

The American States on Shortwave

by

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Please note that this document is no longer being updated after December 31, 2021.

For close-up viewing of the graphics in Table 2 (pgs. 5-25), set your Adobe Reader to 400%.

Have you ever wondered how many states of the United States have broadcast on shortwave at one time or another, and which ones? If so, read on.

Introduction

Like many counting exercises, definitions are important. Exactly what constitutes a shortwave broadcasting station is a question that has arisen often in the context of counting stations or countries, and it comes up here as well. Candidate stations fall into five categories, which I have denominated “A” through “E.”

“A” - There isn’t any controversy about most traditional shortwave broadcast stations, either governmental or private: they clearly are intended to serve the general listening public. This group includes stations like KNLS, KGEI, WRMI, WBCQ, the various VOA stations, etc.

In the 1920s there were a few standard broadcast stations that flirted with shortwave simulcasts for brief periods. Their activities have largely been lost to history, and I have included only those for which there is some evidence of on-air activity. Many standard broadcast stations used shortwave for field work, i.e. relaying the coverage of remote events to the studio, and while these transmissions were sometimes heard at a distance, they are not included in the count because they were not intended for general public reception. Nor have I included studio link transmissions that are heard occasionally in the 25-26 MHz. range, e.g. WFLA in Florida.

During World War II, all of the private American shortwave stations were programmed by the U.S. government, and eventually they started identifying as the Voice of America. They were, however, still run and maintained by their private owners (Westinghouse, General Electric, etc.), and often their private-station call letters were used on the air even after they entered VOA service.

“B” - Then there are the commercial, or point-to-point, shortwave stations which have from time to time carried broadcast programming, either for the purpose of relaying broadcast material to some specific receiving site (usually for further transmission over local or network broadcast band stations), or to serve the general public with direct-to-listener shortwave broadcasting along the lines of a traditional shortwave broadcaster. There was much relay broadcasting in the early years of shortwave, and during World War II many point-to-point stations were pressed into service for direct-to-listener broadcasting in order to supplement the limited capacity of the country’s regular (“A”) shortwave broadcasters. Both categories are included in the count.

“C” - Another group is the “apex” stations that were active from the mid-1930s to 1941. These were the siblings of AM broadcast band stations. They operated on an experimental basis in regular AM mode on high shortwave frequencies, and were the precursors to FM. Many operated on 31.6 MHz., still others on higher channels, sometimes much higher. Some used frequencies around 26 MHz., below the 30 MHz. “cutoff” that is commonly considered the top of the shortwave bands. For our purposes I have included in the count those apex

stations that operated below 30 MHz. (Changes in frequency among the apex stations were not unusual, and some were authorized to operate on more than one frequency.)

Since in many respects the apex stations were different from the traditional stations (low power, high frequency, relatively brief life spans), and are of historical interest in their own right, they are listed separately at the end of Table 2 (pgs. 23-25).

Shortwave is usually taken to begin around 2 or 3 MHz., and so I have omitted the four special “high fidelity” AM stations that operated from 1934 to 1941 on 1530 and 1550 kHz., channels slightly above the then-standard broadcast band; as well as the expanded band stations that have broadcast in the “new” 1600-1700 kHz. range since the mid-1990s.

“D” - And WWV must be accounted for. The National Bureau of Standards station was located in Washington, D.C. during the 1920s and actually carried some broadcast transmissions, albeit not on shortwave. By 1935, when its first voice announcements were heard on shortwave, the station had relocated twice—first to College Park, Maryland (in 1931), then to nearby Beltsville, Maryland (1932). Given its use of voice, and its public service mission (standard frequency, time, propagation, etc.), WWV is often considered to be in the nature of a shortwave broadcasting station (at least from 1935).

“E” - Finally there are a few special situations, e.g. early shortwave broadcast operations, AFRTS broadcasts via military transmitters, etc., that are included. Pirates are omitted, even if their state of location is known. Also not included are certain factory tests of VOA transmitters that were heard from time to time (Dallas, Texas, 1955; Yuma, Arizona, 1962).

I have included basic information on ownership, call letters and dates of operation, but I have not attempted to trace every twist and turn of station history, nor every change of power or assignment or change of call letters. For shortwave’s early days, the line between shortwave broadcasting and other commercial or experimental transmissions was often more imagined than real, and so the classification of a station as broadcast or commercial often is in the eye of the beholder. In addition, many of the details of shortwave history, especially in the 1920s, are murky. A tabulation of every transmission of broadcast programming on shortwave, if such were possible, surely would turn up candidates not listed here.

The results

Table 1 below shows the status of each state in terms of traditional stations, commercial stations, apex stations, WWV, and special situations. From this information we see that the number of states that have broadcast on shortwave in each category over the years is as follows:

Traditional	25
Commercial	5
Apex	16
WWV	3
Special	6

Of course, there are overlaps. Some states, such as Alaska and Texas, have operated stations in only one category. Others, such as New York and California, have operated in several. Counting each state only once, regardless of how many categories of stations have operated from the state, the total number of states that have broadcast on shortwave is 33, that is, the 25 states with traditional stations, plus eight other states with non-traditional stations only. (The eight are Colorado [WWV, apex], Maryland [WWV, special], Minnesota [apex], Missouri [apex], Oklahoma [apex], Virginia [apex, special], West Virginia [apex] and Wisconsin [apex].)

The apex stations are an interesting group. They operated basically for experimental purposes and for a relatively short time. They were broadcast stations, however, and although they were intended for local reception, many were heard worldwide. I have counted them because they are fundamentally no different from shortwave stations in other parts of the world that have broadcast mainly for local consumption. Such stations have always been prime DX targets. Some 16 states had apex stations that broadcast on frequencies below 30 MHz. Of these, five (Minnesota, Missouri, Oklahoma, West Virginia, Wisconsin) had no other shortwave broadcasting stations.

Some of the 16 states, as well as others, had apex stations that broadcast on frequencies above 30 MHz.

Is it fair to lump into the overall count stations that operated only in the 1920s or the 1930s and thus have been long gone? “Yes” if you are looking for a total count, and if you don’t want to omit some of America’s most historic stations; “no” if you want to apply a more contemporary standard, e.g. only states that broadcast on shortwave after World War II (the standard that NASWA applies to counting *countries*).

How many states have had no shortwave broadcast operations of any kind? The number is 17. If you add in the five states whose shortwave operations consisted *only* of apex stations below 30 MHZ., the number goes up to 22.

Table 1
Summary Tabulation of
Shortwave Broadcasting in the American States

Station Type	Number of States	States of Operation
“A” - Traditional stations	25	Alabama Alaska California Florida Georgia Hawaii Illinois Indiana Iowa Kentucky Louisiana Maine Massachusetts Michigan Nebraska New Jersey New Mexico New York North Carolina Ohio Pennsylvania South Carolina Tennessee Texas Utah
“B” - Commercial/point-to-point stations	5	California Florida Hawaii New Jersey New York

“C” - Apex stations below 30 MHz.	16	California Colorado Illinois Indiana Iowa Minnesota Missouri New York Ohio Oklahoma South Carolina Tennessee Texas Virginia West Virginia Wisconsin
“D” - WWV	3	Colorado Hawaii Maryland
“E” - Special situations	6	Florida Hawaii Illinois Maine Maryland Virginia
NO STATIONS	17	Arizona Arkansas Connecticut Delaware Idaho Kansas Mississippi Montana Nevada New Hampshire North Dakota Oregon Rhode Island South Dakota Vermont Washington Wyoming

And how many states still have shortwave broadcast stations? The apex stations, shortwave programming on point-to-point, and the special situation stations are, of course, gone. So, as of December 31, 2021, the number of states on the shortwave broadcast bands, viewed most generously (some operate only intermittently), is 12 (with two of these represented by WWV/WWVH only). The states are: **Alabama** (WEWN), **Alaska** (KNLS), **California** (KVOH), **Colorado** (WWV), **Florida** (WRMI, WJHR), **Hawaii** (WWVH), **Louisiana** (WRNO), **Maine** (WBCQ), **North Carolina** (VOA Greenville), **Pennsylvania** (WINB, WMLK), **South Carolina** (WHRI), and **Tennessee** (WWCR, WWRB, WTWW).

