there is an electron gun for............primary color.
16. Moving or tilting TV camera to follow subject movement.
19. Numerical indication of the degree of picture contrast.
21. Triangular group of three primary color phosphor dots.
22. National Association of Radio and Television Broadcasters (abbr).
23. A thin perforated mask found in a three-gun color TV pix tube.
24. Constant voltage level in a TV signal just before and after transmission of sync pulses.
25. Expansion or divergence of CRT electron beam due to repelling force of each electron on all other electrons.
28. Something often matched when replacing defective parts.
29. Watery picture pattern resulting from interference beats.
32. This color TV generator pattern is often used to adjust convergence.
37. Three of them are used in the tricolor TV pix tube.
38. ....uration is the freedom of a color from white.
40. Cathode current (letters symbol).





Rectification,

ALTERNATING current, usually used for commercial power, is bi-directional, yet most electronic equipment operates from direct current, which is uni-directional. The most common method of changing alternating current (ac) to direct current (dc) is by rectification.

It can be seen that, if we find a device that will only pass current in one direction, and feed ac into it, the output will be dc, since it will pass current only during the time the input current is moving in one direction. A diode tube is such a device, as are selenium and silicon rectifiers.

Electron Flow. If a diode tube is connected as in Fig. 1, electrons would flow from the heater to the plate, since the plate is positive in respect to the negative electrons (from the heater), and unlike charges attract. If we made the plate negative, no current would flow, since the negatively-charged electrons would be repelled by the like negative charge on the plate. The amount of electron flow (or current) would depend on the amount of positive plate voltage, as set by R. The more positive the plate is, the more current flows, as shown by the graph in Fig. 1.

At some point, however, the current stops increasing as the plate voltage increases. This is known as the *saturation point*, at which all electrons that leave the heater reach the plate. The current can then be increased only by increasing the amount of electrons available from the heater.

A Simple Form of Rectifier can be made by connecting a diode as in Fig. 2 (assuming the cathode is heated by a filament not shown). When, on the input side, point "A" is positive and "B" negative, the plate is positive in respect to the cathode, and electrons flow as indicated by the arrows.

On the next half-cycle however, point "A" is negative and "B" is positive. During this half-cycle the plate is negative in respect to the cathode, and no current flows. The output is then a fluctuating direct current that flows only on alternate half-cycles, as shown in Fig. 2, giving us a dc output from an ac input.

Since the rectifier in Fig. 2 passes current only on alternate half-cycles, or half of the

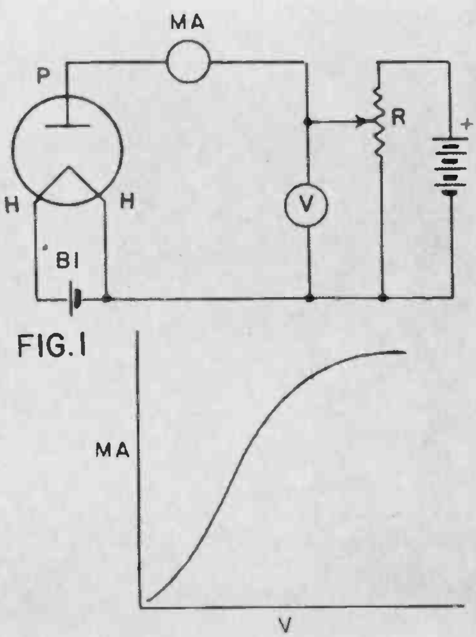


FIG. 1

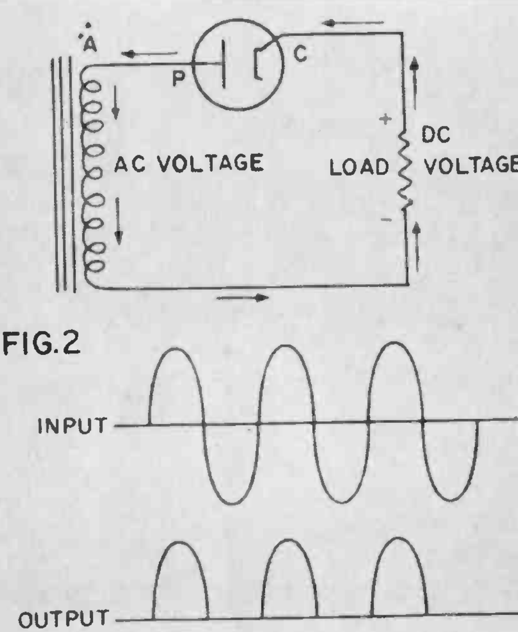


FIG. 2

In Virtually All Electronic Circuits

Filtering, And Detection

time, it is called a *half-wave rectifier*. If a center-tapped input is available, two half-wave rectifiers can be connected in series, as shown in Fig. 3.

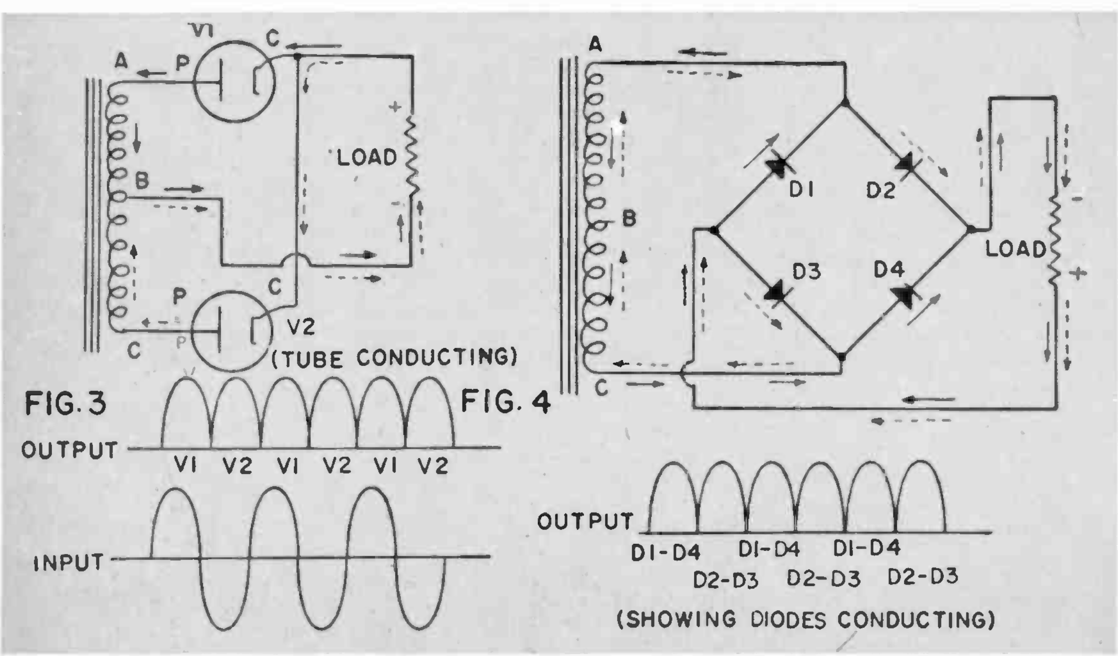
Half-Cycle Changes. In This Circuit, "A" is positive, and "C" is negative on half of the cycle. The midpoint of the input, "B" is negative in respect to "A," and positive in respect to "C." Since both tube cathodes are connected to the midpoint through the load, the plate of V_1 (connected to "A") will be positive to its cathode (connected to "B" through the load) one one half-cycle. Current will then flow from V_1 cathode to the plate, to "A," to "B," and through the load back to V_1 cathode (solid arrows). During this half-cycle, "C" (connected to V_2 plate) is negative in respect to its cathode, and current does not flow through V_2.

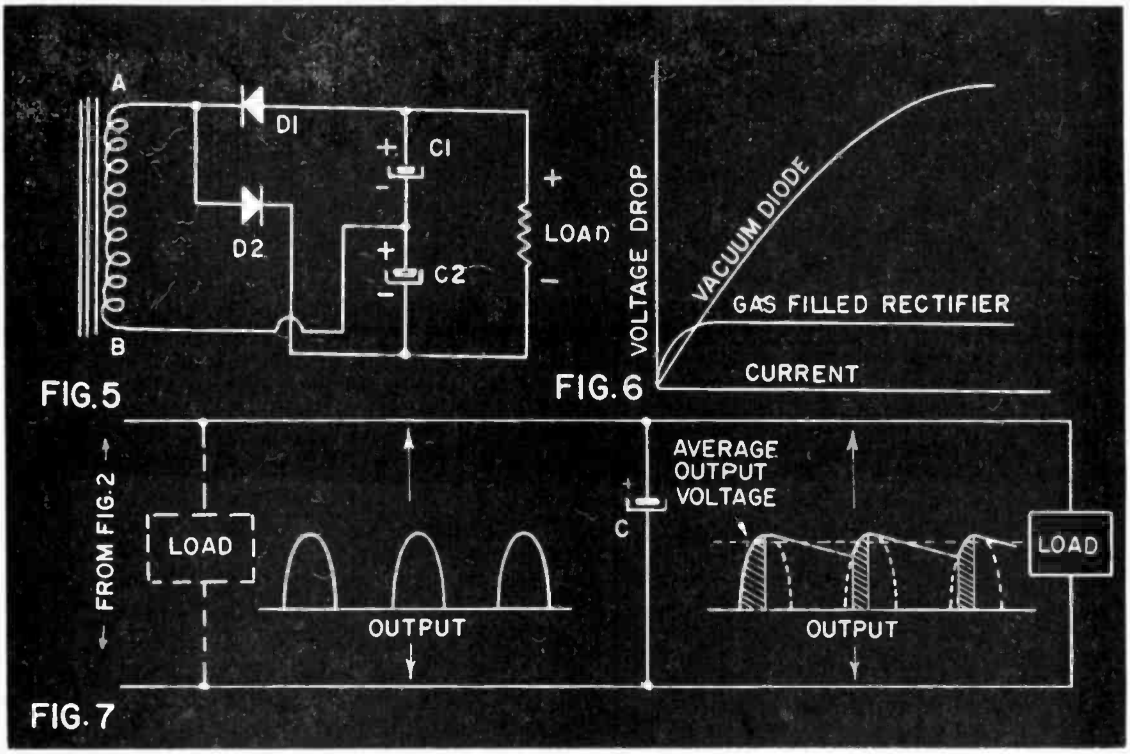
On the next half-cycle, however, the situation is reversed. "C" becomes positive in respect to "B," and current flows through V_2, from cathode to plate, to "C," to "B," and through the load back to V_2 cathode (dotted arrows). So one tube conducts during one half-cycle, and the other conducts during the other half-cycle. Since the system has current flowing during the entire cycle, it is called a *full-wave* rectifier. In practice, usually both plates are in one tube with a single cathode, called a full-wave rectifier tube.

Diode tubes, semi-conductor diodes, or chemical surfaces (selenium, copper oxide, etc.) which pass current in only one direction can be used for these rectifiers. Regardless of which is used, care must be taken in selecting the proper design for the voltage and current involved.

Peak Inverse Voltage. Figure 2 shows that the maximum voltage is across the tube when it is not conducting. At this point the cathode is at peak positive voltage in respect to the plate. This is called the *peak inverse voltage,* and is 1.41 times the "Root Mean Squared" (*rms*) input voltage (which is what most meters read, and how transformers are rated). The maximum allowable peak inverse voltage is included in rectifier specifications, and should not be exceeded.

In the full-wave rectifier (Fig. 3), the peak





inverse voltage is related to the *rms* voltage on each side of the center-tap, since the circuit is essentially two half-wave rectifier circuits in series.

Rectifiers can also be placed in series or parallel to get greater current or voltage capacity. Tubes are often connected in parallel to increase current capacity. Fig. 4 shows how a series connection in bridge fashion can increase output voltage without increasing supply voltage or rectifier capacity. The diagram shows silicon diodes, but vacuum diodes could be used if there were separate filament supplies (one for D_1 and D_3, and one for D_2 and D_4). This is necessary due to the different potentials across the diodes at different times of the cycle.

In the Full-Wave Rectifier (Fig. 3), the voltage output was essentially equal to the voltage between "A" and "B," or "C" and "B," or half the transformer secondary voltage.

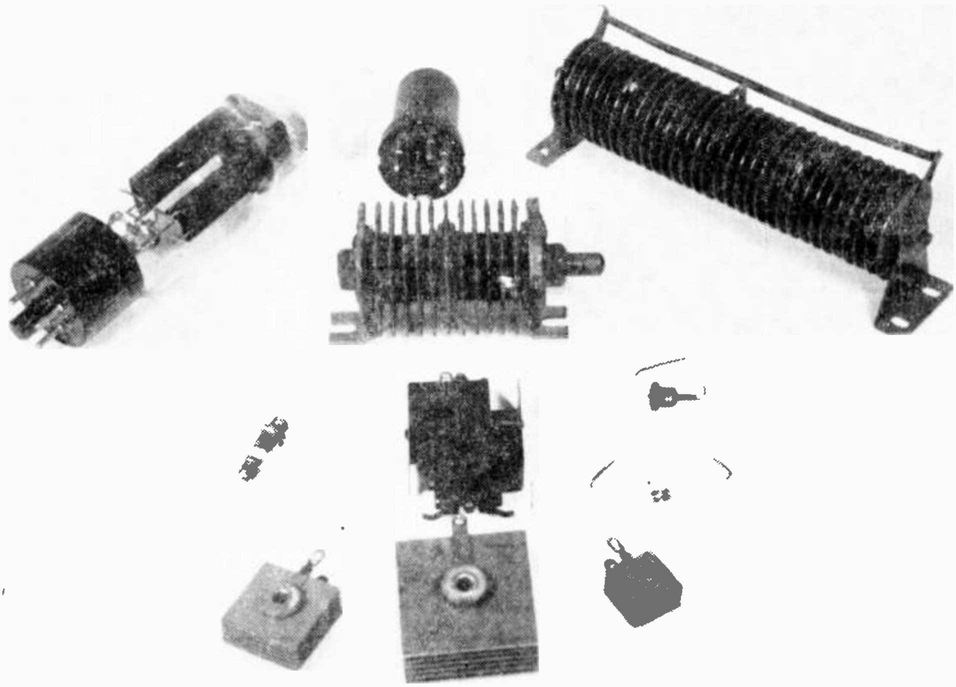
Suppose we use that same transformer in the *full-wave bridge rectifier* circuit shown in Fig. 4? When "A" is positive, current would flow through D_1 to "A," through the transformer to "C," through D_4, through the load and back to D_1 (solid arrows). On the other half-cycle, when "C" was positive, current would flow through D_3 to "C," through the transformer to "A," through D_2, through the load and back to D_3 (dotted arrows).

We would then have current flowing during both half-cycles, and the output voltage would be essentially equal to the full transformer voltage, between "A" and "C." At the same time, the peak inverse ratings of the rectifiers need be no higher than the ones used in the full-wave circuit (Fig. 3), since the diodes are connected in series for each half-cycle.

Rectifiers are also used in voltage-multiplier circuits. In these, a rectifier and capacitor work together to change the voltage to dc and increase it in value. Fig. 5 shows a rectifier-doubler or *voltage doubler*.

When "A" is positive, D_1 will conduct, and charge C_1 to the peak value of the input voltage. When "B" is positive (and "A" is negative), D_2 will conduct, and charge capacitor C_2 to peak input voltage. Since the capacitors are each charged to the peak value of the input voltage, and since they are in series, the output voltage will be twice the peak value of the input voltage. However, since any current drawn by the load tends to discharge C_1 while C_2 is charging (and vice-versa), the output voltage drops rapidly under load. To minimize this, large capacity condensers (40 mfd. to 100 mfd.) are usually used in this type of circuit.

Obviously, the peak inverse voltage rating



Common rectifiers include vacuum and gas tube types as well as solid state and chemically coated devices.

of rectifiers used in doublers must be high. When one diode is not conducting, the reverse voltage impressed across it is the peak supply voltage, plus the voltage to which one capacitor has been charged. The safe peak inverse value to use is therefore 2.82 times the rms supply voltage.

Voltage Multipliers. By placing two or more of these circuits in series, or combining one of them with a standard half- or full-wave rectifier, various amounts of voltage multiplication can be secured. There are tripler, quadrupler, etc., circuits, even up to eight times the input voltage.

In vacuum tube and selenium rectifiers, output voltage under load is reduced by the voltage drop in the tube or rectifier. This voltage drop increases as the current increases, since these rectifiers can be considered as fixed resistances. This loss can be overcome by using a gas-filled rectifier tube, or silicon rectifier, both of which have a relatively constant voltage drop, regardless of current. Fig. 6 shows the comparative voltage drop, related to current, between a vacuum rectifier tube (such as a 5U4), and a gas rectifier (such as an 83).

Gas-filled rectifiers usually contain mercury vapor. When the electrons within the tube reach a sufficient speed (as current starts to flow), they tear other electrons off the mercury atoms as they hit them. The gas then becomes "ionized," and furnishes additional electrons, which tends to reduce the resistance of the tube. As more current flows, there are more collisions and more additional electrons furnished. The result is that the tube resistance tends to decrease as current increases, causing a fairly constant voltage drop in the tube.

The nature of silicon rectifiers is somewhat similar in that the voltage drop is relatively constant. To date, however, silicon rectifiers with high voltage and high current capabilities are somewhat expensive.

Up to now all of the dc voltages we have seen have been fluctuating. This *ripple,* or ac component, must be removed, or there would be hum in the output. This is done by *filtering.* In Fig. 7, we have taken the output of the Fig. 2 circuit, and inserted a large capacitor across it, between the rectifier and the load.

The original output consisted of half-cycles of voltage which rose from zero to peak and back to zero, followed by a non-conducting half-cycle. With the capacitor in the circuit, however, the voltage does not drop to zero, but tends to level off.

On the conducting half-cycle, the capacitor first charges up to peak voltage, and then, as the supply voltage begins to decline, the ca-

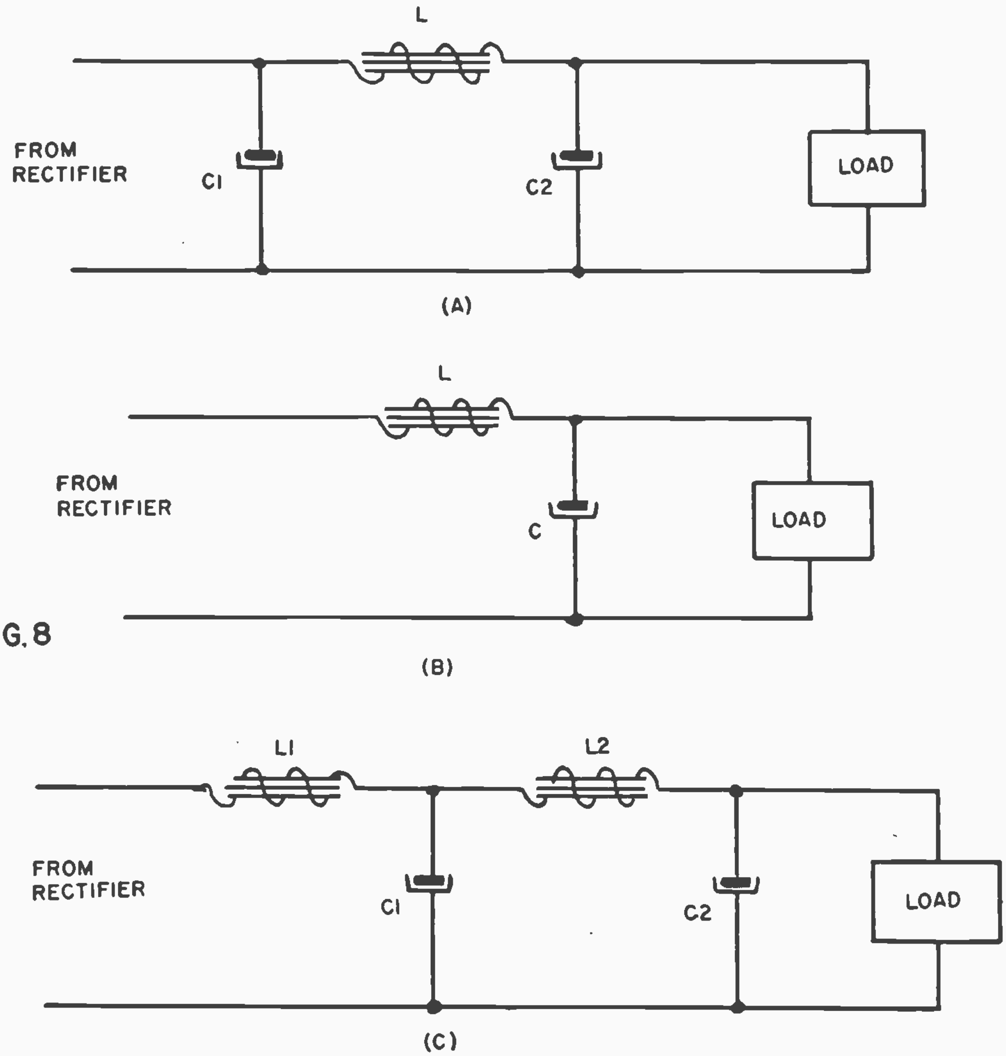
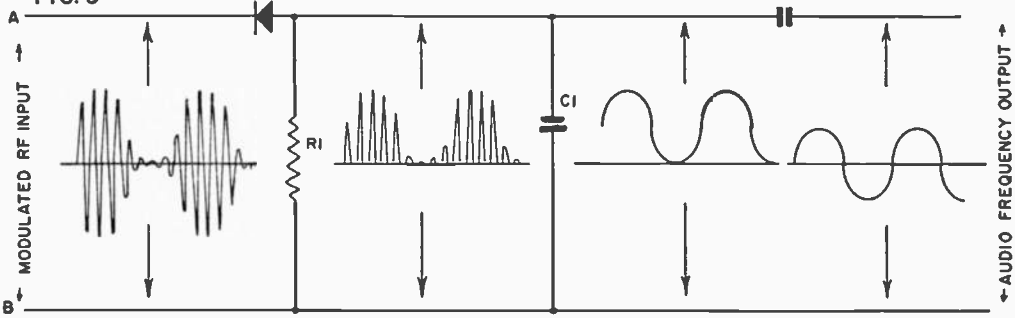

L
FROM RECTIFIER
C1
C2
LOAD
(A)
L
FROM RECTIFIER
C
LOAD
(B)
L1
L2
FROM RECTIFIER
C1
C2
LOAD
(C)

FIG. 8

FIG. 9


D1
C2
A
B
MODULATED RF INPUT
R1
C1
AUDIO FREQUENCY OUTPUT

pacitor starts discharging. It continues to discharge through the non-conducting half-cycle, but cannot completely discharge before the start of the next conducting half-cycle. On this half-cycle, it again charges to peak voltage, and the procedure is repeated. This results in the more constant voltage output shown at the right of Fig. 7. The shaded areas indicate the charging time of the capacitor, and the dotted line indicates the average output voltage, as related to the peak condenser voltage and the lowest voltage to which it can discharge.

A large capacitor must be used. It cannot completely discharge during the second half of the conducting cycle, and all through the non-conducting cycle. It also is apparent that, with a given size capacitor, filtering action would be better in a full-wave rectifier (Figs. 3 and 4), since there would be less time for the capacitor to discharge.

In actual practice, filter circuits usually take the form shown in Fig. 8. The most common circuit, a *capacitor input filter,* is shown in Fig. 8A. Here C_1 removes most of the ripple, as outlined above. The choke L_1 has a high inductance to ac and it, with capacitor C_2, smooths the output even more.

Fig. 8B and C are one- and two-section *choke input filters.* Here the choke greatly reduces the amount of ripple that gets to capacitor C_1, minimizing the compensation required of it during discharge time. In Fig. 8C, an additional choke (L_2) and condenser (C_2) further smooth out the ripple. They act essentially as L_1 and C_2 in Fig. 8A.

If the load current is high, it can be seen that the capacitor in Fig. 7 (or 8A) would discharge very rapidly, and the average voltage output would fall. For this reason, the voltage regulation of capacitor input filters (Fig. 8A) is poor, with the output voltage decreasing as the load current increases. In the choke input filter (Figs. 8B and C), the ripple, or fluctuation across the first capacitor is fairly slight, and the voltage can fall less during the discharge cycle. High load currents therefore have less effect on output voltage, and regulation is better. Due to this improved regulation, choke input filters are usually used where there is to be a wide variation in load current.

Rectification Principles are used for circuits other than power supplies in electronic work. Perhaps the most common circuit is in *detection.* This is the process of separating two alternating voltages, one at radio frequency and one at audio frequency.

In Fig. 9, our input is a modulated RF wave, and when "A" is positive, the input is rectified by D_1, similar to the half-wave rectification in Fig. 2. A rectified half-wave output then appears across the load resistor, R_1, and capacitor C_1 then removes the "ripple" from this output. In this case, the size of C_1 is selected so that it can discharge very little at the very high radio frequency rate, but can easily charge and discharge at the relatively low audio frequency rate. The voltage across in then filters out the radio frequency variations, but follows the audio frequency variations.

This output (shown at right of C_1) is still dc, always being positive. Placing C_2 in series with the output corrects this. As long as the voltage across C_1 is increasing, C_2 is charging. But the instant that the voltage across C_1 starts to decrease, C_2 starts discharging, the two actions resulting in the ac waveform shown below C_2. This ac voltage is then amplified for earphones or loud speaker.

Detection can also be done by triode tubes. In this case, the grid is biased so the tube is cut off and cannot conduct during negative half-cycles, giving the same output as diode D_1. Another method which gives similar results is to utilize the non-linear part of the tube's characteristic curve.

Detection is also used in listening to code, or CW. Here information is sent by breaking the radio frequency signal, which is above audible range. To enable operators to hear the breaks in the R.F. signal, *hetrodyne detection* is used. A constant internal R.F. signal is "beat" against the interrupted R.F. code signal.

Suppose a station is sending code by breaking its 1000-kilocycle signal. If we have a 1001 *kc* oscillator in our receiver, and mix it with the incoming 1000 *kc* signal, we will get a "beat" note of 1000 cycles, or the difference between the two. This "beat" note can be heard readily.

The "beat" note will only exist when the station has the key depressed, and sending a signal. When the key is open, and the station is not transmitting, our 1001 *kc* oscillator is still working, but has nothing to beat against, and we hear nothing. When the key is pressed, and the station sends out its 1000 *kc* signal, the "beat" note is produced, and we can hear the dots and dashes.

While there are certainly other circuits which are used in electronic equipment, these circuits are equally important certainly. However, the principles of rectification, filtering and detection are fundamental. Stress is always applied to amplifiers and oscillators, while these basic circuits outlined here go begging.

As you can see, rectifiers, filters and detectors are closely related to each other, and to a great extent are inter-dependent. These basic circuits are the root of many electronic equipment that we know as part of our everyday lives. . . . Perhaps now we can understand and appreciate the design considerations that went into bringing these benefits.

FIG. 1: Typical of equipment used in World War II and still used on Army equipment is this infrared searchlight mounted on an M-60 tank. Tank commander is using image converter binoculars.

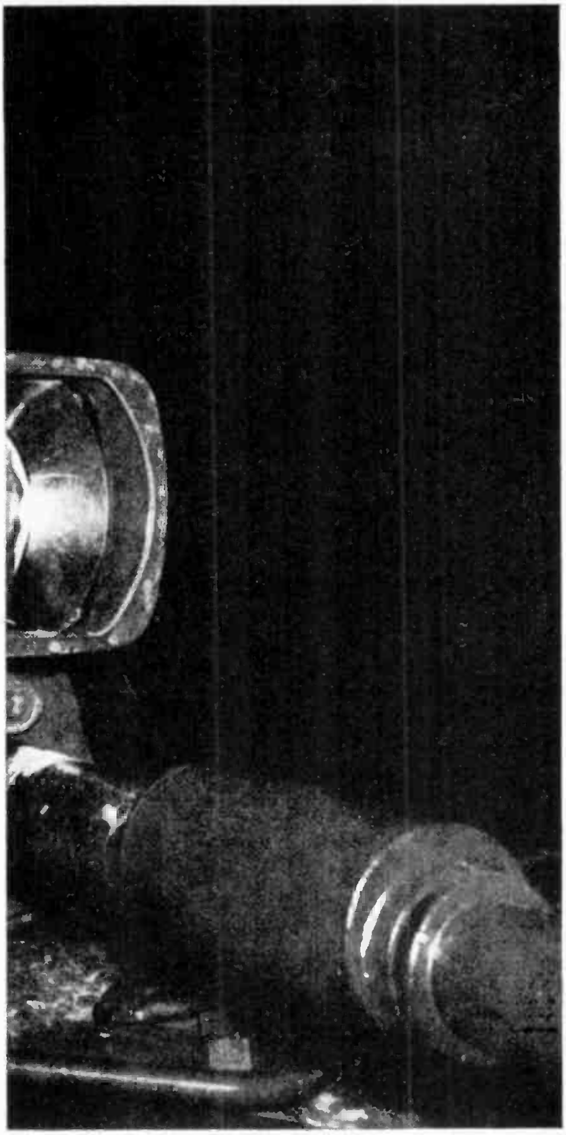
Now You Can See in

A cat will have nothing on us from now on

By OTTO RENIUS

ON A dark and overcast night, through a drizzling rain that added to the simulation of battlefield conditions, the Army put on a demonstration, sponsored by the U. S. Army Mobility Command, of its new fighting capabilities by seeing in the dark.

Until the advent of this new generation of



U.S. ARMY PHOTOS

the Dark

night viewers, the Army used improved World War II equipment. In fact some of the standard night vision equipment on present NATO tanks is little improved over the German devices of 1945.

For example, on April 12, 1945, the American Fifth Armored Division captured a German technician driving his automobile in the dark while fleeing the advancing Russians. His automobile was equipped with infrared driving lights and an image tube that had been manufactured the year before. This enabled him to drive at high speed in the dark with no visible lights showing. Our present tanks (Fig. 1-3) and trucks still use the same type of infrared night driving equipment.

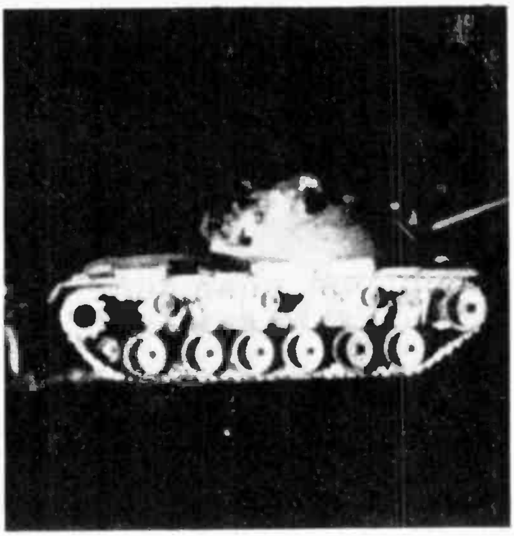


FIG. 2: This is view received on the image convertor. Tank was invisible in pitch black of night until infrared rays picked it up as shown in photo from viewer.

The Germans had developed other night vision systems too; for anti-aircraft gun pointing, for battlefield surveillance, for anti-tank weapons, and for detecting their enemy's use of infrared equipment. Fortunately, the German equipment was so complex for its day that manufacturing difficulties arose and little of it ever saw use on the battlefield.

It is the development of devices for detecting your enemy's use of infrared illumination that makes the employment of this old-style equipment so dangerous on the modern battlefield. All troops can be equipped with simple, hand-held detectors which immediately point out the location of any infrared searchlight or driving lights. Also, with the advent of the infrared homing missile, such as the extremely successful "Sidewinder," who wants to be sitting behind a couple of infrared-beaming headlights which would guide a missile toward you?

The new generation of night vision equipment (Fig. 4-5) is based upon the use of the so-called "passive" detectors. This means that it is not necessary to beam any sort of radiation at your target in order to locate it. The stars, the skygrow, or the enemy himself radiates sufficient light for you to locate him, identify him, and destroy him. And, if the

FIG. 3: Famed sniperscope is now an excellent police weapon with its built-in, infrared searchlight. A well adjusted scope can "see" up to 300 ft., but it still isn't up to the Army's new night vision equipment.

moon is out, the new equipment makes the battlefield look as if the noon sun were beaming down on a clear summer day.

The basic principle of operation of all of the new image amplifier devices for night vision is relatively simple: use the energy of the incoming light (and there always is some light, even if you can't see), to generate an electrically charged image which can be amplified by the proper electronic circuitry. No longer is the infrared searchlight necessary. The existing natural illumination is focused on the face of the image intensifying tube by an optical system. This tube face is coated with a material called a photoemissive surface which emits electrons when the incoming light strikes it. The photoemissive surface emits several electrons for each particle or "photon" of light striking it. These electrons, being negatively charged particles, can be accelerated and focused electrically.

In practical systems, these electrons are used to form a bright image on a phosphor-coated screen. This is the same way in which your television set gives you a bright image; electrons striking the phosphor screen make it glow. The screen remains dark in the areas where no electrons strike, so that a black and white image can be formed. This image on a light amplifier can either be viewed directly through an eyepiece, coupled to a television camera for viewing on the familiar 12- or 17-in. screen, or amplified again by the insertion of another photoemissive surface directly behind the phosphor. By this last method, three or four stages of amplification may be placed in tandem, and gains up to 80,000 or more may be given to the incoming image!

In some hospitals, physicians have been employing both the light amplifying television tube and the direct viewing image intensifier tube in fluoroscopic examinations for several years. In the past, the physician had to dark adapt his eyes for a long period of time before he could see any detail on his fluoroscope screen. Now, by using the light amplifier device, it is not necessary for him to dark adapt his eyes, and he can see twice as much detail on the screen. In addition, if a light amplifier television set is employed, an entire group of doctors can view the same television screen during consultation, while the patient is exposed to less radiation than before.

Industrial uses of the light amplifiers are, at present, also closely tied to x-ray fluoros-

FIG. 4: A sergeant aims a rifle equipped with a new image intensifying scope which turns dim starlight to bright sunlight through the viewer.

FIG. 5: This is a pilot mock-up of image intensifier binoculars for rapid movement of vehicles in dark of night with only star light for intensifiable illumination.

copy. They are used for the examination of everything from rubber tires to electronic assemblies. In fact, one manufacturer uses an intensifier to check the quality of the spark plugs he makes, while another looks for cracks in the welding of critical components before removing the component from its positioning jig. If a defect is seen, the faulty weld can be removed, repaired, and re-examined on the spot!

It won't be long before compact, rugged, light amplifier tubes are available for many other civilian as well as military applications. The equipment employing these tubes may be mounted in aircraft and boats, to aid radar in presenting an actual image in the dark. The size of this type of equipment will initially approximate that of a pair of binoculars. As science progresses though, they may eventually look like a pair of thick-lens glasses. Electric power requirements will be small.

How about the television type of light amplifier? Naturally, through the use of transistors and other improved electronic circuitry, their size will shrink. This would make them practical night vision devices for use in airplane cockpits, for surveillance of highly restricted defense areas where illumination is not desired, or even for submerged submarines.

As modern industrial know-how finds better and better ways to make intensifier tubes, their cost will drop considerably. This will open up interesting new areas for their application. It's not difficult to imagine the image intensifier as standard equipment for police during night patrols. This ability of the police to "see in the dark" would be an extremely effective crime deterrent. It would allow them to view a suspicious looking dark area without giving away their own position, as they must do with a flashlight or other visible light.

FIG. 6. Photo of a new intensifying scope as it appears on regular TV. Night view of tank shows detail now available with improved night-seeing devices.

The car of the future might even come equipped with small, dim, headlights, and intensifier type glasses for the driver. This would eliminate headlight glare, and allow a much better view of the area to the side of the road. Sportsmen could also use the compact light intensifier when they want to go out in the field before daylight without frightening the game, or when they want to set up a decoy pattern for ducks, on a pitch black lake.

Not since the days of Ali Baba and his mystical "Open, Sesame!" has man had so much convenience for so little effort as in this...

Remote Control Garage

By M. C. ANDERSON

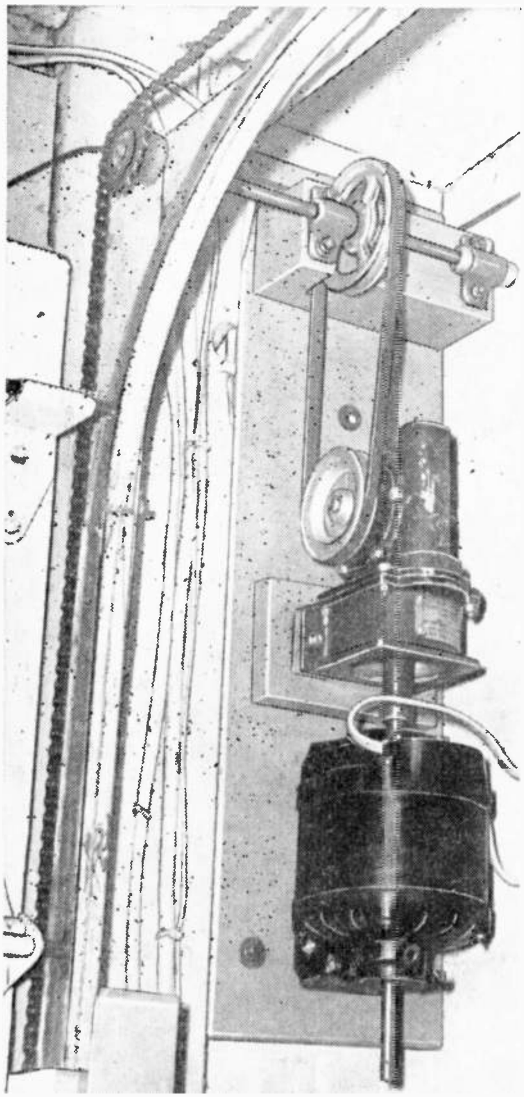


FIG. 1: The motor drive unit in a vertical mounted installation. A horizontally-based motor unit can usually be mounted easily in a vertical position.

PUSH a button on the dashboard of your car and a circuit-breaker or buzzer sends pulses of current through a transmitting coil of wire mounted underneath the dash. In an action similar to that which occurs between the coils of a common transformer, the pulses of electromagnetism created around this transmitter induce a small current in a similar coil buried beside the driveway. This induced current is fed to the control grid of a vacuum tube, causing it to "fire" or conduct current which operates a relay. This relay in turn closes a motor relay and operates the door. The drive shown is adaptable to any overhead-type garage door.

Motor Drive Unit. The motor drive unit, Fig. 1, is the basic power unit for operating any of the overhead door types described here. It combines a used fractional *hp* appliance motor with a worm gear reduction and V belt drive to a power takeoff shaft.

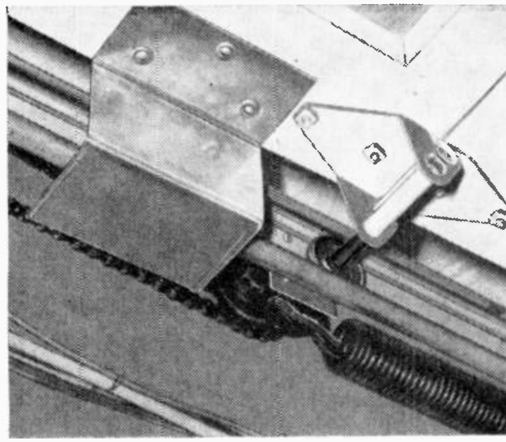
The worm gear unit shown in Fig. 1 is a surplus aircraft wing flap drive with a gear reduction of 40 to 1. You can also use a very similar worm gear drive taken from an old wringer type washing machine.

A 1/10 or 1/6 *hp* motor is adequate for this purpose and 1/4 *hp* is the largest motor recommended. The motor selected should be split-phase or capacitor start type. These are easily reversed, and preferably built for vertical mounting.

To be reversible, the motor selected must have 4 external leads or terminals at the terminal box. Two of these connect to running windings and two to the starting coils through a centrifugal starting switch. Normally, one starting and one running lead will be connected to each side of the 110-volt circuit. The direction of rotation may be reversed by simply crossing the starting coil connections to the running windings. In the control box, this is accomplished by the motor control relay.

Fractional *hp* appliance motors may have either 3 or 4 leads coming out of the motor terminal box. If the motor has only 3 external connections, one end of the starting coil

FIG. 2: The up-limit switch shown is about to be operated by the switch arm. This will stop the motor.



Door Opener

will be permanently connected to the running windings inside the motor. The other end will connect to the starting switch and become the third lead. In order to make motors of this type reversible, the fixed end of the starting coil must be cut loose from the field coil and brought outside the motor as the fourth power lead. With the motor disassembled, trace the power leads to the point where they join the motor field coils. These joints will be soldered (or welded) and taped. The two connections to the running windings are easy to identify, since these windings are of smaller wire than the starting coils. The fixed end of the heavier starting coil will be attached at one of these points. Cut it loose, retape the joint and solder a short length of insulated wire to the end of the starting coil to bring it out of the motor case. Drill a hole in the insulating backing of the motor terminal plate and use an 8-32 machine screw as the new fourth terminal. Mark the terminals to identify the starting and running coil connections.

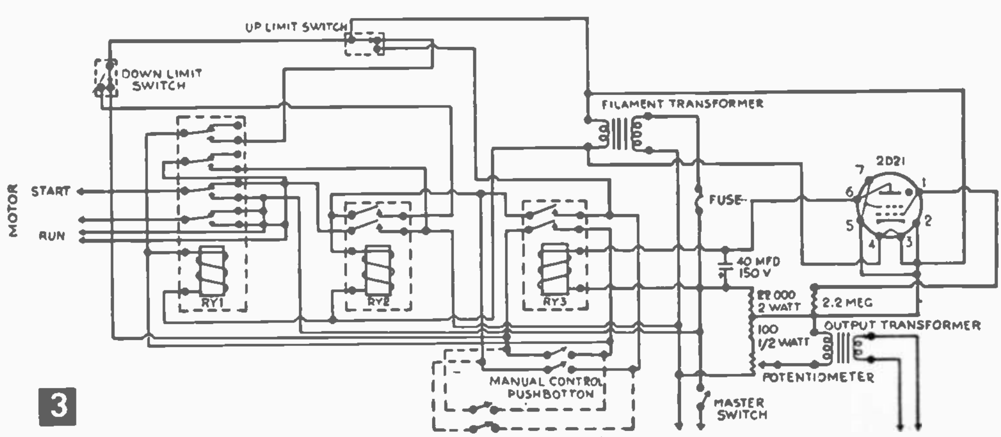
The motor and worm gear are mounted on a sturdy base of wood or plywood and connected by a flexible rubber coupling. This coupling provides mechanical isolation for the motor and a safety factor for shock transmission caused by door movement.

The power output shaft is supported in standard ½ in. line-shaft pillow blocks or bearing hangers. The length of this shaft should be adjusted to the mounting intended. The drive sprocket is a ½-in. pitch gear bicycle sprocket brazed or bolted to the steel V pulley normally used on appliance motors.

The V belt pulleys should be selected to give a total speed reduction at the drive sprocket of between 35 and 40 to 1.

Dual-Spring Cable-Operated Doors. The door mechanism shown in the photos is a very common type using two overhead tension springs acting on steel cables. This unit may be mechanized by driving only one side of the door, permitting the other side to follow, counterbalanced by its spring. The cable and pulleys on the driven side are removed and replaced by bicycle chain and sprockets. The motor unit drives the door through this chain, and may be mounted to the side of the door (Fig. 1) or overhead.