The stations state-by-state


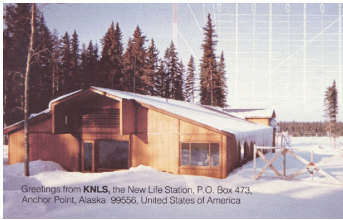
Table 2 shows the shortwave broadcasting history of each state. The traditional stations are shown in ordinary font; the entries for all *other* stations are shaded and in italics. Apex stations are grouped together

separately at the end of the chart. For each station, a letter in the far-left column indicates the category of the station, thus:

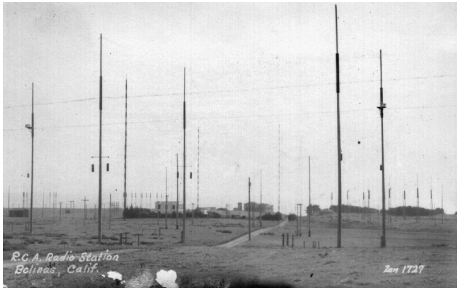
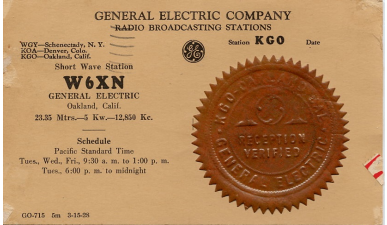

- A = Traditional
- B = Commercial/point-to-point
- C = Apex
- D = WWV
- E = Special situation



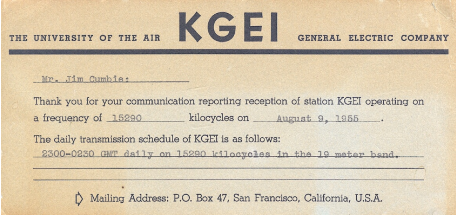

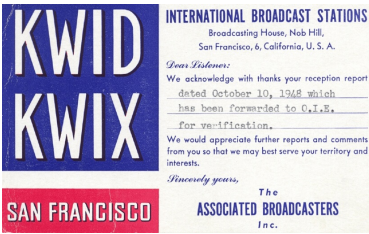

Within each state the stations are listed roughly by dates of origin and divided into three broad periods: (1) shortwave's early days, 1922-1940, a time of experimentation and development; (2) the war years, starting in 1941, plus the postwar period, during which no new shortwave broadcast stations were authorized; and (3) 1962 and later, 1962 being the first year after the war that a new shortwave broadcaster took to the air (WINB). That year was nominally the start of the modern expansion of traditional American shortwave broadcasting, although the shortwave broadcast license granted next after 1962 was not until 1977, and it was for Guam (KTWR). The first new post-1962 stateside shortwave broadcasting licensee was WRNO (1982).

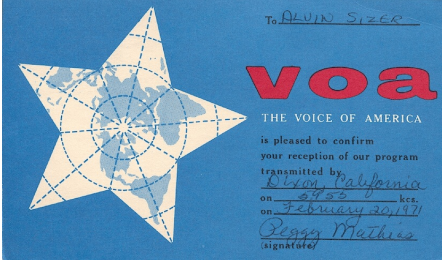

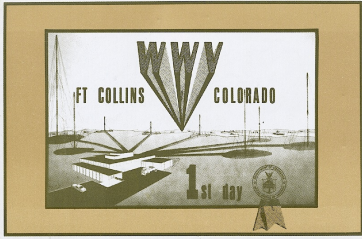
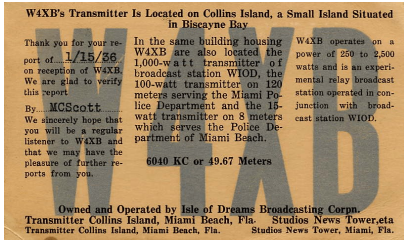
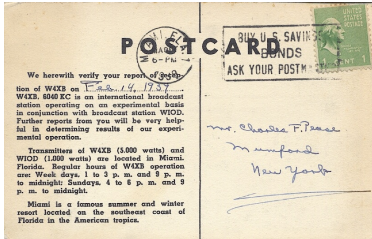
Table 2
Shortwave Broadcasting in the United States,
State-by-State

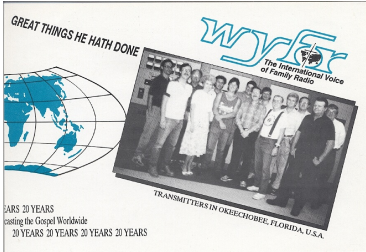


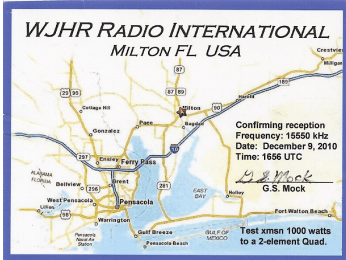

A B C D E	Experimental and Developmental Shortwave, 1923-1940	The War Years and After, 1941-1961	WINB and Later, 1962-2021
ALABAMA			
A			<p>WEWN - Catholic broadcaster Eternal Word Network (EWN), headquartered in Birmingham, began broadcasting in December 1992 with 500 kw., and is still on the air. Transmitters are located in Vandiver.</p>
ALASKA			
A			<p>KNLS - The "New Life Station" of World Christian Broadcasting Corp., Abilene, Texas, signed on in July 1983 from its 100 kw. transmitters at Anchor Point, Alaska. It is still on the air.</p>
ARIZONA No stations			
ARKANSAS No stations			


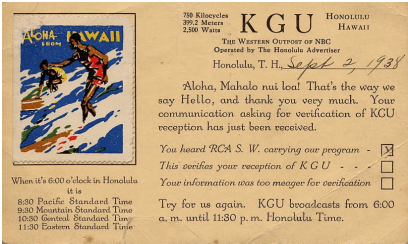


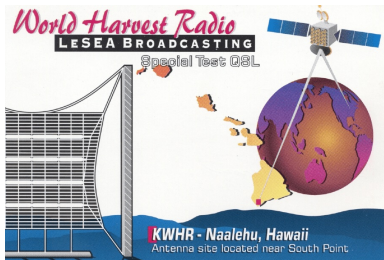
CALIFORNIA

<p>B <i>RCA Bolinas - Originally an American Marconi facility, RCA acquired the transmitting plant at Bolinas (near San Francisco), and by 1925 had equipped it with shortwave. A point-to-point facility, it carried a multitude of commercial traffic, including broadcast relays for direct reception (especially during the war years). It operated with call signs such as KRCA, KRCQ, etc.</i></p>		
<p>A KFI - This Los Angeles broadcaster was said to have experimented with shortwave broadcasting during the medium's early years.</p>		
<p>B <i>W6XN - Starting in August 1929 and lasting for more than a year, this General Electric station in Oakland—technically not a broadcaster but used mainly to send west coast broadcasts to east coast partner stations—was heard nationwide via its 5 (later 10) kw. transmitter.</i></p>		
<p>B <i>Press Wireless - "PW" was formed in 1929 to handle news dispatches for newspapers. Its main transmitters were in Belmont, California (south of San Francisco) and Hicksville, L.I. (moved to Centereach, L.I. in 1957). It also carried other commercial traffic, and was one of many point-to-point stations that carried some broadcast relays to and from the U.S. The facility closed down in 1973.</i></p>		
<p>B <i>Press Wireless - PW also had a station in Los Angeles that carried some broadcast programming, usually for point-to-point purposes.</i></p>	<p><i>Press Wireless KROJ - This station commenced operation in 1943, and was joined by sister station KROU in mid-1945. Their location is believed to have been Los Angeles, their power either 15 or 50 kw. Although a commercial setup, its extensive AFRS programming had a wide following among service members in the Far East.</i></p>	

<p>B <i>AT&T Dixon - This commercial station, located in Dixon, near Sacramento, opened in 1931, and like other such plants, from time to time, both before and during the war, it carried broadcast programming on shortwave. Callsigns includes KMI, KVV, etc. Globe Wireless took over the plant in 1993 and operated it until it closed in 2013.</i></p>	 <p>Date: October 1, 1945.</p> <p>Dear Listener: Thank you for your reception report of our station. It has been checked and found to be correct. We appreciate your interest and urge you to continue to listen and send us further reports, both on quality of reception and on the programs themselves.</p> <p>Cordially yours, KVV</p> <p>Please address all future messages to this station c/o OFFICE OF WAR INFORMATION 111 Sutter Street San Francisco, California</p>	
<p>A W6XBE - This 20 kw. General Electric station in San Francisco commenced operation in February 1939. It received what would become the historic call letters KGEI later that year. In 1941 it moved to Belmont, where it operated with 50 (later 100) kw. KGEI was bought by the Far East Broadcasting Co. and from March 1960 operated as an FEBC station. It closed down in June 1994.</p>	 <p>LATIN AMERICAN SERVICE FAR EAST BROADCASTING CO. P.O. BOX 915 SAN FRANCISCO, CALIF., U.S.A.</p> <p>"The Voice of Friendship"</p>	 <p>THE UNIVERSITY OF THE AIR KGEI GENERAL ELECTRIC COMPANY</p> <p>Mr. Jim Cumble:</p> <p>Thank you for your communication reporting reception of station KGEI operating on a frequency of 18290 kilocycles on August 9, 1956.</p> <p>The daily transmission schedule of KGEI is as follows: 2300-0200 GMT daily on 18290 kilocycles in the 10 meter band.</p> <p>Mailing Address: P.O. Box 47, San Francisco, California, U.S.A.</p>
<p>A </p>	<p>KWID - Associated Broadcasters (KFSO) brought this station to air in San Francisco in May 1942 in order to beef up America's west coast shortwave capability during the war. Power was 100 kw. Fifty kilowatt KWIX was added in 1943. The station closed in 1953.</p>	 <p>KWID KWIX</p> <p>INTERNATIONAL BROADCAST STATIONS Broadcasting House, Nob Hill, San Francisco, 6, California, U.S.A.</p> <p>Dear Listener: We acknowledge with thanks your reception report dated October 10, 1948 which has been forwarded to C.I.B. for verification. We would appreciate further reports and comments from you so that we may best serve your territory and interests.</p> <p>Sincerely yours, The ASSOCIATED BROADCASTERS Inc.</p> <p>SAN FRANCISCO</p>
<p>A</p>	<p>CBS Delano - Late in 1944, CBS inaugurated this new VOA 50 kw. shortwave station in Delano, located between Los Angeles and San Francisco. Calls were KCBA and KCBF. A 200 kw. sender, KCBR, was added in 1945, and the calls were consolidated into KCBR in 1951. In 1992, VOA Delano was named the Jack R. Poppele Transmitting Station after a former VOA director. The site closed down in October 2007.</p>	 <p>Date: October 1, 1945.</p> <p>Dear Listener: Thank you for your reception report of our station. It has been checked and found to be correct. We appreciate your interest and urge you to continue to listen and send us further reports, both on quality of reception and on the programs themselves.</p> <p>Cordially yours, KCBA KCBF</p> <p>Please address all future messages to this station c/o OFFICE OF WAR INFORMATION 111 Sutter Street San Francisco, California</p>

A		<p>NBC Dixon - In late 1944-early 1945, this new NBC-operated VOA facility came into operation from a different (non-AT&T) location in Dixon. Power was 50 kw. The call letters were KNBA, KNBC, KNBI and KNBX, consolidated as KRCA (an old Bolinas callsign) in 1951. VOA Dixon closed in September 1979. In October 1983 it was brought back into service for broadcasts to Latin America until closing down for good in 1988.</p>	
A			<p>KVOH - High Adventures Ministries of Los Angeles commenced operation in October 1986 from nearby Rancho Simi. Power was 50 kw. Approximately 20 years later KVOH was bought by a Spanish church in Los Angeles which operated it as La Voz de Restauración. Following a hiatus, it returned to the air in 2013 as the Voice of Hope, a name long associated with High Adventures. It is still on the air.</p>
COLORADO			
D			<p>WWV - In 1966 WWV moved from Greenbelt, Maryland to Fort Collins, Colorado, from where it still operates.</p>
CONNECTICUT No stations			
DELAWARE No stations			
FLORIDA			
A	<p>W4XB - NBC's standard broadcast station WIOD ("Wonderful Isle of Dreams") in Miami Beach opened this shortwave outlet in 1932. Power was 2.5 kw. at first, increased to 5 kw. circa 1936. It moved to Miami in 1938. The station closed down in 1940, by which time its call letters were WDJM.</p>		

B	<i>AT&T Hialeah - This commercial station was sometimes used for broadcast relay work.</i>		
A		 <p>GREAT THINGS HE HATH DONE</p> <p>WYFR The International Voice of Family Radio</p> <p>TRANSmitters BY OKEECHOBEE, FLORIDA, U.S.A.</p> <p>20 YEARS posting the Gospel Worldwide 20 YEARS 20 YEARS 20 YEARS 20 YEARS</p>	<p>WYFR - This Family Radio station, previously heard over the former WRUL from its site in Scituate, Massachusetts, commenced broadcasts from a new 660-acre site in Okeechobee, Florida in November 1977. Scituate was phased out over two years. WYFR left shortwave in June 2013.</p>
A		 <p>WRMI</p> <p>Radio Miami International</p>	<p>WRMI - Jeff White's well-known 50 kw. Miami station came on the air in 1994. WRMI took over the WYFR Okeechobee transmitter site in December 2013.</p>
E		 <p>This letter serves as confirmation of your August 19 and 20, 2000, reception of Armed Forces Radio and Television. The signal originates from Naval Computer and Telecommunications Master Station, Key West, Florida on 12080.5 kHz.</p> <p>Naval Computer and Telecommunications Area Master Station, Key West, Florida broadcasts with a 48 foot inverted cone antenna from Boca Chica, Florida with 8 kilowatts of power.</p> <p>AFRTS shortwave radio transmissions have historically existed to provide AFRTS radio service to U.S. Navy vessels and outlying military posts receiving limited American radio or television through other means. The signals will be in existence for a limited time until a new technology, which is currently being tested, allows for reception of AFRTS via satellite.</p> <p>We are pleased that you have received the AFRTS shortwave signal and thank you for your interest and confirmation of the signal's quality.</p> <p>Sincerely, Michael Fouch, Chief Broadcast Operations Specialist</p>	<p>AFN Key West - This station, Naval Computer and Telecommunications [NAVCOMTEL] Area Master Station, Key West, was one of several U.S. naval stations around the world that began regular relays of American Forces Network programming. It was on the air from 1998 to 2012.</p>
A		 <p>WJHR RADIO INTERNATIONAL MILTON FL USA</p> <p>Confirming reception Frequency: 16550 kHz Date: December 9, 2010 Time: 1656 UTC</p> <p>G.S. Mock</p> <p>Test xmsn 1000 watts to a 2-element Quad.</p>	<p>WJHR - This station, in Milton, Florida, came on the air in November 2009. Originally licensed for 50 kw., it operates at much lower power. WJHR carries religious programs exclusively, and operates in USB, but is highly irregular in operation.</p>
GEORGIA			
A		 <p>WGTC</p> <p>With Glory To God</p> <p>Radio Station WGTC</p> <p>P. O. Box 1131</p> <p>Copperhill, TN 37317 U.S.A.</p>	<p>WGTC - This 50 kw. religious station, "With Glory to God," came on the air in 1995 from McCaysville, Georgia (postal address in nearby Copperhill, Tennessee). In 2000 it became WWFV and moved to Manchester, Tennessee, whereupon it became WWRB.</p>