Run the door all the way up and secure it by tightening a C clamp on the track on



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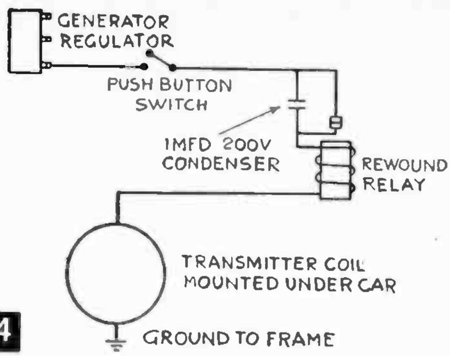

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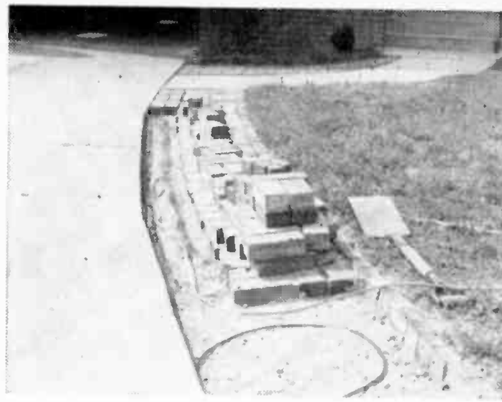


FIG. 7: Brick walk alongside driveway helps simplify problem of bedding down the pickup coil and cable.

FIG. 5: The coil of the transmitter relay must be completely stripped and rewound with No. 18 Formvar.

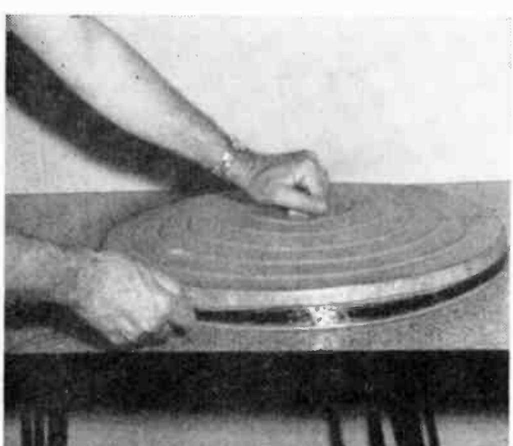


FIG. 6: An ordinary garbage can lid makes a handy coil form for winding the required induction coils.

either side. Then release the spring on the side to be driven and remove the cable and both pulleys. The pulley at the door end will be replaced by the drive sprocket of the motor unit. It may be necessary to enlarge its mounting hole somewhat to pass the sprocket drive shaft. This can be easily accomplished with a tapered reamer in a large drill brace.

Disassemble the idler pulley unit and replace the pulley with a ½-in. pitch bicycle rear sprocket. Since these sprockets have no hub, press or braze a bushing into the center hole to reduce the size and provide a bearing. Join the two lengths of bicycle chain with a repair link and attach the ends to the bottom section of the door and to the track at the same points where the cable was formerly attached.

Pivot-Type Doors. Overhead garage doors which open by pivoting around two centers will require an overhead cable system, in addition to the basic motor drive unit. As shown, the door is driven by the motor sprocket through a length of ½-in. pitch bicycle chain which is part of a cable loop. Movement of the cable is transmitted to the door through a 12-ft. drive rod of wood or steel tubing. The motor drive unit should be centered overhead on this installation. Steel clothesline cable, clamps and a clothesline pulley make up the cable loop. The cable is tensioned by a turnbuckle.

Crawford Doors. The Crawford door is counter-balanced by a single torsion spring operating on cables wound on cable drums. The 1-in. tubing on which the cable drums are mounted usually extends an inch or so beyond the drums on either end. This provides sufficient clearance to install a 6-in. V pulley with a 1-in. shaft hole.

Transmitter. The simple transmitter circuit is shown in Fig. 4. The buzzer or circuit-breaker is a power type relay, rewound with No. 18 Formvar insulated wire so that the

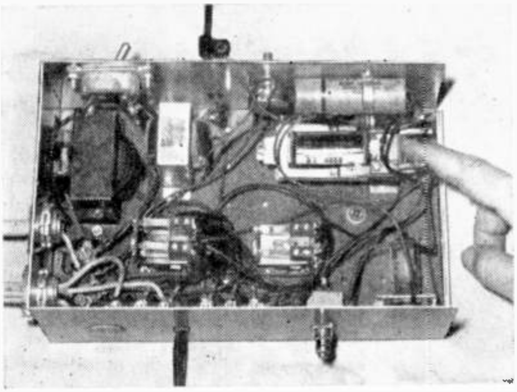


FIG. 8: The control box should be mounted on the wall near the motor drive. Location is not critical.

MATERIALS LIST— REMOTE CONTROL GARAGE DOOR OPENER

Amt. Req.	Size and Description
1	100 ohm. ½ watt carbon resistor
1	22 megohm ½ watt carbon resistor
1	22K ½ watt carbon resistor
1	2.5K potentiometer (sensitivity control)
1	1.0 mfd 200 v capacitor
1	40 mfd 150 v electrolytic capacitor
1	6 v ac 4PDT relay (RY-1 motor reversal. Potter & Brumfield PM 17 AY)
1	6 v ac DPST relay (RY-2 motor control. Guardian 1R-500-G6)
1	5 to 15K sensitive DPST relay (RY-3 receiver circuit. Guardian 1R-626-5)
1	Power relay. SPST. Modified Potter & Brumfield PR5D or MR5D.
1	SPST pushbutton switch
1	SPST toggle switch
1	DPST pushbutton switch
2	SPDT snap-action switches with lever actuator
1	DPST locking switch
1	Filament transformer. 6.3 v
1	Universal output transformer
2 lbs. (app.)	#18 Formvar insulated wire
1	1 amp. 110 v fuse and fuse clip
1	2D21 tube and socket
1	4 x 8 x 10" utility box
1	¼ to 1/10 *hp* split phase or capacitor start motor
2 lengths	½" pitch, single bicycle chain
2	½" pitch bicycle sprocket, rear
Misc.	V-belt, pulleys, ½" line shaft, bearing hangers, terminal strips and universal joint, as required.

coil will carry a heavy surge of current. The relay must be of the normally-closed type, with the points open when the coil is energized. On the relay shown, a normally-open type which happened to be on hand, the points were reversed to produce a circuit-breaker. Remove the coil from the frame and unwind the wire down to the bare spool, then rewind with No. 18 formvar (Fig. 5).

Connect the coil leads in series with the points, so that the circuit is broken when the pull of the coil opens the points. The result will be a buzzer capable of producing a high-current dc pulse through the transmitter coil suspended beneath the car. A 1 mfd. 200 volt capacitor across the points of the relay protects them against arcing and also produces a clean current cut-off for maximum transmitter effectiveness. The rewound relay may be used on either 6 v or 12 v systems.

Mount the relay at any convenient location under the hood (Fig. 9) and connect one lead to the battery terminal of the voltage regulator. Run the other lead to a pushbutton mounted on the dash and then to the coil, mounted under the car.

The transmitting coil consists of 30 turns of No. 18 formvar insulated wire. A garbage can lid (Fig. 6) approximately 20-in. diameter is a convenient form for winding this coil. When all 30 turns are in place, tape the coil at intervals to hold the loops in place, then tape the entire coil with plastic electrical tape. This binds and protects the wire and makes the coil rigid enough to mount easily. Mount the coil as close as possible to the side on which the buried receiving coil will be located. The coil may be flattened into an oval shape if required for mounting. The coil should be suspended a short distance below the metal parts of the car, but must not project enough to be easily damaged. Ground one lead of the coil securely to the frame.

The receiving coil, like the transmitting

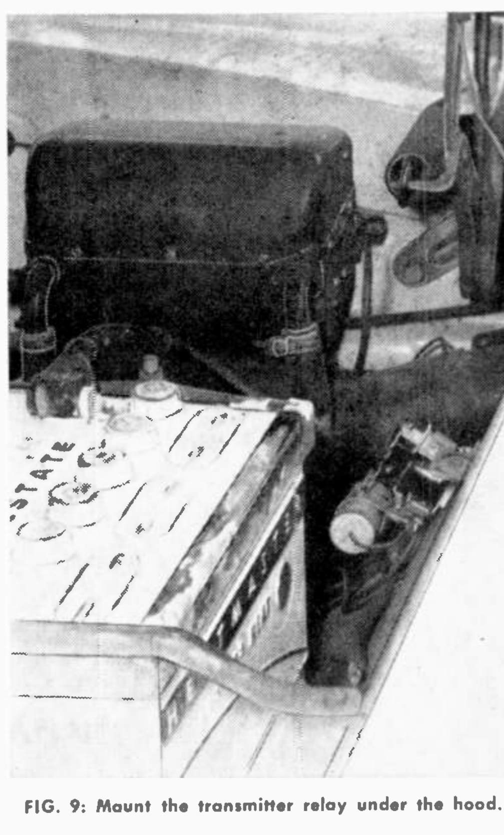


FIG. 9: Mount the transmitter relay under the hood.

coil is wound of No. 18 Formvar using a 20-in. garbage can lid as a winding form. Twenty turns will be sufficient for this coil. Tape the coil for protection with plastic electrical tape. The receiving coil is buried alongside the driveway (Fig. 7). Although the coils are effective up to a distance of about 5-ft., the closer they can be mounted the more positive the operation will be. Connect the coil to the required length of underground type plastic covered cable and position it on top the ground for a trial run to establish the correct location before starting to dig. When a coil location is found which will trip the door mechanism without fail when you hold the transmitter button while driving up the drive, finish burying the cable and coil.

Control Box. The control box (Figs. 3 & 8) contains three relays, two for motor control and reversal and one sensitive type for detecting the induction signals from the receiving coil buried beside the driveway. A midget 2D21 thyratron type vacuum tube acts as an electronic switch, tripping the sensitive relay on signal from the receiving coil. A potentiometer adjusts the sensitivity of the circuit by controlling the standby bias on the vacuum tube.

Any double pole single throw sensitive type relay of 5000 to 15000 ohms impedance will operate satisfactorily in this circuit. The relay shown is a discarded telephone relay. You can use single pole relays in parallel to produce a double pole circuit.

Note that two or more relays may be connected in parallel to provide, for example, 4 pole double throw operation from two double pole double throw relays or double pole control from two single pole relays.

Signals from the receiving coil are fed to the secondary side of a universal output transformer. The terminals of the transformer will usually be plainly marked. The coil leads were soldered to terminals 1 and 2 of the secondary on the transformer shown. The other two leads are connected to terminals 1 and 3 of the primary. If the transformer used is not so marked, select the terminals which give the best sensitivity.

The unit is mounted in one of the aluminum chassis boxes sold by radio supply stores for use with home-built equipment. It is wise to bench-test the circuit before mounting, by connecting temporary leads. Then if adjustments are required, the wiring is accessible without breaking connections.

The control panel may be wired with radio push-back wire or ordinary bell wire on the limit switch circuits, which operate on 6 volts. The motor circuit, however, should be wired with flexible, stranded, rubber-covered wire. The solder terminals on the 4PDT relay specified are closely spaced and care must be taken to avoid shorting them. It is wise to cover these joints with insulating spaghetti or tape, as a precaution, after soldering is complete.

The mounting locations shown in the photos need not be followed exactly, since location of the components is not critical.

Limit Switch Circuit. The limit switch circuit (Fig. 2) is designed for low voltage (6V here, other voltages may be used) to avoid the shock hazard present if exposed switches carry 110 v. Both up and down limit switches are operated by the same switch arm. This is bent from heavy gauge galvanized steel or sheet aluminum. It must clear the track over the full travel of the door. Provide a switch-operating surface which is long enough to allow for motor coast after the power is turned off. The lower limit switch is protected by a sheet metal guard, bent to clear the switch-operating arm. Both limit switches must be located well away from the curve of the track, since the door-to-track spacing varies as the door turns the corner, which will cause erratic switch operation.

The limit switches on pivot-type doors must be mounted on the pivot mechanism near the hinge-point. Study the action and locate the switches in a position to be operated when the door has reached full travel less the amount of over-run for your particular motor and gear unit.

The snap-action switches used should first be mounted on sheet metal backing plates, slotted to provide adjustment. The backing plate is in turn attached to the door track with flat head machine screws.

When the motor, control box, and limit switches have been wired it is well to check the direction of motor rotation before attempting to drive the door. Once started in either direction, the motor will continue until the opposite limit switch is tripped.

Rotate the potentiometer until the sensitive relay is pulled in and the motor drive operates, then back off sufficiently to prevent "volunteer" operation.

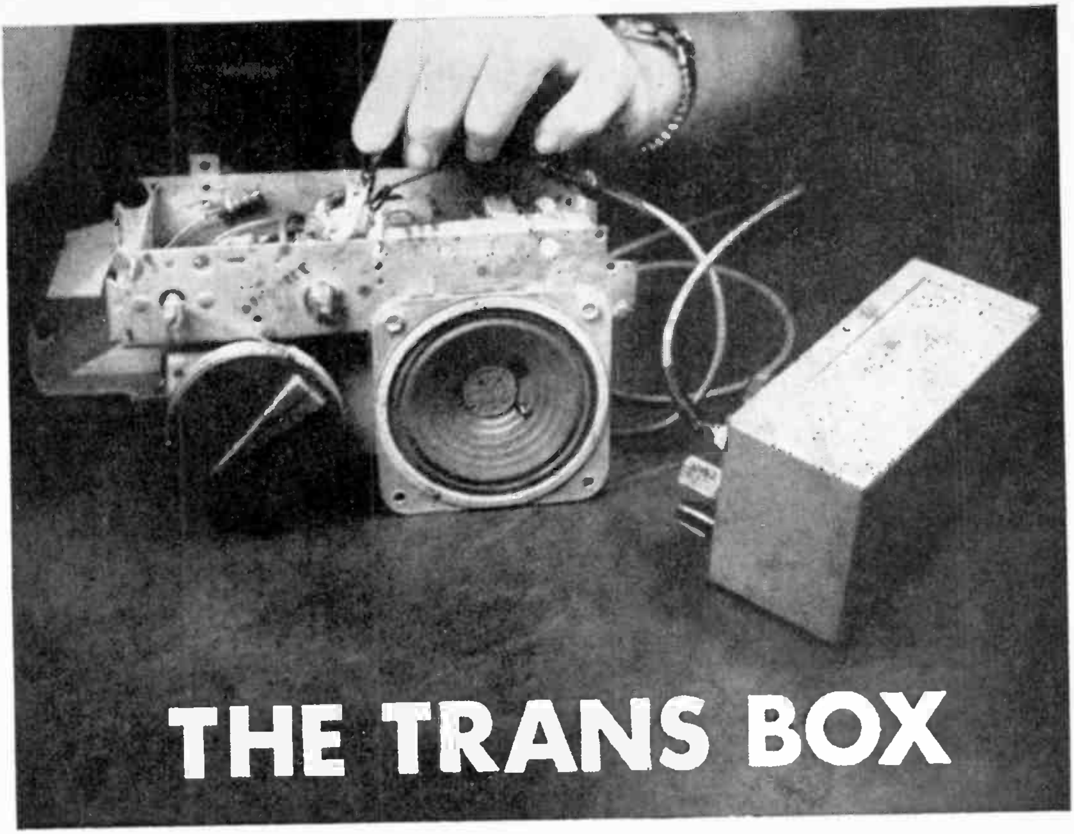
These checks completed, assemble the door drive and operate the door drive cautiously through a complete cycle. When this has been completed, the door will automatically operate through one cycle on signal from the manual pushbutton or the transmitter.

Extension pushbutton switches are a convenience and may be added as shown in Fig. 2 if required at points other than the control.

These extension switches will permit you to operate the door without being in the car. Additional switches can be extended to other parts of the house, so the garage doors can be remotely controlled, for example, you may want to close the door from inside the kitchen on a cold and rainy night!

Wire Scraper From Old Blade

• An old piece of hacksaw blade can be used for cleaning wires when soldering. It will not cut the strands as will a knife.



THE TRANS BOX

This compact two-transistor unit triples as an AF-RF signal tracer, utility amplifier, and transistor circuit power supply

By FORREST H. FRANTZ Sr.

THIS unit and an audio or RF signal generator are all that are required to signal trace broadcast and short wave receivers and audio amplifiers of all kinds.

Power for external transistor circuits is available from the tracer at 1.5, 3, 4, 5, or 6 volts at the flick of a switch. It does extra duty as a utility amplifier for general lab use. A self-contained loudspeaker makes the unit convenient without the inconvenience of an earphone.

Mount the Battery Holder on the perforated board as in Figs. 2 and 4. Mount the output transformer on this board with a piece of solid wire passing through the holes and around the underside.

Drill the holes for the battery terminals, input jack, volume control, switch and speaker. Cut the volume control shaft to a length of 3/8-in. Mount these parts. Be careful to avoid shorting of the battery terminals to the case. Wire the front panel. Fasten the circuit board to the speaker with solid wire. Interconnect the board and the front panel circuitry (Fig. 4). Connect leads from the batteries to the switch (Fig. 6).

The First Switch Position is "off." Other switch positions turn the signal tracer-amplifier on. In addition, section B of S1 selects the battery voltage which will appear across the battery output terminals for powering an external circuit with current requirements of 25 milliamps or less. This feature will prove invaluable for checking out transistor tuners, amplifiers and other circuits and for performing circuit experiments requiring small currents.

For Audio Testing and signal tracing, use a shielded lead with a miniature phone plug termination on one end and extended leads with minigator clips on the other end. To signal trace in tube circuits connect a 47K resistor in series with the center lead of the shielded input cable. This minimizes circuit

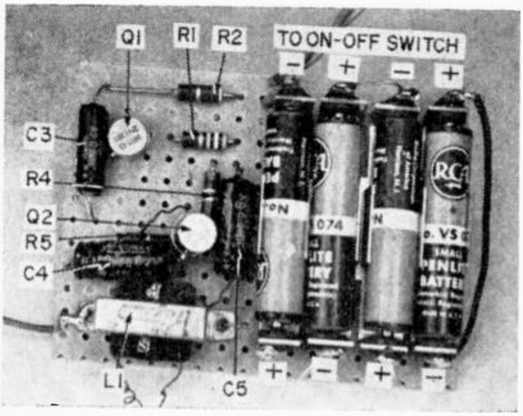


FIG. 1: Looking down on the circuit board, the parts are easily located. Wiring isn't critical, but try to keep leads as short and as neat as possible.

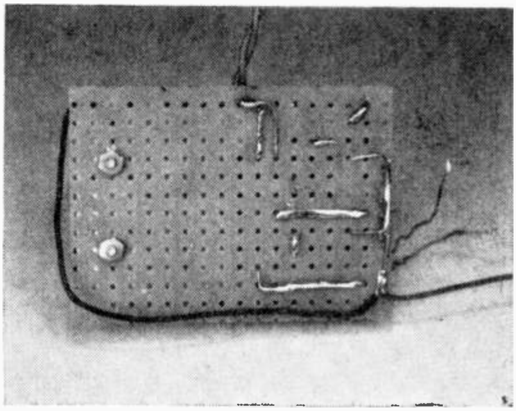


FIG. 2: Wiring is brought through the holes to the underside of the circuit board. Note that no components mount underneath for ease of servicing.

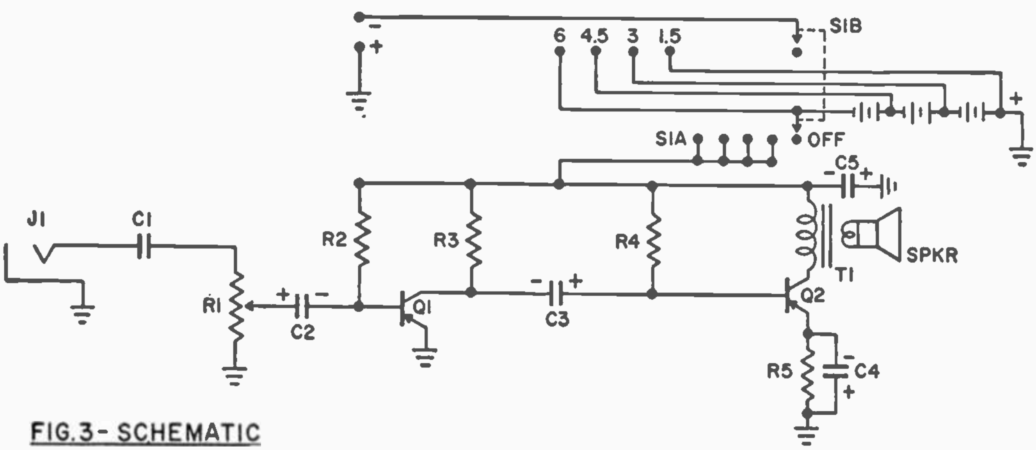


FIG. 3 - SCHEMATIC

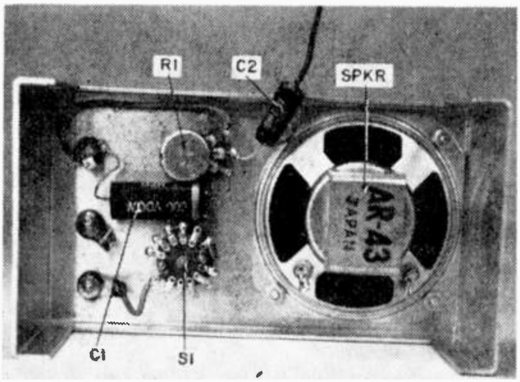


FIG. 4: Chassis-mounted parts inside the box cover include the speaker, switch, potentiometer, jacks and two capacitors. Wire these in place separately.

loading during testing operations.

If you have difficulty, check the battery holder for good contact to the batteries. You may have to fill the contact eyelets with solder. Check the circuit against the wiring diagram. With the audio signal tracing lead in the input jack, you should be able to hear the speaker hum when you touch the center input lead (volume all the way up).

Heart of the Signal Tracer is the high gain, two-stage transistor, audio amplifier on the perforated board. The signal under test enters the tracer through jack J1 and is applied to gain control R1 through isolation capacitor C1. C1 is rated at 600 volts and keeps dc from getting through, but permits audio to pass. The gain control feeds the signal to the amplifier.

Resistors R2, R3, and R4 provide operating biases for Q1 and Q2. Capacitors C2 and C3 provide isolation between dc potentials, but pass ac signals. Resistor R5 stabilizes the

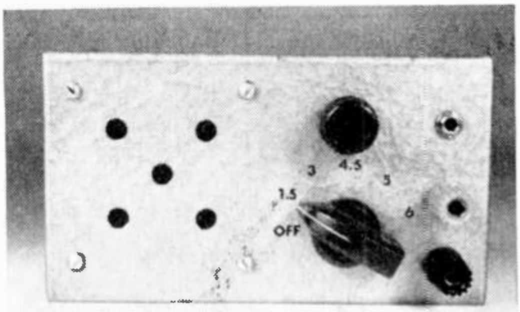


FIG. 5: Looking head-on at the front panel, the unit presents an uncluttered, business like appearance. Finish the panel with decal lettering and lacquer.

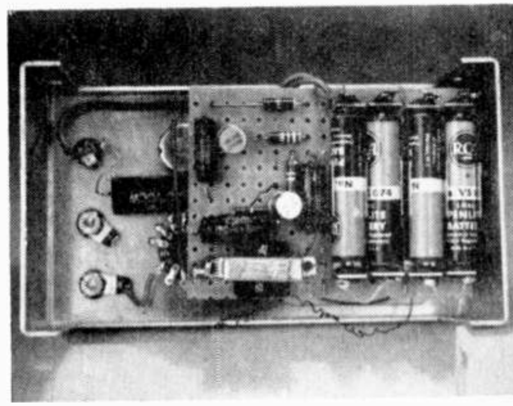


FIG. 6: Inside the box with the circuit board installed in place. Box and circuit board are wired separately, after installation, hooked up together.

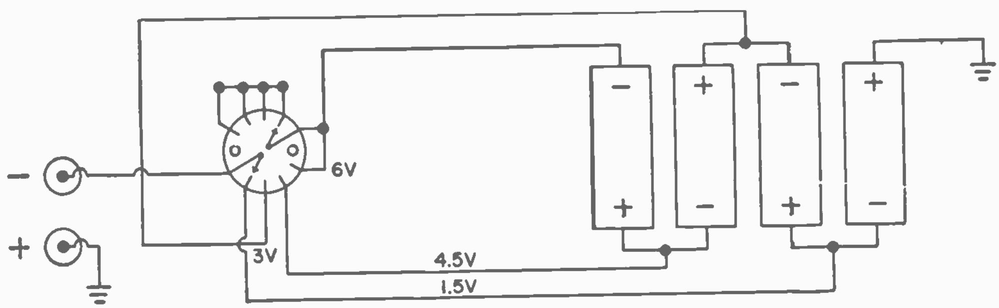


FIG.7 - BATTERY SWITCH WIRING

operating point of Q2, C4 is a bypass around R5, and C5 bypasses (effectively shorts) the ac signal around the battery to prevent degeneration due to internal battery resistance.

Transformer T1 couples the output of transistor Q2 to the loudspeaker with the proper impedance match. Section A of switch S1 provides one "off" position, but applies voltage to the amplifier on the other four positions. Section B of S1 switches 0, 1.5, 3, 4.5, or 6 volts to the battery output terminals.

This provides a convenient source for obtaining those much-needed, often hard to find test voltages to power transistorized equipment on the workbench. You can also use these voltages to substitute for batteries that are suspect, in equipment under test.

MATERIALS LIST—TRANS BOX

Desig.	Size and Description
R5	68 ohm, 1/2 watt carbon resistor
R3	4.7 k, 1/2 watt carbon resistor
R4	150 k, 1/2 watt carbon resistor
R2	390 k, 1/2 watt carbon resistor
R1	5 k miniature potentiometer (Lafayette VC-33)
C1	.1 mfd, 600 v paper tubular capacitor (Aerovox P8292ZN28)
C3	10 mfd 6v ultraminiature electrolytic capacitor (Lafayette CF-103)
C2	10 mfd 25 v ultraminiature electrolytic capacitor (Lafayette CF-142)
C4, C5	50 mfd 6 v ultraminiature electrolytic capacitor (Lafayette CF-105)
T1	10 k primary, 10 ohm secondary output transformer (Lafayette TR-93)
S1	5-position, 2-pole miniature rotary switch (Lafayette SW-78)
Q1, Q2	2N1380 transistor
B	1.5 penlight cells, four in series (RCA VS074)
J1	miniature phone jack (Lafayette MS-370 is jack and plug set)
	binding posts (Lafayette MS-566 is kit of 10; only 2 required for this project)
	4-cell battery holder (Lafayette MS-170)
	2 7/16 x 3 3/8" unclad miniature perforated board (Lafayette MS-304)
	miniature knob (Lafayette MS-185)
	pointer knob (Lafayette KN-43)
	2 1/8 x 3 x 5 1/4" gray hammertone aluminum miniature case (Lafayette MC-381)

Parts source: Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.

Ask Me Another!

By JOE MARSHALL

With this issue, RADIO-TV EXPERIMENTER brings the know-how of an electronics expert to its readers. If you have any questions for Joe, send them on in. All queries will be answered, the most generally interesting will be printed.

QUESTION: I overheard an argument between two hi-fi cranks on the subway the other day. They were arguing whether one amplifier had a "more transparent or opaque sound" than another one. What the heck is transparent or opaque sound?

ANSWER: Strictly speaking, of course, there ain't no such beasts. However, sometimes it is easier to talk in analogy than in direct terms and this "transparent or opaque sound" bit comes from such an analogy. Suppose you are looking at a view through a window, or better yet, the windshield of your car. If the windshield or window is perfectly clean and has no faults in it, the view you see looking through it is the same as the view you see if you go outside and look at it directly. You can then say that the window or windshield is perfectly transparent. On the other hand, if the window or windshield is dirty, or has a film of rain, or has inner faults, or, like many windshields, has curving surfaces, the image you see will not be clear and may also be distorted. You can then say that the window or windshield is less transparent or more opaque.

A hi-fi system stands between you and what you want to hear, like a window or windshield. If it is perfectly free of distortion the sound you hear will be like the sound you would hear if you were at the original performance and you could say "the system has a transparent sound." On the other hand, if the system distorts the sound and obscures the fine details of it, you could say it is "less transparent" or "more opaque." Basically, when they talk about a system being more or less transparent they mean that like a window or windshield, the system is clean and more or less free of distortion. But this is not nearly so picturesque and besides high priests from time immemorial have known that to sound like one you must invent a language that is fully understood only by other high priests!

QUESTION: I notice that in catalog specifications, communications receivers claim better sensitivity for CW than for phone. Why is this? P. L. Augusta, Ga.

Question: Most FM tuners have two sensitivity ratings: a 300-ohm rating and a 50-ohm rating. If I understand this right they are more sensitive with a 50-ohm antenna. Why should this be true? J.I.M., Jersey City, N. J.

ANSWER: The sensitivity of a receiver is limited by the noise of the receiving system. To read a signal it must be stronger than the noise; or, to put it the other way, the less noise in the receiving system, the weaker the signal that you can read and hence the more sensitive the system.

The noise comes from the tubes and resistors in the receiver itself, the antenna, and from space. In measuring receiver sensitivity, we normally consider only the noise generated in the receiver and the antenna. This is random noise and covers the entire frequency range from the audio frequency region all the way up into the light region. The narrower the bandwidth of the receiving system, the smaller the slice of noise that is passed through it. For CW reception we can use a bandwidth of 1 *kc* or less, whereas we need 3 *kc* for a single sideband voice signal and 6 *kc* for a normal double sideband voice signal. Communications receivers provide a means for narrowing the bandwidth when CW is to be received. With this narrower bandwidth less noise passes through the system and therefore a weaker signal can be read. Because we can use a narrower bandwidth for a single sideband signal, the communications receiver will also be more sensitive for SSB than for conventional double sideband AM.

We noted that noise is generated by the antenna as well as by the receiver. An antenna generates noise by the movement of electrons in the material of which it is made. This movement generates a current and, as we know from ohms law, the higher the resistance through which the current flows, the higher the voltage across it. So, the higher the resistance of the antenna, the higher voltage of the noise that appears across the input of the receiver. Thus a 50-ohm antenna presents a lower noise voltage than a 300-ohm antenna; therefore, a weaker signal can be read and hence an FM receiver can be more sensitive with a 50-ohm antenna than a 300-ohm.

But don't rush out looking for a 50-ohm antenna to improve the sensitivity of your FM tuner. There are such antennas—usually high gain Yagis. However, generally speaking the lower the radiation resistance of an antenna the narrower its bandwidth. Thus a 50-ohm antenna will cover only a small portion of the 20 *mc* wide FM band, and would be useful only for receiving one station or several stations within a 1 or 2 *mc* slice of the band. If you need or want the highest sensitivity for one station only, one of these 50-ohm antennas is a good way of getting it. But if you want to cover the entire band, you will have to use a broad-band antenna which means a 300-ohm antenna, and accept the penalty of higher noise and lower sensitivity.

QUESTION: Should I get a soldering iron or a soldering gun for my occasional radio experiments? A.W.L., Lima, Ohio.

ANSWER: A soldering gun is a handy tool for the radio serviceman or for the experimenter so active that he is likely to need to solder a joint or two any time; but it is a poorer tool for good soldering in construction work than a good soldering iron. Probably the most useful iron for general construction work, kit-building, etc., is a miniature soldering iron with a 25-watt heating element and a ⅛-in. or ¼-in. tip. It will provide just enough heat to do a good job but not so much of it that you will damage components.

If you do a lot of construction work, you should probably plan on adding a soldering gun for those quick jobs requiring the soldering or unsoldering of one or two joints; and a heavy duty 100- or 200-watt soldering iron for heavy soldering, like soldering to an iron or copper chassis. Whichever you use, you will save yourself a lot of trouble and ensure good joints if you use solder whose composition is 60% tin and 40% lead, rather than the normal 40% tin and 60% lead.

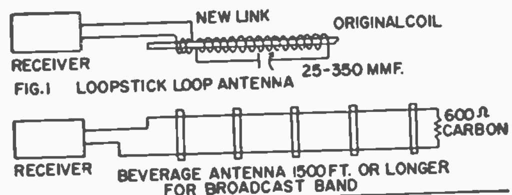
QUESTION: I see a lot of multitesters, Jap made, listed for as little as $5 or $6. Are they any good?

ANSWER: I have used several and have found them very good indeed. Accuracy is good and they have this additional advantage—if you burn them out, your carelessness is not so expensive.

QUESTION: I would like to listen to WQXR on 1560 *kc* in New York but I am getting interference from a station in Paducah, Ky. I bought a very good receiver, but it's still there. Is there any way I can get rid of this interference? J.F.B., Charleston, W. Va.

ANSWER: Possibly. From your location, New York and Paducah are at an angle close to 90°. It is possible a loop antenna can be used to null out the Paducah station.

The simplest way to make a loop is to get the largest ferrite core 'loopstick"—the 7-in. size (Allied Radio #91C063) will do. Wind a link coil of hook-up wire between five and 10 turns adjacent to or over the coil on the loopstick. This link goes to your receiver.



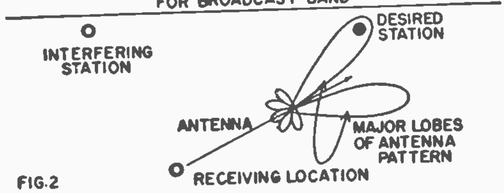


FIG.2

Resonate the original coil on the loopstick with a capacitor, to WQXR's frequency. Since WQXR is at the high end of the BC band, a small 50 mmf miniature variable will do. When the loopstick is in the horizontal position it should show a null when it is rotated. Turn it so that the Paducah station is nulled out but WQXR still comes in. When you have found the proper position, you can fix the loopstick in place.

If you want to use the loop over the entire BC band, use a 350- or 400-mmf. condenser to tune the loopstick.

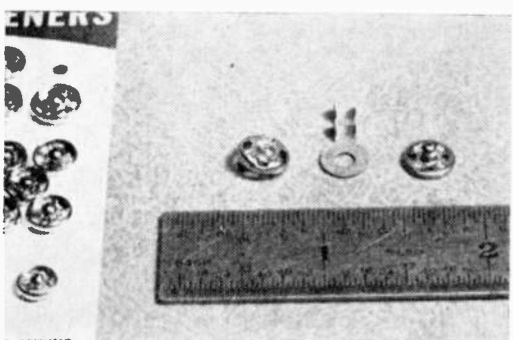
I had a similar problem once and solved it with a Beverage antenna. This is a long wire, grounded at the far end through a 600-ohm carbon resistor. The wire has to be several wavelengths long. This means a quarter mile or more in the broadcast band. However, it does not have to be more than 10 or 15 ft. high, can be strung (as in my case) from tree to tree, or between small poles, or scantlings nailed to fence posts. The Beverage contributes gain in the favored direction as well as sharp side nulls and hence gives the desired station a double break. The forward lobes are not exactly in line with the wire unless the wire is more than three or four wavelengths long. So it should be pointed a few degrees to one side of the desired station as shown in Fig. 2. For receiving, the wire is not critical, it can be small diameter magnet wire, #22, although of course heavier wire will stay up longer. TV-type, screw-in insulators can be used to hold it up. If you have the space, this sometimes does the job. If this seems like a lot of trouble, keep in mind that some troubles can only be cured with strong medicine.

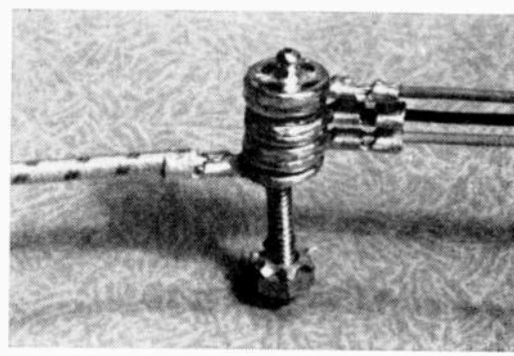
QUESTION: What is the best loudspeaker for $100. M.K., Nashville, Tenn.

ANSWER: Giving honest answers to honest questions like this is the best way for question answerers like me to shorten their careers. It wins them only two friends: the guy who asks the question (and even this is doubtful), and the guys who make the recommended equipment; and wins them the enmity of all the other manufacturers in the business. But here goes: the Acoustic Research AR2.

QUESTION: Do you think technician licensees should be given operating privileges on 10 meters like some propose? W2———

ANSWER: Certainly. In fact, they're undoubtedly better qualified to operate on the 10-meter band than most of the general licensees now privileged to operate there but who don't. Techniques, propagation characteristics, etc., on 10 resemble those on the 6-meter band much more than those on the lower bands. Techs with experience on 6 thus have more experience, and more relevant experience, than the general who now in an almost unanimously drove do not operate on 10. This however, is not going to be the criterion for decision, though it might sound sensible. Technicians generally spend less money for their equipment, and a large proportion of them build their own gear. Furthermore, most of them operate with relatively low powers and with normal double sideband AM. Since status on the ham bands, as in other phases of our affluent society, is measured by the amount of money one has or has put into an activity; since commercial gear costs more, and since single sideband and high power run into more money, Techs are going to be the low boys on the ham totem-pole until they stop experimenting, stop building their own stuff, and start investing $2000 apiece for gear. Exclusive clubs do not seem to allow amateur radio mechanics to use even the empty rooms in the club-houses. But don't get me wrong. I'm a realist. I own Collins stock.





Connectors Made From Clothing Snaps

IN THIS electronics age miniaturization is becoming more and more important in order to fit small components into small spaces. There are many instances where a number of electrical conductors must be joined together quickly and easily taken apart. A very efficient stack wire connector can be made from snap fasteners used for clothing. One assembly snaps on top of another and there is no limit how many can be used. There are many ways they can be used, such as speaker connectors, terminal strips and battery connectors. They may also be soldered to ends of resistors and capacitors for substitution tests, etc.

To make these "midgets" buy a card of plated snap fasteners from any dime or department store. File the plating from the bottom of each male and female fastener and with 50-50 resin core solder tin the bottom being especially careful not to run solder on the small spring in the female fastener. Place a solder lug or a solderless terminal between the bottom of the male and female fasteners and heat with a small soldering iron. A little extra solder run around the rim will help make a stronger joint. For a stud assembly solder a snap on a screw.—ROBERT MICALS.

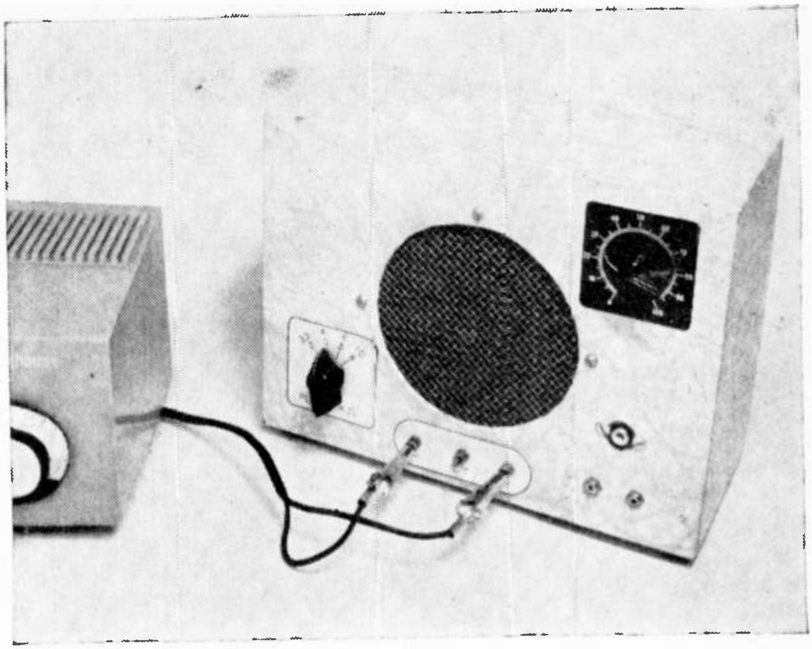


Fig. 1: The unit is a versatile test instrument for general use around the laboratory, as well as a supplementary speaker for audio use.

Speaker Box Does Everything

By ROY L. CLOUGH JR.

ONE of the handiest pieces of equipment, this little speaker box, performs an impressive list of chores.

It's a remote speaker with constant impedance volume control; It's an impedance match, speaker to plate, of any output impedance from 2000 to 10,000 ohms; It matches either single-ended or push-pull output; It's a phone patch box to any receiver with isolating capacitors that nullify shock hazard; It can be used as a dynamic mike with input matched to practically any PA or tape recorder and it can be used to test final audio stages where an output transformer is suspect and input stages where the mike is questioned.

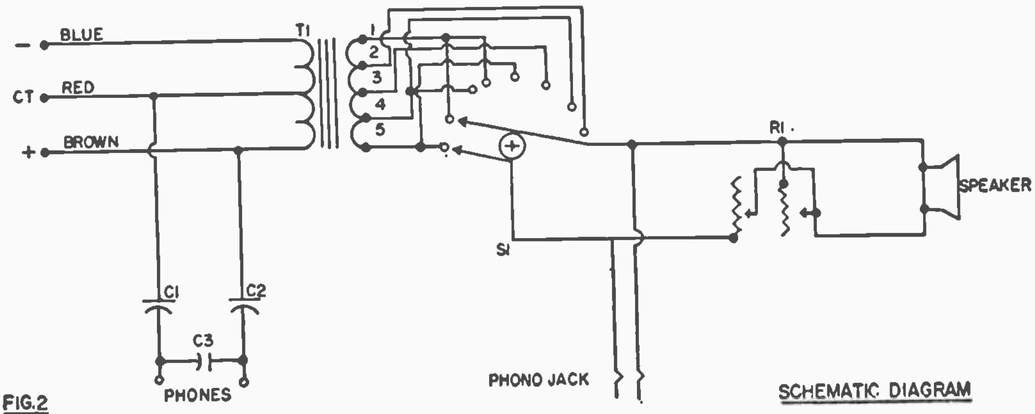


FIG.2

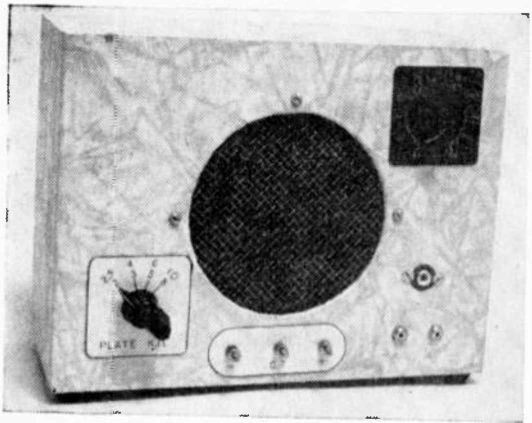


Fig. 3: Parts placement is easily seen with the rear cover removed. The hardware cloth grille screen is held in position by pressure from the speaker rim.

You may locate most of the needed parts in the junk box. The rotary switch, for example, can be anything that will perform the required switching operations. We used a war surplus two-deck job. Any two-pole switch that will switch to four different positions will do the job.

A 5-in. permanent magnet speaker with a 3.2-ohm voice coil was used. Speaker size isn't too important if you don't mind re-dimensioning the box. You can also use an 8- or 16-ohm speaker; just check the spec sheet that comes with the transformer for the appropriate connections.