A			<p>WWBS - Also a religious station, WWBS was inaugurated in December 1998. The location was Macon, and power was 50 kw. It was on the air until February 2003.</p>
HAWAII			
B	<p>RCA Kahuku - This station participated in many Transpacific shortwave relays of broadcast material, including the relay of the well-known, locally-produced "Hawaii Calls" to the U.S. mainland starting in 1935, and AFRS and other broadcast programming during the war.</p>		
A		<p>KRHO - This 100 kw. VOA relay base near Honolulu came into operation in December 1944 and was on the air until 1969. It was one of the first relay bases built specifically for the VOA.</p>	
D		<p>WWVH - Located in Puunene (Maui), the first transmissions from this WWV "outstation" were in 1948.</p>	<p>WWVH changed islands in 1971, relocating from Maui to Kauai in 1971.</p>
A			<p>KWHR - On Christmas Day, 1993, World Harvest Radio, already operating WHRI in Indiana, opened a new shortwave station in Naalehu, Hawaii, said to be the southernmost point of the United States. The station closed in 2009 and operations were transferred to the World Harvest Radio station in Palau.</p>

E			<p><i>AFN Lualualei - One of the new American Forces Network naval stations carrying AFRTS programming, this one was on Oahu. It began broadcasting in 2000, and became inactive in 2009.</i></p>
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IDAHO
No stations

ILLINOIS



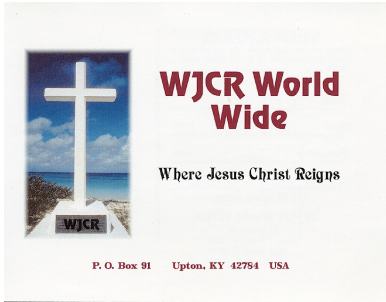
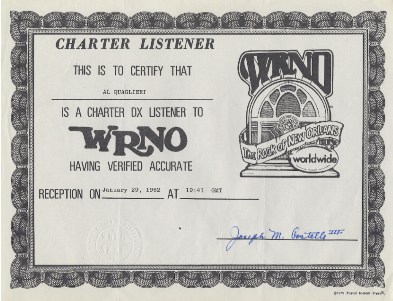
A	<p>W9XF - This 5 kw. (later 10 kw.) station in Downers Grove was owned by Great Lakes Broadcasting Co. and commenced operation in 1929. It simulcasted standard broadcast station WENR. NBC assumed ownership in 1932. The station closed down in 1938.</p>		
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A	<p>W9XAA - "The shortwave voice of labor and farmer" was owned and operated by the Chicago Federation of Labor and simulcasted the Federation's broadcast band station WCFL. Testing from the 500 watt station began in 1929. It moved to Downers Grove in 1936 and left the air circa 1939, by which time it had been assigned the new call letters WCBI.</p>		
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E	<p>W9XBS - This experimental station in Chicago, owned by NBC, was reported to be carrying broadcast programming on shortwave in 1935.</p>		
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INDIANA

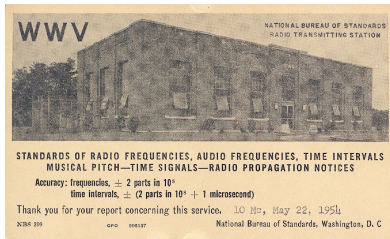

A	<p>WOWO - The dates are unknown, but this station in Fort Wayne was said to have carried some broadcast programming (including CBS programs) on 13160 kHz.</p>		
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A			<p>WHRI - This 100 kw. World Harvest Radio station, owned by LeSea Broadcasting and headquartered in South Bend with transmitters in Noblesville, came to air in 1985. It closed in 2004, its programming picked up by WSHB, South Carolina, which LeSea had purchased.</p>
IOWA			
A	<p>9XU - This shortwave station in Council Bluffs was said to carry the programs of its Mona Motor Oil Co. parent station KOIL (including CBS network programs).</p>		
KANSAS No stations			
KENTUCKY			
A			<p>WJCR - This 50 kw. religious station (“Where Jesus Christ Reigns”) began transmission in March 1992 from Upton. Ten years later it came under the ownership of Word Broadcasting Network and changed its call letters to WJIE (“Where Jesus Is Exalted”). The station operated intermittently and disappeared circa 2005.</p>
LOUISIANA			
A			<p>WRNO - “The Rock of the World,” the first commercial shortwave station to be licensed by the FCC in 20 years, began operation in 1982. By 2001, when it was purchased by Good News World Outreach of Fort Worth, Texas, equipment failures were permitting only intermittent operation, a condition which continued for years but has recently improved.</p>

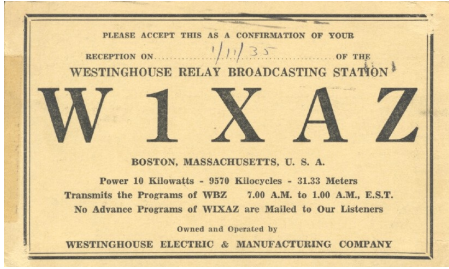
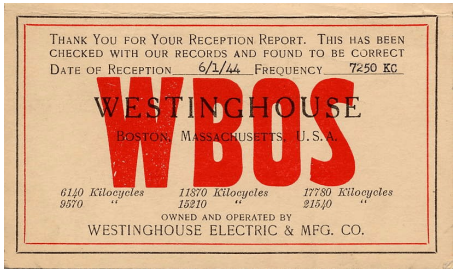
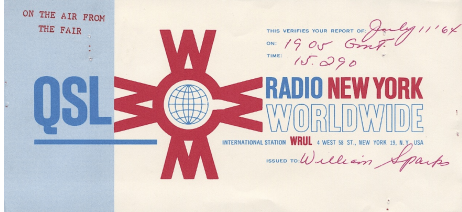
MAINE

<p>E <i>IXAO - In March 1925, this RCA commercial station in Belfast picked up a longwave transmission from 5XX in England and relayed it by shortwave to the RCA radio laboratory in New York City for further relay by wire to several broadcast band stations. It was an important event in the days of experimental shortwave.</i></p>		
<p>A</p>		<p>WCSN - The Christian Science Church, began shortwave broadcasting from this 500 kw. station in Scotts Corners in 1987. Later the church left shortwave, and in 1994 sold WCSN to Prophecy Countdown of Mt. Dora, Florida, which operated it as WVHA, World Voice of Historic Adventism. In 1997 the station was sold again, this time to LeSea Broadcasting, which changed the call letters to WHRA. WHRA ceased operation in 2009.</p>
<p>A</p>		<p>WBCQ - An earnest attempt to prove the efficacy of private shortwave broadcasting, this 50 kw. station began transmitting in August 1998 from Monticello. It is still on the air, and began testing a 500 kw. transmitter in May 2019.</p>

MARYLAND

<p>E <i>NSS - This naval station in Annapolis did some shortwave relay work in 1930 (together with NAA in Arlington, Virginia).</i></p>		
<p>D <i>WWV - Voice announcements from National Bureau of Standards station WWV were first heard on shortwave in 1935, by which time the station was located in Maryland (first College Park, then Beltsville).</i></p>		

MASSACHUSETTS

A	<p>WARC - It is unclear whether, in 1925-1926, Powell Crosley ever used this broadcast band station in Medford Hillside to relay WLW on shortwave (the two were licensed for intra-company shortwave communication).</p>		
A	<p>WIXAZ - Westinghouse opened this 4 kw. shortwave station in Springfield in 1930, relaying WBZ-WBZA. (It is unclear if WBZ in Springfield operated a shortwave transmitter circa 1924-1926 or not.) WIXAZ moved to Boston (Millis) in 1934 and became W1XK (10 kw.) in 1935, WBOS in 1939. In 1940, Westinghouse Pittsburgh station WPIT (formerly W8XK) merged into WBOS, which moved to Hull and increased power to 50 kw. WBOS ceased operation in 1953.</p>		
A	<p>W1XAL - The Walter Lemmon-owned predecessor to WRUL began operation from Boston in 1931 with 5 kw. (increased to 10 kw. in 1935, 20 in 1936). Transmitters were moved to Scituate in 1939, the same year the station became WRUL. It was programmed by OWI during the war, and it was the only American station to resume private operation after the war, by which time power was 50 kw.</p>		<p>WRUL was sold to an arm of the Mormon church in 1962 and began operation as "Radio New York Worldwide." Call letters were changed to WNYW in 1966, and to WYFR in 1973 when the station was bought by Family Radio. It closed in 1979, by which time WYFR was transmitting from Okeechobee, Florida.</p>

MICHIGAN

A	<p>8XAO - WJR in Detroit is said to have transmitted circa 9375 kHz. under the 8XAO call letters.</p>		
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MINNESOTA

Apex only

MISSISSIPPI

No stations

MISSOURI

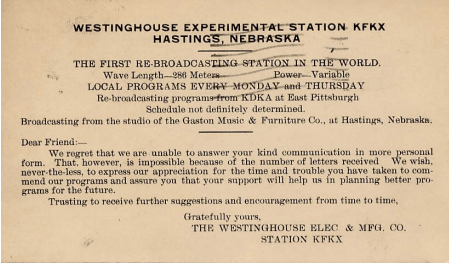
Apex only

MONTANA

No stations

NEBRASKA

A **9XW** - One of the earliest shortwave broadcast experiments, Westinghouse station KFKX in Hastings operated from 1923 to 1927. It mainly picked up KDKA shortwave and relayed it over the KFKX broadcast band transmitter, and at times over its own shortwave transmitter, 9XW.

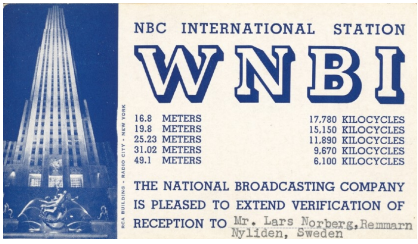
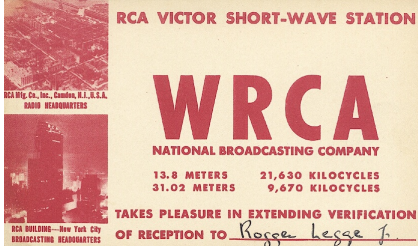
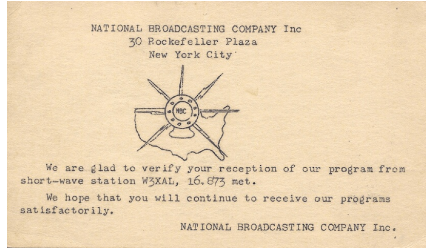
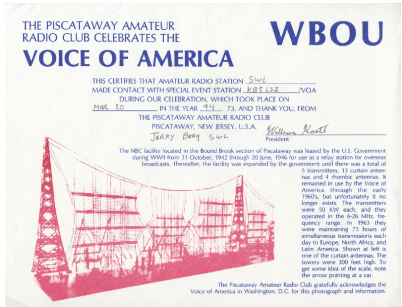


NEVADA
No stations

NEW HAMPSHIRE
No stations

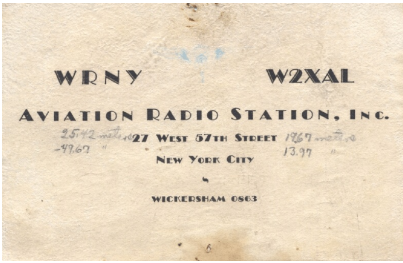
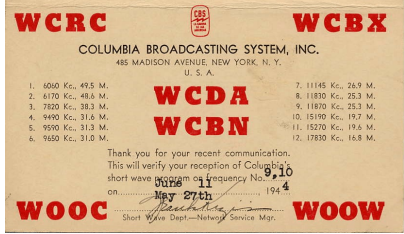
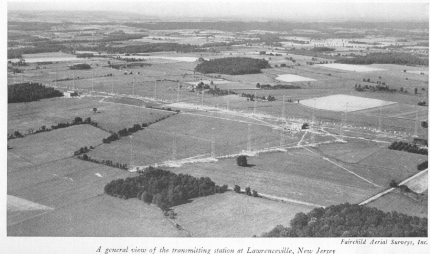
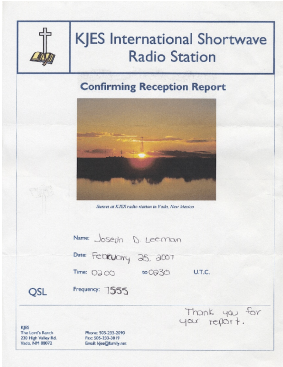
NEW JERSEY

A **2XAR** Bound Brook - Starting in November 1925, a shortwave transmitter at this RCA site was used to relay the co-located WJZ and also handle RCA domestic and international commercial traffic. A 30 kw. experimental shortwave transmitter, **W3XL**, was installed in 1927 for shortwave relay purposes; and a 30 kw. transmitter, **W3XAL**, began relaying WJZ on a scheduled basis in 1930. W3XL and W3XAL became **WNBI** and **WRCA** respectively in 1939. NBC was responsible for their operation. WNBI and WRCA went to 50 kw. in 1941. Three new 50 kw. transmitters were installed in 1944. The Bound Brook station became **WBOU** in 1955. It closed down in 1963.



B **RCA Tuckerton and New Brunswick** - These RCA commercial stations were equipped for shortwave work in 1925.

A **2XBA** - This was the shortwave outlet of WAAM, Newark, operating in 1927. The frequency was 4600 kHz.