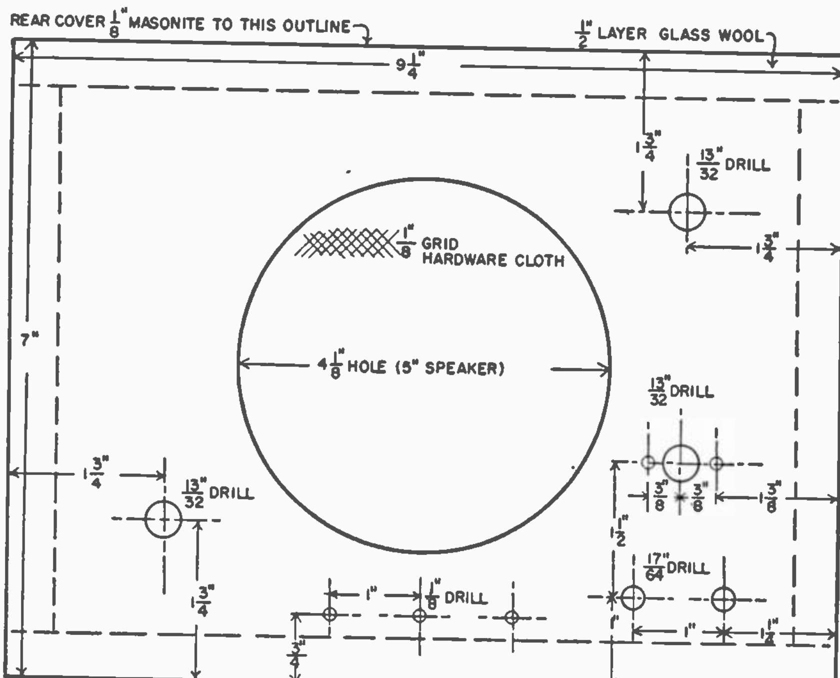
Make the box from ½-in. plywood sides. The front and back is ⅛-in. tempered hardboard. *Elmer's Glue-all* is entirely adequate to hold it together sans nails or other fasteners. Cover the box with *Contact* plastic covering material after cutting all the required holes.

The speaker grille is a scrap of ⅛-mesh hardware cloth or screening, held in place by the speaker rim when it is bolted in place.

Mount the "L" pad in the upper right hand corner, install the phono-jack and phone jacks in the appropriate holes. The transformer is bolted to the box behind the speaker. Wiring the switch will be easier if pigtails are attached before mounting the switch. The same is true for the connections to the 4-40 brass nuts and bolts which serve as outside terminals. Check the wiring diagram carefully before making the final connections and you'll have no trouble.

Draw the switching dial plate on a stiff white cardboard, with transparent plastic spray over markings and cement it with vinyl glue to the covering of the box.

How It Works: A 3.2-ohm speaker is mounted in a heavy, rigid box with a fibreglass lined back cover and rubber tacks under each corner isolate the speaker box from table or bench. The result is good tone



DRILL SPEAKER MOUNT HOLES AS REQUIRED　SIDES ½" PLY x 3⅞" DEEP—FRONT ⅛" MASONITE

FIG.4

MATERIALS LIST—SPEAKER BOX

No. Req.	Size and Description
1	Triad s-62-x universal output transformer (30 ma each side)
1	Clarostat CIL-4 "L" pad
2	.1 400 v paper capacitors
1	.006 400 v paper capacitor
1	phonograph jack
2	earphone jacks
1	rotary switch, 2 poles, four positions
3	¾" 4–40 brass fillister head bolts
6	4–40 brass nuts
1	5" speaker, PM with 3.2-ohm voice coil
2	pointer knobs
Misc.	assorted scraps of ½" plywood, hardboard scrap and vinyl contact type covering, 5" sq. of wire screen, ⅛ mesh, four rubber-headed tacks.

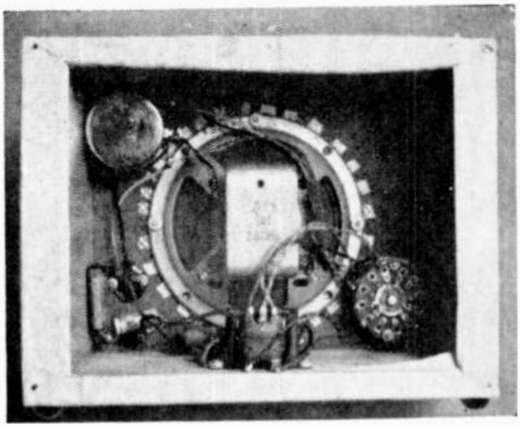


Fig. 5: The front of the unit presents a handsome appearance. The controls are easily accessible and all connections are provided on the front panel face.

quality from a small speaker in a cheap enclosure. A universal output transformer is connected through a rotary switching arrangement that permits matching impedances from 2 to 10 K ohms. Between the voice coil and output transformer switch a 4-ohm "L" pad and a phono jack is inserted which permits constant impedance volume control of the speaker when used either as a 3.2-ohm remote speaker or when connected to the plate output.

A capacitor network permits the attachment of phones (1500 ohms or higher) to any receiver with no shock hazard. The outside terminals are connected to the transformer in such fashion that either single-ended or push-pull output may be fed into the box.

By running a shielded microphone cable to the outside terminals the box can be used as a dynamic mike with any PA system or recorder. Switching the plate impedance control will permit matching inputs to practically all amplifiers. If attentuation is desired the "L" pad control can be cut in. A couple of alligator clip test prods plugged into the box terminals can be used to check audio final stages, if, for example, the output transformer of the set under test is suspect.

Still other uses will suggest themselves to the experimenter who will quickly be aware that the speaker box is a very nice thing to have around.

(Continued from page 69)

polish on the inside of the front of the box, and line the box with aluminum foil, shiny side facing in. Mask the front panel and paint the box. It is not necessary to roughen the surface for printing however, since this box is large enough to allow the use of commercial lettering. Pre-cut ½ inch high letters, such as Dennison #192 Silver Letterset (15c at your local 5 & 10) are glued to the outside front of the box to spell out on the air. Pliobond, or similar cement, should be used, since the gummed backing on the letters won't stick permanently to the plastic.

Inside the box, cement a candelabra screw socket (Dialco #607 or parallel type Christmas tree bulb socket); the bulb used is a 7C7/W white 7-watt night light type. Run two insulated wires from the socket through a notch in the side of the box, and connect them to the voltage source.

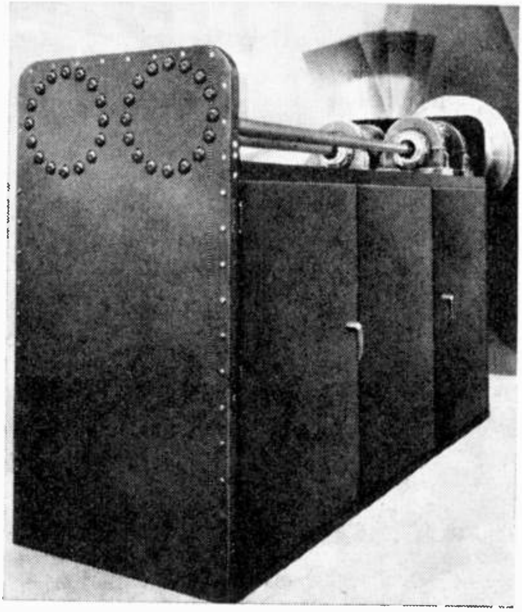
The voltage source for use with this unit must be 117 volts, *ac only*. Do not try to connect this directly to your switched transmitter B-plus line, or you will certainly burn out your power transformer in a short time! Sometimes the equipment has an external 117 vac antenna changeover relay and the wires from the box may be connected to the coil terminals of the relay, thus lighting the bulb whenever the transmitter is on the air. Some transmitters have switched 117 vac available at a socket on the back of the unit; see your instruction book. If no source of 117 vac is available when the transmitter is turned on, check the instruction manual to find a voltage that *is* switched on when transmitting, and use an appropriate relay; connect the relay so the coil is energized by the switched voltage, and the relay contacts close the 117 vac circuit to the on the air box. The relay and dropping resistor which only draw from 2 to 4 milliamperes from the B-plus supply, could easily be built inside the box, if desired.

They take considerably less room and use much less power than the common commercial units . . . and do the same job. Will we be seeing you "on the air"?

The Flarescan Blind Landing System

Air safety is a continuing problem. We no sooner modernize the equipment than new advances make it obsolete...

By F. H. BATTLE JR.



Airborne Instruments Laboratory

FIG. 1: The antenna is installed a few hundred feet aside the runway. The runway nearly centered on the beam.

A LEADING contender in blind landing systems is the Flarescan all-weather landing system developed by the Airborne Instruments Laboratory (AIL) division of Cutler-Hammer, Inc. This system, currently being tested by the Federal Aviation Agency at the NAFEC facility in Atlantic City and by the French aviation authorities at the French Flight Test Center, Bretigny, France, is actually based on techniques that were available at the end of World War II, although there is some novelty in the way these techniques are applied. The delay resulted primarily from an imposing list of practical requirements, not essentially scientific in nature. The system design was largely an exercise in matching scientific possibilities to operational and economic objectives.

The two key developments for the system were a rapidly scanning microwave antenna and a precise pulse-data code. The ground-based antenna uses a thin section of a parabolic reflecting surface, sandwiched between conducting metallic planes, and illuminated by a waveguide horn radiator placed at the focal point (midway up the forward edge). The 16,000 *mc* radio beam emanating from his 8-ft. array is only ½° thick, vertically, so that a sharp signal is produced as it scans past an aircraft.

The antenna is attached to one end of a long steel rod, the other end of which is anchored at the opposite side of the equipment enclosure. This arrangement forms a torsion pendulum, which is counterbalanced by a second bar supporting an oppositely rotating weight. The spring constant of the bars, combined with the rotational inertia, tunes the assembly to an oscillatory frequency of 5 cycles per second (*cps*). The thin, fan-shaped beam is thus scanned through a sector of 20 degrees above ground level, 10 times each second.

Flarescan provides guidance to landing airplanes by use of the intercepted beam signals to indicate their elevation angles above the runway surface. Since the landing maneuver occurs between 1000 and 5000 ft. away from the scanner, and since changes of only a few feet in height must be detected, great precision is required in the angular measurements; the system was designed for an accuracy better than 0.05°.

A unique code was devised to represent the angle at which the beam is pointing, not only with precision, but several hundred times during each scan (so as to serve airplanes that happen to be at any angle when they receive the signal). This code, which is transmitted on the beam itself, is simply a series of pulses of radio energy that are repeated at intervals controlled by the angle of the scanning antenna at the instant of transmission. Several dozen pulses are received while the beam passes the airplane, and the airborne equipment measures the average time between pulses to find the angle from the ground station. This is about the simplest possible code structure, and it should encourage the future development of simple and ingenious decoders.

A highly accurate receiver-decoder, now being tested, is suitable for airliner installations (see Fig. 2). It uses transistors throughout, except for the ultra high frequency klystron microwave generator that serves as a local oscillator. (It should soon be possible to replace the klystron with varactor and transistor circuits.)

The smallest unit receives the beam signals, via waveguide from a tiny antenna on the airplane, and converts them to 60-*mc* pulses. These travel through coaxial cable to the larger angle-tracking unit, which produces a dc voltage proportional to the spacing of the pulses most recently received. As the airplane descends toward the airport, the output voltage gradually decreases in accordance with the diminishing elevation angle.

The link between the radio guidance system and the cockpit controls is provided by the small, thin control unit. Adjustments within this unit are permanently set to match the flight characteristics of the airplane, and to provide an automatic program of the successive elevation angles that would be measured during an ideal landing maneuver. By comparison of the changing voltage from this unit against the output voltage from the angle tracking unit, the human pilot or autopilot can detect deviations from the ideal maneuver and correct the flight path accordingly.

Operationally, it can be used in conjunction with the present standard instrument landing system (ILS). This system is widely installed throughout the world, and although it is not trusted for actual blind landings it is extremely reliable for guidance down to about 100 ft. of altitude. The new scanning-beam station is installed about ½ mile farther down the runway than the aiming point of the ILS glide path. As the airplane follows the straight ILS glide beam, it also measures a continuously decreasing elevation angle from the FLARESCAN location. At 100 ft., or any chosen altitude, arrival at a preselected angle causes automatic transfer of control to the system, which then guides the airplane along a smoothly shallowing path to the runway surface.

Among the practical requirements that were faced and satisfied in the course of system design were:

1. Gradual transition from present equipment and piloting procedures. (ILS equipment and training are fully utilized, and the new guidance signals appear similar to ILS.)
2. Usefulness at all airports. (Guidance signals are derived relative to the runway surface, and are independent of terrain features.)
3. Unlimited capacity for simultaneous use. (Airplanes are not individually tracked from the ground, but each tracks itself.)
4. Simplicity, and hence reliability, of equipment. (Only a transmitter on the ground and a receiver in the air are needed; signals are directly usable without geometric computers.)
5. Slow obsolescence. (Wide-sector coverage, data rates, and precision are more than adequate for today's airplanes, and should suffice for the higher performance aircraft of the next generation.)

Although it was designed to allow an extension of this new technique to include functions of the present ILS, a system as well proven as ILS will not quickly be abandoned. Furthermore, the joint FLARESCAN-ILS operation allows cross-checks between two independent systems (a capability much appreciated by pilots) since now signals are received throughout the ILS approach.

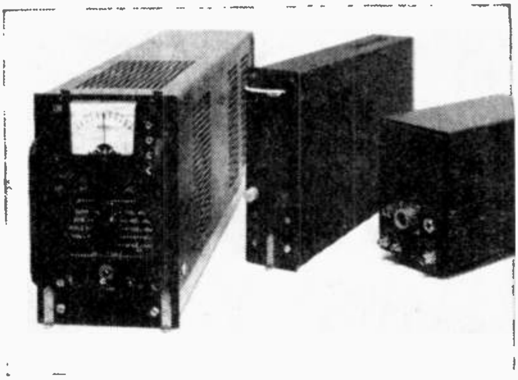
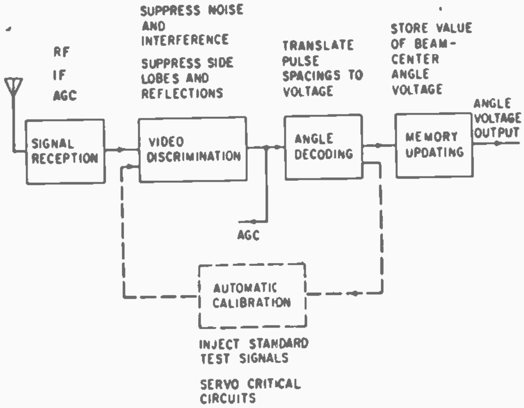
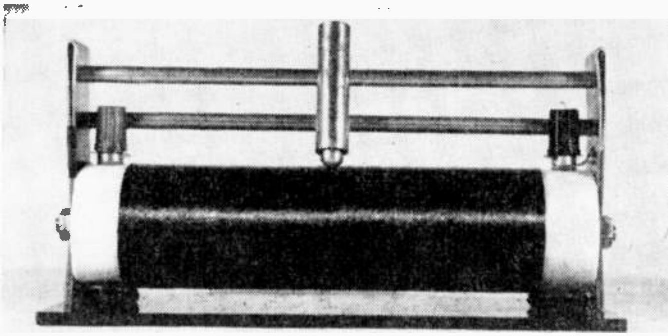
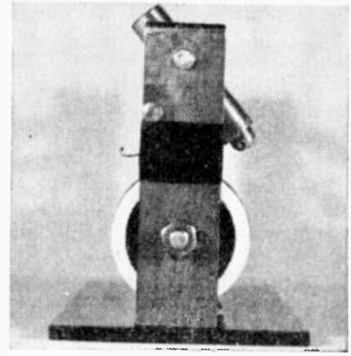


FIG. 2: The airborne equipment works with the ground equipment and provides flare-out, touchdown info.



FLARESCAN SCANNING-BEAM RECEIVER





Utility Induction Coil

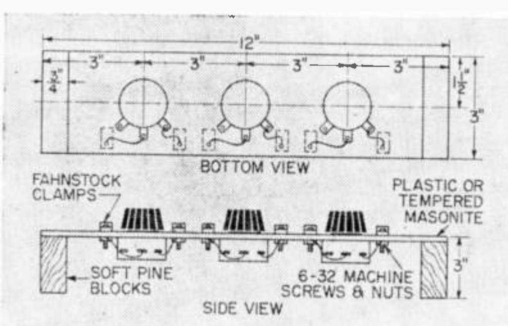
By VICTOR A. ULRICH

HERE is a heavy-duty variable inductance coil that works well as an antenna tuner and in many other applications. The base is a piece of 3/16 x 3¼ x 8-in. *Bakelite, Masonite* or plywood. A 1¾ x 7½-in. porcelain ready-drilled form can be obtained at a surplus store, but shorter coil forms can be spliced to adequate length by fitting a wood dowel inside and gluing forms together with plastic cement.

The end strips are 3/64 x 1-in. brass strips folded over once to double thickness. They require three ¼-in. drilled holes. Cut two 8-in. lengths from ¼-in. brass rod. Mount one near the top of the end strips, centered over the coil; mount the other rod half the distance to the coil. Set back half the thickness of the slider to serve as a backstop and guide for the slider.

Make the contact point of the slider from a brass cabinet door-spring latch. The slider is a ½-in. brass tube. Drill it to accept the ¼-in. rod and slide it onto the rod. Push a spring into the slider, then solder in the spring latch.

A brass rod, threaded at both ends, runs through the coil form and holds the whole assembly together, when bolted at the ends.



"Pot Rack"—a Big Help in Circuit Adjustment

By C. F. ROCKEY

ALTHOUGH it is possible to calculate proper resistance values for many electronic circuits, there's nothing like finding the optimum resistor sizes by actual trial. One or two "pot racks" like this makes it convenient to do. The accompanying diagram shows the idea.

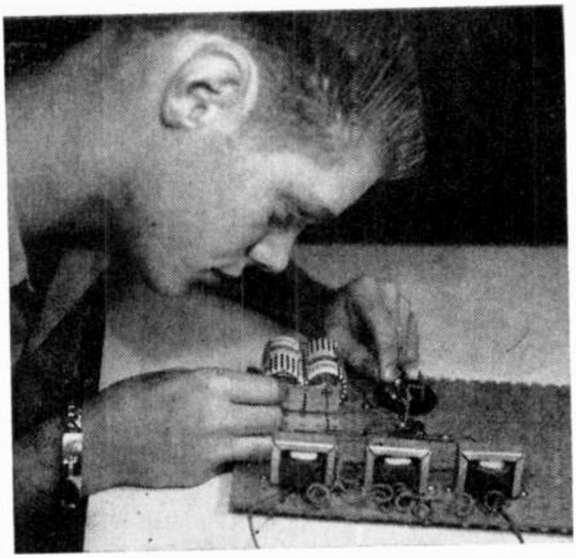
Although you may mount as many pots as you desire in a single rack, the writer recommends three. Those having a maximum resistance value of 1000 ohms, 10K ohms, and 100K ohms probably make the most useful trio for vacuum-tube circuits. The transistor specialist might find 100 ohms, 1000 ohms, and 10K ohms even handier.

Surplus, wire-wound potentiometers of this sort are available for less than 50c apiece, and are ideal for this sort of work since they have a higher heat-dissipation rate than the newer midget types. Newark Electric Co., 223 W. Madison St., Chicago, Ill., is a good source of these pots. If they have switches on them, just ignore these.

To use, merely connect the pot of the appropriate range into your circuit using ordinary hookup wire, or better yet, test leads, with a small battery clip at each end. Rotate the pot shaft until optimum performance of the circuit is observed. Then disconnect the pot from the circuit and measure with your ohmmeter.

MATERIALS LIST—POT RACK

Amt. Req.	Size and Description
1	1/8 x 3 x 12" plastic or tempered hardboard
2 pcs.	1x2x3" soft pine end blocks
3	potentiometers (see text)
3	¼" shaft knobs
6	Fahnestock clips
6	6-32 x ½" r.h. brass machine screws and nuts
4	#6 x ½" wood screws
	miscellaneous wire, solder



Build This High Voltage Source

By FORREST H. FRANTZ SR.

ALTHOUGH high voltage and high cost may seem synonomous to the experimenter, this isn't always the case. You can construct a high voltage source for interesting electrical and physics experiments at relatively low cost. The high voltage source described in this article can be constructed for about $5. It will provide an ac voltage of from 600 to about 1500 volts depending on the characteristics of the individual components used and the adjustment of the buzzer which serves as a vibrator.

The basic supply of energy for the high voltage power source is interesting too. The energy to operate the unit is furnished by two ordinary flashlight batteries. The power source then converts 3 volts into 600 to 1500 volts. This is a voltage multiplication of 200 to 500!

The operation of the high voltage source is based on the conversion of a smooth dc voltage into a pulsating dc voltage, amplification of the associated current, followed by voltage step up through a transformer.

A frequently used technique for converting smooth dc to varying dc is to chop the dc with a vibrator. The scheme is shown in Figure 1. When a dc voltage is applied initially, current flows through the contacts and the coil. The core of the coil is magnetized and the armature which carries one of the contacts is attracted to the core. When this occurs, the current path is broken, the magnetic field collapses and spring tension on the armature pulls it and the attached contact up toward the other contact. Current flows again and the cycle is repeated.

The operation is similar to the operation of an electrical buzzer. The difference, of course, is that the buzzer is built to make sound while the vibrator is made to chop a voltage. Consequently, vibrators usually have heavier contacts and are placed in sound absorbing enclosures. The important point though, is that a buzzer may be used as a vibrator.

How do you obtain a pulsating voltage from the buzzer? The contact interruptions cause the pulsating dc waveform shown in Fig. 1 to appear across the coil. This voltage contains a dc and an ac component. If the reference is considered to be on the center of the waveform the voltage would in fact be an ac voltage. (A pulsating dc voltage changes value but never crosses the zero reference line. An ac voltage changes value and polarity.) A pulsating dc voltage applied to the primary of a transformer produces an ac voltage in the secondary.

The contacts of an inexpensive buzzer cannot handle very large currents without undergoing rapid destruction. However, a transistor may be used as a current amplifier. Fig. 2 shows a buzzer equipped with a transistor current amplifier. When the buzzer armature is up (contacts closed) base current flows. This causes a much larger emitter current to flow. The voltage between the emitter and positive battery terminal is almost equal to the base voltage.

The current amplification of the transistor (beta) is the ratio of output to contact current (exclusive of coil current). Thus, if the output current is 1 ampere and the beta of the transistor is 50, the contact current is 1/50 of an ampere or only 20 milliamperes.

The requirement for high current is imposed by the voltage step-up required. Al-

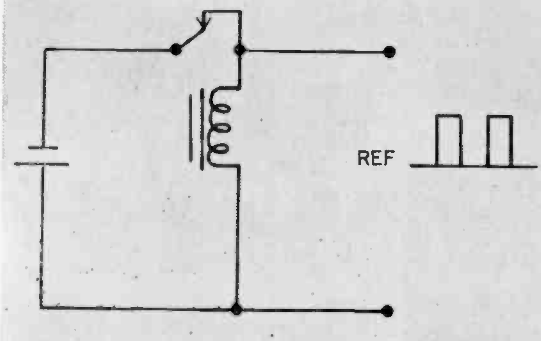


FIG.1

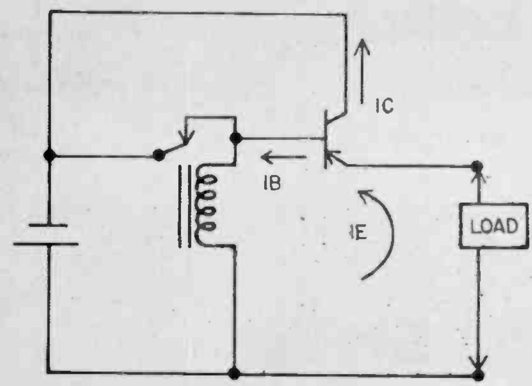


FIG.2

though a voltage of only about 1 volt rms is available from the circuit arrangement of Fig. 2, the desired voltage output is 600 to 1500 volts. The power available at a transformer secondary is never more than the power into the primary. Therefore high current is required in the primary although the secondary current is small.

The final circuit of the high voltage power supply is shown in Fig. 3. The buzzer and transistor circuit is the same as that of Fig. 2 with one exception. The resistor R has been connected in series with the buzzer V to limit current through the buzzer coil.

The output circuit (which provides the voltage step-up) employs three inexpensive output transformers. The low impedance windings (ordinarily secondaries) are employed as primaries and are connected in parallel. The high impedance windings (usually primaries) are employed as secondaries. They're connected in series to provide three times as much voltage as a single winding.

Build the high voltage source on a perforated Masonite board. Use Fig. 4 as a guide for mounting components. Mount the transistor on a metal bracket (½-in. wide with 1½-in. sides) with a machine screw and nut. The bracket, in addition to supporting the transistor, acts as a heat sink. The transistor collector is connected to the shell and therefore connects to the bracket.

Connect the transistor base lead to the buzzer coil and contact junction with a lead soldered to the coil frame. Solder the base and emitter leads directly to the transistor

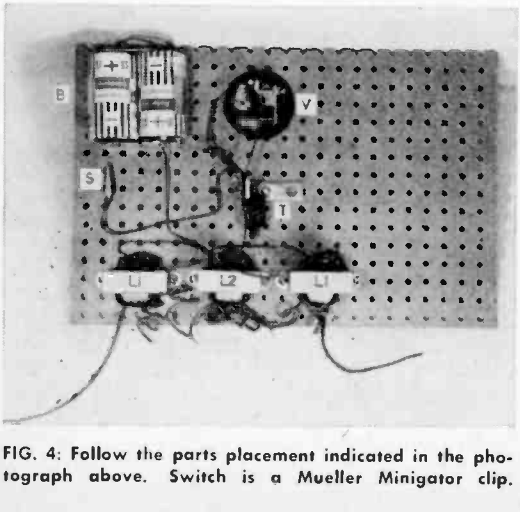


FIG. 4: Follow the parts placement indicated in the photograph above. Switch is a Mueller Minigator clip.

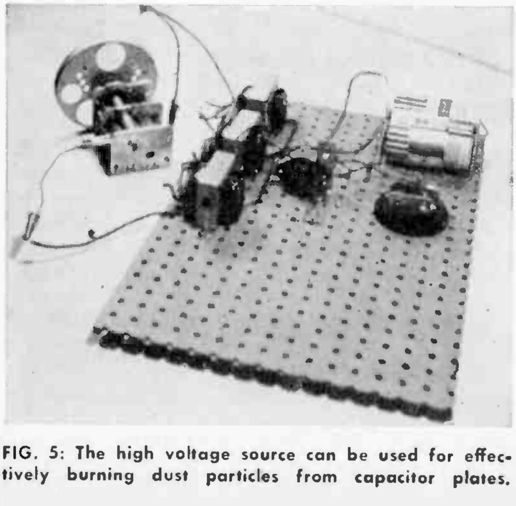
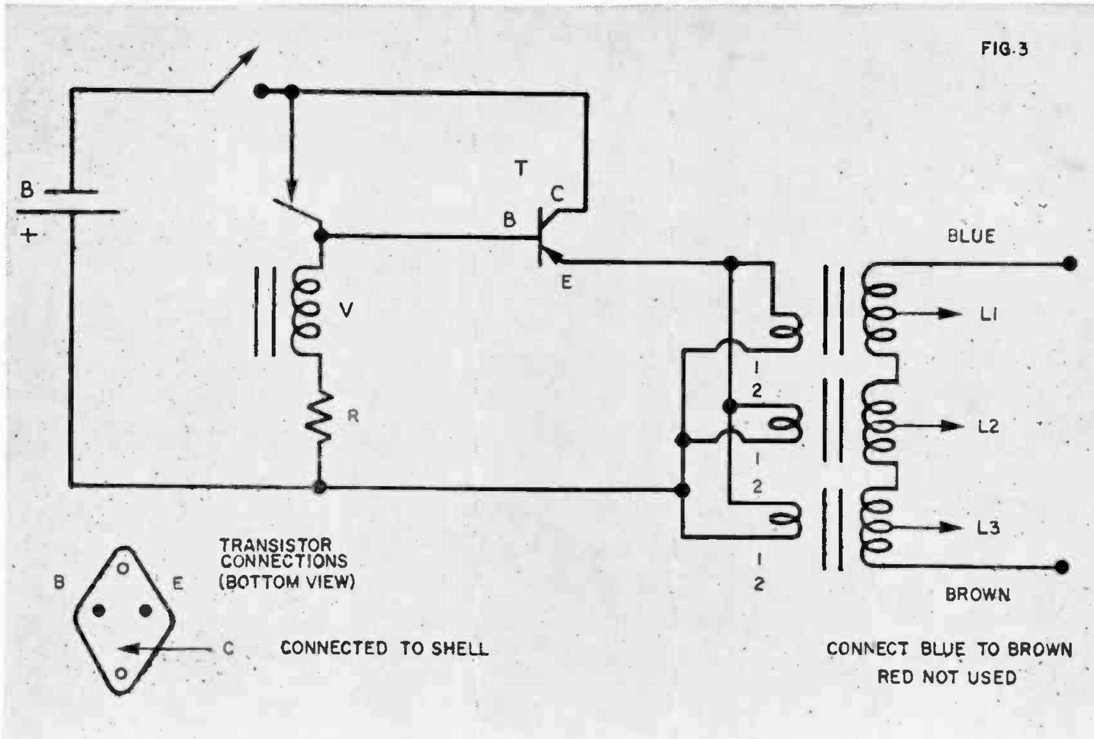


FIG. 5: The high voltage source can be used for effectively burning dust particles from capacitor plates.



pins. Use a pair of needle nose pliers between soldering iron and transistor body to avoid heat damage.

Connect taps 1 and 2 of transformers L1, L2 and L3 in parallel in the transistor collector circuit. Connect the high impedance windings brown to blue (red unused) to form the high voltage output circuit.

The switch S is a *Mueller Minigator* clip. It is clipped to the negative battery terminal to turn the high voltage supply on. When the clip is disconnected, the high voltage source is off.

The adjustment of the buzzer is a major factor in determining the output of the power supply. To adjust the buzzer for maximum output from the high voltage source, connect a voltmeter set to a range in the neighborhood of 1000 to 2000 volts to the output leads of the power supply. Loosen the lock-nut slightly on the buzzer contact adjusting screw and adjust this screw for maximum voltage output. This adjustment is fairly critical and it's tricky. You may have to repeat it several times to get good results.

The voltage output may be increased by increasing the input voltage—*up to a point!* The input voltage should never exceed 6 volts. And the input voltage should never be increased to the point where heavy contact arcing begins. When heavy contact arcing occurs, the contact points burn out after a relatively short period of operation.

Use the high voltage source in electrical experiments that require high ac voltages. It may be used, with a rectifier and filter to supply high dc voltages, or in maintenance applications to burn small particles of dust out of capacitor plates (see Fig. 5). The experimenter will find the high voltage source interesting to construct and use. Since it operates from two regular flashlight batteries and generates a very high voltage, it has wide-eyed wonder appeal. It is also extremely portable.

MATERIALS LIST—HIGH VOLTAGE SOURCE

Desig.	Size and Description
R	10-ohm ½-w resistor
L1, L2, L3	TR-12 universal output transformer
T	CBS 2N255 or Sylvania 2N307 power transistor
V	1½-v high frequency buzzer (Lafayette MS-436)
B	two 1.5-v batteries series connected (Burgess #2)
S	minigator clip (Mueller 30)
	battery holder (Lafayette MS-176)
	⅛ x 7²⁷⁄₃₂ x 11²⁷⁄₃₂" perforated board (Lafayette ML-81)
	bracket (see text)

Components may be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., N. Y.

New Sounds For Stereo

By HANS FANTEL

MICROPHONES of all types are used in a recording studio. Each is selected for its ability to pick up a particular

They're doing funny things in studios these days . . .
Engineers read music scores as well as schematics
and reedy, thin voices are made strong and virile

"WE USED to just walk into a place, set up mikes, and let the tape roll. That's about all there was to recording," says recording engineer Dave Jones. "Now we make a complete acoustic survey before we even bring in the recording gear."

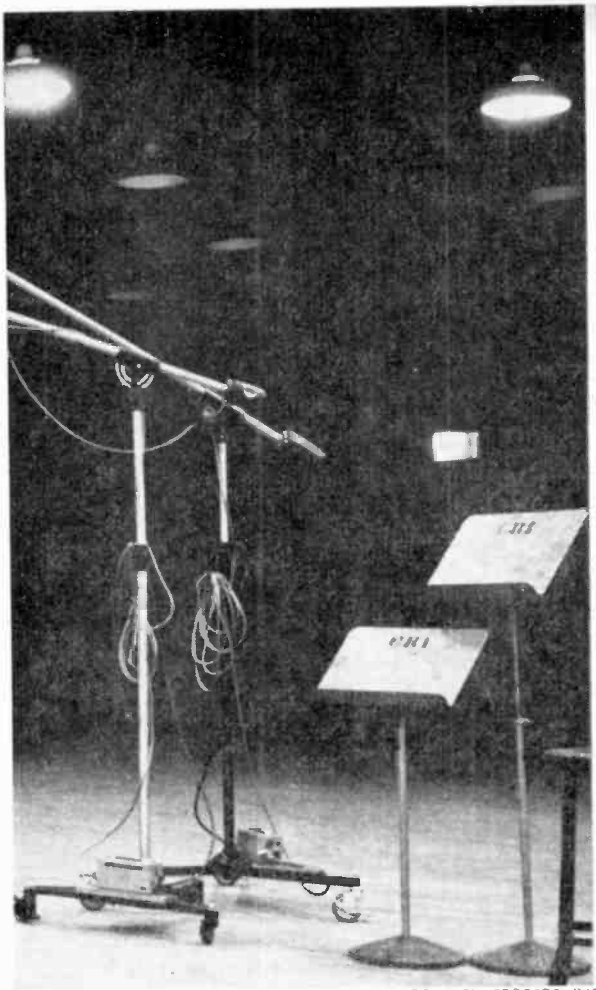
Jones was rigging his equipment in a Manhattan night club to record the evening's show. He walked across the stage, clapping his hands.

"I'm not applauding myself," he explained. "That's how we test reverberation. The echo of each clap is picked up by microphones in different parts of the hall. We time the echo in all those places. Then we put the recording mikes in spots with just the right balance between direct sound and echo."

Jones' Methods are typical of a new engineering approach to stereo. From where you sit—in your living room—you can easily tell the difference:

- The walls are pushed back—your living room seems bigger to your ears. Close your eyes and you can "feel" the large space of the hall where the record was made.
- The extra sense of space makes your stereo system sound full-toned, the bass more resonant, even though no changes are made in the system itself.
- Singers and instruments seem spaced out front-to-back as well as left-to-right.

The New Type of Sound is an answer to



COLUMBIA RECORDS, INC.

range of sound. Note boom stands.

COMMAND RECORDS

ENOCH LIGHT supervises a recording session using his controversial sprocket-driven film recorders.

public demand. The novelty of stereo has worn off. Record buyers are tired of hearing music jump back and forth between speakers. Realism, not ping-pong sound, is the new goal.

Engineers began experimenting with the depth dimension in sound, taking in echoes from the rear of the concert hall. They found that the impression of front-to-back depth contributes as much to the stereo space illusion as the familiar left-to-right spread. So they moved the microphones further back from the orchestra to catch more hall echo. But that way they lost the sharp sonic focus that makes the listener feel right up front with the players. Finally, they came up with an electronic trick for having it both ways.

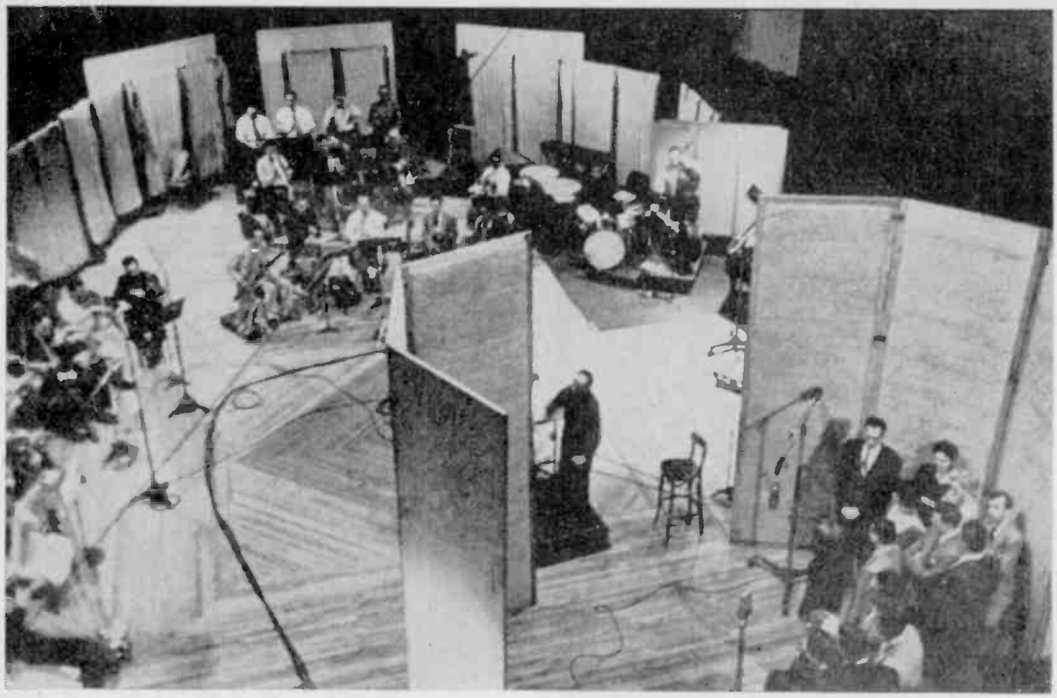
Setting Up Mikes both in front of the musicians and in back of the hall, they fed the signal from the back mikes to a third channel that had been added to studio tape recorders. Later, when cutting the two-channel stereo record from the three-channel studio tape, they blend the extra channel that conveys the depth dimension with the regular left and right channels.

"It's like being all over the place at once," a technician explains. "Till now we were satisfied if we could make the listener feel he was hearing the music from the best seat in the house. Now with the new multichannel methods we can do better than that. No seat in the house gets as much of what's going on musically as a multi-mike pickup. That's like having extra ears everywhere."

This hardly overstates the case. Some serious listeners today would rather play a record than go to a concert. A famous music critic went to the opening of the new Philharmonic Hall in New York to report on the acoustics. His verdict: "I can hear better on my stereo system."

It takes more than clever mike placement to make a first-rate record. To stay in the

RCA VICTOR



ACOUSTIC SCREENS are set up in the studio to control reverberation and separate the chorus in the foreground from the orchestra in the rear. The conductor is stationed centrally, visible to all musicians.

competitive race for better sound, record companies are giving their engineers a free hand and a fat budget to

- revamp control panels
- calibrate microphones
- improve tape recorders
- devise new re-recording methods.

Last year, RCA Victor and London Records built control consoles that enable one engineer to ride herd on twenty mikes simultaneously. He can cook up any desired mixture of sound by blending each mike with any other in varying degrees. Cross-feeding separate stereo channels, he can shrink or stretch the stereo space illusion side-to-side and front-to-back. He can even make an instrument seem to "walk" across the stage though the player is sitting still. All he has to do is to gradually fade the instrument from one channel to another. For the listener, this creates the impression of moving sound. London's *"Phase 4 Stereo"* and RCA Victor's *"Stereo Action"* records specialize in this kind of electronic conjuring.

With 20 Mikes Under His Thumb, the engineer can accent any section of the orchestra or even spotlight individual instruments. What's more, he can change the tonal character of the instruments by adjusting tone controls for each of the 20 mikes.

When Larry Elgart's band recorded last fall at Columbia's 30th-Street Studio in New York, the slide trombone sounded too polite in playback.

"Put some razz on it!" Elgart suggested over the intercom.

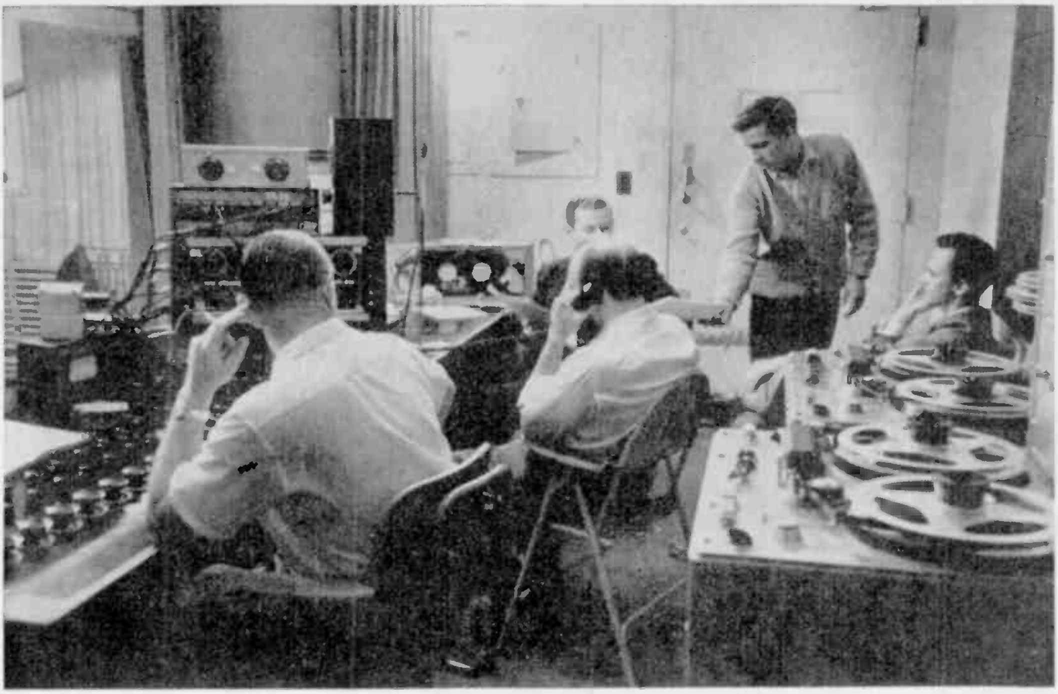
In the control room, the engineer turned up the treble for the mike in front of the trombone section. The raspy overtones got an electronic boost. Result: a real trombone snarl on the next take.

Pop Singers in particular benefit from the

COLUMBIA RECORDS, INC.

CUTTING the goofs is the tricky job of the tape editor. Ease in cutting, splicing is advantage of tape.

COLUMBIA RECORDS, INC.



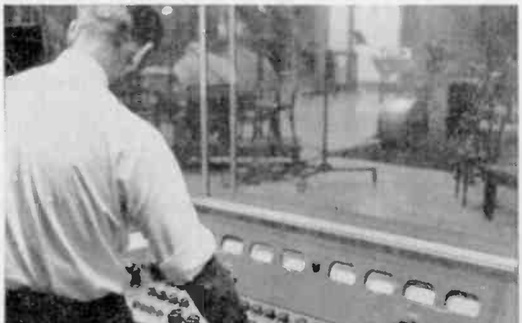
The main control room at Columbia is where the director operates. Here, he phones instructions to studio technicians to shift the positions of microphones on the studio floor, which adjoins control.

audio engineer's ability to improve on nature. What a singer's voice lacks in quality of power, electronics can supply. Rock-and-rollers, for instance, are usually picked more for the way they look than the way they sound. The voice is made to order in the control room. A thin whine is turned into a chesty roar, and sex appeal is added by frequency compensation in the right places.

These synthetic singers are in quite a fix when they appear in person. Their fans wouldn't recognize the real voice, so the singers have someone play their own records backstage while they stand silently mouthing the songs for the audience.

Electronic shenanigans of this kind are strictly pop stuff. Engineers wouldn't dream of gimmicking a Beethoven symphony or a Mozart opera. In classical recording, multi-channel techniques serve a different purpose

RCA VICTOR



On this control panel, a recording engineer mixes signals from twenty mikes, adjusting level, color.

RCA VICTOR

Re-recording after the session puts final polish on sound. Huge control panel covers all sonic sources.

RCA VICTOR

SPECIAL EFFECTS are produced as Julie Andrews lends her voice to a recording which is being rhythmically punctuated by the tap dancer in the foreground. An accent mike is on the fancy footwork.

RCA VICTOR

BING CROSBY sings close to the microphone and demonstrates his famous crooning technique. He was one of the first to utilize voice boosting.