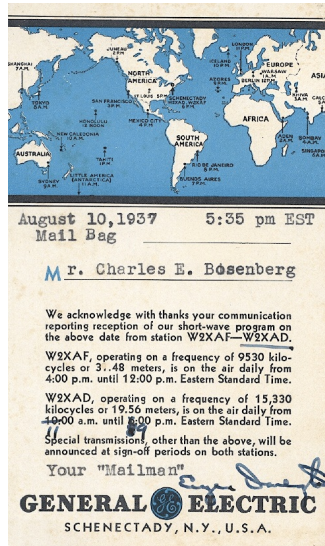
<p>A W2XAL - This 500 watt shortwave station began carrying the programs of its broadcast band sibling, <i>Radio News</i> station WRNY, in 1927. Transmitters were in Coytesville, New Jersey. Walter Lemmon purchased the station in 1929, increased power to 15 kw. in 1930, and moved the station to Boston in 1931, where it became W1XAL and later WRUL.</p>		
<p>A W2XE - In 1932, CBS shortwave station W2XE was moved from Long Island to Wayne, New Jersey, and relayed broadcast bander WABC over a 5 kw. transmitter. It became WCBX in 1939, and returned to Long Island in 1941, whereupon shortwave from Wayne ceased temporarily.</p>	<p>CBS Wayne - CBS brought the Wayne facility back into shortwave service in 1944 and equipped it with two new 50 kw. transmitters, WOOC and WOOW. In 1951 it became WABC, and still later WDSI, calls that it shared with the Brentwood, L.I. CBS station. WDSI-Wayne closed in 1963.</p>	
<p>B AT&T Lawrenceville - This commercial station were sometimes used for broadcast relays on shortwave in the mid-1930s, and on a stepped up basis during the war years (when power was increased to 100 kw.). It closed in 1975.</p>	 <p><i>A general view of the transmitting station at Lawrenceville, New Jersey</i></p>	
<p>B AT&T Ocean Gate - Another AT&T commercial station sometimes used for broadcasting purposes, Ocean Gate operated with 20 kw. It closed in 1999.</p>		
<p>NEW MEXICO</p>		
<p>A</p>		<p>KJES - Religious station KJES, “King Jesus Eternal Savior,” Vado, New Mexico, began testing in 1989. It was 5 kw. at the start, eventually reaching 50 kw. In recent years transmissions were often on hiatus due to technical difficulties. The station left shortwave in Fall 2014, retaining a small online presence. It was sold to Shellsburg Community Broadcasting, which planned to upgrade it and return it to the air, but it subsequently closed.</p>

NEW YORK

B *Radio Central* - The huge RCA laboratory-commercial transmitter base at Rocky Point, Long Island, played an integral part in American shortwave broadcasting, for many years serving as a shortwave link for program relays sent and received from abroad. Shortwave experiments started in 1923 and shortwave soon replaced longwave as the station's main method of transmission. The last message from Rocky Point was sent in 1978.

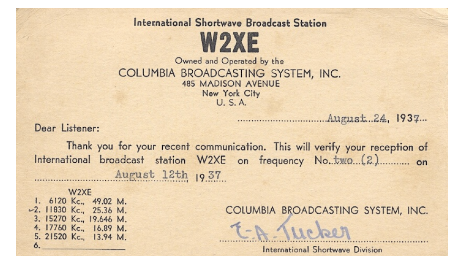


A **W2XAF & W2XAD** - General Electric in Schenectady was experimenting with shortwave as 2XI as early as 1924, often relaying its broadcast band station, WGY, on shortwave. High frequency work quickly increased when 1 kw. units W2XAF (later upgraded to 10-20 kw., then 40) and W2XAD (later 25 kw.) were brought into service in 1925. These two stations eventually became the most active and the best heard of the early American shortwave stations. In 1939 the W2XAF and W2XAD call letters were changed to **WGEO** and **WGEA** respectively, and WGEO went to 100 kw., making it the most powerful stateside shortwave broadcaster at the time. Schenectady left shortwave in 1962.

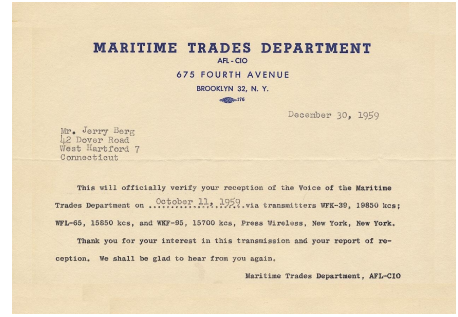
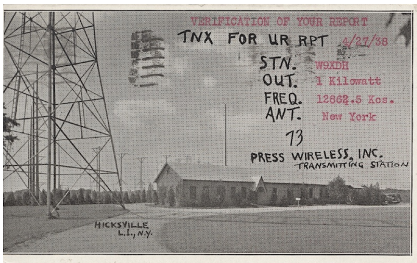


A **W2XE Richmond Hill-Jamaica** - Commencing operation in 1927, 2XE was the 250 watt shortwave sibling of WABC, a station originally owned by A. H. Grebe and sold to CBS in 1928 (whereupon power was increased to 1 kw.). The shortwave transmitter was located first in Richmond Hill and then Jamaica, both on Long Island, until 1932 when it was moved to Wayne, New Jersey, where the broadcast band transmitter was located.

CBS Brentwood - In 1941 the Wayne, New Jersey station (originally W2XE) returned to Long Island. By now 10 kw. and called WCBX, the new location was Brentwood. At year's end, power was increased to 50 kw., and additional transmitters were added thereafter. In 1951 Brentwood shortwave became **WABC**, and still later **WDSI**, calls that it shared with the Wayne, New Jersey CBS station. Brentwood closed down in 1963.



B *Press Wireless, Hicksville - "PW" was founded in 1929. One of its main transmitter bases was in Hicksville, L.I. (the other was in Belmont, California). In the latter 1930s, in addition to news dispatches, Press Wireless also carried other commercial traffic, including some point-to-point broadcast relays, and, during the war, direct-to-listener shortwave broadcasting. (During the late 1950s, the AFL-CIO broadcast the "Voice of the Maritime Trades Department" Sunday news program for ships' crews from Hicksville.)*

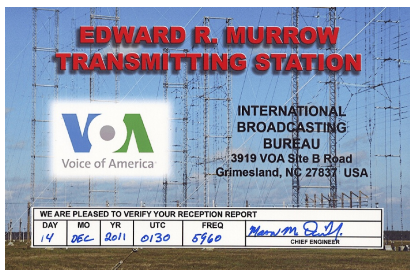


A **W2XV** - Owned by Radio Engineering Laboratories, an early manufacturer of radio equipment, W2XV was located in Long Island City, a borough of Queens. First reported heard in September 1930, the station operated on 4795 and 8650 kc., also 17300 kc. (2 x 8650). Charles M. Srebroff (pictured) was the founder of REL, which maintained a corporate existence until 1972. It was reported that W2XV occasionally carried programs from the International Short Wave Club's New York chapter



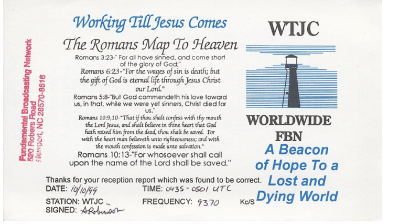
NORTH CAROLINA

A

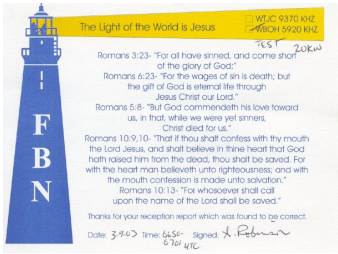


VOA Greenville - This VOA station opened in September 1962. It was the first new VOA station in North America since VOA had been created, and its 250 kw. transmitters, combinable to 500 kw., set a new standard for power. In 1968 it was named the Edward R. Murrow Transmitting Station in honor of the late journalist and USIA director.

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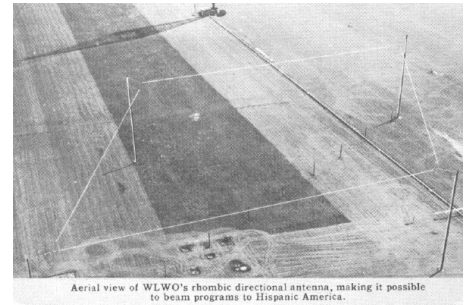
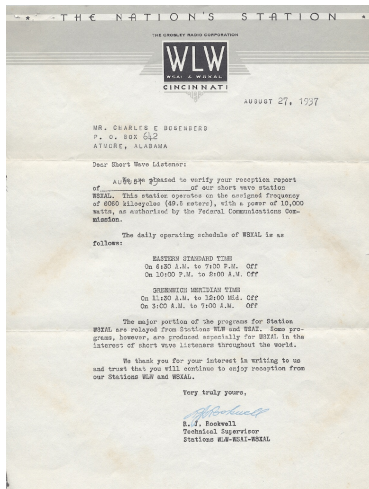
WTJC - This 50 kw. Fundamental Broadcasting Network station opened in Newport in September 1999. The religious station went silent in August 2012.

A		<p>WBOH - In 2002, the Fundamental Broadcasting Network opened this second station, located just a few miles away from WTJC. WBOH left the air in October 2009.</p>
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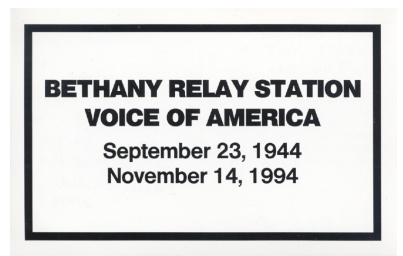
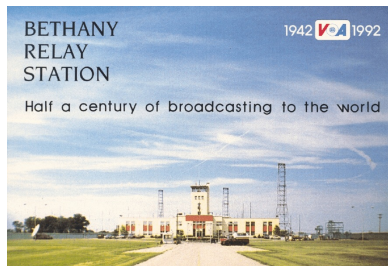
NORTH DAKOTA
No stations

OHIO

A **W8XAL** - Powell Crosley's 100 watt station, located in Harrison, went on the air in 1924, simulcasting WLW. It was moved to Mason in 1929 (by then the site of broadcast bander WLW). Power had grown to 250 watts, increased to 10 kw. in 1932, later 50 kw. It became **WLWO** in 1939. WLWO saw extensive wartime service. The Mason facility closed down shortwave operations in 1954.



A **WLWL, WLWR, WLWS Bethany** - In 1944, Crosley opened a new transmitter plant in Bethany, a mile from Mason, and three 200 kw. transmitters were installed, the most powerful in the world at the time. The Crosley station was turned over to the VOA in 1963. It was taken out of service in 1994.

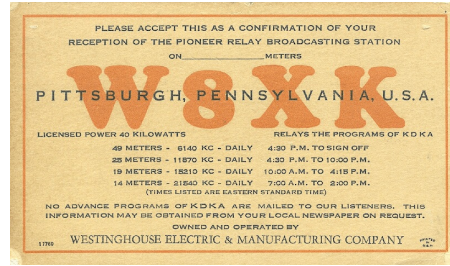


OKLAHOMA
Apex only

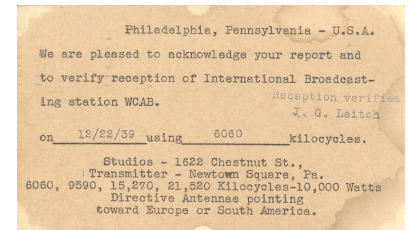
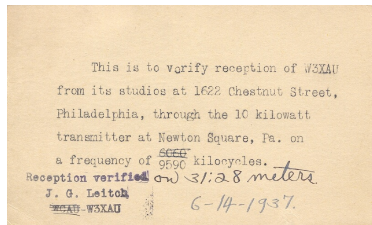
OREGON
No stations

PENNSYLVANIA

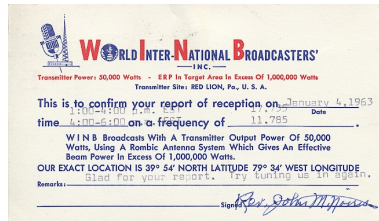
A **KDKA** - The first shortwave broadcaster anywhere, Westinghouse station KDKA began regular broadcasts as 8XS in 1923, and experimented on shortwave even before that. The call letters became **8XK** in 1924, **W8XK** in 1928. The transmitters were moved to Saxonburg in 1932, and power was soon up to 40 kw. W8XK became **WPIT** in 1939. The station was closed in 1940 when Westinghouse shortwave activities in Pittsburgh were integrated into the company's Boston shortwave operation, WBOS.



A **W3XAU** - CBS opened this shortwave station in Philadelphia in January 1930. It relayed WCAU over a 1 kw. transmitter (later 10 kw.). W3XAU became **WCAB** in 1939, and operated until the end of 1941, when CBS opened its Brentwood, L.I. transmitter plant.

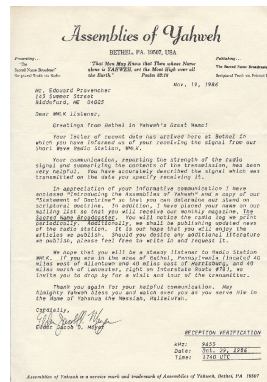


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WINB - The 50 kw. station came on the air from Red Lion in September 1962. FCC concerns over its evangelical and fundamentalist programming led to an embargo on further shortwave broadcasting licenses for many years. WINB is still on the air.

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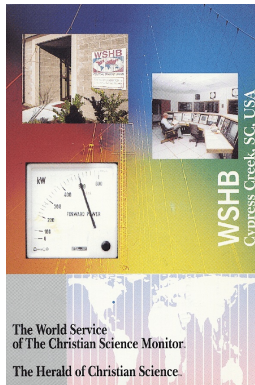


WMLK - This religious station, run by the Assemblies of Yahweh, began broadcasting from Bethel in 1985 with a power of 50 kw. In recent years the station has suffered technical difficulties and been off the air for long periods.

RHODE ISLAND
No stations

SOUTH CAROLINA

A



WSHB - March 1989 saw the opening of this new station in Cypress Creek. It was owned by the Christian Science church, and it remained on the air until February 2004. In June 2004 it was sold to LeSea Broadcasting (World Harvest Radio), and LeSea's **WHRI** call letters were transferred from its Indiana station (which then closed down) to the South Carolina facility. A pending sale of WHRI to WBCQ is uncertain.

SOUTH DAKOTA

No stations

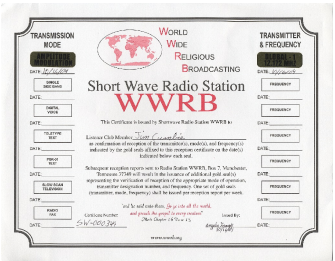
TENNESSEE

A



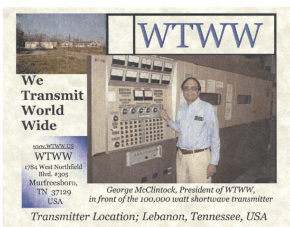
WWCR - "World Wide Christian Radio" came to air in May 1989. It was co-located in Nashville with WNQM, the company's broadcast band station, and operates with 100 kw.

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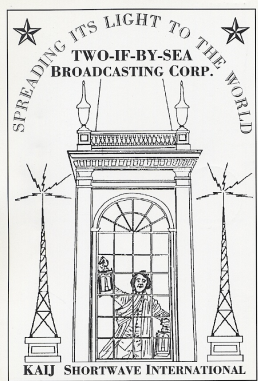
WWRB - At the end of 2000, WWFV (formerly WGTG) relocated from McCaysville, Georgia to Manchester, Tennessee, and took the new call letters WWRB. It downsized in 2018, but it is still on the air.