—to capture the fine points of complex scoring that might otherwise be drowned out in the orchestral din. Nowadays many recording engineers read symphonic scores as accurately as any trained musician. They anticipate solo passages and shifts in orchestration and follow through with control adjustments that make the most of the music.

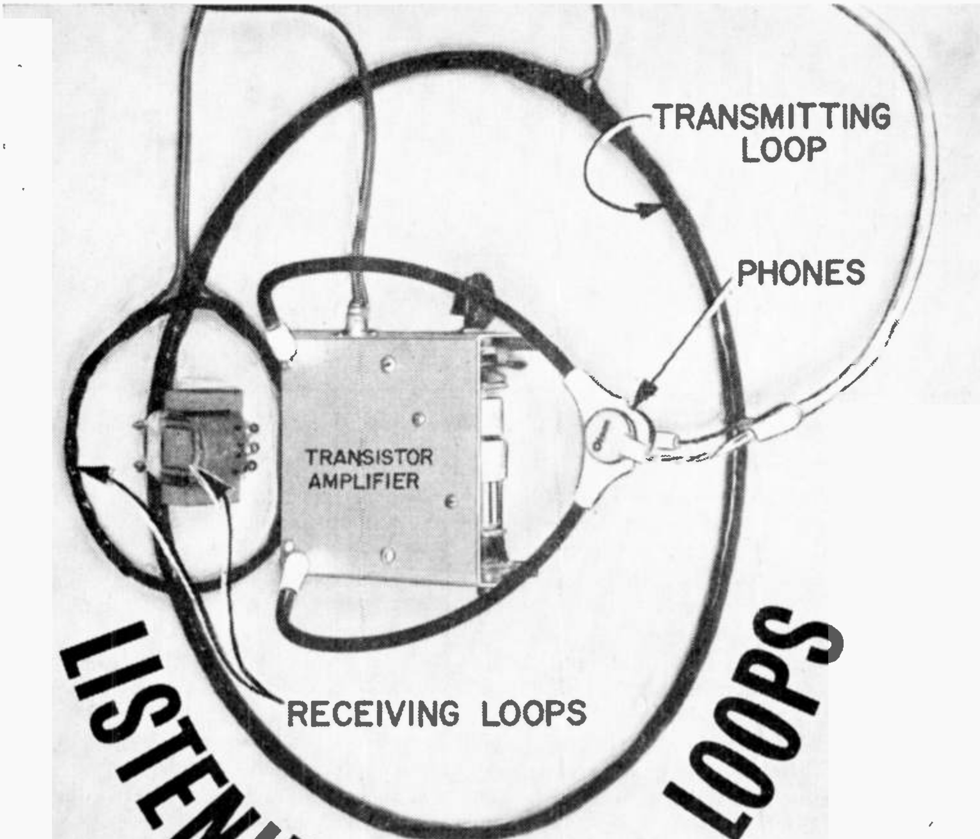
"We even handpick our microphones for classical sessions," says John Pfeiffer, recording director for RCA Victor. "We found some mikes sound better for strings, others for woodwinds, and some are especially good for percussion. We've tested just about every make of mike—German Telefunken, Austrian AKG, Japanese Sony, and American RCA, Altec, and Western Electric mikes. We ran response curves on them all and got each tagged for specific jobs."

Tape recorders are also caught up in the sound race. Everest and Command Records, for instance, came up with machines that don't use tape at all. Instead they record sprocket-driven 35-mm film coated with magnetic oxide. "The sprocket drive keeps the tension absolutely constant across the recording head," explains Enoch Light of Command Records. "That eliminates the last bit of flutter—the tremulous wavy sound you sometimes get in the treble. Besides, magnetic film is wider and thicker than tape and that makes for better stereo channel separation, wider range between soft and loud, and a quieter background."

Not All Engineers Agree. Some object to the sprocket drive because it is prone to low-frequency noise (around 96 cycles per second) that might interfere with clean bass reproduction unless it's carefully filtered out. With double-width tape whizzing past the recording head at 30 in. per second (four times as fast as on your home tape machines) most engineers believe that tape can match and even surpass the sound quality of magnetic film.

Once an engineer's work was over at the end of a session. Now he has a new chore —an added production step called re-recording. He plays the tape recorded at the session and, as he listens, he records the music from the first tape onto a second one. During this transfer the signal runs again through an elaborate control board. That's when fine points of channel balance, tone color and emphasis are touched up—long after the musicians have left.

"If you had a good stereo phonograph at home," says engineer Alan Silver of Connoisseur Society Records, "chances are that it was capable of greater fidelity than was contained on most records. But now the shoe is on the other foot. The new records give even the best stereo system a real workout. We have given the stereo fan a good reason for improving his rig."



LISTENING WITH LOOPS

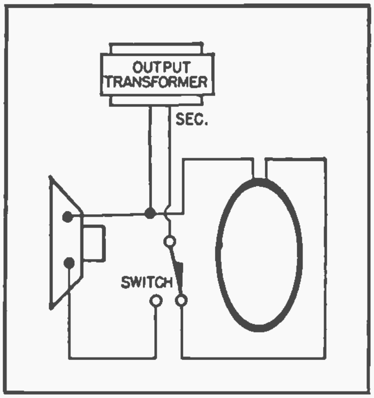
Did you ever attend a "silent" dancing party? The dancers wear earphones and only they hear the music. The effect is eerie...

By JOHN POTTER SHIELDS

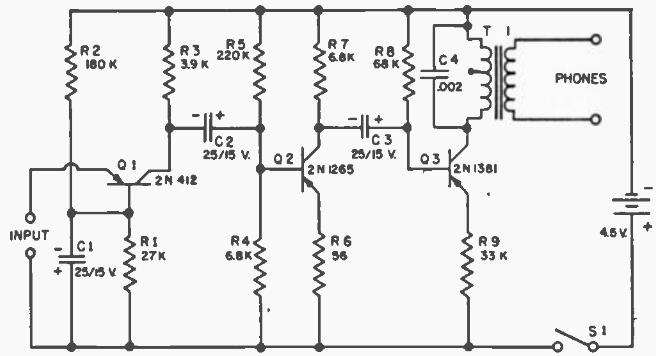
YES, you can hear loud and clear with no physical connection between your earphones and radio or hi-fi. What's more you can hear when others cannot. The loop system is great for getting the sound from your television without interrupting grandma's nap. With loop listening a housewife can keep up with her chores while hearing her favorite programs without trailing wires and without having the radio or hi-fi blasting through the house. Here's how your loop system works and how to build it.

In Operation, as the signals flow through the transmitting coil, they generate a magnetic field around the coil which varies in proportion with the currents. The field produced by the transmitting coil induces currents in the receiving coil which are a facsimile of the signals applied to the transmitting coil. These currents in the receiving coil are applied directly to phones or an amplifier for further amplification. The action is exactly the same as a transformer.

For Maximum Range, the transmitting loop should be as large as possible and consist of many turns. To wind the coil, trace a



1. WIRE loop and speaker to select.



2. SCHEMATIC for transistor amplifier which boosts sound.

line conforming to the desired overall dimensions on your workbench. Drive 1-in. nails equal distances around the marking to form a coil form. When the winding is completed, remove the coil from the form and secure its turns in place with tape. Remove the insulation from the leads and attach them to a convenient length of ordinary "zip cord."

Due to its low impedance, the transmitting loop is connected to the transformer terminals of the particular amplifier being used. Due to the low impedance of the output transformer secondary, #20 or heavier wire should be used to wind the transmitting loop. The coil should not consist of more than 50 turns. If you like, a S.P.D.T. switch can be included in the setup so that either the loop or speaker is connected to the output transformer.

MATERIALS LIST—TRANSISTOR AMPLIFIER

R1	27K	
R2	180K	
R3	3.9K	
R4	6.8K	
R5	220K	(Olson #R-50, ½ watt)
R6	56 ohm	
R7	6.8K	
R8	68K	
R9	33 ohm	
C1	25 mfd 15 volt miniature elec. cap. (Olson #C-872)	
C4	.002 cap. (Olson #C-307)	
T1	500 ohm pri., 3.2 ohm sec. output transformer	
Q1	2N412 transistor	
Q2	2N1265 transistor	
Q3	2N1381 transistor	
1	S.P.S.T. rotary switch (Allied #34-B-080)	
1	battery holder and 3 pen-lite cells	
1	1 x 3¾ x 4⅛" miniature aluminum chassis	
1 pc.	2⅝ x 2²³⁄₃₂" un-clad peg board	
1	bag push-in terminals (Olson #HW-5)	
1	phone jack (Allied #41-H-642)	
1	phono jack (Allied #46-H-214)	
1 pr.	headphones (Olson #PH-55) (4 ohms) or PH-10 (4,000 ohms)	
1	½ lb. #20 enamel covered magnet wire (for transmitting loop)	
1	¼ lb. #30 enamel covered magnet wire (for receiving loop)	

The Receiving Loop should be as large in diameter as possible. Since the receiving loop will normally work into medium to high impedance inputs, it should have as many turns as are practical as this will increase both its sensitivity and impedance match. As mentioned earlier, the receiving loop can be connected directly to a pair of phones for short range operation. The phones should have an impedance of between 500 and 2,000 ohms.

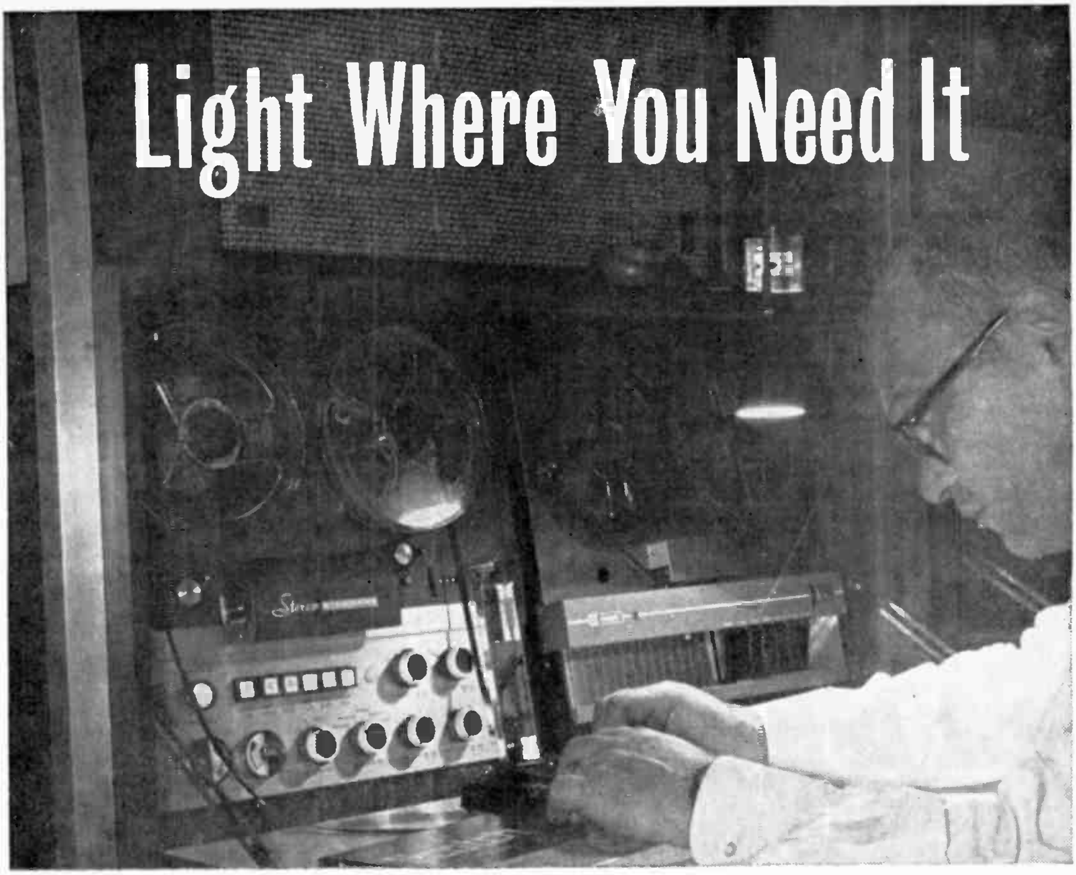
A self-contained amplifier can be used to considerably boost the operating range. With the transistor amplifier between the receiving loop and phones, the operating range was extended to about 20 feet. A five inch coil wound with 100 turns of #30 wire yielded an operating range of about 15 feet.

The transistorized amplifier is straightforward with the exception that a common base input stage is used rather than the more conventional common emitter configuration. This provides a better impedance match between the receiving coil and the amplifier's input. The output transformer shown in the schematic matches the last transistor to the four ohm stereo phones.

Placement of the receiving coil need not be a problem if a reasonably small loop is used.

As Much Power As Possible should be used to drive the transmitting loop in order that the amount of amplification between the receiving loop and phones can be kept to a minimum. Excessive amplification at the receiving end can cause an objectional amount of hum and spurious noise. The ratio of the energy emitted to the surrounding radiation should be as high as possible.

Light Where You Need It



Often, the best place for the stereo system is decided by sound quality and appearance. It isn't always the best illuminated area in the room . . .

When you sit down to an evening of editing and splicing tapes, good and proper lighting plays an important part. Without it, your eyes will fatigue rapidly, and therefore the amount of time you planned to devote is sharply curtailed.

The lamp shown in the accompanying photographs provides a highly intense even white light, and the three-position switch permits you to operate at full brightness, half brightness, or off. The unit uses a transformer in the base and an automotive lamp provides the light. Three joints and a swiveling head permit maximum flexibility. The lamp can be stored easily when not in use as it collapses to only a few inches in height.

For more information, contact Tensor, Inc., 1873 Eastern Pkwy., Brooklyn 33, N. Y.

HIGH INTENSITY and extreme flexibility are features of this work lamp from TENSOR. Lots of joints and swivels.

Using C-B Radio

WHITE PLAINS High School, White Plains, N. Y., is the first school in the country to employ two-way Citizens Band radio equipment as an integral part of their student driver training program.

Dr. C. Darl Long, the school's principal, decided to equip their seven student driver training cars with two-way radios in addition to having a two-way radio installed in a control tower.

Why? Now one teacher in the tower can do the work of seven teachers. The radios are tools for instruction. Previously each teacher set up his own road condition or circumstance with no relation to what the other six teachers were having their students do. All seven cars are on the road at the same time.

Overall control of area is exercised by one man in the tower.

Coordinated use of the driver training track by all cars at the same time or assignment of each car to a separate area of the course and instantaneous or coordinated reassignment of cars to a new area of the course helps save cost and time.

The Citizens Band radio equipment used by the school is manufactured by Cadre Industries Corp. This is a completely transistorized 5-watt transceiver with almost no battery drain when left in an *on* position. The unit also has a built-in squelch and noise limiter (eliminating distracting and annoying static when not in use but still in an *on* position to receive.

The school started its driver training program in 1959. To date there have been no accidents on the driver training course nor is there a known accident involving a student who had successfully completed the course of study.

The driver education program is part of the school's overall health, physical education, and safety program and every student is required to take the driver education part of the program before graduation. Of the school's total enrollment of approximately 2000 students, between 750 and 800 children successfully complete the program each year.

The one mile driver training course was built for the school by the city of White Plains. The Traffic Engineering Dept. laid out the course, provided the marking and traffic equipment to simulate all phases of driving.

Examples:

- Parking (both parallel and diagonal)
- Broken U turns and full U turns
- Yield Right of Way signs
- Three-way traffic lights
- Full Stop signs
- Traffic circle
- Curved highway

Driver education curriculum covers two years. The sophomore year (14-15 years of age)—18 hours of general safety education (correct way to walk the roads, ride a bike, swimming habits, etc.) stressing the correct attitudes and habits for safety and an introduction into driver education.

The junior year (16 years of age)—18 hours of classroom lectures and films, 18 hours of simulated driver training and 21 hours behind the wheel on the driver track.

In New York state, in the suburbs, you can get your junior license at 16 years of age.

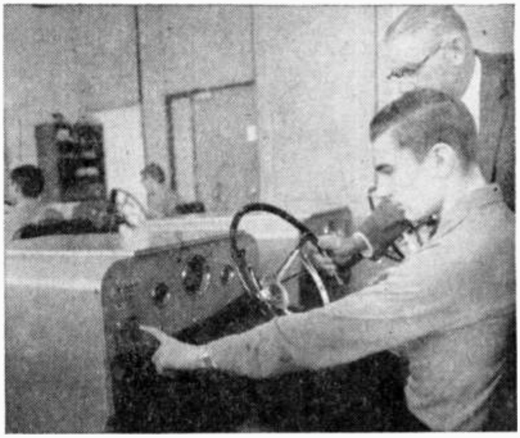


Fig. 1: Before the student driver gets anywhere near a car, lots of procedure practice is applied in classroom.

Fig. 4: When out on the study track, cars are plainly marked. Note intersection sign "Yield Right of Way."

in Driver Education

And at 18, your senior license which permits you to drive at night. New York state, however, has agreed to issue a senior license to all students who have successfully completed the course in their 17th year—one year earlier—provided the student has had a minimum of 72 hours driver education.

Insurance companies have also agreed to a minimum 10% gross reduction in car insurance premiums for the family in which the child has successfully completed the course of study. In round figures this amounts to a savings of one year gross cost to the family over the eight year period in which there is a premium cost for under 25 drivers.

There are no costs to the students of White Plains High. The local Board of Education has funds for gas and insurance.

According to Commissioner Edward J. MacDonald, the judges in the community are seriously considering sentencing minor traffic violators to a number of hours on the White Plains driver training course instead of $5 and $10 fines because of track excellence.

Since all costs for this driver training program is paid for by the city through taxes—the school, the Board of Education and the local elected officials must continually impress the community with the value of the money being spent.

Fig. 2: The citizens band radio transceivers are placed under the dash. Speaker provides instructions.

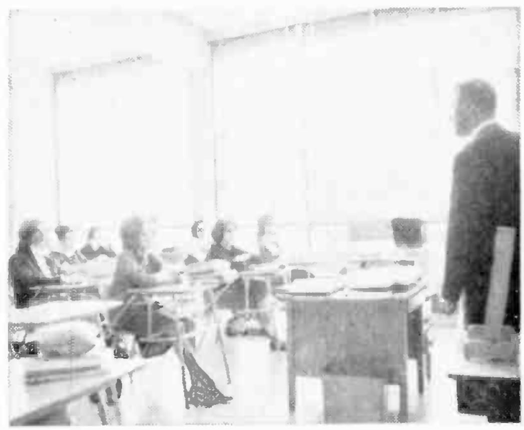


Fig. 3: More and more in-the-class study before going out on the track. Students study well before practice.

Fig. 5: Instructor in tower commands full view of all cars on track, is in constant two-way contact with cars.

Fig. 6: Final briefing instructs student group in use of radio equipment and answers any last questions now.

Put More Talkie in Your Walkie

By FRED BLECHMAN, K6UGT

THE popularity of Part 15 100 milliwatt walkie-talkies is increasing by leaps and bounds. The introduction of the Knight C-100 Citizens Band transceiver kit by Allied Radio (#83Y804-J $9.95 plus postage each) has spurred even greater interest in these useful flea-power units.

Many units in this class suffer from a common problem—low modulation percentage. This article will specifically show you how to triple the modulation of the C-100 to almost 100%, using only two new parts. If you have a similar unit, you should be able to apply this information to it. It's really quite simple.

The C-100 "as-built" modulation percentage is roughly 30%, about one-third the safe allowable. The result is that although the transmitted carrier is evident by the quieting of the superregenerative hiss on the companion unit, it's somewhat difficult to hear the message as the distance is increased. Of course, you can hold the speaker near your ear, but that's not very desirable, especially in noisy areas.

Why the low modulation? The small speaker, used in the normal mode when receiving, is used as a dynamic microphone when transmitting. This is a very low impedance device (about 8 ohms). Capacitatively coupling it directly to the base of the audio transistor

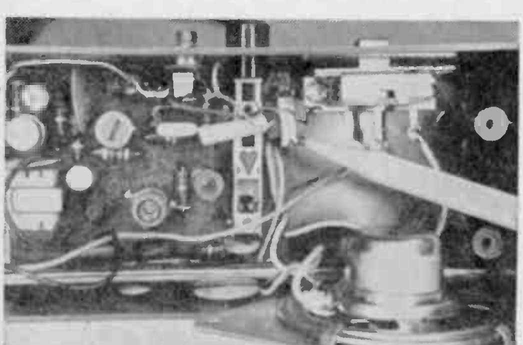


Fig. 2: The modified unit contains a simple push-to-make switch. Glue a tab to old switch to activate both.

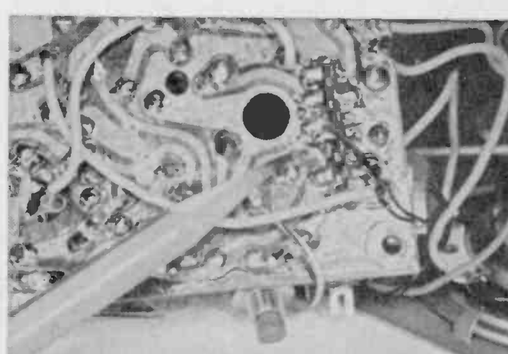


Fig. 3: Cut the printed circuitry at the point indicated by the pencil. Simply scratch with knife blade.

results in an extreme mismatch, and consequent loss in power transfer. All we do to correct this condition is to insert a step-up transformer between the "mike" and the first audio transistor. This increases the applied audio voltage and comes much closer to matching the transistor input impedance.

How do we do it? Figure 1A shows part of the original C-100 circuit. Note that when the speaker is switched from receive to transmit it is fed directly (through C8) to TR-2. See the point marked "X"? This is where we are going to insert the matching transformer.

You'll need an 8 ohm to 500 ohm miniature transformer; the Lafayette Radio TR-116 (111 Jericho Turnpike, Syosset, L. I. New York, 79¢) is ideal in size and rating. The photos show how the TR-116 is neatly tucked in between the two switches of the C-100.

Now look at Figure 1B, which shows the modified circuit. Switch S3 is *very important;* with a little explanation it's easy to understand why. In the depressed position, the "bottom" of both transformer windings are grounded and the mike develops audio voltage across the 8 ohm winding. This is stepped-up in the 500 ohm winding and fed to TR-2 through C8. But what would happen if there was no switch here and the transformer stayed grounded in the receive mode? The grounded 8 ohm winding would be almost a short circuit to the high-impedance detected signal from the RF detector! If we lift the ground we're still in trouble, since the 8 ohm and 500 ohm windings of the transformer are now a relatively high series resistance to the base of TR-2 and seriously cut audio volume. The solution is to short out the 500 ohm winding when receiving, leaving only the insignificant 8 ohm winding in series, and ground both windings when transmitting.

The Lafayette Radio MS-449 SPDT miniature push button switch (19¢) is tailor made for this task. Install it just below the send-receive switch, as shown in the photo. You'll need only a ¼-in. hole. Carefully bend the transceiver crystal towards the center of the board to allow room for this new switch.

The actual wiring is pretty straightforward. Remove the circuit board from the case and cut the printed circuit at the point indicated in Figure 2, using a razor blade or knife. Cement the new transformer in position, bottom up. Solder the black transformer wire and the S3-3 lead to the circuit board as shown in Fig. 2. Replace the circuit board in the case. Connect both green transformer wires to terminal 1 of S3 (see Fig. 1B insert for switch numbering). Connect a wire from terminal 2 of S3 to the end of R10 (68 ohm) closest to the edge of the board (ground). Connect the brown transformer lead, and the lead from the circuit board, to S3 terminal 3. This completes the wiring changes.

It's a little inconvenient to press both S1 and S3 at the same time when transmitting. You can solve this problem by cementing a small tab to the S1 send-receive button; this tab extends over S3. Now when you press S1, S3 will also be depressed.

For less than a dollar, and less time and effort than it takes to describe, you can greatly improve your flea-power transceiver modulation. Try it and see!

MATERIALS LIST—MODIFIED WALKIE-TALKIE

desig.	Size and Description	Price (Postage extra)
C-100	Citizens' Band Transceiver Kit Allied 83 Y 804-J	$9.95
T2	500 ohm to 8 ohm miniature audio output transformer Lafayette TR-116	.79
S3	SPDT miniature pushbutton switch Lafayette MS-449	.19
misc.	wire, small aluminum tab, cement. Allied Radio Corporation 100 North Western Avenue Chicago 80, Illinois. Lafayette Radio Electronics Corporation 111 Jericho Turnpike, Syosset, L. I., New York.	

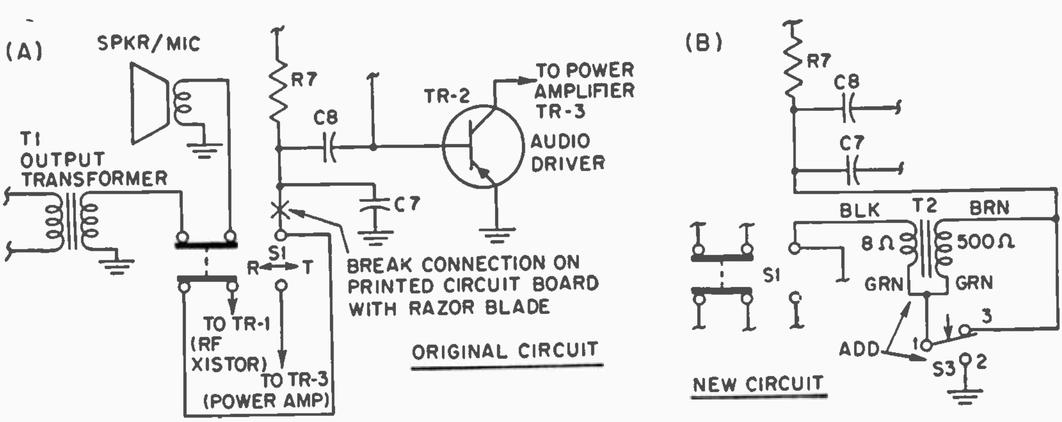
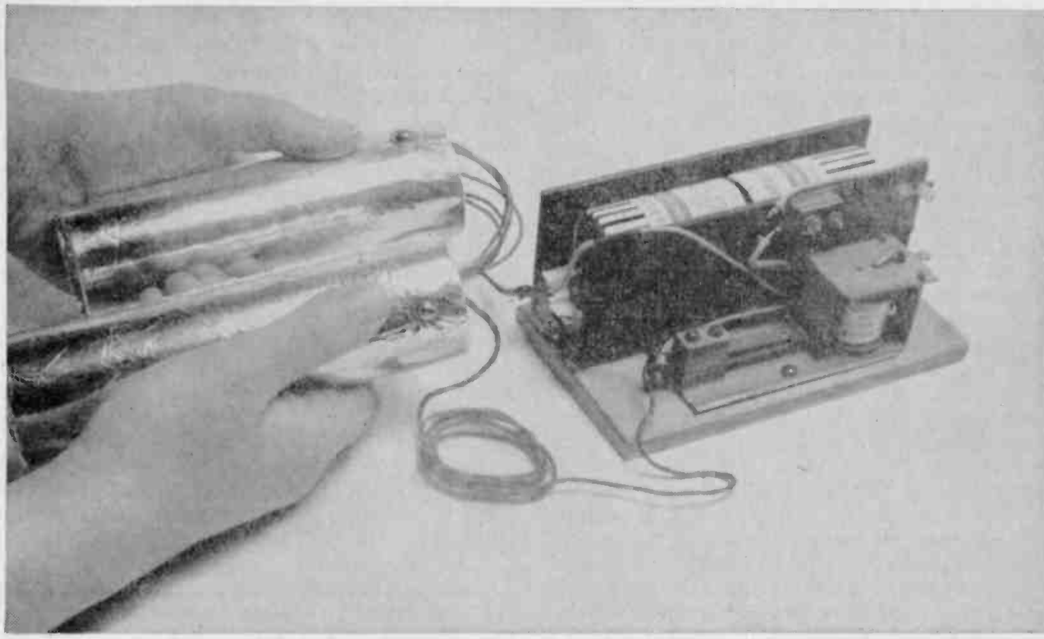


FIGURE 1. C-100 MODULATION MODIFICATION

Trickle Voltage Relaxer

By THOMAS J. HIDLEY



It used to be called a "Shock-Box", and was said to heal many of the ills that man is heir to. Electricity was new.

A LOW voltage trickle can be built from a six or twelve volt relay by reversing the points so the relay will vibrate. Whatever other contacts are on the relay can be eliminated or used for other parts of the assembly. The points can be adjusted so that even a slight voltage will make the contacts vibrate. The tension of the spring can also be reduced. Two flashlight cells are sufficient. Three is the maximum.

After cutting wood to size, sand, stain and varnish each piece. When dry, assemble all

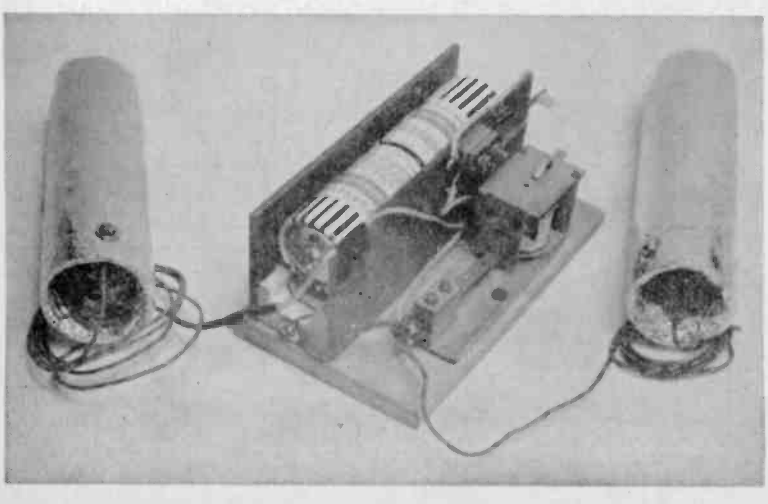


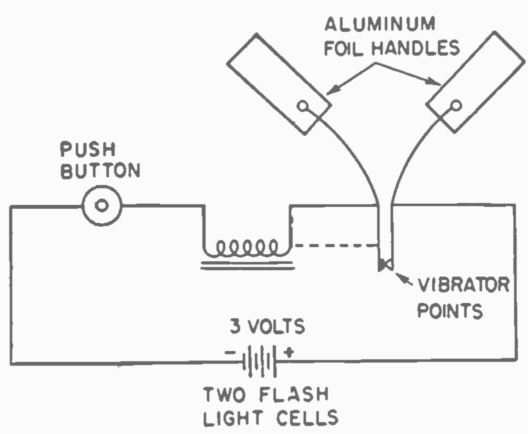
Fig. 1: Aluminum foil over the cordboard tube serves as the conductor. A surplus relay can easily be modified to serve as a vibrator to deliver the jolt where it's needed.

MATERIALS LIST—VOLTAGE RELAXER

Amt. Req.	Size and Description	
Two pieces	3/4 x 1 5/16 x 5 1/2" pine	Top & Bottom for Battery holder.
Two pieces	1/4 x 3 x 5 1/2" plywood	(Ends)
Two pieces	1/4 x 1 7/8" plywood	(Sides)
One piece	1/4 x 3 1/2 x 6" plywood	(Base)

One relay, 6 or 12 volts, with surplus male and break contacts.
One dozen small finishing nails, brads or small wood screws.
Three 5/32 x 1/2" brass bolts, including hex nuts and eight brass washers.
Seven feet stranded hookup wire.
One cardboard tube cut in half.
Two pieces 7 x 12" aluminum foil to cover cardboard tubes.
Two 5/32 x 3/8" round head wood screws for mounting relay.
One 3/32 x 1/4" long round head wood screw. For press button.
One round piece of wood 1/4" thick, 3/8" long. Used for button.
Surplus contact points are used to make up a push button assembly, and the contacts for each end of the batteries.

WIRING DIAGRAM

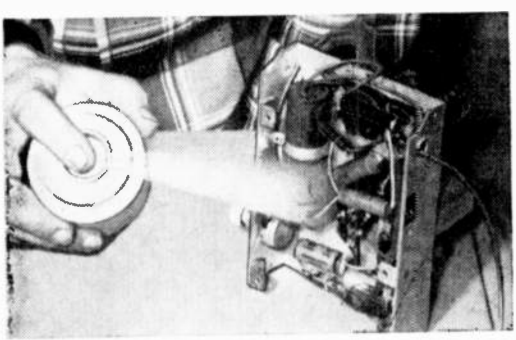


the wood parts, mount the relay and push-button assembly. Now it is ready for wiring. Wrap the handles of cardboard tubing with the aluminum foil, and seal along the edges with transparent tape from end to end. Push the overlap of foil into the end of the tubes. using a small nut and bolt backed up with two washers. Cut two 30-in. lengths of hook-up wire and attach them to the handles and the relay as in Fig. 1.

Back in the old days people used such a device for relieving their aches and pains. It can be fun at your next party, or the trickle of voltage can be most relaxing.

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-

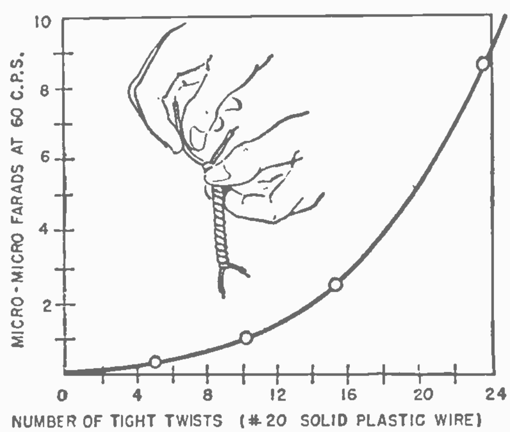


haves or goes dead. The trouble may be a part that expands with heat after current has been flowing through for a few moments. Spray suspicious parts with CO_2 gas one at a time. The intense cold will contract a defective component so it can work normally.

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.

Twisted Wires Make Capacitor

• You can make capacitors for coupling or neutralizing simply by twisting two pieces of plastic hook-up wire tightly together. The insulation is left on, and you can easily change the capacitance to adjust your circuit.



The chart shows the result of measurements made with a bridge at 60 cycles per second. The "gimmick" capacitors were made of size 20 plastic solid hookup wire twisted as tightly as possible by hand. Leads were 1/2 in. long. Because dielectric constants of various brands of wire will vary, the chart will not be precise in every case.—C. F. ROCKEY.

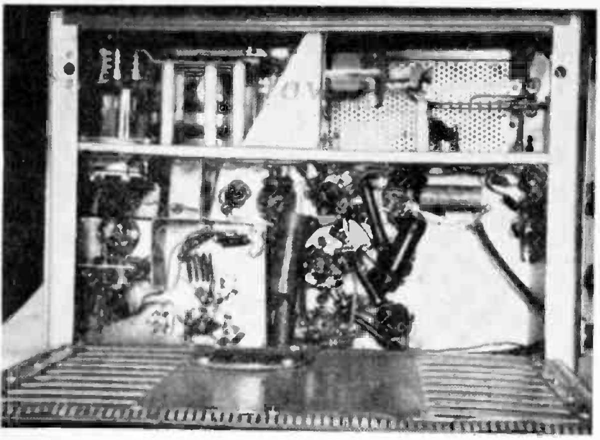


Fig. 6: The transmitter layout is uncluttered, and ease of accessibility is assured by hinged side panels.

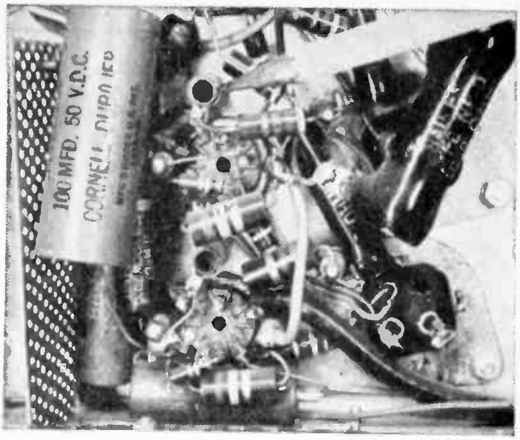


Fig. 7: What may at first glance appear to be "rats-nest" wiring becomes pure and lucid when you understand.

(*Continued from page* 33)

Audio communication is maintained on standard 2-meter (146 mc.) equipment, which is much simpler than adding sound to the TV signal.

Camera or "Flying Spot." If you want live action, you must have a camera. For still picture transmission, a flying-spot-scanner technique may be used; we'll cover that a little further on.

Various types of cameras are available, using either an iconoscope or a vidicon as the eye. Fig. 1 shows the basic elements of an iconoscope, which was the first practical all-electronic pickup tube, and was widely used for many years. Note the relatively large size of the iconoscope. Also, an iconoscope needs a large amount of light to produce a usable picture. A much smaller and more sensitive tube is the vidicon, shown in

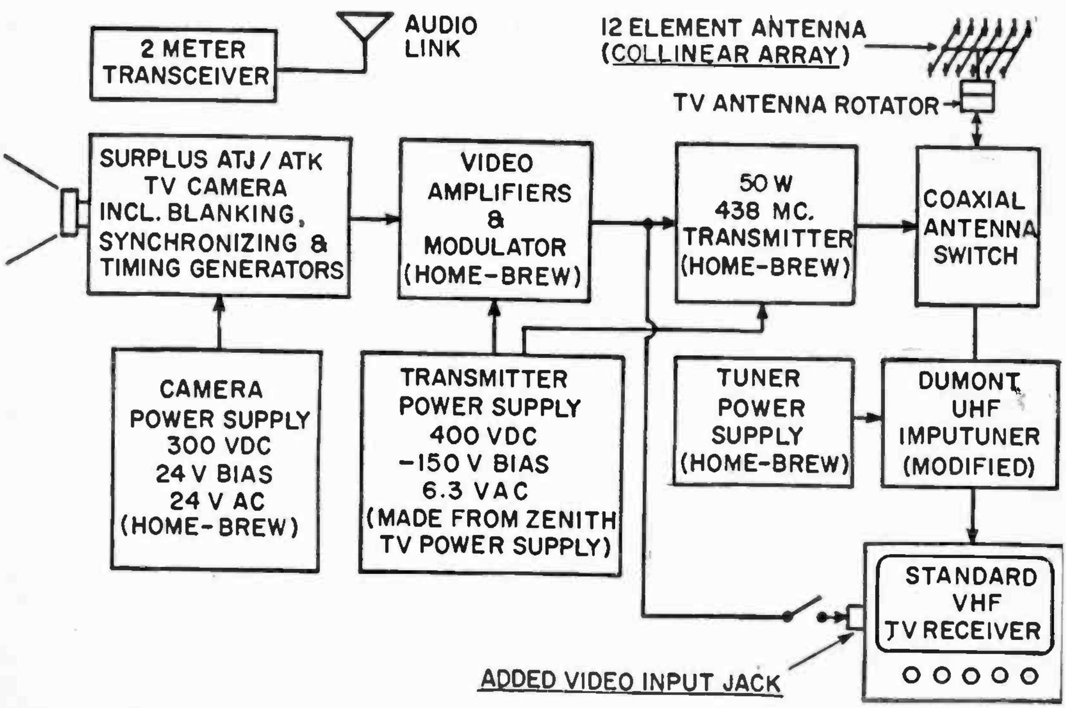


FIGURE 10 K6IPR— LOW-BUDGET "LIVE" TV SYSTEM

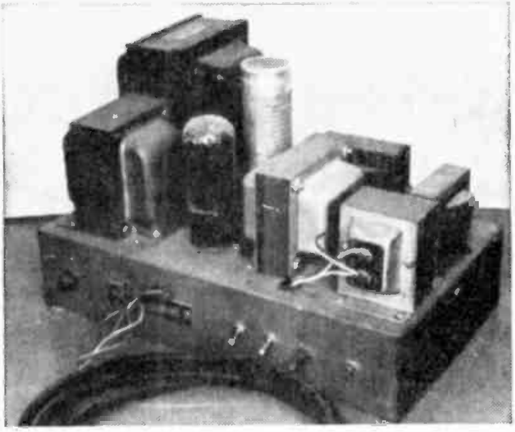


Fig. 8: Power supplies are straightforward and uncomplicated. Standard electronic construction is used.

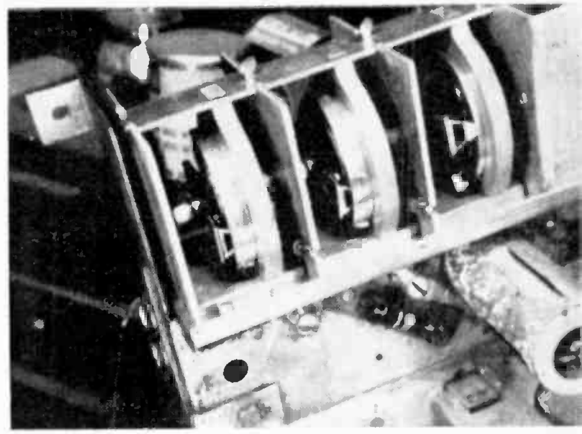


Fig. 9: In this commercial converter, you only have to reposition the contacts on circular tuned lines to alter.

Fig. 1.

The newer and more expensive cameras use vidicons, which provide a good picture with normal room lighting; surplus camera units are likely to use the iconoscope, which requires floodlights on the subject for sufficient indoor illumination. Either tube may be used in normal outdoor lighting.

A representative flying-spot-scanner system is shown in Fig. 5. The raster of a TV receiver is projected through a transparent slide onto the active surface of a phototube. The raster is actually a rapidly moving spot of light sweeping horizontally across the face of the TV tube 15750 times per second, and vertically 60 times per second, as provided by the standard TV receiver circuitry. As the moving light beam passes through the darker parts of the slide, it is attenuated in proportion to the slide density. These variations in light are picked up by the phototube, amplified, combined with synchronizing pulses, and used to video-modulate the transmitter.

The use of a TV receiver to produce the flying-spot is very practical these days, with inexpensive used TV sets readily available. However, complete construction information for building a scanning unit, using a 5- or 8-in. cathode ray tube, may be found in chapter 3 of "Ham TV," by Melvin Shadbolt WØKYQ.

Several variations are used. For instance, you can use a slide projector "backwards" by replacing the projector bulb with a phototube, and focusing the TV raster onto the phototube. The use of a photomultiplier tube can provide a gain of 1,000,000 in the conversion of the light variations into an electrical signal.

The flying-spot-scanner restricts you to the display of transparent stills, such as ordinary photographic negatives (which are shifted electronically to be received as positives), Polaroid transparency film, or slides made with india ink, grease pencil or felt marking pens.

Combined Or Separate Sound? Standard broadcast TV stations send sound as well as picture information on the same channel, but with the audio and video carriers separated by 4.5 mc. A few hams, W6VCF for example, transmit both audio and video on the same band, allowing both picture and sound to be received simultaneously on a conventional TV receiver. But this does represent additional complexity in the transmitting equipment (greater bandwidth, additional carrier generation, etc.), and since all hams have other communications equipment, the voice contact is usually maintained on 2 or 6 meters. Often, duplex voice operation is used; in duplex, one station is on one band, the other on a different band. This allows both reception and transmission of voice simultaneously (like a tele-

Fig. 11: W6VCF at the controls of his rather elaborate TV rig. The huge console is all "home-brew" at low cost.

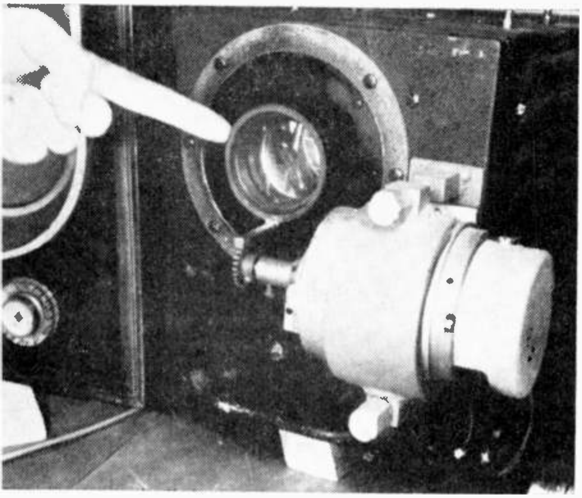


Fig. 12: Here's how the lens of the surplus TV camera is focused by the selsyn. Note rack and pinion set-up.

phone), rather than switching back and forth. This greatly enhances on-the-air adjustments of the TV image, antenna orientation and experimentation, with the receiving station giving comparative reports.

The Transmitter and Modulator. Several methods may be used to transmit the video information produced by the camera or scanning unit. Fig. 6 shows, in block diagram form, the essential elements of one system. A crystal oscillator, followed by a string of frequency multipliers, drives a linear final amplifier in the 420 mc. band. The video signal is amplified and used to grid-modulate the final amplifier. Notice that the oscillator-multiplier stages could be a standard 2-meter transmitter, such as the Gonset *Communicator* or the Heath *Twoer* with the addition of a tripler stage and final amplifier for output on the 420 mc. band. Of course, any 420 mc. transmitter, with the addition of the video modulator, could be used.

Fig. 13: The author sits in the glow of a photo-flood to provide sufficient light for the TV camera. He's on the air!

Another approach is fully detailed in a recent QST article. Here, the amplified output of a commercial closed-circuit TV camera (55 mc.) is mixed with 385 mc. output of a string of double-amplifiers, with the additive frequency of 440 mc. resulting. This signal, which contains the video information, is then further amplified for transmission.

A recent article in 73 Magazine details the use of the 432 mc. oscillator section of a surplus radar set to drive a power amplifier, and also shows a video amplifier modulator used with a surplus iconoscope camera.

Another practical approach to obtaining a transmitter for use on the 420 mc. TV band is to slightly modify a used 450-470 mc. mobile commercial communications unit, such as the RCA CMU-10A or the similar GE MC-306. These transmitter-receivers are sometimes available from factory dealers as trade-ins on new equipment, and require only an external power supply, video modulator and retuning to the 420 mc. band for use as a Ham-TV transmitter. The receiver section is not used at all, and some dealers will sell the transmitter section separately at a considerable saving.

Antennas—Take Your Choice! No matter how powerful your transmitter, or sensitive your receiver, you need a good antenna for efficient operation. Fortunately, at these UHF frequencies, high-gain antennas are quite small. Because they are not large, arrays of many elements are common. Yagi beams, helical beams, parabolas and collinear arrays each have their ardent supporters. In the final analysis, you should use the highest gain antenna you can manage, and put it as high as you can. The use of commercial UHF antennas should not be disregarded; sometimes only a change in the driven element is required to drop the resonant frequency into the 420 mc. band, which is not far below the commercial broadcast UHF TV channels. Care must be taken that the bandwidth characteristic of the antenna is sufficient to pass the relatively wide band TV signal.

Two antennas specifically designed for amateur TV use are described in WØKYQ's "Ham-TV" book.

An antenna rotator will be a necessity, and a standard TV type will handle these antennas easily.

Converters and Receivers. Standard ac-operated VHF television sets can be used for receiving amateur TV signals without modification. ac-dc sets can only be used safely with a simple isolation transformer. Since the amateur signals are above the normal TV set's tuning range, a UHF converter is added ahead of the TV set. This changes the frequency of the amateur signal down to channel 5 or 6 of the VHF TV band. Many commercial UHF converters, such as the Mallory *Inductuner* and the Blonder-Tongue 99, are available for less than $20, and most of them can be modified to tune down to the 420-450 mc. ham band, which is not far below the 470 mc. lower end of the broadcast UHF TV band. The modification to the converter usually involves adjustment of the oscillator frequency by tuning a slug, adjusting the position of the tuned-line contacts, or adding capacitance.

If you are so inclined, you can build your own converter from scratch.

Details, Details! ! Well, now that we've covered the generalities, you will want to dig into the details. All we've tried to do in this article is to give you enough information to allow you to go from here on your own with some idea of the overall picture. The following paragraphs tell you where to get more information on theory, practice and actual equipment and modifications. From here on, your own initiative must take over. Write the sources listed for more information; the more specific your request, the more specific your reply is likely to be. Let the editor of this and other magazines know if you'd like some detailed articles on Ham-TV.

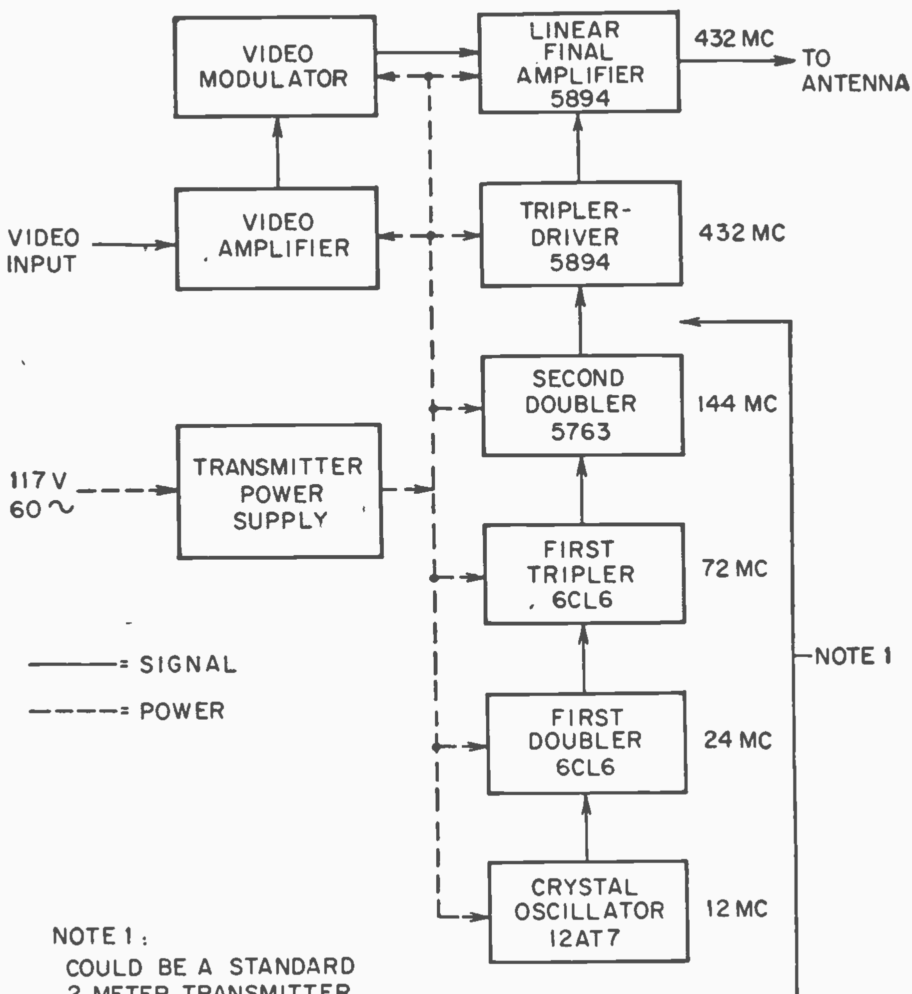


FIG.14 BLOCK DIAGRAM OF TYPICAL HAM-TV TRANSMITTER

(Continued from page 77)
clock faces and electric blanket indicators glow.

Now being tested are electroluminescent highway signs, and airport runway indicators consisting of EL lamps imbedded in the pavement.

A leading authority in electroluminescence, William E. Hall, lt. gen., USAF (Ret.), predicts that EL panels will one day be used as marker strips on bridges and highways, in refrigerator and closet walls, and in luminous sidewalks.

Gen. Hall is board chairman of Madigan Electronic Corp., a Carle Place, Long Island company that is a leading developer of uses for electroluminescence. Madigan is the manufacturer of the belt that emits a strobe-like warning for the protection of traffic police, mineworkers, aircraft crews and others.

Called the Band-O-Lite, the belt is the first that actually emits light rather than reflects it. It makes the first use of a new *flexible* EL panel developed in close cooperation with Sylvania Electric products and is powered by a Madigan development that is considered an important step forward in the application of electroluminescence.

This development is a portable power source using nickel-cadmium batteries. The Pow-R-Mizer, as it is called for very good reason, applies the required alternating field to the EL panels in the circuit and maintain high overall efficiency by utilizing the electrical energy stored in the dielectric of the

Fig. 3. Flexible belt for traffic officers winks on and off with bright orange color, is easy to see in the dark.

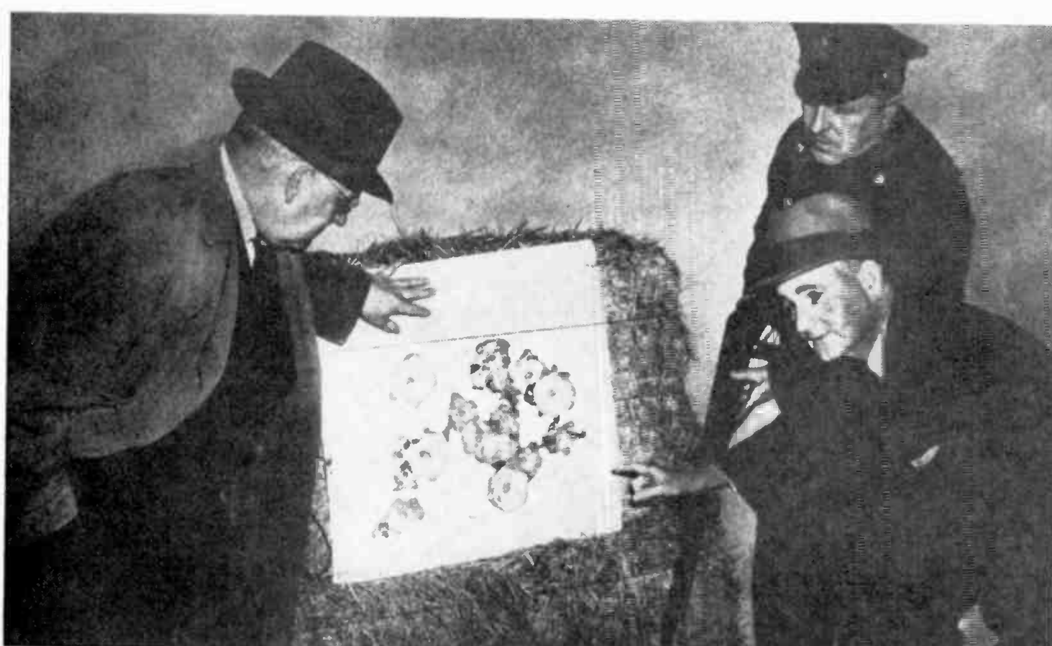


Fig. 4. Dented but undaunted, this Sylvania Electro-luminescent panel stood up against police riot gun fire.

lamp itself. This portable unit is expected to greatly broaden the uses of EL.

Gen. Hall reports that Madigan will use the Pow-R-Mizer in an unusual exit sign that will be introduced shortly. Called the Exit-Lite, it will be powered by ordinary line current under normal conditions and—during emergency disruption of power—it will automatically be activated and powered by the self-contained Pow-R-Mizer.

Installation of the Exit-Lite will eliminate the need for emergency secondary power lines which are required for safety purposes by many municipalities.

Madigan is actively developing a number of other new products that make use of EL panels. Among these are illuminated street signs that are clearly visible at distances up to 300 ft. on the most dimly lit suburban streets. It will also bring out a flashing safety helmet designed as a companion piece to the flashing belt.

Gen. Hall reports also that his company is broadening the uses of EL in the branch of electronics known as alpha-numeric display, or the pictorial representation of changing information on a cathode screen.

EL panels are ideal indicators in alpha-numeric displays. They are flat, hence have a wide "read-out." Moreover, they are much cooler than such indicators as masked filament bulbs, and thus cause far fewer failures. And they can be rapidly switched.

EL displays will soon help control sea and air traffic, instantaneously signal balls and strikes on scoreboards, and transmit stock market prices to brokers' quotation boards.

Madigan recently delivered to the Army Air Defense Command a display system that depicts air traffic in combat zones. Employing EL lamps and advanced memory storage tubes, the display system was installed in two large air conditioned vans for use in any climate.

The company is now developing another display device, for the Air Force, that uses phosphors which are selectively activated by ultra-violet light. The incoming data is instantly exposed and imaged by the Xerox process.

Asked to describe the new frontiers of EL research, Gen. Hall replies that engineers are now chiefly concerned with ways to improve the brightness of EL panels. The applications of electroluminescence are still limited because the panels do not yet have the brightness required for "primary" lighting.

Madigan's own engineers are attacking the brightness problem with a matched power driver. This company-developed power driver, now being tested, almost doubles the brightness of EL lamps when hooked up between the primary power source and the EL panel.

Fig. 5. Incorporated in a clear glass table top, a soft, even light produces glare-free illumination.

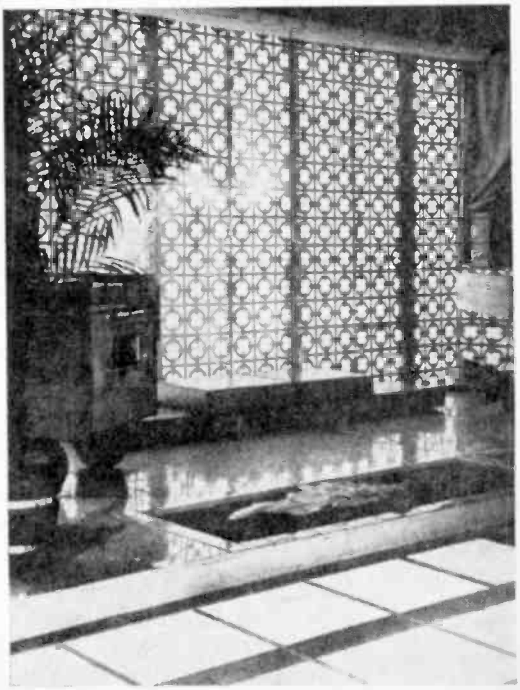


Fig. 6. Decorative wall uses EL panel behind screen, walls, floors, ceilings will turn on with switch in future.

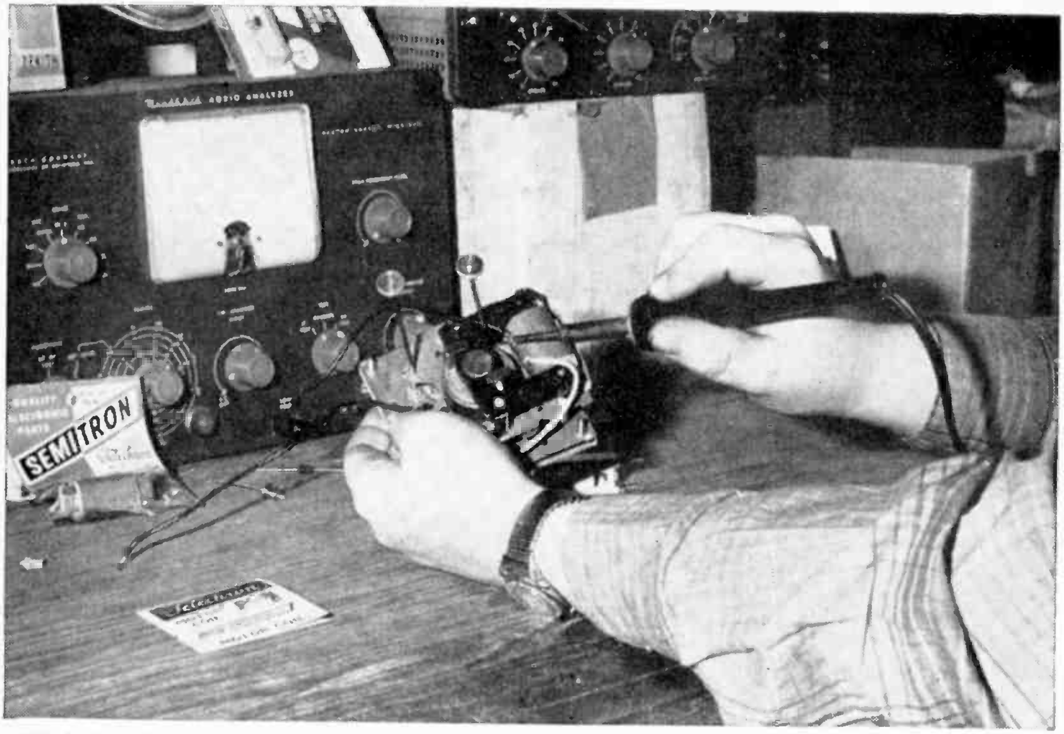


FIG. 1: Start the replacement by first disconnecting the wires from the clock motor coil soldering terminals.

Repairing Radio Clocks

When a radio clock mechanism makes noise, the first step is to apply oil. If the unit is a sealed type, try running it upside down to let the oil seep back into the works. If that doesn't help, try this before changing the unit . . .

By L. RIVMAN Semitronics Corp.

WITH clock radios now as common as the ordinary ac-dc set, it is understandable that you will be called upon to service the timer portion of the clock radio.

Although 75% of the clock radio troubles are in the radio itself, the other 25% of the troubles can be repaired with little or no difficulty.

Look closer into the radio clock timer and you can see it is similar in construction to the mechanism used on electric ovens, dehumidifiers, vending machines, advertising clocks, electric timer switches, x-ray equipment, electric broilers, barbecue stoves, refrigerators, washing machines, dryers, and others.

One of the major difficulties encountered in the service of electrical timer apparatus, has been the procurement of replacement parts. There has been no centralized procurement of parts to repair these millions of appliances. The consumer has had to rely entirely upon the factory service repair stations. The difficulty of having to return the appliance to the factory for repair and service is a troublesome one. Usually, there is a minimum service fee, plus shipping charges. This has made repairing timers quite costly.

The business of supplying spare parts for appliance timers actually arose out of a problem with a noisy clock radio. An employee of the Semitronics Corp. of New York could not sleep nights due to the excessive noise from the motor of his clock radio. Trying to purchase a replacement motor from a local radio distributor, he was shifted to an appliance dealer. The appliance dealer sent him to the company directly. Atfer finally obtaining the replacement motor, he repaired the clock without difficulty.

Other than the motors in radio and appliance timers that one may experience difficulty with, is the electrical switch. The most common trouble is the burning out of switch contact points. The switch, like the motor can be easily replaced in the timer.

The following list of clock and timer repairs can be accomplished by any competent electrical handyman.

- Replacement of open or shorted motor coil
- Replacement of motor mechanism
- Replacement of knobs and bezel
- Replacement of electrical switch
- Replacement of broken crystal or dial
- Adjustment of alarm and vibrator
- Cleaning of clock mechanism

In order for you to repair an appliance timer intelligently, it is necessary to understand the function of the unit. An appliance timer is a mechanical unit, electrically controlled to operate at a predetermined time or sequence. It may be set to turn an apparatus on, off, or signal at a predetermined time, or at intervals.

In all clock radios, the clock motor is connected directly across the ac power line, independent of all switching. Therefore, the clock motor should always be running regardless of switch setting or electrical sequence. The clock motor is independent of the radio.

There are two time switches on the clock radio. One is manual and usually on the front panel. The second switch, in parallel with the first is automatically clock operated. Since these switches are in parallel either one will operate the timer mechanism (not the clock motor). It is impossible to switch the clock on or off.

The outlet plug receives current when either of the two switches are turned on. Thus an externally connected appliance is automatically activated.

Possible troubles and causes in appliance timers:

Defect	Cause
Clock will not operate	Open ac line Defective motor coil Defective rotor or motor Defective clock switch Binding of parts
Clock noise	Defective motor or rotor Loose parts Binding of parts Alarm armature improperly adjusted Loose laminations
Clock Loses or gains time	Defective motor coil Defective motor rotor Binding of parts Bent timing shaft Damaged or broken teeth or gears

Visual Inspection and Test. Inspect for any obvious defects such as bent shafts, hands, broken crystal, broken cabinets, etc.

Measure motor coil to see if it is shorted or open. If O.K., plug into ac line and observe. *Note*. Never plug clock into dc line.

Removal and Replacement of Parts. To disassemble the clock movements, be sure to observe the following precautions:

1. Knobs on the front of radio clocks are push-on type. Remove by grasping them and pulling

Use this diagram for better parts identification.

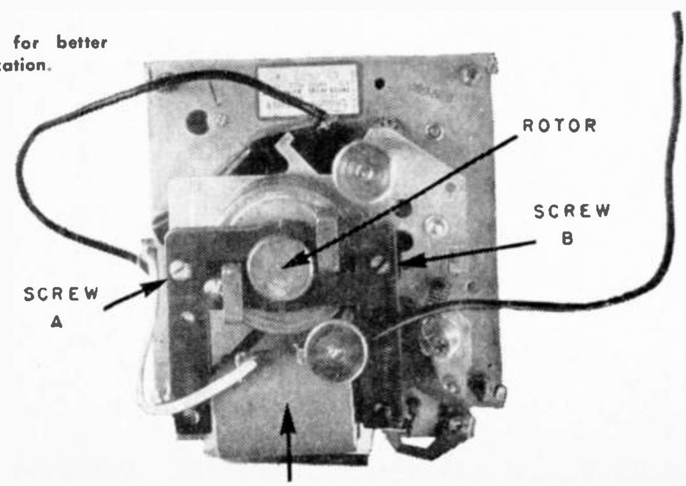


FIG. 2: With the clock motor removed completely from the radio and switching circuit, proceed with work.

FIG. 3: Remove the two screws labeled "A" and "B."

FIG. 4: Removal of the screws "A" and "B" permit the motor coil and rotor to be disassembled from the frame.

them off gently. Knobs on the back of the clock are usually screwed on. They may have a reverse thread. Do not apply too much force. Remove with caution.

2. *Bezels* are usually held on with tabs bent over dial back. Straighten tabs to remove bezel.
3. *Crystals* may be attached with plastic tabs that snap onto the dial. Remove by gently forcing crystal off. Many crystals are part of the cabinet and cannot be removed.
4. *Dials* may be removed by straightening the ears that are usually bent over the back.
5. *Hands* may be removed by grasping them with thin-nosed pliers. Carefully remove each hand individually by grasping with a thin-nosed plier as close as possible to the shaft. Avoid bending or scratching the dial.

Excessive heat may cause damage. Do not use a large soldering iron. Apply only enough heat to loosen the electrical connection.

Cleaning Movement. All movements should be blown out and cleaned with carbon tetrachloride before replacing in cabinet. Oxidized oil may be removed by rubbing with a fine grade of steel wool moistened with carbon tetrachloride.

Lubrication. Do not use too much oil. Oil collects dust. It may stain the crystal and dial. Use only clock oil. Lubricate the two arms and bearing holes and the end of the sweep second shaft of the back bearing plate. Using graphite, lubricate levers and cam gears.

Cleaning for Appearance. Clock radios should be returned as new looking as possible. Clean plastic crystals with soft cloth using only water, and glass crystals with a

FIG. 5: Using thumb and gentle pressure, push out the rotor assembly. Do not hammer; push it carefully.

FIG. 6: Insert the new rotor coil or motor, depending on which was the faulty part determined by your tests.

FIG. 7: Reassemble frame, replace screws "A" and "B."

FIG. 8: Reconnect the wire leads to the motor coil soldering terminals and replace the unit into the radio.

glass cleaner. Bezels should be cleaned with soap and water. Do not rub too hard as you may remove numbers. Plastic cabinets should be cleaned with soap and water.

Testing and Adjustment of Alarm and Switch Mechanism. After the radio has been repaired, the following adjustments should be checked:

- Turn the function switch to the automatic wake or alarm position.
- Set the automatic (alarm or wake) dial hands for any desired time.
- Turn the time set knob or clock hand control clockwise to the preset alarm hour. The radio (or alarm) should close at the alarm hour. Continue to rotate the clock hands and note if the alarm (or wake) vibrator arm drops toward the field core seven to 10 minutes after the set was automatically turned on.

If the switch contact does not close at the correct time, the minute hand should be moved to make the necessary adjustment. The time set knob should be held firmly while the minute hand is being moved.

To adjust the alarm period, set the clock so that it reads ten minutes after the time set for the alarm. Slowly turn the adjusting screw in until the shut off lever just slides over the edge of the screw head.

To adjust the tone of the vibrator, connect power to set, have the vibrator operate, and bend the vibrator arm (close to its anchor point) nearer or farther from the field core. Do not over bend.

Replacement parts for repairing clock mechanisms are available from Semitronics Corp., 265 Canal St., New York City.

(*Continued from page* 87)

% of modulation = Emax —Emin

% of modulation = Emax —Emin

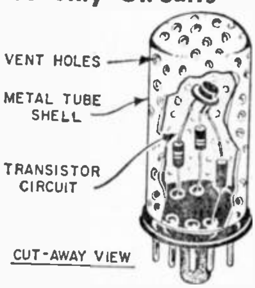
X 100

It is recommended to couple the transmitter directly to the vertical plates, because very few oscilloscopes contain amplifiers with linear frequency response over 5MC.

Alignment: The most popular application of the oscilloscope, of course, is in the alignment or servicing of FM and TV receivers. However, the procedures recommended by different manufacturers of these appliances vary to such degree, that it would be difficult to recommend a general procedure. The alignment steps are always fully described in the manuals for any given model, and they should be followed explicitly. In trouble-shooting of TV receivers the manuals also should be consulted for proper wave shapes at critical points of the circuit.

In conclusion we would like to mention, that in recent years oscilloscopes became very popular in industrial applications. Armature, testing, resistance welding, pressure measurements, motor tune-up, testing photographic shutters are just a few examples. In most of these cases the techniques are quite involved and require special accessories or modifications of the scopes. With the wide acceptance of the oscilloscopes the price of this instrument became accessible to anybody interested in electronics. Once you master the techniques of different applications, you will find this instrument a great time saver and a willing helper in most of your problems.

Tube Shells House Tiny Circuits



• Discarded metal vacuum tube shells make neat shielded housings for plug-in relays, transistors, and diode circuits. Pry the base from the tube and discard the innards. Solder in your transistor circuit making connections to the base pins, and you have a plug-in device that fits tube sockets. If components such as resistors radiate heat, then drill enough vent holes to provide an adequate air circulation.—JOHN A. COMSTOCK.

Solder Spool Carries Flux Can

• Attach a cork to the lid of your can of soldering paste and set your spool of solder down over the plug as a means for keeping the can of flux handy. It will always go wherever the spool of solder goes and will also serve as a base to keep the spool from tipping over and rolling off the bench.—J. A. C.

Putty "Tacks" Wire to Terminal

• When you want to temporarily connect a low current-carrying wire to a terminal (as in building experimental circuits) and haven't the time to fasten a test clip to the end, use a small wad of putty or modeling clay to momentarily "tack" the wire in place. Just place the bare tip of the wire to the terminal and press a small wad of the putty or clay over top of it.—JOHN A. COMSTOCK.

Nailpolish Is "Liquid" Insulation

• Nail polish makes a high-quality liquid insulation for coating bare electric wire connections and is especially easy to apply to radio-TV connections that are difficult to reach with tape. After the connection has been soldered and allowed to cool, apply the polish with the handy-applicator brush provided in the bottle. If the connection has to be unsoldered later, just the touch of a hot soldering iron will burn away such insulation with a puff of smoke.—JOHN A. COMSTOCK.

Tape Splicing Technique

• Clear fingernail polish serves as an excellent cement when splicing recording tape. Taper cut the two ends of tape at a 45° angle, then daub some of the polish on the leading edge of one piece and overlap the other piece ⅛ in. Let dry for about ten minutes, then daub polish on the overlapping edges to ensure a perfect splice. You'll have a firm, long-lasting splice that can withstand considerable tension and flexing as the tape passes through the recording machine, and is just as good as one made with cellulose splicing tape.—JOHN A. COMSTOCK.

Charged Plastic Dusts Platter

• If the grooves of your hi-fi phonograph records are filled with dust, here's how to remove it the harmless electrostatic way: Take a piece of Saran plastic wrap and crumple it in your fingers while holding it about an inch above the surface of the revolving platter. The static electricity produced by crumpling the plastic will attract the dust particles and hold them. If you watch very closely, you'll actually be able to see them jump from the platter to the charged wade of plastic.—J.A.C.

The Crystal Ball

July—September 1963

By C. M. STANBURY, II

"WHERE should I listen for it and when?" This is the question most often asked by SWLs. They can obtain a variety of answers, usually based upon the sunspot count and season (see, "How Short Wave Works" on page 70). Unfortunately, this 100% technical approach can provide only half an answer. For example, suppose 41M is the best band for Latin America during the evening hours. So what? There just aren't any Latin American SWBC stations on this band. Obviously you must take into consideration the stations themselves. If 31M is best for Africa but most of the action is on lower frequencies, a "compromise" prediction must be made.

Time in the following table is standard time at the listener's location (for daylight time add 1 hour) which effectively compensates for differences in reception conditions between the east and west coasts of North America. However, Asia will generally be stronger in the West with the reverse true of Europe. This is an important factor when anticipating interference.

Bands in brackets are second choices.

	0000 — 0300 — 0600 — 0900 — 1200 — 1500 — 1800 — 2100 — 2400
ASIA (except Near East)	41 & 49 — 25 & 31 — 16 & 19 — 31 (25 & 41) POOR — 25 & 31 (41)
SOUTH PACIFIC	31 & 49 (41) — 25 & 31 — 25 (19 & 31) — 19 & 25 (16 & 31)
EUROPE, NEAR EAST & AFRICA (North of the Sahara)	31 & 41 (49) — 19 & 16 (POOR) — 16 & 19 (25 & 31) — 25 & 31 (19 & 41) — 21 & 41
AFRICA (South of the Sahara)	31 & 41 (49 & 60) — 31 & 41 — nil — 19 & 16 — 19 & 25 (16 & 31) — 25 & 31 — 25,31 & 41 (49 & 60)
SOUTH AMERICA	49 & 60 — 49 & 31 — 25 & 31 — 19 & 16 (25 & 31) — 25 & 31 (16 & 19) — 49 & 60 (49) (90)

Partially applies to the Caribbean and Central America.

Free Literature

GENERAL PARTS DISTRIBUTORS

49. Want a colorful catalog of surplus goodies? *John Meshna Jr.* has one that covers everything from assemblies to Zener diodes. You can buy complex units that set the government back thousands, at a fraction of the cost!

50. This catalog is far too detailed to describe here. Circle No. 50, and *Lafayette Radio Electronics Corp.* will send one you can examine for yourself!

51. Here's another catalog that's bursting with goodies from *Radio Shack Corp.* Included is the exclusive line of *Realistic* equipment. If you can't find it here, you just can't find it!

52. We'll exert our influence to get you on the *Olson* mailing list. This catalog comes out regularly with lots of new and surplus items. If you find your name hidden in the pages, you win $5 in free merchandise!

53. A 16-page catalog of new and surplus bargains from *ALCO Electronic Sales* is yours for circling No. 53. We'll get your name on the regular mailing list, too.

54. Catering to hams for many years *World Radio Laboratories* has a few flyers for you to look over. These include their new transmitter and an assortment of other products that deserve space in any ham shack.

55. This catalog is so widely used as a reference book, that it's regarded as a standard by people in the electronics industry. Don't *you* have the latest *Allied Radio* catalog? The surprising thing is that it's free!

56. Unusual scientific, optical and mathematical values. That's what *Edmund Scientific* has. War surplus equipment as well as many other hard-to-get items are included in this catalog.

106. Bargains galore, that's what's in store! *Poly-Paks Co.* will send you their latest four-page flyer listing the latest in merchandise available, including a giant $1 special sale.

SCHOOLS AND EDUCATIONAL

57. Three new courses in marine communication, aircraft communication, and guidance and mobile communications are available from *National Radio Institute*. The pamphlets are well-illustrated and educational.

58. Here are three pamphlets dealing with television trouble-shooting, radio trouble-shooting and high fidelity. These, from *Progressive Edu-Kits* are very complete and easy to understand.

59. Interested in ETV? *Adler Electronics* has a booklet describing educational television and this goes into a depth study of ETV in all its ramifications. There's a good science fair project here for someone!

105. For a complete rundown on curriculum, lesson outlines, and full details from a leading electronic school, ask for this brochure from the *Indiana Home Study Institute*.

MICROPHONES, SPEAKERS, TAPEHEADS, CARTRIDGES, HEADPHONES

60. Don't miss this bulletin of professional quality microphone stands. *Atlas Sound* will send it along with a listing of accessories, including explosion-proof loudspeakers!

61. This company makes the headsets that are used as terminal communications by our astronauts. The stereo phones that *Roanwell Corp.* has for hi-fi-nicks reflect the same standards of quality.

62. Tone-arms, cartridges, hi-fi, and stereo preamps and replacement tape heads and conversions are listed in a complete *Shure Bros.* catalog.

63. Here's a beautifully presented brochure from *Altec Lansing Corp.* Studio-type mikes, two-way speaker components and other hi-fi products.

64. For the love of mikes! *Astatic Corp.* has lots. Studio types, ham types, recording types, etc. See its catalog sheets for the details.

65. A name well-known in audio circles is *Acoustic Research*. Here's its booklet on the famous AR speakers and the new AR turntable.

66. Loudspeakers, enclosures, systems, and mikes are the specialty of the house at *Electro-Voice*, and they have a catalog to prove it. Speaker enclosures are either finished in your choice or unfinished for do-it-yourselfers.

67. Speakers and enclosures from *Argos Products Co.* feature a new and novel wall-mounting system. To find out more about this, circle No. 67.

68. If you know stereo, you know *Empire*. If you DON'T know Empire, you'd better ask for this four-page brochure, and get in on the news.

69. Tape recorder heads wear out. After all, the head of a tape deck is like the stylus of a phonograph, and *Robins Industries* has a booklet showing exact replacements. Lots of good info on how the things are built, too.

70. A wide variety of loudspeakers and enclosures from *Utah Electronics* lists sizes, shapes, and prices. All types are covered in this 16-page heavily illustrated brochure.

71. Here's a "plus" deal. *EICO* will send you a complete catalog of their new electronic kits, PLUS a four-page course leading to a novice class amateur license, PLUS a chart of electronic symbols, and finally, a booklet explaining the "why" of stereo!

72. Catalog sheets describing the *Philmore* line of UHF-TV converters, CB walkie-talkies, speaker-mikes, code oscillators, can be had by circling No. 72.

KITS

73. Here's a firm that makes everything from television kits to pocket stoves. The *Conar* catalog is yours for the asking. Circle No. 73.

74. Interested in tackling a TV kit? *Arkay Kits, Inc.* will send you full literature (including a schematic) of this truly educational kit. It's used in many of the electronic schools.

75. Nothing to hide, that's *Harmon-Kardon!* They send you a batch of literature describing their products, complete with technical laboratory reports. The equipment is of course, beautiful. It sounds as good as it looks.

76. Here's a 100-page catalog of a wide assortment of kits. They're highly-styled, highly-versatile, and *Heath Co.* will happily add your name to the mailing list. Circle 76.

77. Do you think you should expect to save money by building kits? *National Kits* has a four-pager that will be a real eye-opener.

78. A long-time builder of ham equipment, *Hallicrafters, Inc.* will happily send you lots of info on the ham, CB, and commercial radio equipment. They've also sponsored the CB REACT teams, and will fill you in on those details too.

79. A complete line of test equipment as well as a wide assortment of hi-fi and stereo gear from *PACO Kits* will come your way if you circle 79.

80. A complete booklet and price list giving you the inside data on *Schober Organs* will come your way if you check 80. We just found out that these beauties sound even better than they look!

110. When a manufacturer of high-quality high fidelity equipment produces a line of kits, you can just bet that they're going to be of the same high quality! *H. H. Scott, Inc.*, has a catalog showing you the full-color, behind-the-panel story.

ACCESSORIES

81. Got "furniture-sag"? Hmmm? *Adjustable Caster Co.* thinks you'd better level the shelf your turntable sits on before you try to level the turntable itself! Lots of data here.

82. A catalog describing a complete assortment of radio and TV tube protectors, fuses, light winkers and a wide variety of switches and outlets from *Eagle Electric* will come your way if you circle No. 82.

83. Are you still paying drugstore prices for tubes? *Nationwide Tube Co.* will send you their special bargain list of tubes. This will make you light up!

84. Here's some info on a wireless remote control for your hi-fi, or if you prefer, they have a wired version for you. There's also a sweet little phase and balance meter. *Stereosonics, Inc.* will send it all if you check 84.

85. Some of the teentsy-weenies that *Chicago Miniature Lamp Works* sells make a #47 pilot lamp look like a 100 watter! They'll be happy to send you their catalog.

86. Data processing and display equipment, ultrasonic tools, and rechargeable batteries are described in a passel of literature from *Gulton Industries*. Check No. 86 and watch the mailbox!

87. A 12-page catalog describing the audio accessories that make hi-fi living a bit easier is yours from *Switchcraft, Inc.* The cables, mike mixers, and junctions are essentials!

88. Here's a goodly assortment of literature covering the products of the *Dow-Key Co.* They make coaxial relays, switches, and preamps for hams and CBers.

89. Got some questions regarding transistor ignition? *W. F. Palmer Labs* will send you a booklet which explains what transistor ignition is all about. If you decide, after reading, that this is for you, their kits will let you build your own!

90. A booklet on TV and radio servicing, a tube price list, and an unusual through-the-mail diagnosis request form entitle you to an analysis of your sick set for a buck! It's all from *Century Electronics*.

91. Delayed action switches for the home or car, something brand new in miniaturized amplifiers, a new light-dimming switch as well as the other *Saxton Products* are listed in brochures.

107. Ever try to find your house number in the dark? Your visitors have the same trouble. An electroluminescent panel makes house number easy to read and a door bell button makes this *Madigan Electronic* unit serve double duty.

108. Great Britain comes through with an assortment of hi-fi needs from the famous Garrard turn-tables to some fancy speakers, 5-core solder and quality hi-fi tubes. *British Industries* will happily send the whole package for your leisurely perusal.

109. Want to see the latest in communications receivers? *National Radio Co.* puts out a line of mighty fine ones and their catalog will tell you all about them.

111. "Get the most measurement value per dollar." That's what *Electronic Measurements Corp.* says. Looking through the catalogue they send out, they very well might be right!

TAPE RECORDERS AND TAPE

92. Want to see the latest in portable tape recorders? Curious about an intercom with a fabulous wound to-size ratio? *Mathew Stuart, Inc.* will send all the details at your request.

93 "The Care and Feeding of Tape Recorders" is the title of a booklet that *Starkes-Tarzian* will send you. It's 16 pages jam-packed with info for the home recording enthusiast. Includes a valuable table of recording times for various tapes.

94. You can learn lots about tape recorders. Big tape recorders for studios, little tape recorders for business men, all kinds of tape recorders from *American Concertone*.

95. If you are serious about home tape recording this technical bulletin and descriptive literature from *Kodak* (Yup! They're making recording tape) will interest you.

96. Here's a list of a complete line of tape machines. Also, *SONY Superscope* will include a list of ways that you can use a tape recorder, and some of these were new to us!

RADIO

97. Are you getting all you can from your Citizens Band radio equipment? *Cadre Industries* has a booklet that answers lots of the questions you may have.

98. Antennas for CB and ham use as well as for commercial installations is the specialty of *Antenna Specialists Co.* They also have a generator for power in the field.

99. Convert your home or shop from clutter to convenience with the *Akro-Mills* cabinets. Those see-through drawers eliminate cigar-box confusion!

100. An assortment of high fidelity components and cabinets are described in the *Sherwood* brochure. The cabinets can almost be designed to your requirements, as they use modules.

101. Very pretty, very efficient, that's the word for the new *Betacom* intercom. It's ideal for stores, offices, or just for use in the home, where it doubles as a baby-sitter.

102. Here's some more data on transistor ignition systems for cars. *Automotive Electronics Co.* has the whole story here, including typical wiring diagrams.

103. One of the best ways to make a radio signal get up 'n' git is to put the antenna up high enough, and you will need a place to hang it. Take your pick from this catalog of towers by *Tri-Ex Tower Corp.*

TELEVISION

104. The smallest television set to date is featured in this beautifully prepared brochure from *SONY Corp.* You'll be amazed at the variety this firm offers.

Radio-TV Experimenter, Dept. FL-644
505 Park Avenue
New York 22, N. Y.

☐ I am a subscriber

☐ Indicate total number of booklets requested

Please arrange to have the literature whose numbers I have encircled sent to me as soon as possible.

49	50	51	52	53	54	55	56	57	58	59	60	61
62	63	64	65	66	67	68	69	70	71	72	73	74
75	76	77	78	79	80	81	82	83	84	85	86	87
88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111		

NAME (Print clearly)__________

ADDRESS__________

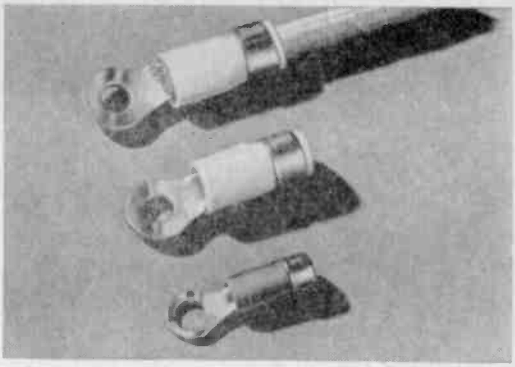
CITY__________ZONE_____STATE_____

Service on this coupon expires Nov. 2, 1963.

NEW PRODUCTS

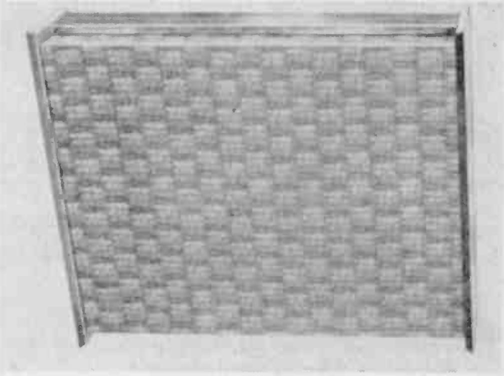
Terminals Really the End!

Solderless terminals feature aluminum crimping rings and gold-plated metal parts for high conductivity. Teflon bushing cartridge provides for effective moisture shield as well. Crimped with manufacturer's hand or power crimping tools. AMP Inc., Dept. RTE, Harrisburg Pa.



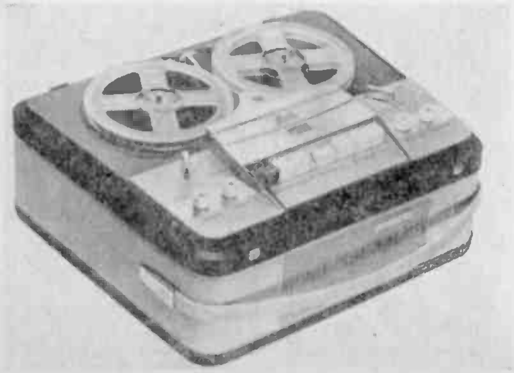
Versatile VTVM

New intermodulation, harmonic distortion meter and ac VTVM is a necessary tool in any testing laboratory. Can be used for checking phonos, tape decks, amplifiers, or any other item in the audio field. Permits serviceman to readjust hi-fi equipment to meet manufacturer's original rated specifications. $250, wired and tested from EICO, Dept. RTE, 33-00 Northern Blvd., Long Island City 1, N. Y.



New "Loudenboomer"

The "Slenderette" shown here is only 5 in. wide and can be placed on the floor, on a wall, on a shelf, and contains five (count 'em) speakers. Two 6-in. woofers, one 8-in. mid-range, and two 3½-in. tweeters. $39.95 from Lafayette Radio, Dept. RTE, 111 Jericho Turnpike, Syosset, L. I., N. Y.