A

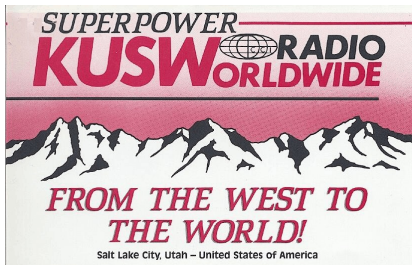
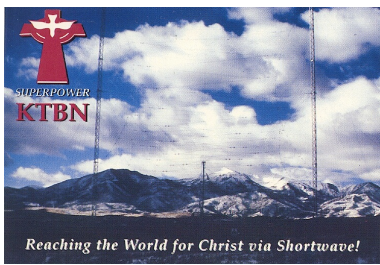


WTWW - This station, "We Transmit World Wide," began broadcasting in January 2010 from Lebanon, Tennessee using a 100 kw. transmitter inherited from the former KAIJ in Texas. It is still on the air, carrying religious programs.

TEXAS

A			<p>KCBI - In July 1985, following more than six months of testing, this new 50 kw. (later 100 kw.) station took to the air from Dallas. After a period of inactivity KCBI began carrying the program's of Dr. Gene Scott's University Network. In 1994 KCBI was sold and operated under the new call letters KAJI. It was on air intermittently until it cased in 2009.</p>
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UTAH

A			<p>KUSW - "Superpower KUSW Radio Worldwide" commenced broadcasting from Salt Lake City in December 1987. The plan for news, pop music and the promotion of Utah could not be sustained, however, and in 1990 KUSW was sold to Trinity Broadcasting Network, which used it to simulcast the TV audio of the TBN religious network. The station's new call letters were KTBN. It closed down in 2008.</p>
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VERMONT
No stations

VIRGINIA

E	<p><i>NAA - The famous naval station in Arlington did some shortwave relay broadcasting in 1930.</i></p>		
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WASHINGTON
No stations

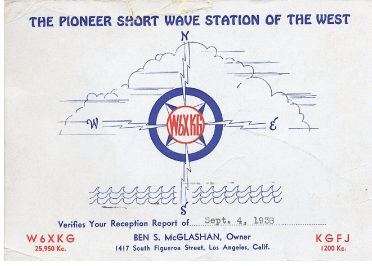
WEST VIRGINIA
Apex only

WISCONSIN
Apex only


WYOMING
No stations

APEX STATIONS

CALIFORNIA

<p>C W6XKG - KGFJ, Los Angeles, "The Pioneer Short Wave Station of the West," 25.95 MHz., 100 watts or 1 kw. This 24 hour station was heard worldwide.</p>		
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COLORADO

<p>C W9XLA - KLZ, Denver, 25.4 MHz., 100 watts.</p>		
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ILLINOIS

<p>C W9XTA - Schonert Radio Service, Harrisburg, 25.5 MHz., 500 watts.</p>		
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INDIANA

<p>C W9XH - WSBT, South Bend, 26.05 MHz., 100 watts.</p>		
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IOWA

<p>C W9XTB - KSO, Des Moines, 26.55 MHz., 100 watts.</p>		
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MINNESOTA

<p>C W9XTC - WTCN, Minneapolis, 26.05 MHz., 150 watts.</p> <p>C W9XUP - KSTP, St. Paul, 25.95 or 26.15 MHz.</p>		
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MISSOURI

<p>C W9XA - KITE, Kansas City, 26.0 or 26.45 MHz., 1 kw.</p> <p>C W9XBA - WHB, Kansas City, 26.1 MHz., 100 watts.</p> <p>C W9XOK - KXOK, St. Louis, 25.3 MHz., 100 watts.</p> <p>C W9XPD - KSD, St. Louis, 25.9 MHz., 100 watts.</p>		
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NEW YORK

<p>C W2XJI - WOR, New York, 25.3 MHz., 100 watts.</p> <p>C W2XQO - WMCA, New York, 25.5 or 26.55 MHz., 100 watts.</p> <p>C W2XVP - WNYC, New York, 26.1 MHz., 100 watts or 1 kw.</p>		
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OHIO

<p>C W8XNU - WSAI, Cincinnati (Crosley), 25.95 MHz., 1 kw.</p>		
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OKLAHOMA

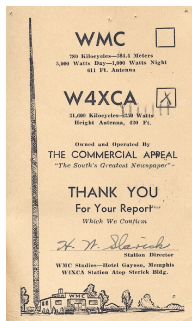
<p>C W5XAU - WKY, Oklahoma City, 26.125 MHz., 100 watts.</p>		
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SOUTH CAROLINA

<p>C W4XH - WSPA, Spartanburg, "The Voice of South Carolina," 25.95 MHz., 50 watts.</p>		
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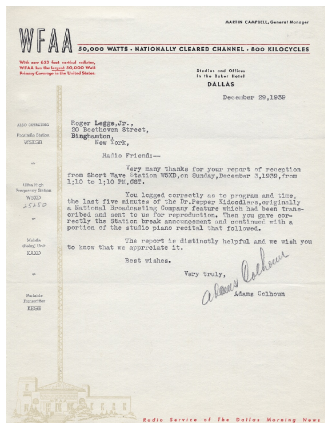
TENNESSEE

- C **W4XA** - WSM, Nashville, 26.15 MHz., 1 kw.
- C **W4XBW** - WDOD, Chattanooga, 26.0 MHz., 100 watts.
- C **W4XCA** - WMC, Memphis, 26.15 MHz., 250 watts.



TEXAS

- C **W5XD** - WFAA, Dallas, 25.25 or 25.3 MHz., 100 watts.



VIRGINIA

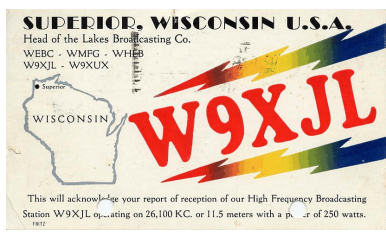
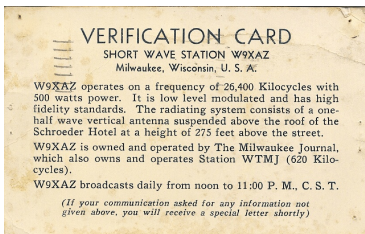
- C **W3XEX** - WTAR, Norfolk, 26.05 MHz., 50 watts.

WEST VIRGINIA

- C **W8XNO** - WCHS, Charleston, 26.1 MHz., 50 watts.

WISCONSIN

- C **W9XAZ** - WTMJ, Milwaukee, 26.4 MHz., 500 watts
- C **W9XJL** - WEBC, Superior, 26.1 MHz., 80 (later 250) watts. This was one of the most widely heard apex stations.



v. 01.140604 Original

Modifications:

v. 01.141201 KJES closure noted

v. 01.160908 Added W2XV, New York

v. 01.160908 KJES purchase noted

v. 01.160908 WWBS departure from SW in February 2003 noted

v. 01.161006 Added W2XJI QSL

v. 01.211231 Added reference to WWRB downsizing

v. 01.211231 Added W5XAU, Oklahoma City QSL

v. 01.211231 Added reference to WBCQ 500 kw. transmitter

v. 01.211231 Noted pending sale to WBCQ

v. 01.211231 Added reference to status of WJHR

v. 01.211231 Noted closure of KJES