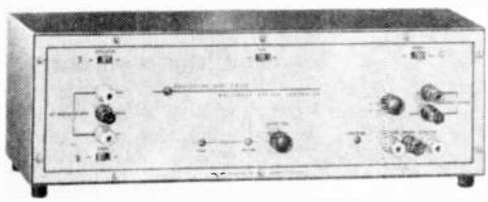


Up to 32 Hours per Reel

Thanks to a new head from Phillips, with a gap of only 0.0001 in., you can add a new standard speed to tape recorders; 15/16 *ips* provides up to 32 hours on a standard 7-in. reel. The rest of the unit is fully transistorized and has the other three common speeds as well! Called the Continental 401, it's available for $399.95 from Norelco, Dept. RTE, 230 Duffy Ave., Hicksville, L. I., N. Y.

For the Rock-Bound

This six-meter VFO costs a lot less than a handful of crystals, and covers a much wider frequency range. If THAT isn't enough of an argument for you, remember the last time you lost a rare one because you weren't close enough to his frequency. 'Nough said? It's called the HE-61 and sells for $19.95 from Lafayette Radio Co., Dept. RTE, 111 Jericho Turnpike, Syosset, L. I., N. Y.

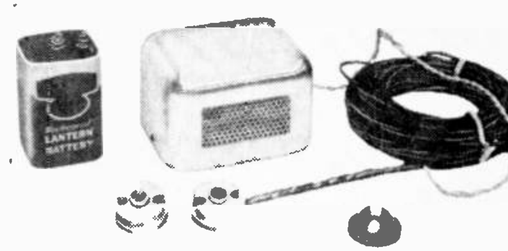


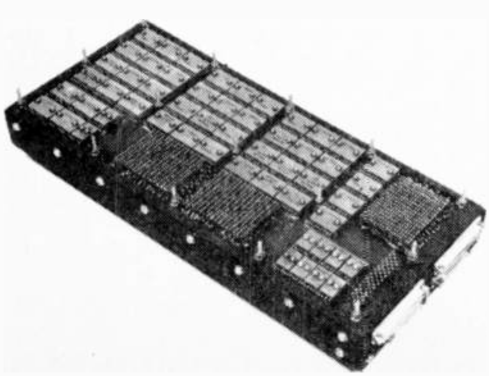
Multi-Generator

With the big boom in multiplex well under way, you'll need this piece of test equipment to service the new stereo tuners. Gives you channel separation, balance, sync pull-in and hold-in range for adjustment and measurement. Model E-490 available from Precision Apparatus Co., Dept. RTE, 70-31 84th St., Glendale 27, N. Y.

Fire Insurance

Automatic fire alarm consists of six sensitive thermostatic detectors and a two-horn signal unit. Enough wire to hook the unit up and a lantern battery complete the system. A manual test button permits checking to see that all is functioning properly. Model ML-290, $29.95 from Lafayette Radio, Dept. RTE, 111 Jericho Turnpike, Syosset, L. I., N. Y.





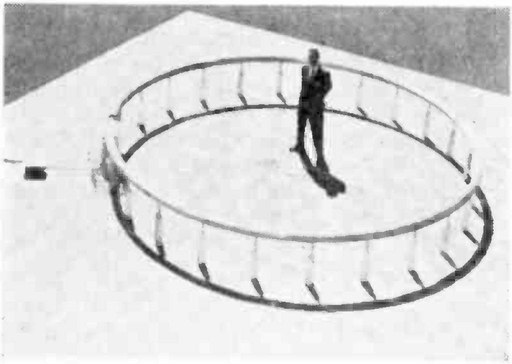
It's MAGIC

Here's an airborne digital computer that actuates vehicle controllers for guidance, or control of missiles, space vehicles or aircraft. Utilizes molecular electronics and the production model will weigh in at 34 lbs. AC Spark Plug, Dept. RTE, Milwaukee 1, Wis.

NEW PRODUCTS

Fireless-Works

Using fiber optics, light is bent and distributed in patterns and colors. The display, designed for indoor commercial and industrial use, is accompanied by taped festive music and synchronized swishes, whistles and booms. Mobilcolor, Dept. RTE, 232 E. 53rd St., New York 22, N. Y.

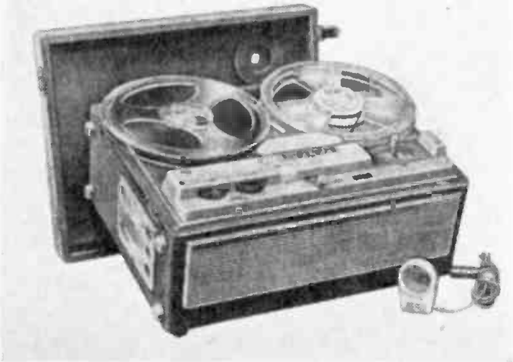


More Letters

Now it's DDRR. English translation? Directional Discontinuity Ring Radiator. Sorry, we said *English* translation! It's a new concept in antenna design in which recent tests of the 2-foot-high model performed with the same efficiency as a conventional 60-ft. tower antenna. For more info contact Northrup Corp., Ventura Div., Dept. RTE, Northrup Bldg., Beverly Hills, Calif.

Beam-Current CRT Checker

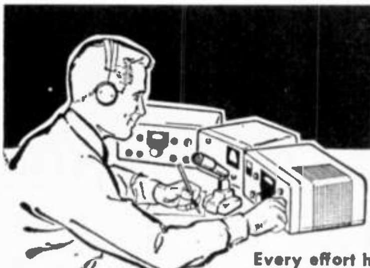
Tests AND rejuvenates all picture tubes and checks for screen brightness under hi or lo line conditions. Provides correct filament voltage continuously variable from 1.5 to 12 volts, regardless of line conditions. $44.95 for the kit, or factory wired at $59.95, PACO, Dept. RTE, 70-31 84th St., Glendale 27, L. I., N. Y.



Portable Recorder

Boasting a signal to noise ratio of −42 db, this unit will record four-track mono and playback four track stereo with a second channel system. Operates at 3¾ or 7½ *ips* will hande up to a 7-in. reel. Model RK-137, $89.50 from Lafayette Radio, Dept. RTE, 111 Jericho Turnpike, Syosset, L. I., N. Y.

(continued on page 192)



WHITE'S RADIO LOG

An up-to-date broadcasting directory
AM, FM, TV, and short wave stations

Vol. 40 No. 3

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
KNOE Monroe, La. 5000
WDMV Pocomoke City, Md. 500d
WBIC Islip, N.Y. 250d
WETC Wendell-Zebulon, N.C. 250d
WARO 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. 5000
KMRE Spokane, Wash. 500d
WSAU Wausau, Wis. 5000

560—535.4

CJDC Dawson Creek, B. C. 10000
CHCM 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
KSFD 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. 1000
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
CHLC Hauterive, Que. 5000
WABT Tuskegee, Ala. 500d
KABI Ketchikan, Alaska 1000
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
CFTK Terrace, B.C. 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
WKZD 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
WPDQ 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

CKML Mont Laurier, Que. 1000
CHNC New Carlisle, Que. 5000
CJAT Trail, B.C. 1000
CKKL Thompson, Man. 1000
CKTB St. Catharines, Ont. 10000
CKYL Peace River, Alta. 10000
WSGN Birmingham, Ala. 5000
KFAR Fairbanks, Alaska 5000
KAVL Lancaster, Calif. 1000
KFRC San Francisco, Calif. 5000
WTOR Torrington, Conn. 1000d
WCKR Miami, Fla. 5000
WMEL Pensacola, Fla. 500d
WCEH Hawkinsville, Ga. 500d
WRUS Russellville, Ky. 500d
KDAL Duluth, Minn. 5000
WDAF Kansas City, Mo. 5000
KOJM Havre, Mont. 1000
KCSR Chadron, Nebr. 1000d
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
CKCM Grand Falls, Nfld. 10000
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
WJDX 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
WVMT Burlington, Vt. 5000
WWNR Beckley, W.Va. 1000
WTMJ Milwaukee, Wis. 5000

630—475.9

CFCD Chatham, Ont. 1000
CKAR Huntsville, Ont. 1000
CHLT Sherbrooke, Que. 10000
CFCY Charlottestown, P.E.I. 10000
CJET Smith Falls, Ont. 1000
CKRC Winnipeg, Man. 10000
CKDV Kelowna, B.C. 1000
WAVU Albertville, Ala. 1000d
CHED Edmonton, Alta. 10000
WJDB Thomasville, Ala. 1000d
KJND Juneau, Alaska 1000
KVMA Magnolia, Ark. 1000d
KIDD Monterey, Calif. 1000
KHOW Denver, Colo. 5000

Kc. Wave Length W.P.

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
KWRO	Coquille, Oreg.	5000d
WEJL	Scranton, Pa.	500d
WKYN	San Juan, P.R.	5000
WPRO	Providence, R.I.	5000
KGFX	Pierre, S. Dak.	200d
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
KNBR	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
KBAT	San Antonio, Tex.	50000
KOMW	Omak, Wash.	1000d
WCAW	Charleston, W.Va.	10000

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
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	500
WMTC	Van Cleve, Ky.	1000d
KTRY	Bastrop, La.	250d
WARB	Covington, La.	250d
WJTO	Bath, Maine	1000d
WACE	Chicopee, Mass.	5000d
KWRE	Warrenton, Mo.	1000d
KWOA	Worthington, Minn.	1000d
KURL	Billings, Mont.	500d
KVOD	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
WFSG	Boca Raton, Fla.	1000d
WKMK	Blountstown, Fla.	1000d
WKIS	Orlando, Fla.	5000
KYME	Boise, Idaho	500d
WVLN	Olney, Ill.	1000d
KBOE	Oskaloosa, Iowa	250d
WNOP	Newport, Ky.	1000d
WTAO	Cambridge, Mass.	250d
KPBM	Carlsbad, N.Mex.	1000d
WGSM	Huntington, N.Y.	5000d
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	Humbolt, 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

CFCW	Camrose, Alta.	10000
CFDR	Dartmouth, N. S.	5000
CKMR	Newcastle, N.B.	1000
CHIC	Brompton, Ont.	1000
CKSO	Sudbury, Ont.	10000
WTUG	Tuscaloosa, Ala.	500d
KCEE	Tucson, Ariz.	5000d
KOSY	Texarkana, Ark.	1000
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
KEKO	Kealakekua, Hawaii	1000
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
KXGO	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.	10000
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
WVAL	Sauk Rapids, Minn.	5000
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
WIGO	Indianapolis, Ind.	250d
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
KFUO	St. Louis, Mo.	5000d
WKIX	Raleigh, N.C.	10000
WJW	Cleveland, Ohio	10000
WJAC	Johnstown, Pa.	10000
WEEU	Reading, Pa.	1000
WABA	Aquadilla, P.R.	500
WRAP	Norfolk, Va.	5000
KTAC	Tacoma, Wash.	1000

860—348.6

CBH	Halifax, N. S.	10000
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
WOWW	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
WSTH	Taylorsville, N. C.	250d
KSHA	Medford, Oreg.	1000d
WAMO	Pittsburgh, Pa.	1000d
WTEL	Philadelphia, Pa.	10000d
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
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	Nashau, 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
KFLO 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
KQTY Salina, Kans. 00000
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
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
WVTR White River Junction, Vermont 1000d
WRNL Richmond, Va. 5000
WHYE Roanoke, Va. 1000d
KORD Pasco, Wash. 1000d
KIXI Seattle, Wash. 1000
KISN Vancouver, Wash. 1000
WHSM Hayward, Wis. 5000d
WOOR 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
WGNU Granite City, Ill. 500d
WMOK Metropolis, Ill. 1000d
WBAA W. Lafayette, Ind. 5000
KFNF Council Bluffs, Ia. 5000
WTCW Whitesburg, Ky. 5000d
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 1000
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

Kc. *Wave Length* W.P.

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. 1000d
KHJ Los Angeles, Calif. 5000
KNGL 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
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. 5000
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
KAHU Waipahu, Hawaii 10000
WMIX Mt. Vernon, Ill. 5000d
KIOA Des Moines, Iowa 10000
WYLO New Orleans, La. 1000
WJOR South Haven, Mich. 1000d
WCPC Houston, Miss. 50000d
KSWM Aurora, Mo. 500d
KVSH Valentine, Nebr. 5000d
WFNC Fayetteville, N.C. 10000
KGRL Bend, Oreg. 1000d
WESA Charlerol, Pa. 250d
WGRP Greenville, Pa. 1000d
WIPR San Juan, P.R. 10000
KIXZ Amarillo, Tex. 5000
KTON Belton, Tex. 1000d
KATQ Texarkana, Tex. 1000d
WNRG Grundy, Va. 5000d
KQOT Yakima, Wash. 250
WFAW Ft. Atkinson, Wis. 250

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. 5000d
KIMN Denver, Colo. 5000
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
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
WBER Moncks Corner, S. C. 500d
WSPA Spartanburg, S.C. 5000
KWAT Watertown, S.Dak. 1000
WAGG Franklin, Tenn. 1000d
KDSX Denison, Tex. 500
KPRC Houston, Tex. 5000
KSEL Lubbock, Tex. 5000
WXGI Richmond, Va. 5000d
KMER Kemmerer, Wash. 1000
KJR Seattle, Wash. 5000
WERL Eagle River, Wis. 1000d
WKAZ Charleston, W.Va. 5000
WKTS Sheboygan, Wis. 500d

Kc. *Wave Length* W.P.

960—312.3

CFAC Calgary, Alta. 10000
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
KRIK Roswell, 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
CKNL Ft. St. John, B. C. 1000
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
KOCE Espanola, N. M. 1000d
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. 5000
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
KCTY Salinas, Calif. 1000d
KGLN Glenwood Sprgs., Colo. 1000d
WSUB Groton, Conn. 1000d
WRC Washington, D.C. 5000

Kc. *Wave Length* W.P.

WDVH Gainesville, Fla. 5000d
WFOT 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
KOSJ 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
WDWO 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. 10000
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. 5000d

Kc. Wave Length	W.P.
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
WABZ Albermarle, N.C.	1000d
WFGW Black Mountain, N.C.	10000d
WELS Kinston, N.C.	1000d
WIOI 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
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
WMSG Oakland, Md.	500d
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
WZIP Cincinnati, Ohio	1000d
KCCO Lawton, Okla.	250d
KFMJ Tulsa, Okla.	1000d
KUBE Pendleton, Oreg.	1000d
KEED Springfield, Oreg.	1000d
WBUT Butler, Pa.	1000d
WWDS Everett, Pa.	250d
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.	5000d
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
WRJS San German, P. R.	250

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.	1000d
WUFO Amherst, N.Y.	1000
WEWO Laurinburg, N.C.	1000d
KWJJ Portland, Oreg.	50000
WEEP Pittsburgh, Pa.	1000d
KRLD Dallas, Tex.	50000

1090—275.1

CHEC Lethbridge, Alta.	5000
CHRS St. Jean, Que.	10000d
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
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
KRLA Pasadena, Calif.	50000
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
KRDU 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

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 Lloydminster, 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

KRDS 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
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
WOSL 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.	5000d
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

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
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
KINO Winslow, Ariz.	250
KCON Conway, Ark.	250
KFPW Ft. Smith, Ark.	1000
KBTM Jonesboro, Ark.	1000
KGEE Bakersfield, Calif.	1000
KWTC Barstow, Calif.	1000
KIBS Bishop, Calif.	1000
KXO El Centro, Calif.	250
KDAC Ft. Bragg, Calif.	250
KGFJ Los Angeles, Calif.	1000
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.	1000
KGEK Sterling, Colo.	1000d
WINF Manchester, Conn.	1000
WGGG Gainesville, Fla.	1000
WONN Lakeland, Fla.	1000
WMAF Madison, Fla.	1000
WSBB New Smyrna Bch., Florida	1000
WNVY Pensacola, Fla.	1000
WCNH Quincy, Fla.	1000d
WJNO W. Palm Beach, Fla.	250
WBIA Augusta, Ga.	1000d
WBLJ Dalton, Ga.	1000
WXLI Dublin, Ga.	1000
WFOM Marietta, Ga.	1000
WSOK Savannah, Ga.	1000
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.	1000d
WSHO New Orleans, La.	1000
KSLO Opelousas, La.	1000
WQDY Calais, Maine	1000
WITH Baltimore, Md.	1000d
WCUM Cumberland, Md.	1000
WMNB No. Adams, Mass.	1000d
WESX Salem, Mass.	1000
WNEB Worcester, Mass.	1000
WJEF Grand Rapids, Mich.	1000
WIKB Iron River, Mich.	1000
WMPC Lapeer, Mich.	250

Kc. Wave Length W.P.

WSOO Sit. Ste. Marie, Mich. 1000
WSTR Sturgis, Mich. 1000d
KXRA Alexandria, Minn. 250
WKLK Cloquet, Minn. 1000
KGHS Internat'l Falls, Minn. 250
KYSM Mankato, Minn. 1000
KMRS Morris, Minn. 250
KTRF Thief Riv. Flls., Minn. 250
KWNO Winona, Minn. 1000d
WCMA Corinth, Miss. 1000
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
KHDN Hardin, Mont. 1000
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. 1000d
WTSV Claremont, N.H. 1000
WCMC Wildwood, N.J. 100
KALG Alamogordo, N.Mex. 250
KOTS Deming, N.Mex. 250
KYVA Gallup, N. Mex. 1000
KFUN Las Vegas, N.Mex. 250
KRSY Roswell, N. Mex. 1000
WNIA Cheektowaga, N.Y. 500
WENY Elmira, N.Y. 1000
WHUC Hudson, N. Y. 1000
WLFH Little Falls, N. Y. 1000
WFAS White Plains, N. Y. 1000
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. 1000
WCBT Roanoke Rap., N. C. 1000
KDIX Dickinson, N.Dak. 250
WCPO Cincinnati, Ohio 1000
WCOL Columbus, Ohio 1000
WIRO Ironton, Ohio 250
WTOL Toledo, Ohio 1000d
KADA N. of Ada, Okla. 250
WBBZ Ponca City, Okla. 250
KIAL Astoria, Oreg. 1000
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. 1000
WKBO Harrisburg, Pa. 1000
WCRO Johnstown, Pa. 1000
WBPZ Lock Haven, Pa. 250
WTIV Titusville, Pa. 500d
WNIK Arecibo, P.R. 1000
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. 1000
KDLK Del Rio, Tex. 250
KNUZ Houston, Tex. 1000
KERV Kerrville, Tex. 1000
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. 1000d
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. 1000
WCLO Janesville, Wis. 1000
WHVF Wausau, Wis. 1000d
KVOC Casper, Wyo. 1000

1240—241.8

ZNS-2 Nassau, Bahamas 250
CFLM La Tuque, Que. 1000
CFNW Norman Wells, Northwest Terr. 100
CFPR Prince Rupert, B.C. 250
CFVR Abbottsford, 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-l Williams Lake, B.C. 250
CKLS LaSarre, Que. 250
WEBJ Brewton, Ala. 250
WPRN Butler, Ala. 1000d
WULA Eufaula, Ala. 250
WOWL Florence, Ala. 1000
WARF Jasper, Ala. 1000
KVRD Cottonwood, Ariz. 250
KZOW So. of Globe, Ariz. 1000
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
KKLO San Diego, Calif. 250
KSMA Santa Maria, Calif. 250
KSUE Susanville, Calif. 1000
KRDO Colo. Sprgs., Colo. 1000
KDGO Durango, Colo. 1000
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. 1000
WDUN Gainesville, Ga. 1000
WLAG LaGrange, Ga. 1000
WBML Macon, Ga. 1000
WWNS Statesboro, Ga. 1000
WPAX Thomasville, Ga. 250
WTWA Thomson, Ga. 250
KVNI Coeur d'Alene, Idaho 250
KFLI 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. 500d
WHBU Anderson, Ind. 1000d
KDEC Decorah, Iowa 1000
KWLC Decorah, Iowa 1000
KBIZ Ottumwa, Iowa 1000
KICD Spencer, Iowa 1000
KIUL Garden City, Kans. 1000
KAKE Wichita, Kans. 250
WINN Louisville, Ky. 1000
WFTM Maysville, Ky. 1000
WPKE Pikeville, Ky. 1000d
WSFC Somerset, Ky. 1000
KASO Minden, La. 1000
KANE New Iberia, La. 1000
WCOU Lewiston, Maine 1000
WCEM Cambridge, Md. 1000
WJEJ Hagerstown, Md. 1000
WHAI Greenfield, Mass. 250
WOCB W. Yarmouth, Mass. 1000
WATT Cadillac, Mich. 1000
WCBY Cheboygan, Mich. 250
WJPD Ishpeming, Mich. 1000
WJIM Lansing, Mich. 1000d
WMFG Hibbing, Minn. 1000
KPRM Park Rapids, Minn. 100
WJON St. Cloud, Minn. 1000
WMPA Aberdeen, Miss. 250
WGRM Greenwood, Miss. 250
WGCM Gulfport, Miss. 1000
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. 1000
KAVE Carlsbad, N.Mex. 250
KCLV Clovis, N.Mex. 1000
WGBB Freeport, N. Y. 1000
WGVA Geneva, N.Y. 1000d
WJTM Jamestown, N.Y. 500d
WVOS Liberty, N. Y. 1000
WNBZ Saranac Lake, N.Y. 1000
WSNY Schenectady, N.Y. 1000d
WATN Watertown, N. Y. 1000
WPNF Brevard, N.C. 250
WIST Charlotte, N.C. 1000
WCNC Elizabeth City, N.C. 1000d
WJNC Jacksonville, N.C. 1000
WRAL Raleigh, N.C. 1000
KDLR Devils Lake, N.Dak. 250
WBBW Youngstown, Ohio 1000
WHIZ Zanesville, Ohio 1000
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. 1000
WKOK Sunbury, Pa. 250
WBAX Wilkes-Barre, Pa. 1000
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 Sonora, Tex. 1000
KXOX Sweetwater, Tex. 1000
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
WDNE Elkins, W.Va. 1000
WOMT Manitowoc, Wis. 1000d
WIBU Poynette, Wis. 1000d
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

CHWD Oakville, Ont. 1000
CKBL Matane, Que. 5000
CKOM Saskatoon, Sask. 10000
WZOB Ft. Payne, Ala. 1000d
WETU Wetumpka, Ala. 5000d
KAKA Wickenburg, Ariz. 500d
KHIL Willcox, Ariz. 1000d
KFAY Fayetteville, Ark. 1000d
KALO 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
KBTC Houston, Mo. 500d
WKBR Manchester, N.H. 5000
WMTR Morristown, N.J. 5000d
WIPS Ticonderoga, N.Y. 1000d
WFAG Farmville, N.C. 500d
WKDX Hamlet, N. C. 1000d
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. 1000d
KTFO Seminole, Tex. 1000d
KANN Ogden, Utah 1000d
KVEL Vernal, Utah 5000d
WDVA Danville, Va. 5000
WYSR Franklin, Va. 1000d
KWSC Pullman, Wash. 5000
KTW Seattle, Wash. 1000
WEMP Milwaukee, Wis. 5000

1260—238.0

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. 5000d
WFBM Indianapolis, Ind. 5000
KFGQ Boone, Iowa 1000d
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
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

CHAT Medicine Hat, Alta. 10000
CHWK Chilliwack, B.C. 10000
CJCB Sydney, N. S. 10000
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
WTNT 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 Iuka, 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. 5000
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
WITL Superior, Wis. 5000d

1280—234.2

CHIQ Hamilton, Ont. 5000
CJMS Montreal, Que. 10000
CKCV Quebec, Que. 10000
CJSL Estevan, Sask. 1000

Kc.	Wave Length	W.P.
WPID	Piedmont, Ala.	1000d
WNPT	Tuscaloosa, Ala.	5000
KHEP	Phoenix, Ariz.	1000d
KNBY	Newport, Ark.	1000d
KCGH	Arroyo Grande, Calif.	500d
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
WCPM	Cumberland, Ky.	1000d
WDSU	New Orleans, La.	5000
KWCL	Oak Grove, La.	500d
WEIM	Fitchburg, Mass.	5000
WFYC	Alma, Mich.	5000d
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
KBHB	Sturgis, S. D.	1000d
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
WKDE	Altavista, Va.	500d
WYVE	Wytheville, Va.	1000d
KMAS	Shelton, Wash.	1000d
KUDY	Spokane, Wash.	5000d
KIT	Yakima, Wash.	5000
WVAR	Richwood, W.Va.	1000d
WNAM	Neenah, Wis.	5000

1290—232.4

Kc.	Wave Length	W.P.
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
WTOC	Savannah, Ga.	5000
KSNN	Pocatello, Idaho	1000d
WIRL	Peoria, Ill.	5000
KWNS	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.	5000
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

Kc.	Wave Length	W.P.
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

Kc.	Wave Length	W.P.
CBAF	Moncton, N.B.	5000
CJME	Regina, Sask.	1000
WBSA	Boaz, Ala.	1000d
WTLS	Tallassee, Ala.	1000d
WEZQ	Winfield, Ala.	500d
KWCB	Searcy, Ark.	1000d
KROP	Brawley, Calif.	1000
KYNO	Fresno, Calif.	5000
KWKW	Pasadena, Calif.	5000
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
WOOD	Grand Rapids, Mich.	5000
WRBC	Jackson, Miss.	5000
KMMO	Marshall, Mo.	1000d
KBRL	McCook, Nebr.	5000d
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
WQIZ	St. George, 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

Kc.	Wave Length	W.P.
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
WOKA	Douglas, Ga.	1000d
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	1000
KFLA	Scott City, Kans.	500d
WTTL	Madisonville, Ky.	500d
WDOC	Prestonsburg, Ky.	5000d
KIKS	Sulphur, La.	500d
KUZN	W. Monroe, La.	1000d
WLOB	Portland, Maine	5000d
WORC	Worcester, Mass.	5000
WKMH	Dearborn, Mich.	5000
WCCW	Traverse City, Mich.	5000d
KRBI	St. Peter, Minn.	1000d
WXXX	Hattiesburg, Miss.	1000d
KFSB	Joplin, Mo.	5000
KFBB	Great Falls, Mont.	5000
KGMT	Fairbury, Nebr.	500d

Kc.	Wave Length	W.P.
WJLK	Asbury Park, N. J.	1000
WCAM	Camden, N. J.	1000
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.	1000
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
WDKD	Kingstree, S.C.	5000d
WDDD	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

1320—227.1

Kc.	Wave Length	W.P.
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
WDMJ	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
WKRK	Murphy, N.C.	5000d
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.	5000
KELD	Sioux Falls, S.Dak.	5000
WKIN	Kingsport, Tenn.	5000d
WMSR	Manchester, Tenn.	5000d
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

Kc.	Wave Length	W.P.
WROS	Scottsboro, Ala.	1000d
KMOP	Tucson, Ariz.	500d
KVEE	Conway, Ark.	500d
KLOM	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	Havre de Grace, Md.	1000d
WCRB	Waltham, Mass.	5000
WTRX	Flint, Mich.	5000
WLOL	Minneapolis, Minn.	5000

Kc.	Wave Length	W.P.
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	1000
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.	5000
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
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

Kc.	Wave Length	W.P.
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.	1000
WJOI	Florence, Ala.	1000
WGWC	Selma, Ala.	250
WFEB	Sylacauga, Ala.	250
KIBH	Seward, Alaska	250
KIKO	Miami, Ariz.	250
KKIT	Taos, N.M.	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.	1000
KENL	Arcata, Calif.	250
KMAK	Fresno, Calif	1000
KDOL	Mojave, Calif.	100
KSFE	Needles, Calif.	250
KAOR	Oroville, Calif.	250
KATY	San Luis Obispo, California	1000
KIST	Santa Barbara, Calif.	1000
KOMY	Watsonville, Calif.	1000
KDEN	Denver, Colo.	1000
KWSL	Grand Junction, Colo.	250
KVRH	Salida, Colo.	250
WNHC	New Haven, Conn.	1000
WOOK	Washington, D. C.	1000
WSLC	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.	1000
WTIF	Tifton, Ga.	1000
KAIN	Nampa, Idaho	1000
KPST	Preston, Idaho	250
KSKI	Sun Valley, Idaho	1000
WSOY	Decatur, Ill.	1000
WJPF	Herrin, Ill.	1000
WJOL	Joliet, Ill.	1000
WBIW	Bedford, Ind.	1000
WTRC	Elkhart, Ind.	1000
WLBC	Muncie, Ind.	1000
KROS	Clinton, Iowa	1000
KLIL	Estherville, Iowa	100
KCKN	Kansas City, Kans.	1000d
KSEK	Pittsburg, Kans.	1000
WCMI	Ashland, Ky.	1000
WBGN	Bowling Green, Ky.	250
WNBS	Murray, Ky.	1000d
WEKY	Richmond, Ky.	1000
KVOB	Bastrop, La.	250
KRMD	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.	1000
WLAV	Grand Rap., Mich.	1000
WCSR	Hillsdale, Mich.	1000
WMTE	Manistee, Mich.	1000

Kc.	Wave Length	W.P.
WAGN	Menominee, Mich.	1000
WMBN	Petoskey, Mich.	1000
WEXL	Royal Oak, Mich.	1000
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.	1000d
KLID	Poplar Bluff, Mo.	1000d
KSMO	Salem, Mo.	1000
KICK	Springfield, Mo.	1000
KCAP	Helena, Mont.	1000
KPRK	Livingston, Mont.	1000
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.	1000
KKIT	Taos, N.Mex.	250
KSIL	Silver City, N.Mex.	1000
WMBO	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	1000
WSTV	Steubenville, Ohio	1000
KIHN	Hugo, Okla.	250
KOCY	Okla. City, Okla.	1000
KTOW	Sand Springs, Okla.	250
KWVR	Enterprise, Oreg.	250
KIHR	Hood River, Oreg.	250
KFIR	North Bend, Oreg.	1000
WCVI	Connellsville, Pa.	1000d
WSAJ	Grove City, Pa.	100
WKRZ	Oil City, Pa.	1000
WHAT	Philadelphia, Pa.	1000
WRAW	Reading, Pa.	1000
WTRN	Tyrone, Pa.	1000
WBRE	Wilkes-Barre, Pa.	1000
WWPA	Williamsport, Pa.	1000
WGRF	Aguadilla, P.R.	250
WDKE	Charleston, S.C.	1000
WRHI	Rock Hill, S.C.	1000
WSSC	Sumter, S.C.	1000
KIJV	Huron, S. D.	1000
KRSD	Rapid City, S.Dak.	1000
WBAC	Cleveland, Tenn.	1000
WKRM	Columbia, Tenn.	1000
WGRV	Greeneville, Tenn.	1000
WKGN	Knoxville, Tenn.	1000
WHHM	Memphis, Tenn.	1000d
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
KVIC	Victoria, 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
KGRS	Pasco, Wash.	250
KAPA	Raymond, Wash.	250
KMEL	Wenatchee, Wash.	250
WHAR	Clarksburg, W.Va.	250
WEPM	Martinsburg, W. Va.	1000
WMON	Montgomery, W.Va.	250
WOVE	Welch, W.Va.	1000
WLDY	Ladysmith, Wis.	1000
WRIT	Milwaukee, Wis.	1000d
KSGT	Jackson, Wyo.	250
KYCN	Wheatland, Wyo.	250
KWOR	Worland, Wyo.	1000

1350—222.1

Kc.	Wave Length	W.P.
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
WXYC	Ft. Myers, 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
WHMI	Howell, Mich.	500
KDID	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.	5000
WADC	Akron, Ohio	5000
WCSM	Celina, Ohio	500d
WCHI	Chillicothe, Ohio	1000d
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

Kc.	Wave Length	W.P.
CKBC	Bathurst, Nfld.	10000
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
WOBS	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
KHAK	Cedar Rapids, Iowa	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
WKYO	Caro, Mich.	500d
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
WBDB	Galax, Va.	1000d
WHBG	Harrisonburg, Va.	5000d
KFDR	Grand Coulee, Wash.	1000d
KMO	Tacoma, Wash.	5000
WHJC	Matewan, 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

Kc.	Wave Length	W.P.
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
WDEA	Ellsworth, Me.	5000d
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.	5000d
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
WOEF	Chattanooga, Tenn.	5000
WDXE	Lawrenceburg, Tenn.	1000d
WRGS	Rogersville, Tenn.	1000d
KOKE	Austin, Tex.	1000d
KFRO	Longview, Tex.	1000
KUKO	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
WMOO	Moundsville, W.Va.	1000d
WCCN	Neillsville, Wis.	5000d
KVWO	Cheyenne, Wyo.	1000

1380—217.3

Kc.	Wave Length	W.P.
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
WBZI	Brazil, Ind.	500d
WKJG	Ft. Wayne, Ind.	5000
KCIM	Carroll, 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	Holdredge, 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
WMTD	Hinton, W.Va.	1000d
WBEL	Beloit, Wis.	5000

1390—215.7

Kc.	Wave Length	W.P.
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
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
WEGP	Presque Isle, Me.	5000d
KJPW	Waynesville, Mo.	1000d
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
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
WMPO	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

Kc.	Wave Length	W.P.
CKDH	Amherst, N.S.	250
CIFP	Riviere-du-Loup, Que.	1000
CKRN	Rouyn, Que.	250
CKSW	Swift Current, Sask.	1000
WMSL	Decatur, Ala.	1000
WXAL	Demopolis, Ala.	1000d
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.	1000
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
WNVE	Ft. Walton Bch., Fla.	1000d
WRHC	Jacksonville, Fla.	250
WPRY	Perry, Fla.	250
WTRR	Sanford, Fla.	1000
WZRH	Zephyr Hills, Fla.	250
WCQS	Alma, Ga.	1000

Kc.	Wave Length	W.P.
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	1000
WDWS	Champaign, Ill.	1000
WGIL	Galesburg, Ill.	1000
WROZ	Evansville, Ind.	1000
WBAT	Marion, Ind.	1000
KCOG	Centerville, Iowa	100
KVFD	Fort Dodge, Iowa	1000
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	1000d
WIDE	Biddeford, Maine	1000
WWIN	Baltimore, Md.	1000
WALE	Fall River, Mass.	1000
WLLH	Lowell, Mass.	1000
WHMP	Northampton, Mass.	1000
WELL	Battle Creek, Mich.	1000
WJLB	Detroit, Mich.	1000d
WHDF	Houghton, Mich.	250
WMAB	Munising, Mich.	250
WSAM	Saginaw, Mich.	1000
WSJM	St. Joseph, Mich.	1000
WTCM	Traverse City, Mich.	1000
KEYL	Long Prairie, Minn.	1000
KMHL	Marshall, Minn.	1000
KTWN	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.	1000
KTTS	Springfield, Mo.	1000
KDRG	Deer Lodge, Mont.	250
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
WLTN	Littleton, N. H.	250
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.	1000d
WSLB	Ogdensburg, N.Y.	1000
WBMA	Beaufort, N.C.	250
WGBG	Greensboro, N.C.	1000
WSIC	Statesville, N.C.	1000
WLSE	Wallace, N. C.	1000
WHCC	Waynesville, N.C.	1000
WCNF	Weldon, N.C.	1000d
KEYJ	Jamestown, N.Dak.	1000
WMAN	Mansfield, Ohio	1000d
WPAY	Portsmouth, Ohio	1000
KWON	Bartlesville, Okla.	250
KTMC	McAlester, Okla.	250
KNOR	Norman, Okla.	250
KNND	Cottage Grove, Oreg.	1000d
WEST	Easton, Pa.	1000
WJET	Erie, Pa.	1000
WHGB	Harrisburg, Pa.	1000d
WKBI	St. Marys, Pa.	1000
WICK	Scranton, Pa.	1000
WRAK	Williamsport, Pa.	1000
WCOS	Columbia, S.C.	1000
WGTN	Georgetown, S.C.	250
WZOO	Spartanburg, S.C.	1000d
WJZM	Clarksville, Tenn.	1000
WHUB	Cookeville, Tenn.	1000
WLSB	Copper Hill, Tenn.	250
WGAP	Maryville, Tenn.	1000d
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.	1000
KTFS	Texarkana, Tex.	250
KVOU	Uvalde, Tex.	250
KIXX	Provo, Utah	250
WDOT	Burlington, Vt.	1000
WINA	Charlottesville, Va.	1000
WHHV	Hillsville, Va.	250
WHIH	Portsmouth, Va.	1000
WHLF	So. Boston, Va.	1000
WINC	Winchester, Va.	1000
KEDO	Longview, Wash.	250
KRSC	Othello, Wash.	250
KTNT	Tacoma, Wash.	1000

Kc.	Wave Length	W.P.
WBOY	Clarksburg, 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

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.	5000d
KCOL	Ft. Collins, Colo.	1000
WPOP	Hartford, Conn.	5000
WDOV	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
WHAG	Halfway, Md.	1000d
WOKW	Brockton, Mass.	1000d
WGRD	Grand Rap., Mich.	1000d
KLFD	Litchfield, Minn.	500d
KRWB	Roseau, Minn.	1000d
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
KWYD	Sheridan, Wyo.	1000

1420—211.1

CKPT	Peterborough, Ont.	1000
CJMT	Chicoutimi, Que.	1000
WACT	Tuscaloosa, Ala.	5000d
KHFH	Sierra Vista, Ariz.	1000d
KPOC	Pocahontas, Ark.	1000d
KRDO	Colo. Sprgs., Colo.	1000
KSTN	Stockton, Calif.	5000
WLIS	Old Saybrook, Conn.	500d
WBRD	Bradenton, Fla.	1000
WDBF	Delray Beach, Fla.	5000d
WETH	St. Augustine, Fla.	1000d
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
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

Kc.	Wave Length	W.P.
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
WCEO	DuBois, Pa.	5000
WEUC	Ponce, P.R.	1000
WCRE	Cheraw, S.C.	1000d
KDLE	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

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
WTTT	Amherst, Mass.	5000d
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.	5000
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

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
KCDY	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.	5000d
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.	1000d
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

Kc.	Wave Length	W.P.
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
KDNC	Spokane, Wash.	5000d
WHIS	Bluefield, W.Va.	5000
WAJR	Morgantown, W.Va.	5000
WJPG	Green Bay, Wis.	5000

1450—206.8

CFBM	Brochet, Man.	100
CBG	Gander, Nfld.	250
CFAB	Windsor, N.S.	250
CFJR	Brockville, Ont.	1000
CHUC	Port Hope, Ont.	1000
CHEF	Granby, P.Q.	1000
WDNG	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.	1000
WILM	Wilmington, Del.	1000
WOL	Washington, D. C.	1000
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
WTAL	Tallahassee, Fla.	1000
WGPC	Albany, Ga.	1000
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	1000
WVON	Cicero, Ill.	1000
WKEI	Kewanee, Ill.	100
WCVS	Springfield, Ill.	1000
WANE	Ft. Wayne, Ind.	1000
WXVW	Jeffersonville, Ind.	250
WASK	Lafayette, Ind.	1000
WAOV	Vincennes, Ind.	1000
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.	1000
KATE	Albert Lea, Minn.	250
KBUN	Bemidji, Minn.	1000
KBMW	Breckenridge, Minn.	1000
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
KOKD	Warrensburg, Mo.	1000
KWPM	West Plains, Mo.	1000
KXXL	Bozeman, Mont.	1000
KUDI	Great Falls, Mont.	1000
KXLL	Missoula, Mont.	250

Kc.	Wave Length	W.P.
KRBN	Red Lodge, Mont.	1000
KVCK	Wolf Point, Mont.	1000
KWBE	Beatrice, Nebr.	250
KONE	Reno, Nev.	250
WKXL	Concord, N.H.	1000
WFPG	Atlantic City, N.J.	1000
WCTC	New Brunswick, N. J.	1000
KLOS	Albuquerque, N.Mex.	250
KLMX	Clayton, N.Mex.	1000d
KOBE	Las Cruces, N.Mex.	250
KENM	Portales, N.Mex.	1000
WCLI	Corning, N.Y.	1000
WWSC	Glen Falls, N.Y.	1000d
WHDL	Olean, N.Y.	1000
WKIP	Poughkeepsie, N. Y.	1000
WKAL	Rome, N.Y.	250
WATA	Boone, N. C.	1000
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	1000
WMOH	Hamilton, Ohio	1000d
WLEC	Sandusky, Ohio	1000
KWHW	Altus, Okla.	1000
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.	1000d
WDAD	Indiana, Pa.	1000
WPAM	Pottsville, Pa.	1000
WMPT	So. Williamsport, Pa.	250
WMAJ	State College, Pa.	1000d
WJPA	Washington, Pa.	250
WWRI	W. Warwick, R.I.	1000
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.	1000
KYNT	Yankton, S.Dak.	250
WLAR	Athens, Tenn.	1000
WMOC	Chattanooga, Tenn.	1000
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
KOXU	St. George, Utah	250
WSNO	Barre, Vt.	1000
WTSA	Brattleboro, Vt.	1000
WFTR	Front Royal, Va.	1000
WENZ	Highland Springs, Va.	250
WREL	Lexington, Va.	1000
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.	1000
KFIZ	Fond du Lac, Wis.	250
WOLB	Marshfield, Wis.	1000
WPFP	Park Falls, Wis.	1000
WRCO	Richland Center, Wis.	1000
KBBS	Buffalo, Wyo.	250
KVOW	Riverton, Wyo.	1000

1460—205.4

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
WOCH	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
KOMA	Montevideo, Minn.	1000
WELZ	Belzoni, Miss.	1000d
KADY	St. Charles, Mo.	5000d
KRNY	Kearney, Nebr.	5000d

KENO	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.	5000d
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.	5000d
KCOI	Kirkland, Wash.	5000d
KIMA	Yakima, Wash.	5000
WBUC	Buckhannon, W.Va.	5000d
WRAC	Racine, Wis.	500d
WTMB	Tomah, Wis.	1000d

1470—204.0

CHOW	Welland, Ontario	1000
CFOX	Pointe Claire, Que.	5000
WBLO	Evergreen, Ala.	1000d
KMVS	Sierra Vista, Ariz.	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
WOOL	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
KTDL	Farmersville, La.	1000d
KPLC	Lake Charles, La.	5000
WLAM	Lewiston, Maine	5000
WJOY	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
WGOO	Georgetown, S. C.	500d
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
WBZE	Wheeling, W.Va.	500d
WBKV	West Bend, Wis.	1000d
KTWO	Casper, Wyo.	5000

1480—202.6

VOUS	Argentia, Nfld.	250
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
WKOA	Hopkinsville, Ky.	1000d
WNKY	Neon, Ky.	1000d
WTLO	Somerset, Ky.	1000d
KCKW	Jena, La.	500d
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
WOAS	Philadelphia, Pa.	5000
WISL	Shamokin, Pa.	1000
WSHP	Shippensburg, Pa.	500d
WMOO	Fajardo, P.R.	5000
KSDR	Watertown, 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

CKAD	Wilmot Station, N.S.	1000
CFMR	Fort Simpson, NWT.	250
CFRC	Kingston, Ont.	100
CKCR	Kitchener, Ont.	5000
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
KICO	Calexico, Calif.	250
KRKC	King City, Calif.	1000
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.	1000d
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.	1000
KBUR	Burlington, Iowa	1000
WDBQ	Dubuque, Iowa	1000
KBAB	Indianola, Iowa	1000
KRIB	Mason City, Iowa	250
KKAN	Phillipsburg, Kans.	250
KTOP	Topeka, Kans.	250
WFKY	Frankfort, Ky.	1000d
WKAY	Glasgow, Ky.	1000
WOMI	Owensboro, Ky.	1000
WSIP	Paintsville, Ky.	1000
WIKC	Bogalusa, La.	1000
KEUN	Eunice, La.	250
KCIL	Houma, La.	1000
KRUS	Ruston, La.	1000
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
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.	1000
KRSN	Los Alamos, N.Mex.	1000
KRTN	Raton, N. Mex.	1000
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.	1000
WOLF	Syracuse, N. Y.	1000
WSSB	Durham, N. C.	1000
WFLB	Fayetteville, N.C.	250
WLOE	Leaksville, N.C.	250
WRNB	New Bern, N.C.	1000
WRMT	Rocky Mount, N. C.	1000
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.	1000
WBEX	Chillicothe, Ohio	1000
WJMO	Cleveland Hghts., O.	1000
WOHI	E. Liverpool, Ohio	250
WMOA	Marietta, Ohio	1000
WMRN	Marion, Ohio	1000
KWRW	Guthrie, Okla.	100
KBIX	Muskogee, Okla.	250
KBKR	Baker, Oreg.	1000
KRNR	Roseburg, Oreg.	1000
KBZY	Salem, Oreg.	1000
WESB	Bradford, Pa.	1000
WAZL	Hazleton, Pa.	1000
WARD	Johnstown, Pa.	1000
WGAL	Lancaster, Pa.	1000
WBCB	Levittown, Pa.	1000
WMRF	Lewiston, Pa.	1000
WMGW	Meadville, Pa.	1000d
WNBT	Wellsboro, Pa.	1000
WSIB	Beaufort, S.C.	100
WGCD	Chester, S.C.	250
WMRB	Greenville, S.C.	1000
KCRN	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
KEST	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.	1000
WIKE	Newport, Vt.	1000
WCVA	Culpeper, Va.	1000
WVEC	Hampton, Va.	1000
WAYB	Waynesboro, Va.	1000
KBRO	Bremerton, Wash.	1000
KLOG	Kelso, Wash.	1000
KENE	Toppenish, Wash.	250
KTEL	Walla Walla, Wash.	250
WGKV	Charleston, W. Va.	250
WTCS	Fairmont, W.Va.	1000d
WLOH	Princeton, W.Va.	250
WGEZ	Beloit, Wis.	1000d
WLCX	LaCrosse, Wis.	1000
WIGM	Medford, Wis.	1000
WOSH	Oshkosh, Wis.	1000
KIML	Gillette, Wyo.	250
KLME	Laramie, Wyo.	500
KRTR	Thermopolis, Wyo.	250
KGOS	Torrington, Wyo.	1000

1500—199.9

KGMR	Jacksonville, Ark.	1000d
KBLA	Burbank, Calif.	10000
KXRX	San Jose, Calif.	5000
WTOP	Washington, D.C.	50000
WKIZ	Key West, Fla.	250
WSEM	Donaldsonville, Ga.	1000d
WTHN	Thomaston, Ga.	1000d
KUMU	Honolulu, Hawaii	1000
WJBK	Detroit, Mich.	10000
KSTP	St. Paul, Minn.	50000
KDFN	Doniphan, Mo.	1000d
KPIR	Eugene, Ore.	10000d
WMNT	Manati, P.R.	250
WEAC	Gaffney, S. C.	1000d
KWFA	Merkle, Tex.	250d

Kc.	Wave Length	W.P.
KTXO	Sherman, Tex.	250
KANI	Wharton, Tex.	500

1510—199.1

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.	10000
WZZZ	Boynton Beach, Fla.	1000d
WJRC	Joliet, Ill.	500d
WKAI	Macomb, Ill.	1000d
KIFG	Iowa Falls, Iowa	500d
WMEX	Boston, Mass.	5000
WJCO	Jackson, Mich.	5000d
WLKM	Three Rivers, Mich.	500
KCCV	Independence, Mo.	1000d
KTTT	Columbus, Nebr.	500d
WEAL	Greensboro, N.C.	1000d
WRAN	Dover, N.J.	1000
WBRW	Brewster, N.Y.	1000d
WLAC	Nashville, Tenn.	50000
KCTX	Childress, Tex.	250d
KROB	Robstown, Tex.	500d
KSTV	Stephenville, Tex.	250d
KGA	Spokane, Wash.	50000
WAUX	Waukesha, Wis.	10000d

1520—197.4

KGHT	Hollister, Calif.	500
KACY	Port Hueneme, Calif.	10000
WVCF	Apopka, Fla.	5000d
WGNP	Indian Rocks Beach, Fla.	1000d
WIXX	Oakland Park, Fla.	1000d
WHOW	Clinton, Ill.	5000d
WLUV	Loves Park, Ill.	500d
WSVL	Shelbyville, Ind.	1000
KSIB	Creston, Iowa	1000d
WRSL	Stanford, Ky.	500d
KXKW	Lafayette, La.	10000
WKJR	Muskegon Hts., Mich.	1000d
WYNZ	Ypsilanti, Mich.	250d
WYKP	Ocean City, N. J.	1000d
KMNF	Albuquerque, N. Mex.	500d
WKBW	Buffalo, N.Y.	50000
WFYI	Mineola, N. Y.	10000d
WBNO	Bryan, Ohio	500d
KOMA	Okla. City, Okla.	50000
KGON	Oregon City, Oreg.	10000
WRAI	Rio Piedras, P. R.	250

1530—196.1

KJBS	Pine Bluff, Ark.	250d
KFBK	Sacramento, Calif.	50000
WENG	Englewood, Fla.	1000
KWLA	Many, La.	1000d
WRPM	Poplarville, Miss.	1000d
WTHM	Lapeer, Mich.	5000d
WYOQ	Wyoming, Mich.	500d
KMAM	Butler, Mo.	250
WCKY	Cincinnati, Ohio	50000
WMBT	Shenandoah, Pa.	250d
KGTN	Georgetown, Tex.	1000d
KGBT	Harlingen, Tex.	50000
KCLR	Ralls, Tex.	1000d
WQVA	Quantico, Va.	250

1540—195.0

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
WBCO	Bucyrus, Ohio	500d
WABQ	Cleveland, Ohio	1000d
KWFS	Eugene, Ore.	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

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
KIWA	Sheldon, Iowa	500d
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
WJAQ	Jackson, Miss.	50000
WSAO	Sanitobia, Miss.	5kwd
KBLR	Bolivar, Mo.	250
KGMO	Cape Girardeau, Mo.	5000d
KKJO	St. Joseph, Mo.	5000
WCGR	Canadaigua, N.Y.	250
WBAZ	Kingston, N.Y.	500d
WBVM	Utica, N.Y.	1000
WKTB	Greenville, N. C.	500d
WNOH	Raleigh, N.C.	1000d
WTYN	Tryon, N.C.	1000d
WPEG	Winston-Salem, N.C.	1000d
KUTT	Fargo, N.D.	5000d
WDLR	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
KCAN	Canyon, Tex.	1000
KWBC	Navasota, Tex.	250d
WKYE	Bristol, Tenn.	1000d
WYRL	Bristol, Tenn.	1000d
WPTN	Cookeville, Tenn.	250d
WTPI	Cookville, Tenn.	250d
WKPT	Kingsport, Tenn.	10000d
KCOM	Comanche, Tex.	250d
WKBA	Vinton, Va.	1000d
WBOF	Virginia Beach, Va.	5000d
WXVA	Charlestown, W.Va.	500d
KOQT	Bellingham, Wash.	1000d
KGAR	Vancouver, Wash.	1000d

1560—192.3

CFRS	Simcoe, Ont.	250d
WAGC	Centre, Ala.	1000d
KPMC	Bakersfield, Calif.	10000
KIQS	Willows, Calif.	250d
WBYS	Canton, Ill.	250d
KSWI	Council Bluffs, Iowa	1000d
WDXR	Paducah, Ky.	1000
KCLH	Blue Earth, Minn.	250d
KQYX	Joplin, Mo.	250
WQXR	New York, N.Y.	50000
WSDC	Mocksville, N.C.	250d
WGLD	Chardon, Ohio	250d
WTNS	Coshocton, Ohio	1000d
WTOD	Toledo, Ohio	5000d
KWCO	Chickasha, Okla.	1000
WRSJ	Bayamon, P.R.	5000
WAGL	Lancaster, S. C.	1000d
WLVN	Nashville, Tenn.	10000d
WBOL	Bolivar, Tenn.	250d
KCAD	Abilene, Tex.	500d
KHBR	Hillsboro, Tex.	250d
KGUL	Port Lavaca, Tex.	500d
KHOK	Hoquiam, Wash.	1000d

1570—191.1

CHUB	Nanaimo, B.C.	10000
CKLM	Montreal, Canada	10000d
CFOR	Orillia, Ont.	10000
WCRL	Oneonta, Ala.	1000d
WRWJ	Selma, Ala.	5000d
KBRI	Brinkley, Ark.	250d
KBJT	Fordyce, Ark.	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
WOWI	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
WMLO	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
KWAY	Forest Grove, Oreg.	1000d
KOHU	Hermiston, Oreg.	1000d
WBUX	Doylestown, Pa.	1000d
WQTW	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

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
WCCF	Punta Gorda, 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
WLBS	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
WKJK	Granite Falls, N. C.	500d
WPYB	Benson, N.C.	500d
WVKO	Columbus, Ohio	1000d
KLTR	Blackwell, Okla.	1000d
WCOY	Columbia, Pa.	500d
WEND	Ebensburg, Pa.	1000d
WANB	Waynesburg, Pa.	250d
WDRG	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

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
WISZ	Glen Burnie, Md.	500
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

CHVC	Niagara Falls, Ont.	10000
WEUP	Huntsville, Ala.	5000d
WAPX	Montgomery, Ala.	1000
KVIC	Cottonwood, Ariz.	1000d
KXEW	Tucson, Ariz.	1000
KGKO	Benton, Ark.	1000d
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.	500d
WKTX	Atlantic Beach, Fla.	1000d
WKWF	Key West, Fla.	500
WHEW	Riviera Beach, Fla.	1000
WOKB	Winter Garden, Fla.	1000d
WGKA	Atlanta, Ga.	1000d
WNGA	Nashville, Ga.	1000d
WCGO	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
KMDO	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.	50000
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

Kc.	Wave Length	W.P.	Kc.	Wave Length	W.P.	Kc.	Wave Length	W.P.	Kc.	Wave Length	W.P.
WHBT	Harriman, Tenn.	5000d	KBOR	Brownsville, Tex.	1000	KMAE	McKinney, Tex.	1000d	WHLL	Wheeling, W.Va.	5000d
WKBJ	Milan, Tenn.	1000d	KWEL	Midland, Tex.	1000	KOGT	Orange, Tex.	1000	WCWC	Ripon, Wis.	5000d
KBBB	Borger, Tex.	500d	KCFH	Cuero, Tex.	500d	KBBC	Centerville, Utah	1000d			

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	
Abbottsford, B. C.	CFVR	250	
Aberdeen, Md.	WAMD	970	
Aberdeen, Miss.	WMPA	1240	
Aberdeen, S. Dak.	KDLE	1420	
	KSDN	930	A
	KXRO	1320	
Aberdeen, Wash.	KBKW	1450	
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
	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	
	KVOD	730	
	KLOS	1450	
	KMNF	1520	
	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	1230	A
Alexandria, Va.	WPIK	730	M
Algona, Iowa	KLGA	1600	
Alice, Tex.	KOPY	1070	
Allegan, Mich.	WDWE	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, Mass.	WTTT	1430	
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	

Location	C.L.	Kc.	N.A.
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	
Apopka, Fla.	WVCF	1520	
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	
Argentia, Nfld.	VOUS	1480	
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	
Arroyo Grande, Calif.	KCGH	1280	
Ashburn, Ga.	WMES	1570	
Asbury Park, N.J.	WJLK	1310	
Asheboro, N.C.	WGWR	1260	
Asheville, N.C.	WISE	1310	
	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
	WDOL	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

Location	C.L.	Kc.	N.A.
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	WJTO	730	
Bath, N.Y.	WFSR	1580	
Bathurst, Nfld.	CKBC	1360	
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.	KFDM	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	

Location	C.L.	Kc.	N.A.
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
	WBEL	1380	
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	
	KGKO	1600	
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 Spg., 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	
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	
Blue Earth, Minn.	KCLH	1560	
Bluefield, W.Va.	WHIS	1440	N
	WKOY	1240	M
Blythe, Calif.	KYDR	1450	A
Blytheville, Ark.	KLCN	910	
Boaz, Ala.	WBSA	1300	
Boca Raton, Fla.	WFSG	730	
Bogalusa, La.	WIKC	1490	N
	WBOX	920	
Boise, Idaho	KATN	1010	
	KBOI	950	C
	KEST	790	
	KGEM	1140	M
	KIDO	630	N
	KYME	740	

Location	C.L.	Kc.	N.A.
Bolivar, Mo.	KBLR	1550	
Bolivar, Tenn.	WBOL	1560	
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	
Boynton Beach, Fla.			
	WZZZ	1510	
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	790	
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, Ohio	WBNO	1520	
Bryan, Tex.	KORA	1240	M
	WTAW	1150	
Buckhannon, W.Va.	WBUC	1460	
Bucyrus, Ohio	WBCO	1540	
Buffalo, N.Y.	WBEN	930	C
	WYSL	1400	
	WEBR	970	M
	WGR	550	N
	WKBW	1520	N
	WWOL	1120	A
Buffalo, Wyo.	KBBS	1450	
Buford, Ga.	WDMF	1460	
Burbank, Calif.	KBLA	1500	
Burley, Idaho	KBAR	1230	A-M
Burlington, Iowa	KBUR	1490	A
Burlington, N.C.	WBBB	920	M
	WBAG	1150	
Burlington, Vt.	WDOT	1400	
	WJOY	1230	A
	WVMT	620	N
Burnett, Tex.	KTSL	1340	
Burns, Oreg.	KRNS	1230	
Butler, Ala.	WPRN	1240	
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	790	
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.	WDOB	1370	
Canton, N.C.	WWIT	970	
Canton, Ohio	WCNS	900	M
	WHOF	1060	
	WHBC	1480	A
Canyon, Tex.	KCAN	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.	WKYO	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.	KOMO	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
	KLWN	1450	
	WMT	600	C
Cedartown, Ga.	WGAA	1340	
Celina, Ohio	WCSM	1350	
Center, Ala.	WEIS	990	
	WAGC	1550	
Center, Tex.	KDET	930	
Centerville, Iowa	KCOG	1400	
Centerville, Miss.	WLBS	1580	
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.	WLBS	1580	
Chadburn, N.C.	WVOE	1590	
Chadron, Nebr.	KCSR	610	
Chambersburg, Pa.	WCHA	800	
	WCBG	1590	
Champaign, Ill.	WDWS	1400	C
Chanute, Kans.	KCRB	1460	
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
	WOKE	1340	A-M
	WPAL	730	
	WQSN	1450	
	WTMA	1250	N
Charleston, W.Va.	WCAW	680	
	WCHS	580	C
	WGKV	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.			
	WBNB	1000	
	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.	WVON	1450	
Cincinnati, Ohio	WCKY	1530	M
	WCIN	1480	
	WCPO	1230	
	WKRC	550	C
	WLW	700	N-A
	WSAI	1360	
	WZIP	1050	
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.	WROX	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.	WSLC	1340	
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	
	KROS	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.	WCOJ	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	
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	
	KTTT	1510	
Columbus, Ohio	WBNS	1460	C
	WCOL	1230	A
	WMNI	920	M
	WOSU	820	
	WTVN	610	A
	WVKO	1580	
Colville, Wash.	KCVL	1270	
Comanche, Tex.	KCOM	1550	
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
	WPTN	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.			
	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	

Location	C.L.	Kc.	N.A.
Coudersport, Pa.	WFRM	600	
Council Bluffs, Iowa	KFNF	920	
	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.	WGTO	540	
Cynthiana, Ky.	WCYN	1400	
Dade City, Fla.	WOCF	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.	WOAN	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	
Dartmouth, N. S.	CFDR	790	
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.	WHDS	800	
	WAJF	1490	
	WMSL	1400	M
Decatur, Ga.	WGUN	1010	A
Decatur, Ill.	WDZ	1050	
	WSOY	1340	C
Decorah, Iowa	KDEC	1240	
	KWLC	1240	
Deer Lodge, Mont.	KDRG	1400	
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	
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	
	KHDW	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
	KIDA	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.	KOLM	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
	KEOO	1550	
Donaldsonville, Ga.	WSEM	1500	
Doniphan, Mo.	KOFN	1500	
Dothan, Ala.	WAGF	1320	
	WDIG	1450	M
	WOOF	560	
Douglas, Ariz.	KAWT	1450	M
	KAPR	930	
Douglas, Ga.	WDMG	860	
	WOKA	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.	KSFO	750	
Durham, N.C.	WDNC	620	C
	WSRC	1410	
	WSSB	1490	
	WTIK	1310	A
Dyersburg, Tenn.	WDSG	1450	
	WTRD	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	1370	
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	
	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.	KULF	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	
Espanola, N. M.	KDCE	970	
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
	KWFS	1540	
Eunice, La.	KEUN	1490	M
Eureka, Calif.	KINS	980	C
	KDAN	790	
	KREO	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, Pa.	WWDS	1050	
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	
	KXGO	790	A
Faribault, Minn.	KDHL	920	
Farmersville, La.	KTDL	1470	
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.	KFMD	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
	WOWL	1240	A
Florence, S.C.	WJMX	970	A
	WOLS	1230	
	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.	KWAY	1570	
Forrest City, Ark.	KXJK	950	
Ft. Atkinson, Wis.	WFAW	940	
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	
	WXYC	1350	
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	1400	
	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	
	WROL	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

Location	C.L.	Kc.	N.A.
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
	KYND	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	
	WEAC	1500	
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
	WGOO	1470	
Georgetown, Tex.	KGTN	1530	
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	
Glen Burnie, Md.	WISZ	1590	
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
	WGOL	1300	
Gonzales, Tex.	KCTI	1450	
Goodland, Kans.	KLDE	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	
	CKCM	620	
Grand Forks, N.D.	KFJM	1370	
	KILO	1440	C
	KNOX	1310	M
Grand Haven, Mich.	WGHN	1370	
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.	KDZY	1490	M
Grangeville, Idaho	KORT	1230	
Granite City, Ill.	WGNU	920	
Granite Falls, N. C.	WKJK	1580	
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	
	WEAL	1510	
	WKTB	1550	
	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	940	
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.	WHAG	1410	
Halifax, N. S.	CBH	860	
	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	1250	
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	
Hardin, Mont.	KHDN	1230	
Harlan, Ky.	WHLN	1410	
Harlingen, Tex.	KGBT	1530	
Harriman, Tenn.	WHBT	1600	
Harrisburg, Ill.	WEBQ	1240	
Harrisburg, Pa.	WHGB	1400	A
	WCMB	1460	M
	WHP	580	C
	WKBD	1230	N
Harrison, Ark.	KHDZ	900	
Harrisonburg, Va.	WHBG	1360	
	WSVA	550	N
Harrodsburg, Ky.	WHBN	1420	
Hartford, Conn.	WDRC	1360	C
	WCCC	1290	M
	WPDP	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	
Hauterive, Que.	CHLC	580	
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	
	KTOD	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.	KDHU	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	
Hinton, W. Va.	WMTD	1380	
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	
	KAIM	870	
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
	KUMU	1500	
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	
Houghton Lake, Mich.	WHGR	1290	
Houlton, Maine	WHOU	1340	
Houma, La.	KCIL	1490	N
Houston, Miss.	WCPC	940	
Houston, Mo.	KTBC	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	
	KDUR	1220	
Independence, Kans.	KIND	1010	M
Independence, Mo.	KCCX	1510	
Indiana, Pa.	WDAD	1450	C
Indianapolis, Ind.	WFBM	1260	A
	WGEE	1590	
	WIBC	1070	
	WIGO	810	
	WIRE	1430	N
	WISH	1310	C
	WXLW	950	M
Indianola, Iowa	KBAB	1490	
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
	WJCO	1510	
Jackson, Miss.	WJDX	620	N
	WJQS	1400	M
	WJXN	1450	
	WJAQ	1550	
	WDKJ	1590	
	WRBC	1300	M
	WSLI	930	
Jackson, Ohio	WLMJ	1280	
Jackson, Tenn.	WDXI	1310	
	WJAK	1460	
	WTJS	1390	A
Jackson, Wyo.	KSGT	1340	
Jacksonville, Ark.	KGMR	1500	
Jacksonville, Fla.	WJAX	930	N
	WAPE	690	
	WZOK	1320	A-M
	WIVY	1050	
	WMBR	1460	C
	WOBS	1360	
	WPDQ	600	
	WQIK	1280	

Location	C.L.	Kc.	N.A.
	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
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	
June. 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	
Kealakekua, Hawaii	KEKO	790	
Kearney, Nebr.	KGFW	1340	M
	KRNY	1460	
Keene, N.H.	WKNE	1290	N
	WKBK	1220	
Kelowna, B.C.	CKOV	630	
Kelso, Wash.	KLOG	1490	
Kemmerer, Wash.	KMER	950	
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
	KABI	580	
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	1490	
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

Location	C.L.	Kc.	N.A.
Kirkland, Wash.	KCDI	1460	
	KNBX	1050	
Kirkland Lake, Ont.	CJKL	560	
Kirksville, Mo.	KIRX	1450	A
Kissimmee, Fla.	WOSL	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
	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
	KVOL	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.	WJOT	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	
	WAGL	1560	
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
	WQTW	1570	
	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

Location	C.L.	Kc.	N.A.
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
	KOZE	1300	
Lewiston, Maine	WCOU	1240	M
	WLAM	1470	A
Lewistown, Mont.	KXLO	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.	WVOS	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	1280	
Littlefield, Tex.	KZZN	1490	
Little Rock, Ark.	KARK	920	N
	KALO	1250	M
	KLRA	1010	A
	KOKY	1440	
	KAAY	1090	C-M
	KVLC	1050	
Littleton, Colo.	KMOR	1510	
Littleton, N. H.	WLTN	1400	
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	
	KLOM	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	

Location	C.L.	Kc.	N.A.
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.	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
	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.	KMMO	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	

Location	C.L.	Kc.	N.A.
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	
	WORA	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.	WEDD	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
	KSHA	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	
Merkle, Tex.	KWFA	1500	
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-Pomeroy, 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	

Location	C.L.	Kc.	N.A.
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	
Mineola, N.Y.	WFYI	1520	D
Mineral Wells, Tex.	KORC	1140	
Minneapolis, Minn.	WCCO	830	C
	WLOL	1330	
	WMIN	1400	
	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, S. 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	540	
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	

Location	C.L.	Kc.	N.A.
Moultrie, Ga.	WMGA	1400	A
	WMTM	1300	
Moundsville, W.Va.	WMOD	1370	
Mountain Grove, Mo.	KLRS	1360	
Mountain Home, Ark.	KTLO	1490	
Mountain Home, Ida.	KFLI	1240	
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	
	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	1320	
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
	WKJR	1520	
	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	
	KAIN	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
Nassau, Bahamas	ZNS-2	1240	
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

Location	C.L.	Kc.	N.A.
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	
	WADO	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	
Northampton, Mass.	WHMP	1400	M
Northfield, Minn.	WCAL	770	
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, Md.	WMSG	1050	
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	
Ocean City, N. J.	WYKP	1520	
Oceanlake, Oreg.	KBCH	1380	
Oceanside, Calif.	KUDE	1320	
Ocilla, Ga.	WSIZ	1380	
Odessa, Tex.	KECK	920	
	KOSA	1230	C
	KOYL	1310	

Location	C.L.	Kc.	N.A.
	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	
	WHOL	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.	KPON	1340	M
	KHHH	1230	
Panama City, Fla.	WDLP	590	
	WPCF	1430	A
Panama City Beach, Fla.	WTHR	1480	
	WSCM	1290	
Paradise, Calif.	KNGL	930	
Paragould, Ark.	KORS	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	
Park Rapids, Minn.	KPRM	1240	
Parry Sound, Ont.	CKAR-1	1340	
Parsons, Kans.	KLKC	1540	
Pasadena, Calif.	KALI	1430	
	KPPC	1240	
	KRLA	1110	
	KWKW	1300	
Pasadena, Tex.	KLVL	1480	
	KIKK	650	
Pascagoula-Moss Point, Miss.	WPMP	1580	A
Pasco, Wash.	KORD	910	
	KGRS	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	610	
Pearsall, Tex.	KVWG	1280	
Pecos, Tex.	KIUN	1400	M
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	
	WBSR	1450	
	WMEL	610	C
	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
	KJBS	1530	
	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	
	WEEP	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.	WOMV	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	1450	
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	
	WPDR	1490	A-M
Portland, Oreg.	KBPS	1450	
	KBEV	1010	
	KLIQ	1290	
	KEX	1190	
	KGW	620	N
	KOIN	970	C
	KPAM	1410	
	KPDQ	800	
	KPDJ	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	
	KWNS	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	
Punta Gorda, Fla.	WCCF	1580	
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
	WTAO	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
	WNOH	1550	
	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	
	WRAI	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.	WOBJ	960	C
	WRIS	1410	M

Location	C.L.	Kc.	N.A.
	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	
Robstown, Tex.	KROB	500	D
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	
Roseau, Minn.	KRWB	1410	
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	
	KRIK	960	
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
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, S.C.	WQIZ	1300	
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
	KTWN	1400	
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	
	KBZY	1490	N
	KGAY	1430	
Salem, Va.	WBLU	1480	
Salida, Colo.	KVRH	1340	M
Salina, Kans.	KSAL	1150	M
	KCTY	980	
	KQTY	910	
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	
	KBAT	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
	KKLO	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
	KNBR	680	N
	KKHI	1550	M
	KSAY	1010	
	KSAN	1450	
	KSFO	560	
	KYA	1260	
San German, P. R.	WRJS	1060	
Sanitobia, Miss.	WSAO	1550	
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	
Sauk Rapids, Minn.	KVAL	800	
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	
Scott City, Kans.	KFLA	1310	
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
	KIXI	910	
	KING	1090	A
	KIRO	710	C
	KJR	950	
	KOL	1300	
	KOMO	1000	N
	KETO	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	
Sheldon, Iowa	KIWA	1550	
Shelton, Wash.	KMAS	1280	
Shenandoah, Iowa	KMA	960	A
Shenandoah, Pa.	WMBT	1530	
Sherbrooke, Que.	CHLT	630	
	CKTS	900	
Sheridan, Wyo.	KWYO	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
	KMVS	1470	
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	
	KSOO	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	
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
	KDNC	1440	
	KLYK	1230	
	KPEG	1380	
	KHQ	590	N
	KMRE	550	
	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.	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	

Location	C.L.	Kc.	N.A.
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.	WHEO	1270	
Sturgeon Bay, Wis.	WOOR	910	
Sturgis, Mich.	WSTR	1230	
Sturgis, S. D.	KBNB	1280	
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	950	
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	
	WITL	1270	
	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	1450	M
	WTNT	1270	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.	WSTH	860	
	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	590	
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	

Location	C.L.	Kc.	N.A.
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	
	WTHN	1500	
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.	KRDS	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	
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	610	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	
	WXKW	1600	
Troy, N. C.	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

Location	C.L.	Kc.	N.A.
	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	
	WVLD	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	
	CJOR	600	
	CKWX	1130	M
Vancouver, Wash.	KISN	910	
	KKEY	1150	
	KVAN	1480	
	KGAR	1550	
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	
	KVIC	1340	
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	
Viroqua, 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	940	
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

Location	C.L.	Kc.	N.A.
	WTDP	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	
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	
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	
	WBZE	1470	
	WKWK	1400	A
	WWVA	1170	C
White Castle, La.	KEVL	1590	
White Plains, N.Y.	WFAS	1230	
White River Junc., Vt.	WVTR	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	

Location	C.L.	Kc.	N.A.
	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.	KHIL	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	
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
Wilmot Station, N.S.	CKAD	1490	
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
Winfield, Ala.	WEZQ	1300	
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
	KINO	1230	
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	
Wyoming, Mich.	WYOQ	1530	
Wytheville, Va.	WYVE	1280	
Yakima, Wash.	KIT	1280	
	KIMA	1460	C
	KBBO	1390	
	KQOT	940	
	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	
	WYNZ	1520	
Yreka, Calif.	KSYC	1490	
Yuba City, Calif.	KUBA	1600	
	KAGR	1450	
Yuma, Ariz.	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
KABI	Ketchikan, Alaska	580
KABL	Oakland, Calif.	960
KABQ	Albuquerque, N.M.	1350
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
KAHR	Redding, Calif.	1330
KAHU	Waipahu, Hawaii	940
KAIM	Kaimuki, Hawaii	870
KAIN	Nampa, Ida.	1340
KAIR	Tucson, Ariz.	1490
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
KALO	Little Rock, Ark.	1250
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
KAOH	Duluth, Minn.	1390
KAOK	Lake Charles, La.	1400
KAOL	Carrollton, Mo.	1430
KAOR	Oroville, Calif.	1340
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
KBAB	Indianola, Iowa	1490
KBAL	San Saba, Tex.	1410
KBAM	Longview, Wash.	1270
KBAN	Bowie, Tex.	1410
KBAR	Burley, Idaho	1230
KBAT	San Antonio, Tex.	680
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
KBHB	Sturgis, S. D.	1280
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.	1500
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
KBTC	Houston, Mo.	1250
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
KCAN	Canyon, Tex.	1550
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
KCCV	Independence, Mo.	1510
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
KCLH	Blue Earth, Minn.	1560
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
KCOM	Comanche, Tex.	1550
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.	610
KCTA	Corpus Christi, Tex.	1030
KCTI	Gonzales, Tex.	1450
KCTY	Salinas, Calif.	980
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

C.L.	Location	Kc.
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
KDCE	Espanola, N.M.	970
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
KDFN	Doniphan, Mo.	1500
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
KDLE	Aberdeen, S. Dak.	1420
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
KDNC	Spokane, Wash.	1440
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
KDRG	Deer Lodge, Mont.	1400
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	Kealakekua, Hawaii	790
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
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

C.L.	Location	Kc.
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
KFGQ	Boone, Iowa	1260
KFGT	Flagstaff, Ariz.	930
KFH	Wichita, Kans.	1330
KFI	Los Angeles, Calif.	640
KFIF	Tucson, Ariz.	1550
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
KFLA	Scott City, Kans.	1310
KFLD	Floydada, Tex.	900
KFLI	Mountain Home, Ida.	1240
KFLJ	Walsenburg, Colo.	1380
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	Council Bluffs, 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
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
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
KGAR	Vancouver, Wash.	1550
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
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
KGKO	Benton, Ark.	1600

C.L.	Location	Kc.
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
KGMR	Jacksonville, Ark.	1500
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
KGRS	Pasco, Wash.	1340
KGRT	Las Cruces, N.Mex.	570
KGST	Fresno, Calif.	1600
KGTN	Georgetown, Tex.	1530
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
KHAI	Honolulu, Hawaii	1090
KHAK	Cedar Rapids, Iowa	1360
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
KHDN	Hardin, Mont.	1230
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
KHIL	Willcox, Ariz.	1250
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
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
KIFG	Iowa Falls, Ia.	1510
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
KIML	Gillette, Wyo.	1490
KIMM	Rapid City, S.D.	1150
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
KINO	Winslow, Ariz.	1230
KINS	Eureka, Calif.	980
KINT	El Paso, Tex.	1590
KINY	Juneau, Alaska	800

C.L.	Location	Kc.
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	Vancouver, Wash.	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
KIWA	Sheldon, Iowa	1550
KIXI	Seattle, Wash.	910
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
KJBS	Pine Bluff, Ark.	1530
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
KKIO	Pendleton, Oreg.	1240
KKIN	Aitkin, Minn.	930
KKIS	Pittsburg, Calif.	990
KKIT	Taos, N.Mex.	1340
KKJO	St. Joseph, Mo.	1550
KKLO	San Diego, Calif.	1240
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	1130
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
KLOM	Lompoc, Calif.	1330
KLOO	Corvallis, Oreg.	1350
KLOS	Albuquerque, N.Mex.	1450

C.L.	Location	Kc.
KLOU	Lake Charles, La.	1580
KLOW	Loveland, Colo.	1570
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
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
KMAS	Shelton, Wash.	1280
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
KMDO	Ft. Scott, Kans.	1600
KMED	Medford, Oreg.	1440
KMEN	San Bernardino, California	1290
KMEO	Omaha, Nebr.	660
KMER	Kemmerer, Wash.	950
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
KMNF	Albuquerque, N. M.	1520
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
KMRE	Spokane, Wash.	550
KMRS	Morris, Minn.	1230
KMSL	Ukiah, Calif.	1250
KMUL	Muleshoe, Tex.	1380
KMUR	Murray, Utah	1230
KMUS	Muskogee, Okla.	1380
KMVI	Wailuku, Hawaii	550
KMVS	Sierra Vista, Ariz.	1470
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
KNBE	Kanab, Utah	1240
KNBR	San Francisco, Calif.	680
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
KNGL	Paradise, Calif.	930
KNGS	Hanford, Calif.	620
KNIA	Knoxville, Iowa	1320
KNIM	Maryville, Mo.	1580
KNIN	Wichita Falls, Tex.	990
KNIT	Abilene, Tex.	1280
KNNO	Cottage Grove, Oreg.	1400
KNOC	Natchitoches, La.	1450
KNOE	Monroe, La.	540
KNOG	Nogales, Ariz.	1340
KNOK	Ft. Worth, Tex.	970
KNOP	N. Platte, Nebr.	1410
KNOR	Norman, Okla.	1400
KNDT	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
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
KOFE	Pullman, Wash.	1150
KOFI	Kalispell, Mont.	930
KOFO	Ottawa, Kans.	1220
KOFY	San Mateo, Calif.	1050
KOGA	Ogallala, Nebr.	930
KOGO	San Diego, Calif.	600
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
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
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
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
KPRM	Park Rapids, Minn.	1240
KPRO	Riverside, Calif.	1440
KPRS	Kansas City, Mo.	1590
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
KQUT	Yakima, Wash.	940
KQTE	Missoula, Mont.	1340
KQTY	Salina, Kans.	910
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
KRDS	Tolleson, Ariz.	1190
KRDU	Dinuba, Calif.	1240
KRE	Berkeley, Calif.	1400
KREB	Shreveport, La.	980
KREO	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
KRIK	Roswell, N. Mex.	960
KRIO	McAllen, Tex.	910
KRIZ	Phoenix, Ariz.	1230
KRKC	King City, Calif.	1490
KRKD	Los Angeles, Calif.	1150
KRKO	Everett, Wash.	1380
KRKT	Albany, Ore.	990
KRLA	Pasadena, Calif.	1110
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
KROB	Robstown, Tex.	1510
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, Dre.	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
KRWB	Roseau, Minn.	1410
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
KSGT	Jackson, Wyo.	1340
KSHA	Medford, Ore.	860
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
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

C.L.	Location	Kc.
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
KTDL	Farmersville, La.	1470
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
KTTT	Columbus, Nebr.	1510
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
KUOU	Ventura, Calif.	1590
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
KUMU	Honolulu, Hawaii	1500
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.	1570
KUZN	W. Monroe, La.	1310
KUZZ	Bakersfield, Calif.	800
KVAL	Sauk Rapids, Minn.	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	Victoria, Tex.	1340
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
KVOD	Albuquerque, N. Mex.	730
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
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
KWAY	Forest Grove, Oreg.	1570
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
KWEO	Seguin, Tex.	1580
KWEI	Weiser, Idaho	1260
KWEL	Midland, Tex.	1600
KWEW	Hobbs, N.Mex.	1480
KWFA	Merkle, Tex.	1500
KWFR	San Angelo, Tex.	1260
KWFS	Eugene, Oreg.	1540
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
KWK	St. Louis, Mo.	1380
KWKC	Abilene, Tex.	1340
KWKH	Shreveport, La.	1130
KWKW	Pasadena, Calif.	1300
KWKY	Des Moines, Iowa	1150
KWLA	Many, La.	1530
KWLC	Decorah, Iowa	1240
KWLD	Liberty, Tex.	1050
KWLM	Willmar, Minn.	1340
KWMT	Ft. Dodge, Iowa	540
KWNA	Winnemucca, Nev.	1400
KWNO	Winona, Minn.	1230
KWNS	Pratt, Kans.	1290
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
KXGO	Fargo, N. Dak.	790
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.	1230
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
KZOO	Honolulu, Hawaii	1210
KZOT	Marianna, Ark.	1460
KZOW	Globe, Ariz.	1240
KZUN	Opportunity, Wash.	630
KZZN	Littlefield, Tex.	1490
VOUS	Argentia, Nfld.	1480
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
WAGC	Centre, Ala.	1550
WAGE	Leesburg, Va.	1290
WAGF	Dothan, Ala.	1320
WAGG	Franklin, Tenn.	950
WAGL	Lancaster, S. C.	1550
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
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
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

C.L.	Location	Kc.
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
WAVA	Arlington, Va.	780
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
WBCO	Bucyrus, Ohio	1540
WBCR	Christiansburg, Va.	1260
WBCU	Union, S.C.	1460
WBEC	Pittsfield, Mass.	1420
WBEE	Harvey, Ill.	1570
WBEJ	Elizabethton, Tenn.	1240
WBEL	Beloit, Wis.	1380
WBEN	Buffalo, N.Y.	930
WBER	Moncks Corner, S. 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
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
WBNO	Bryan, Ohio	1520
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
WBOL	Bolivar, Tenn.	1560
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	Bennetsville, 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
WBZE	Wheeling, W. Va.	1470
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
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
WCCF	Punta Gorda, Fla.	1580
WCCM	Lawrence, Mass.	800
WCCN	Neillsville, Wis.	1370
WCCO	Minneapolis, Minn.	830
WCCW	Traverse City, Mich.	1310
WCDJ	Edenton, N.C.	1260
WCDL	Carbondale, Pa.	1440
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
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
WCHL	Chapel Hill, N.C.	1360
WCHN	Norwich, N.Y.	970
WCHO	Washington Court House, Ohio	1250
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.	940
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
WDDY	Gloucester, Va.	1420
WDEA	Ellsworth, Me.	1370
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
WEAC	Gaffney, S. C.	1500
WEAD	College Park, Ga.	1570
WEAG	Alcoa, Tenn.	1470
WEAL	Greensboro, N. C.	1510
WEAM	Arlington, Va.	1390
WEAN	Providence, R.I.	790
WEAQ	Eau Claire, Wis.	790
WEAS	Savannah, Ga.	900
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.	1480
WEEP	Pittsburgh, Pa.	1080
WEER	Warrenton, Va.	1570

C.L.	Location	Kc.
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
WENG	Englewood, Fla.	1530
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
WEZQ	Winfield, Ala.	1300
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
WFAW	Ft. Atkinson, Wis.	940
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.	1430
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

C.L.	Location	Kc.
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
WFSG	Boca Raton, Fla.	740
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
WGKV	Charleston, W. Va.	1490
WGL	Fort Wayne, Ind.	1250
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
WGNO	Granite City, Ill.	920
WGNP	Indian Rocks Beach, Fla.	1520
WGNS	Murfreesboro, Tenn.	1450
WGNY	Newburgh, N.Y.	1220

C.L.	Location	Kc.
WGOG	Walhalla, S.C.	1460
WGOH	Grayson, Ky.	1370
WGOK	Mobile, Ala.	900
WGOL	Goldsboro, N.C.	1300
WGOO	Georgetown, S. C.	1470
WGOV	Valdosta, Ga.	950
WGPA	Bethlehem, Pa.	1100
WGPC	Albany, Ga.	1450
WGR	Buffalo, N.Y.	550
WGRA	Cairo, Ga.	790
WGRO	Grand Rapids, Mich.	1410
WGRF	Aguadella, P.R.	1340
WGRM	Greenwood, Miss.	1240
WGRD	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.	950
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
WHAG	Halfway, Md.	1410
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	Riviera Beach, Fla.	1600
WHEY	Millington, Tenn.	1220
WHFB	Benton Harbor, Mich.	1060
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	Matewan, 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

C.L.	Location	Kc.
WHLS	Port Huron, Mich.	1450
WHLT	Huntington, Ind.	1300
WHMA	Anniston, Ala.	1390
WHMC	Gaithersburg, Md.	1150
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
WHPL	Winchester, Va.	610
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
WIGO	Indianapolis, Ind.	810
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

C.L.	Location	Kc.
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
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	Virouqua, Wis.	1360
WISZ	Glen Burnie, Md.	1590
WITA	San Juan, P.R.	1140
WITH	Baltimore, Md.	1230
WITL	Superior, Wis.	1270
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
WJAQ	Jackson, Miss.	1550
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
WJCD	Seymour, Ind.	1390
WJCM	Sebring, Fla.	960
WJCO	Jackson, Mich	1510
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

C.L.	Location	Kc.
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
WJTO	Bath, Me.	730
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
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.	1250
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
WKJK	Granite Falls, N. C.	1580
WKJR	Muskegon, Mich.	1520
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.	1320
WKRM	Columbia, Tenn.	1340
WKRO	Cairo, Ill.	1490
WKRS	Waukegan, Ill.	1220

C.L.	Location	Kc.
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
WKTB	Greenville, N. C.	1550
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
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
WKYO	Caro, Mich.	1360
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
WLBS	Centerville, Miss.	1580
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
WLET	Toccoa, Ga.	1420
WLEU	Erie, Pa.	1450
WLEW	Bad Axe, Mich.	1340
WLFA	Lafayette, Ga.	1590
WLFH	Little Falls, N.Y.	1230
WLGS	Lawrenceville, Va.	580
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

C.L.	Location	Kc.
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
WLTN	Littleton, N. H.	1400
WLUV	Loves Park, Ill.	1520
WLVA	Lynchburg, Va.	590
WLVN	Nashville, Tenn.	1560
WLW	Cincinnati, Ohio	700
WLYB	Albany, Ga.	1250
WLYC	Williamsport, Pa.	1050
WLYN	Lynn, Mass.	1360
WLYO	New Orleans, La.	940
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
WMBT	Shenandoah, Pa.	1530
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
WMEL	Pensacola, Fla.	610
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
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

C.L.	Location	Kc.
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-Pomeroy, 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
WMRP	Flint, Mich.	1570
WMSA	Massena, N.Y.	1340
WMSG	Oakland, Md.	1050
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
WMTD	Hinton, W. Va.	1360
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
WNOH	Raleigh, N. C.	1550
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.	940
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 Bch., Fla.	1400
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
WOKA	Douglas, Ga.	1310
WOKB	Winter Garden, Fla	1600
WOKE	Charleston, S.C.	1340
WOKJ	Jackson, Miss.	1590
WOKK	Meridian, Miss.	1450
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, S. C.	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
WOSL	Kissimmee, Fla.	1220
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
WPLD	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
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.	1240
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
WPTN	Cookeville, Tenn.	1500
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
WQIZ	St. George, S. C.	1300
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
WQTW	Latrobe, Pa.	1570
WQTY	Arlington, Fla.	1220
WQUA	Moline, Ill.	1230
WQVA	Quantico, Va.	1530
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
WRAI	Rio Piedras, P. R.	1520
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.	1060
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
WRLD	Lanett, 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
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
WSEM	Donaldsonville, Ga.	1500
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	Shippensburg, 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

C.L.	Location	Kc.
WSJM	St. Joseph, Mich.	1400
WSJS	Winston-Salem, N.C.	600
WSKI	Montpelier-Barre, Vt.	1240
WSKP	Miami, Fla.	1450
WSKT	S. Knoxville, Tenn.	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
WSTH	Taylorsville, N. C.	860
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.	1450
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

C.L.	Location	Kc.
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
WTEL	Philadelphia, Pa.	860
WTGA	Thomaston, Ga.	1590
WTHG	Jackson, Ala.	1290
WTHI	Terre Haute, Ind.	1480
WTHM	Lapeer, Mich.	1530
WTHN	Thomaston, Ga.	1500
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.	1270
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.	610
WTOT	Marianna, Fla.	980
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

C.L.	Location	Kc.
WTTS	Bloomington, Ind.	1370
WTTT	Amherst, Mass.	1430
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
WVAL	Sauk Rapids, Minn.	800
WVAM	Altoona, Pa.	1430
WVAR	Richwood, W.Va.	1280
WVCF	Apopka, Fla.	1520
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
WVMT	Burlington, Vt.	620
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
WVON	Cicero, Ill.	1450
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
WVTR	White River Junc., Vt.	910
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
WWDS	Everett, Pa.	1050
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

C.L.	Location	Kc.
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
WWOW	Conneaut, Ohio	1360
WWPA	Williamsport, Pa.	1340
WWPF	Palatka, Fla.	1260
WWRI	W. Warwick, R.I.	1450
WWRL	Woodside, N.Y.	1600
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
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
WXKW	Troy, N. Y.	1600
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
WXYC	Ft. Myers, Fla.	1350
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
WYKP	Ocean City, N. J.	1520
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
WYNZ	Ypsilanti, Mich.	1520
WYOQ	Wyoming, Mich.	1530
WYOU	Tampa, Fla.	1550
WYPR	Danville, Va.	970
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
WZIP	Cincinnati, Ohio	1050
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
WZZZ	Boynton Beach, Fla.	1510

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.	860
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

C.L.	Location	Kc.
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.	790
CFCY	Charlottestown, P.E.I.	630
CFDA	Victoriaville, Que.	1380
CFDR	Dartmouth, N. S.	790
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

C.L.	Location	Kc.
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.	590
CFUN	Vancouver, B.C.	1410
CFVR	Abbottsford, B. C.	250
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

C.L.	Location	Kc.
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.	790
CHIQ	Hamilton, Ont.	1280
CHLC	Hauterive, Que.	580
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

C.L.	Location	Kc.
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.	1450
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. William, 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
CKAD	Wilmot Station, N.S.	1490
CKAR	Huntsville, Ont.	590
CKAR-I	Parry Sound, Ont.	1340
CKBB	Barrie, Ont.	950
CKBC	Bathurst, Nflc.	1360
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
CKCM	Grand Falls, Nfld.	620
CKCN	Seven Iles, Que.	560
CKCQ	Quesnel, B.C.	570
CKCQ-I	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.	610
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 Aleman	XEHI	1470	500
	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 Brava	XEOQ	1110	1000
Rio Bravo	XEFO	1170	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
College	KUAC	104.9

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
	KNIZ	102.5
	KOY-FM	92.5
	KPHO-FM	96.9

Location	C.L.	Mc.
	KTAR-FM	98.7
	KYEW	93.3
Sun City	KTPM	106.3
Tempe	KUPD-FM	97.9
Tucson	KFMM	99.5
	KSOM	92.1

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	KDTN-FM	92.3
Siloam Springs	KUOA-FM	105.7

CALIFORNIA

Location	C.L.	Mc.
Alameda	KJAZ	92.7
Anaheim	KEZR-FM	95.9
Arcata	KTDO	*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	KECR	93.3
Eureka	KIEM	96.3
Fresno	KARM-FM	101.9
	KCIB-FM	94.5
	KFRE-FM	93.7
	KMJ-FM	97.9
	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	KFDX-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
	KBIQ	104.3
	KBMS	105.9
	KCBH	98.7
	KFAC-FM	92.3
	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
	KPPC-FM	106.7
Palm Springs	KDES-FM	104.7
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	98.1
	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	KDGD-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
	KBCO	105.3
	KCBS-FM	98.9
	KDFC	102.1
	KEAR	97.3
	KFDG	104.5
	KFRC-FM	106.1
	KGD-FM	103.7
	KNBR-FM	99.7
	KHIP	106.9
	KRDN-FM	96.5
	KSFR	94.9
	KQBY-FM	95.7
	KYA-FM	93.3
San Jose	KSJO-FM	92.3
	KRPM	98.5
	KSJS	90.7
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	KHDM	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
	KVDR-FM	92.9
Cortez	KZFM	94.1
Denver	KFML-FM	98.5
	KDEN-FM	99.5
	KLIR-FM	100.3
	KLZ-FM	106.7
	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
Westport	WMMM	107.9

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
	WTDP-FM	96.3
	WWDC-FM	101.1

FLORIDA

Location	C.L.	Mc.
Cocoa Beach	WXBR	101.1
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
	WGBS-FM	96.3
	WIOD-FM	97.3
	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
	WHOD-FM	96.5
	WKIS-FM	100.3
Palm Beach	WQXT-FM	97.9
Pensacola	WPEX-FM	94.1
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
	WAVQ	94.9
	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	WTDC-FM	97.3
Swainsboro	WJAT-FM	101.7
Toccoa	WLET-FM	106.1

HAWAII

Location	C.L.	Mc.
Honolulu	KAIM-FM	95.5
	KPDI-FM	97.5
	KVDK	*88.1
	KUDH	*90.5

IDAHO

Location	C.L.	Mc.
Boise	KBDI-FM	97.9
Lewiston	KOZE-FM	96.7
Pocatello	KBGL	*88.7

ILLINOIS

Location	C.L.	Mc.
Alton	WDKZ-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
	WDHF	95.5
	WEBH	93.9
	WEFM	99.5
	WHFC	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
	WLBK-FM	92.5
E. St. Louis	WBBR	101.1
Effingham	WSEI	95.7
	WELG	103.9
	WRMN-FM	94.3
Elgin	WEPS	*88.1
Elmhurst	WRSE-FM	*88.7
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
Skokie	WRSV	98.3
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
Frankfort	WILD-FM	99.7
Fort Wayne	WPTH	95.1
Gary	WGVE	*88.1
Goshen	WGCS	91.1
Greencastle	WGRE	*91.7
Greenfield	WSMJ	99.5
Hammond	WYCA	92.3
Hartford City	WHCI	*91.9
Huntington	WVSH	*91.9
Indianapolis	WAJC	*104.5
	WICR	*88.7
	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
Kokomo	WFKO	100.5
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	WSIM-FM	98.9
Seymour	WJOD	93.7
South Bend	WETL	*91.9
	WNDU-FM	92.9
	WPFR	102.7
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	KRDS-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	WMT-FM	*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
Garden City	KNCO-FM	97.3
Kansas City	KCJC	98.1
Lawrence	KANU	*91.5
Leavenworth	KCLO-FM	98.9
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
Prestonburg	WDOC-FM	95.5

LOUISIANA

Location	C.L.	Mc.
Alexandria	KALB-FM	96.9
Baton Rouge	WJBD-FM	98.1
Jennings	KJEF-FM	92.7
Monroe	KMLB-FM	104.1
New Orleans	WBEH	89.3
	WDSU-FM	105.3

Location	C.L.	Mc.
	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
Orono	WMEB-FM	91.9
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	94.7 (s)
	WHFS-FM	102.5
Bradbury Heights	WPGC	95.5
Cumberland	WCUM-FM	102.9
Frederick	WFMO-FM	99.9
Hagerstown	WJEJ-FM	104.7
	WARK-FM	106.9
Havre de Grace	WASA-FM	103.7
Oakland	WBUZ	95.5
Tacoma 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
	WHIL-FM	107.9
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
	WEOK	*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
	WCHO	105.9
	WOTM	106.7
	WABX	99.5
	WOTR	*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
	WGMZ-FM	107.9
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	WJGS	98.5
Interlochen	WGYA	*103.1
Jackson	WBBC	94.1
Kalamazoo	WMCR	*102.1
Lansing	WJIM-FM	97.5
	WMRT-FM	100.7
Midland	WQOC-FM	99.7
Mount Clemens	WBRB-FM	102.7
Muskegon	WMUS-FM	106.9
Oak Park	WLDM	95.5
Royal Oak	WOAK	*89.3
	WOMC	104.3
Saginaw	WSAM-FM	98.1
Spring Arbor	WSAE	*89.3
Sturgis	WSTR-FM	103.1

MINNESOTA

Location	C.L.	Mc.
Brainerd	KLIZ-FM	95.7
Mankato	KMSO	*90.5
	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. Louis Park	KRSI-FM	104.1
St. Paul	KNOF	95.3
Worthington	KWOA-FM	94.9

MISSISSIPPI

Location	C.L.	Mc.
Jackson	WJOX-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
	KMBC-FM	99.7
	KXTR	96.5
Kennett	KBOA-FM	98.9
Poplar Bluff	KWOC-FM	94.5
St. Joseph	KUSN-FM	105.1
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
	KRFO	106.9
Springfield	KTTS-FM	94.7
	KTXR	101.5
West Plains	KWPM-FM	93.9

NEBRASKA

Location	C.L.	Mc.
Beatrice	KWBE-FM	92.9
Kearney-Holdrege	KRNY-FM	98.9
Lexington	KRUN-FM	93.1
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
Atlantic City	WFPG-FM	96.9
	WOSJ-FM	103.7
	WRNJ	95.1
Bridgeton	WSNJ-FM	107.7
Camden	WKDN-FM	106.9
Dover	WDHA-FM	105.5
E. Orange	WFMU	*91.1
Eatontown	WHTG-FM	105.3
Franklin Lakes	WRRH	88.7
Hackettstown	WNTI	*91.9
Long Branch	WRLB	107.1
Millville	WMVB-FM	97.3
Newark	WHBI	105.9
	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	WBUD-FM	101.5
	WTOA	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
Clovis	KTQM-FM	99.9
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
	WHOM-FM	92.3
	WKCR-FM	*89.9
	WLIB	107.5
	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
	WOOS-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	WBT-FM	107.9
	WIST-FM	95.1
	WSOC-FM	103.5
	WYFM	104.7
Clingman's Pk.	WMIT	106.9
Concord	WEGO-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
	WIRC-FM	95.7
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
North Wilkesboro	WKBC-FM	97.3
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
Williamston	WIAM	103.7
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
	WCUF	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
	WMNI-FM	99.7
	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	WOUB-FM	91.3
Greenville	WORK-FM	106.5
Hamilton	WQMS	96.7
	WHOH	103.5
	WFOL-FM	94.9(s)
Hillsboro	WSRW-FM	106.7
Kent	WKSU-FM	*88.1
Lancaster	WHOK-FM	95.5
Lima	WIMA-FM	102.1
Mansfield	WVNO-FM	*105.9
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
Norwalk	WLKR-FM	95.3
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

Location	C.L.	Mc.
	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
Van Wert	WERT-FM	98.9
Westerville	WOBN	*91.5
Wilberforce	WJSC-FM	*88.9
Wooster	WWST-FM	104.5
Worthington-Columbus	WRFD-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
	KRAV	96.5

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
	WPCA-FM	104.5
	WFIL-FM	102.1
	WDVR	101.1
	WFLN	95.7
	WHAT-FM	96.5
	WUHY-FM	*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
Reading	WRFY-FM	102.5
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
	WSBA-FM	103.3

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
Beaufort	WBEU-FM	98.7
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
N. Charleston	WKTM	102.5
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
Manchester	WMSR-FM	99.7
Memphis	WMC-FM	99.7
	WMPS-FM	97.1
	WDIA-FM	102.7
Nashville	WFMB	105.9
	WPLN	90.3
	WSIX-FM	97.5
Sevierville	WSEV-FM	102.1
Tullahoma	WJIG-FM	93.3

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
	KMAP	105.3
	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
	KMOD-FM	93.3
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)
Wichita Falls	KLUR	99.9
	KNTO	95.1

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
	WNOR-FM	98.7
	WRVC	102.5
	WTAR-FM	95.7
	WXRI	104.5
	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
Ellensburg	KCWS-FM	*91.5
Eugene	KBMC	104.5
Lynden	KLYN-FM	106.5
Opportunity	KZUN-FM	96.1
Prosser	KACA	102.3
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
	KRAB	107.7
	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

WISCONSIN

Location	C.L.	Mc.
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	WCLD-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
	WFNY	92.1
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	WBKV-FM	92.5
Wisc. Rapids	WFHR-FM	103.3

WYOMING

Location	C.L.	Mc.
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.
KACA	Prosser, Wash.
KACE-FM	Riverside, Calif.
KADI	St. Louis, Mo.
KAFE	Oakland, Calif.
KAFI	Auburn, Calif.
KAFM	Salina, Kans.
KAIM-FM	Honolulu, Hawaii(s)
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.
KBBI	Los Angeles, Calif.
KBBL	Wichita, Kans.
KBBM	Hayward, Calif.
KBBW	San Diego, Calif.
KBCA	Los Angeles, Calif.
KBCL-FM	Shreveport, La.
KBCD	San Francisco, Calif.(s)
KBEE-FM	Modesto, Calif.
KBEY	Kansas City, Mo.
KBFI	Boise, Idaho

C.L.	Location
KBFM	Lubbock, Tex.
KBGL	Pocatello, Ida.
KBIM-FM	Roswell, N.Mex.
KBIQ	Los Angeles, Calif.
KBMC	Eugene, Wash.
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)
KCHD-FM	Amarillo, Tex.(s)
KCHQ-FM	Conchella, Calif.(s)
KCIB-FM	Fresno, Calif.(s)
KCJC	Kansas City, Kans.
KCLE-FM	Cleburne, Tex.
KCLO-FM	Leavenworth, Kans.
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.
KCWS-FM	Ellensburg, Wash.
KDB-FM	Santa Barbara, Calif.
KDDD-FM	Dumas, Tex.
KDEF-FM	Albuquerque, N.Mex.
KDEN-FM	Denver, Colo.
KDES-FM	Palm Spgs., Calif. (s)
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
KDUO	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.
KECR	El Cajon, Calif.
KEED-FM	Springfield-Eugene, Oregon(s)
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.
KEPI	Phoenix, Ariz.(s)
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	Glendale, Calif. (s)
KFMV	Minneapolis, Minn
KFMW	San Bernardino, Calif.
KFMX	San Diego, Calif.(s)
KFMY	Eugene, Oreg.(s)
KFNB	Oklahoma City, Okla.(s)
KFNE	Big Springs, Tex.
KFOG	San Francisco, Calif. (s)
KFOX-FM	Long Beach, Calif.
KFRC-FM	San Francisco, Calif.
KFRE-FM	Fresno, 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(s)
KHBL	Plainview, Tex.
KHBR-FM	Hillsboro, Tex.
KHCB	Houston, Tex.
KHFI	Austin, Tex.
KHFM	Albuquerque, N.Mex.(s)
KHFR-FM	Monterey, Calif.(s)
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.(s)
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.
KISA	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.
KJEF-FM	Jennings, La.
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.(s)
KLCN-FM	Blytheville, Ark.
KLEN-FM	Killeen, Tex.
KLFM	Beverly Hills, Calif.
KLIR-FM	Denver, Colo.(s)
KLIZ-FM	Brainerd, Minn.
KLOA-FM	Ridgecrest, Calif.
KLON	Long Beach, Calif.
KLRO	San Diego, Calif.(s)
KLSN	Seattle, Wash.(s)
KLST	Colorado Springs, Colo.(s)
KLUB-FM	Salt Lake City, Utah
KLUR	Wichita Falls, Tex.
KLVL	Pasadena, Tex.
KLYD-FM	Bakersfield, Calif.
KLYN-FM	Lynden, Wash.
KLZ-FM	Denver, Colo.
KMAK-FM	Fresno, Calif.
KMAP	Dallas, Tex.
KMAX	Sierra Madre, Calif.
KMBC-FM	Kansas City, Mo.(s)
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.(s)
KMMK	Little Rock, Ark.
KMOD-FM	Midland, Tex.
KMOX-FM	St. Louis, Mo.
KMPX	San Francisco, Calif.(s)
KMSU	Mankato, Minn.
KMUW	Wichita, Kans.
KMYC-FM	Marysville, Calif.
KMUZ	Santa Barbara, Calif.(s)
KNBR-FM	San Francisco, Calif.
KNCO-FM	Garden City, Kans.
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
KNIX	Phoenix, Ariz.(s)
KNOB	Long Beach, Calif. (s)
KNOF	St. Paul, Minn.
KNTO	Wichita Falls, Tex.(s)
KNX-FM	Los Angeles, Calif.
KOA-FM	Denver, Colo.
KOAP-FM	Portland, Ore.
KOCW	Tulsa, Okla.(s)
KODA-FM	Houston, Tex.(s)
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.(s)
KOSE-FM	Osceola, Ark.
KOST	Dallas, Tex.
KOSU-FM	Stillwater, Okla.(s)
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 (s)
KPOJ-FM	Portland, Oreg.
KPOL-FM	Los Angeles, Calif.(s)
KPPC-FM	Pasadena, 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.
KQRD	Dallas, Tex.
KQUE	Houston, Tex. (s)
KQV-FM	Pittsburgh, Pa.
KQXR	Bakersfield, Calif.
KRAB	Seattle, Wash.
KRAK-FM	Stockton, Calif.
KRAM-FM	Las Vegas, Nev.
KRAV	Tulsa, Okla.(s)
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.
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)
KRSI-FM	St. Louis Park, Minn.
KRSN-FM	Los Alamos, N.Mex.
KRVM	Eugene, Oreg.
KRVN-FM	Lexington, Nebr.
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.(s)
KSFV	San Fernando, Calif.
KSFX	San Francisco, Calif.
KSHE	Crestwood, Mo.(s)
KSHS	Colorado Springs, Colo.
KSJD-FM	San Jose, Calif.(s)
KSJS	San Jose, Calif.
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
KSOM	Tucson, Ariz.
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.(s)
KTOP-FM	Topeka, Kans.
KTOY	Tacoma, Wash.
KTPM	Sun City, Ariz.(s)
KTQM-FM	Clovis, N. M.
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.(s)
KTXT-FM	Lubbock, Tex.
KTYM-FM	Inglewood, Calif.
KUAC	College, Alaska
KUDE-FM	Oceanside, Calif.
KUDU-FM	Ventura-Oxnard, Calif.(s)
KUER	Salt Lake City, Utah
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.
KUSN-FM	St. Joseph, Mo.
KUT-FM	Austin, Tex.
KUTE	Glendale, Calif.
KVCR	San Bernardino, Calif.
KVEC-FM	San Luis Obispo, Calif.(s)
KVEN-FM	Ventura, Calif.
KVFM	San Fernando, Calif.
KVIL	Highland Pk., Tex.(s)
KVOF-FM	El Paso, Tex.
KVOK	Honolulu, Hawaii
KVOP-FM	Plainview, Tex.
KVOR-FM	Colorado Springs, Colo.
KVSC	Logan, Utah
KVTT	Dallas, Tex.
KWAR	Waverly, Iowa
KWAX	Eugene, Oreg.
KWBE-FM	Beatrice, Neb.
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
KWPM-FM	West Plains, Mo.
KXEL-FM	Waterloo, Iowa(s)
KXFM	Fort Worth, Tex.
KXJK-FM	Forrest City, Ark.
KXLU	Los Angeles, Calif.
KXOA	Sacramento, Calif.
KXOL-FM	Ft. Worth, Tex. (s)
KXQR	Fresno, Calif.(s)
KXRQ	Sacramento, Calif.
KXTR	Kansas City, Mo.(s)
KXYZ-FM	Houston, Tex.(s)
KYA-FM	San Francisco, Calif.
KYEW	Phoenix, Ariz.
KYFM	Oklahoma City, Okla.
KYSM-FM	Mankato, Minn.
KYW-FM	Cleveland, Ohio
KZAM	Seattle, Wash.(s)
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-FM	Detroit, Mich. (s)
WABZ-FM	Albemarle, N.C.
WACD	Waco, Tex.
WAEB-FM	Cincinnati, Ohio
WAEF	Syracuse, N.Y.
WAER	Syracuse, N.Y.
WAEZ	Miami Beach, Fla.(s)
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.(s)
WAPI-FM	Birmingham, Ala.
WAPS	Akron, Ohio
WAQE-FM	Towson, Md.(s)
WARD-FM	Johnstown, Pa.
WARK-FM	Hagerstown, Md.
WARN-FM	Fort Pierce, Fla.
WASA-FM	Havre De Grace, Md.
WASH	Washington, D.C.(s)
WATR-FM	Waterbury, Conn.
WAUG-FM	Augusta, Ga.
WAUP	Akron, Ohio
WAUX-FM	Waukesha, Wis.
WAVA-FM	Arlington, Va.
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.(s)
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.

C.L.	Location
WBBR-FM	E. St. Louis, Ill.
WBBS	Crawfordsville, Ind.
WBBW-FM	Youngstown, Ohio (s)
WBCB-FM	Levittown-Fairless Hills, Pa.
WBCI-FM	Williamsburg, Va.
WBCM-FM	Bay City, Mich.
WBCN	Boston, Mass.(s)
WBEN-FM	Buffalo, N.Y.
WBET-FM	Brockton, Mass.
WBEU-FM	Beaufort, S.C.(s)
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.(s)
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
WBDS-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)
WBUD-FM	Trenton, N.J.(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.
WCEN-FM	Mt. Pleasant, Mich.(s)
WCFM	Williamstown, Mass.
WCHA-FM	Chambersburg, Pa.(s)
WCHD	Detroit, Mich.
WCLE-FM	Cleveland, Tenn.
WCLI-FM	Corning, N.Y.
WCLM	Chicago, Ill.
WCLO-FM	Janesville, Wis.
WCLT-FM	Newark, Ohio
WCLW-FM	Mansfield, 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.(s)
WCSQ	Central Square, N.Y.
WCTA-FM	Andalusia, Ala.
WCTC-FM	New Brunswick, N.J.
WCTM	Eaton, Ohio
WCTW-FM	New Castle, Ind.
WCUF	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.
WDBN	Akron, Ohio(s)
WDBO-FM	Orlando, Fla.
WDBQ-FM	Dubuque, Iowa
WDCX	Buffalo, N.Y.(s)
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.(s)
WDUQ	Pittsburgh, Pa.
WDUZ-FM	Green Bay, Wis.
WDVR	Philadelphia, Pa.
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.
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.
WEDL-FM	Elyria, Ohio
WEPM-FM	Martinsburg, W.Va.
WEPS	Elgin, Ill.
WEQR	Goldsboro, N.C.
WERE-FM	Cleveland, Ohio
WERI-FM	Westerly, R.I.
WERS	Boston, Mass.
WERT-FM	Van Wert, Ohio
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.(s)
WFIG	Sumter, S.C.
WFIL-FM	Philadelphia, Pa.
WFIN-FM	Findlay, Ohio(s)
WFIU	Bloomington, Ind.
WFKO	Kokomo, 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.
WFNY	Racine, Wis.
WFOB-FM	Fostoria, Ohio
WFOL	Hamilton, Ohio(s)
WFOS	South Norfolk, Va.
WFPG	Atlantic City, N.J.
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.(s)
WGAY	Silver Spring, Md.
WGBH-FM	Cambridge, Mass.(s)
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.
WGMZ	Flint, Mich.(s)
WGNB	St. Petersburg, Fla.
WGNC-FM	Gastonia, N.C.
WGPA-FM	Bethlehem, Ga.
WGPM	Detroit, Mich.
WGPR-FM	Detroit, Mich.(s)
WGPS	Greensboro, N.C.
WGR-FM	Buffalo, N.Y.
WGRE	Greencastle, Ind.
WGRV-FM	Greeneville, 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. (s)
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)
WHBI	Newark, N.J.
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.
WHFC	Chicago, Ill.
WHFI	West Paterson, N. J.
WHFM	Rochester, N.Y.
WHFS	Bethesda, Md.(s)
WHHI	Highland, Wis.
WHHS	Havertown, Pa.
WHIL-FM	Medford, Mass.
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. (s)
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.
WIAL	Eau Claire, Wis.
WIAM-FM	Williamston, N.C.
WIAN	Indianapolis, Ind.
WIBA-FM	Madison, Wis.
WIBC-FM	Indianapolis, Ind.
WIBG-FM	Philadelphia, Pa.
WICB	Ithaca, N.Y.
WICR	Indianapolis, Ind.
WIFE	Buffalo, N.Y.
WIFI	Glenside, Pa.(s)
WIFM-FM	Elkin, N.C.
WIKY-FM	Evansville, Ind.
WIL-FM	St. Louis, Mo.
WILL-FM	Urbana, Ill.
WILD-FM	Frankfort, Ind.
WIMA-FM	Lima, Ohio
WINA-FM	Charlottesville, Va.
WINE-FM	Kenmore, N.Y.
WINF-FM	Manchester, Conn.
WINZ-FM	Miami, Fla.
WIOD-FM	Miami, Fla.
WIP-FM	Philadelphia, Pa.
WIPR-FM	San Juan, P.R.
WIRA-FM	Ft. Pierce, Fla.
WIRC-FM	Hickory, N. C. (s)
WIRQ	Rochester, N.Y.
WISH-FM	Indianapolis, Ind.(s)
WISK	Medford, Mass.
WISM-FM	Madison, Wis.(s)
WISN-FM	Milwaukee, Wis.
WIST-FM	Charlotte, N.C.
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.
WJGS	Houghton, Mich.
WJHL-FM	Johnson City, Tenn.
WJIG-FM	Tullahoma, Tenn.(s)
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)
WJOF	Athens, Ala.
WJOL-FM	Joliet, Ill.(s)
WJR-FM	Detroit, Mich.
WJRZ	Newark, N.J.
WJSC-FM	Wilberforce, Ohio
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	N. Wilkesboro, 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.
WKET-FM	Kettering, Ohio(s)
WKFM	Chicago, Ill.(s)
WKIC-FM	Hazard, Ky.
WKIP-FM	Poughkeepsie, N.Y.
WKIS-FM	Orlando, Fla.
WKIX-FM	Raleigh, N.C.
WKJF	Pittsburgh, Pa.(s)
WKLF-FM	Clanton, Ala.
WKLS	Marietta, Ga.(s)
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 (s)
WKRG-FM	Mobile, Ala.
WKRT-FM	Cortland, N.Y.
WKSD	Kewanee, Ill.
WKSU-FM	Kent, Ohio
WKTM	N. Charleston, S.C.
WKTM-FM	Mayfield, Ky.(s)
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.
WLBK-FM	DeKalb, 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.
WLIB	New York, N. Y.
WLIN	Merrill, Wis.
WLIP-FM	Kenosha, Wis.
WLIR	Hicksville, N.Y.(s)
WLKR-FM	Norwalk, Ohio
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.

C.L.	Location
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)
WMEB-FM	Orono, Maine
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.
WMMM	Westport, Conn.
WMNA-FM	Gretna, Va.
WMNI-FM	Columbus, Ohio
WMPS-FM	Memphis, Tenn.
WMRI-FM	Marion, Ind.
WMRN-FM	Marion, Ohio
WMRO-FM	Aurora, Ill.
WMRT	Lansing, Mich.
WMSP	Harrisburg, Pa.
WMSR-FM	Manchester, Tenn.
WMT-FM	Cedar Rapids, Iowa (s)
WMTH	Park Ridge, Ill.
WMTI	Norfolk, Va.
WMTW-FM	Mt. Washington, N.H.(s)
WMUA	Amherst, Mass.
WMUB	Oxford, Ohio
WMUL	Huntington, W.Va.
WMUS-FM	Muskegon, Mich.
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.
WNBD-FM	Daytona Beach, Fla.
WNBF-FM	Binghamton, N.Y.
WNBH-FM	New Bedford, Mass.
WNCN	New York, N.Y.
WNCO-FM	Ashland, Ohio
WNDA	Huntsville, Ala.(s)
WNDU-FM	South Bend, Ind.
WNEM-FM	Bay City, Mich.(s)
WNES-FM	Central City, Ky.
WNEW-FM	New York, N.Y.
WNEX-FM	Macon, Ga.
WNFO-FM	Nashville, Tenn.(s)
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.
WNOR-FM	Norfolk, Va.
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.(s)
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)
WPFR	Terre Haute, Ind.
WPGC	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.
WPLN	Nashville, Tenn.
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.(s)
WQDC-FM	Midland, Mich.(s)
WQFM	Milwaukee, Wis.
WQMF	Babylon, N.Y.(s)
WQMG	Greensboro, N.C.(s)
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.
WRFY-FM	Reading, Pa.
WRHS	Park Forest, Ill.
WRIT-FM	Milwaukee, Wis.
WRJN-FM	Racine, Wis.
WRJR	Lewiston, Maine
WRKO-FM	Boston, Mass.
WRKT-FM	Cocoa Beach, Fla.(s)
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.
WRSV	Skokie, Ill.
WRSE-FM	Elmhurst, Ill.
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.
WSAE	Spring Arbor, Mich.
WSAI-FM	Cincinnati, Ohio
WSAM-FM	Saginaw, Mich.
WSB-FM	Atlanta, Ga.(s)
WSBA-FM	York, Pa.
WSBC-FM	Chicago, Ill.(s)
WSBF-FM	Clemson, S.C.
WSCB	Springfield, Mass.
WSCH	Hartford, Conn.
WSEI	Effingham, Ill.
WSEV-FM	Sieverville, Tenn. (s)
WSFM	Birmingham, Ala.(s)
WSHS	Floral Park, N.Y.
WSID	Baltimore, Md.
WSIM-FM	Salem, Ind.
WSIU	Carbondale, Ill.
WSIX-FM	Nashville, Tenn.(s)
WSJG	Hallandale, Fla.
WSJS-FM	Winston-Salem, N.C.
WSKS	Wabash, Ind.
WSLN	Delaware, Ohio
WSLS-FM	Roanoke, Va.(s)
WSMC-FM	Collegedale, Tenn.
WSMD-FM	Waldorf, Md.
WSMI-FM	Litchfield, Ill.
WSMJ	Greenfield, Ind.
WSNJ-FM	Bridgeton, 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.
WSTO	Owensboro, Ky. (s)
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.(s)
WTDS	Toledo, Ohio
WTFM	Babylon, N.Y.(s)
WTHI-FM	Terre Haute, Ind.
WTHS	Miami, Fla.
WTIC-FM	Hartford, Conn.(s)
WTJS-FM	Jackson, Tenn.
WTJU	Charlottesville, Va.
WTMA-FM	Charleston, S.C.
WTMJ-FM	Milwaukee, Wis.(s)
WTNC-FM	Thomasville, N.C.
WTOA	Trenton, N.J.
WTOC-FM	Savannah, Ga.
WTOD-FM	Toledo, Ohio
WTOF	Canton, Ohio
WTOL-FM	Toledo, Ohio
WTOP-FM	Washington, D.C.
WTOS	Wauwatosa, Wis.
WTRC-FM	Elkhart, Ind.
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)
WUHY-FM	Philadelphia, Pa.
WULX-FM	Richmond, Ind.
WUNC	Chapel Hill, N.C.
WUOA	Tuscaloosa, Ala.
WUOM	Ann Arbor, Mich.
WUOT	Knoxville, Tenn.
WUPY	Lynn, Mass.(s)
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.(s)
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
WVLK-FM	Lexington, Ky.(s)
WVLN-FM	Olney, Ill.
WVMC-FM	Mt. Carmel, Ill.
WVNA-FM	Tuscumbia, Ala.
WVNJ-FM	Newark, N.J.
WVNO-FM	Mansfield, Ohio(s)
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.(s)
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-FM	Erie, Pa.
WXBR	Cocoa Beach, Fla.
WXCN	Providence, R.I.(s)
WXFM	Elmwood Park, Ill.
WXHR	Cambridge, Mass.
WXPN	Philadelphia, Pa.
WXRI	Norfolk, Va.
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.

C.L.	Location
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	WAAY-TV	25
	WAFG-TV	31
	WHNT-TV	19
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	KOOL-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	23
	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
	KIIX	22
	KMEX-TV	34
	KNXT	2
	KNBC	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
	KVCR-TV	*24
San Diego	KFMB-TV	8
	KOGO-TV	10
(Tijuana, Mex.)	XETV	6
San Francisco	KFOG-TV	44
	KGO-TV	7
	KPIX	5
	KQED	*9
	KRON-TV	4
	KEZE-TV	20
San Jose	KNTV	11
San Luis Obispo	KSBY-TV	6
San Mateo	KCSM-TV	14
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
	KCTO	2
Durango	KFJT-TV	6
Grand Junction	KREX-TV	5
Montrose	KREY-TV	10
Pueblo	KCSJ-TV	5

CONNECTICUT

Location	C.L.	Chan.
Bridgeport	WICC-TV	43
	WEDH	*24
Hartford	WTIC-TV	3
	WHCT-TV	18
New Britain	WHNB-TV	30
New Haven	WNHC-TV	8
Waterbury	WATR-TV	53

DELAWARE

Location	C.L.	Chan.
Wilmington	WHYY-TV	12

DIST. OF COLUMBIA

Location	C.L.	Chan.
Washington	WETA-TV	*26
	WMAL-TV	7
	WOOK-TV	14
	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
	WFTV	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
	WAII-TV	11
	WSB-TV	2
	WETV	*30
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
	WCIV	26
	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
Marion	WTAF	31
Muncie	WLBC-TV	49
South Bend	WNDU-TV	16
	WSBT-TV	22
Terre Haute	WTHI-TV	10

IOWA

Location	C.L.	Chan.
Ames	WOI-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	KLOE-TV	10
Great Bend	KCKT	2
Hays	KAYS-TV	7
Hutchinson	KTVH	12
Pittsburg	KOAM-TV	7
Salina	KSLN-TV	34
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
Orono	WMEB-TV	*12
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	KCMO-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

NEBRASKA

Location	C.L.	Chan.
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

Location	C.L.	Chan.
Henderson	KORK-TV	2
Las Vegas	KLAS-TV	8
	KSHO-TV	13
Reno	KCRL	4
	KOLO-TV	8

NEW HAMPSHIRE

Location	C.L.	Chan.
Durham	WENH-TV	*11
Manchester	WMUR-TV	9

NEW JERSEY

Location	C.L.	Chan.
Newark	WNDT-TV	13

NEW MEXICO

Location	C.L.	Chan.
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
Santa Fe	KVSF-TV	2

NEW YORK

Location	C.L.	Chan.
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
	WNYC-TV	31
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

Location	C.L.	Chan.
Asheville	WISE-TV	62
	WLOS-TV	13
Chapel Hill	WUNC-TV	*4
Charlotte	WBTV	3
	WSOC-TV	9
Durham	WTVD	11
	WUTV	36
Greensboro	WFMY-TV	2
Greenville	WNCT	9
Raleigh	WRAL-TV	5
Washington	WITN	7
Wilmington	WECT	6
Winston-Salem	WSJS-TV	12

NORTH DAKOTA

Location	C.L.	Chan.
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	KCND-TV	12
Valley City	KXJB-TV	4
Williston	KUMV-TV	8

OHIO

Location	C.L.	Chan.
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
Newark	WGSF	*28
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

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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	WLYH-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

Location	C.L.	Chan.
Providence	WJAR-TV	10
	WPRO-TV	12

SOUTH CAROLINA

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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
	KDCD-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

Location	C.L.	Chan.
Ogden	KVOG-TV	9
	KWCS-TV	*18
Provo	KBYU-TV	11
Salt Lake City	KSL-TV	5
	KCPX-TV	4
	KUED	*7
	KUTV	2

VERMONT

Location	C.L.	Chan.
Burlington	WCAX-TV	3

VIRGINIA

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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
	KYVE	*47

WEST VIRGINIA

Location	C.L.	Chan.
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

Location	C.L.	Chan.
Eau Claire	WEAU-TV	13
Green Bay	WBAY-TV	2
	WFRV	5
	WLUK-TV	11
Hurley	WAEO-TV	12
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
	WMVT	*36
	WTMJ-TV	4
	WXIX	18
Wausau	WSAU-TV	7

WYOMING

Location	C.L.	Chan.
Casper	KTWO-TV	2
Cheyenne	KFBC-TV	5
Riverton	KWRB-TV	10

PUERTO RICO

Location	C.L.	Chan.
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

ALBERTA

Location	C.L.	Chan.
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

Location	C.L.	Chan.
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

Location	C.L.	Chan.
Goose Bay	CFLA-TV	8

MANITOBA

Location	C.L.	Chan.
Baldy Mountain	CKOS-TV-1	8
Brandon	CKX-TV	5
Winnipeg	CBWT	3
	CBWFT	6
	CJAY-TV	7

NEW BRUNSWICK

Location	C.L.	Chan.
Campbellton	CKCD-TV	7
Moncton	CKAM-TV	2
	CBAFT	11
Saint John	CHSJ-TV	4
Upsalquitch Lake	CKAM	12

NEWFOUNDLAND

Location	C.L.	Chan.
Argentia	CJOX-TV	10
Corner Brook	CBYT	5
	CHEK-TV	6
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

Location	C.L.	Chan.
ONTARIO		
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
Ottawa	CBOFT	9
	CBOT	4
	CJOH-TV	13
Parry Sound	CKVR-TV-1	11
Pembroke	CHOV-TV	5
Peterborough	CHEX-TV	12
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		
Charlottetown	CFCY-TV	13
QUEBEC		
Carleton	CHAU-TV	5
	CJAO-TV-1	80
	CHSM-TV	7
Clermont	CFCV-TV-1	75
Estcourt	CJES-TV-1	70
Gaspe West	CFGW-TV-1	6
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		
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	7

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)

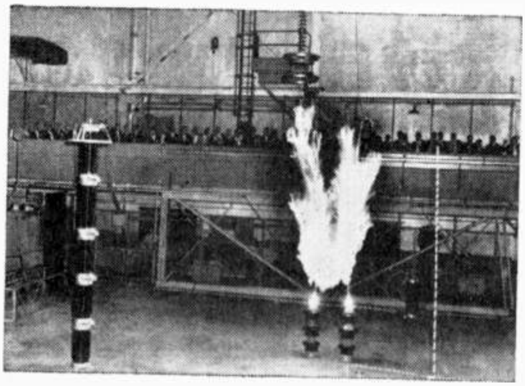
Kcs.	Call and Location
3225	ELBC, Monrovia, Lib.
3245	YVKT, Caracas, Ven.
3255	ELBC, Monrovia, Liberia
	YVQL, El Tigre, Ven.
3265	ZFY Georgetown, Br. Guiana
3280	W.I.B.S., Grenada, Windward Is.
3285	HISD, Santo Domingo, D.R.
3290	HJCQ, Bogota, Colombia
3295	YVOG, Trujillo, Ven.
3300	B.H.B.S., Belize, Br. Honduras
3305	YVKX, Caracas, Ven.
3315	Fort de France, Martinique
3316	Freetown, Sierra Leone
3322	HIUA, Santo Domingo, D.R.
3325	HI5U, Santo Domingo, D.R.
3326	Kaduna, Nigeria
3355	YVLC, Valencia, Ven.
3366	Accra, Ghana
3395	YVOJ, Merida, Ven.
4630	HCGBI, 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	HCXZI, 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	HRCPI, 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	HRN, 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
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	LRY1, Buenos Aires, Arg.
6090	VLI6, Sydney, Aus.
6090	Luxembourg, Lux.
6090	XECMT, C. El Mante, Mex.
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	HER5, 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
7195	VOA, Monrovia, Lib.
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.
7275	Paradys, S. Africa
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.
9009	Tel Aviv, Israel
9360v	Madrid, Spain •
9380v	Madrid, Spain
9410	BBC, London, Eng.
9440	CP38, La Paz, Bol.
9480	Peking, China
9490v	Cairo, Egypt
9500	Magadan, U.S.S.R.
9500	Moscow, U.S.S.R.
9505	PRB22, Sao Paulo, Braz.
9505	HIUA, Santo Domingo, D.R.
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	Colombo, Ceylon
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	Sofia, Bulgaria •
9560	RTF, Paris, France
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 •
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. •
9675	BBC, London, Eng.
9675	NHK, Tokyo, Japan

Kcs.	Call and Location
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	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	HIST, Santo Domingo, D.R.
9740	Lisbon, Port.
9740	Khabarovsk, U.S.S.R.
9740v	LRS1, 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. ●
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	Radio Americas, Havana, Cuba
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.
11845	St. George's, Windward Is.
11850	Sofia, Bulg.
11850	Brussels, Belgium
11850	Beirut, Lebanon
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. ●
11868	Elizabethville, Congo Rep.
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
11890	Beirut, Lebanon
11695	Dakar, Mali Fed.
11895	Radio Free Europe
11895	VOA, Poro, 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.
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	Melbourne, Australia
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
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.
17840	Melbourne, Australia
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

(continued from page 152)

C-B Loading Coil

Increase the effectiveness of your present CB system by as much as 4 to 8 decibels. This base-loading coil will help match the whip to the transmitter. Encapsulated in weatherproof epoxy, it fits standard mounting threads and is available in several sizes at $5. Write Creative Products Co., Dept. RTE, 6944 Plainfield Rd., Cincinnati 36, Ohio.

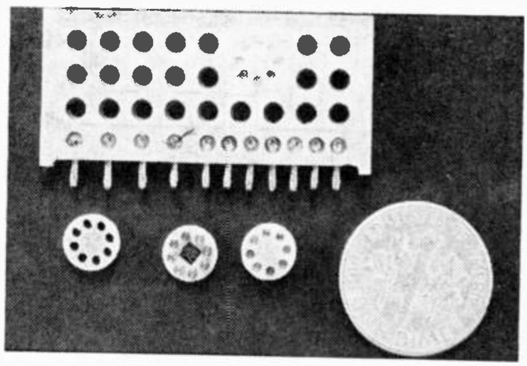


Hot Stuff

Called a Jacob's Ladder, this demonstration was staged for engineering visitors. This man-made lightning was used to show the value of a new home lightning protector by General Electric. Product withstood a 7.5-million-volt charge with no ill effects. GE Dept. RTE, Schenectady, N. Y.

Now It's Pellets

The electronic technician of the future will probably have to wear a jewelers' loupe! That disk you see in the corner of the picture is a genuine, U.S.-type dime. Pelletized circuits are dropped in the holes, connected by a conducting cement, and the result is a completed unit. Just don't get those pellets into your pill bottle! For more info, write General Dynamics, Dept. RTE, 1 Rockefeller Plaza, New York 20, N. Y.



Color Bars, White Dots

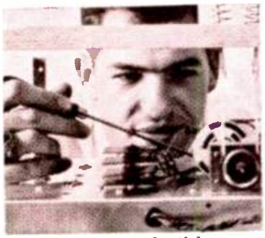
New generator comes in kit form, provides color bars, white dots, cross hatch, vertical or horizontal bars. RF output on channel 3 or 4. Compact piece of lab equipment for the TV serviceman. For more data, write to PACO Electronics, Dept. RTE, 70-31 84th St., Glendale 27, L. I., N. Y.

WHERE You Train is as Important As Your Decision to Train

Electronics is a growing and expanding industry. That's why so many ambitious men are training for careers in this exciting field. They recognize the opportunities to fill in interesting and important positions. But *where* a man trains and *how* the school of his choice teaches the many fields of Electronics-Automation, Radio-Television . . . how it encourages him to reach his goals and realize his ambitions . . . is most important to his success.

This is a fast changing world. A school offering Electronics courses must keep pace. That's why NRI—with nearly 50 years of specialized experience—now offers eight choices of training. Select the course of most interest to you and receive the kind of home-study training that prepares you for a *specialized career.* NRI's large staff of specialists is always on the job keeping your course material up-to-date . . . helping you earn your way while you train . . . assisting you with job placement. In short, NRI is qualified to help you grow.

Special Training Equipment Included



The NRI "learn-by practice" method is the time-proved way to better pay. It makes training easier, faster, better. Most NRI courses include—*at no extra cost*—special training equipment to give shop and laboratory experience in your own home. All equipment is yours to keep.

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"I want to thank NRI for making it all possible," says Robert L. L'Heureux of Needham, Mass., who sought our job consultant's advice in making applications and is now an assistant Field Engineer in the DATAmatic Div. of Minneapolis-Honeywell, working on data systems.

"I have gone ahead financially ever since I enrolled with NRI," writes Gerald W. Kallies, now a chief Instrument Technician of Rio Algom Nordic ceremium mines and part-time TV engineer for CKSO-TV, Elliott Lake, Ont. He enrolled with NRI on finishing high school.

His own full-time Radio-TV shop has brought steadily rising income to Harlin C. Robertson of Oroville, Calif. In addition to employing a full-time technician, two NRI students work for him part-time. He remarks about NRI training, "I think it's tops!"

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