

PRIVATE U.S. SHORTWAVE BROADCASTERS are a pretty select group. Out of a total of over 10,000 private broadcasters under FCC control, only about 15 of them use shortwave, or the *High Frequency* (HF) range from 2 MHz–30 MHz. However, while this overall number may seem small, the 1980's witnessed a 500% increase in U.S. shortwave stations, which is an outstanding growth rate.

In the 1930's, when radio had the potential and excitement that cable and satellite TV offer today, many U.S. broadcasters like GE, Westinghouse, and the major radio networks tried shortwave HF, in addition to AM. The potential U.S. audience was sizable because many old floor-standing living-room radios included shortwave bands. As shortwave radio developed, so did the potential audience for it.

Then, however, came World War II. The government soon recognized the obvious need for an international voice to combat Axis propaganda. There was no time to wait for facilities to be built, so the government nationalized private shortwave stations for the first Voice Of America (VOA) broadcasts.

In 1948, a new law governing U.S. shortwave broadcasting made the VOA a permanent government entity, but encouraged private broadcasting by forbidding a government monopoly on radio, and particularly shortwave. The law let the VOA lease private shortwave stations from NBC and Crosley Broadcasting; this practice continued until about 1960, when the VOA shortwave station in Greenville, NC was finished. As private leases expired, however, nearly all private firms opted to get out of the shortwave broadcasting business.

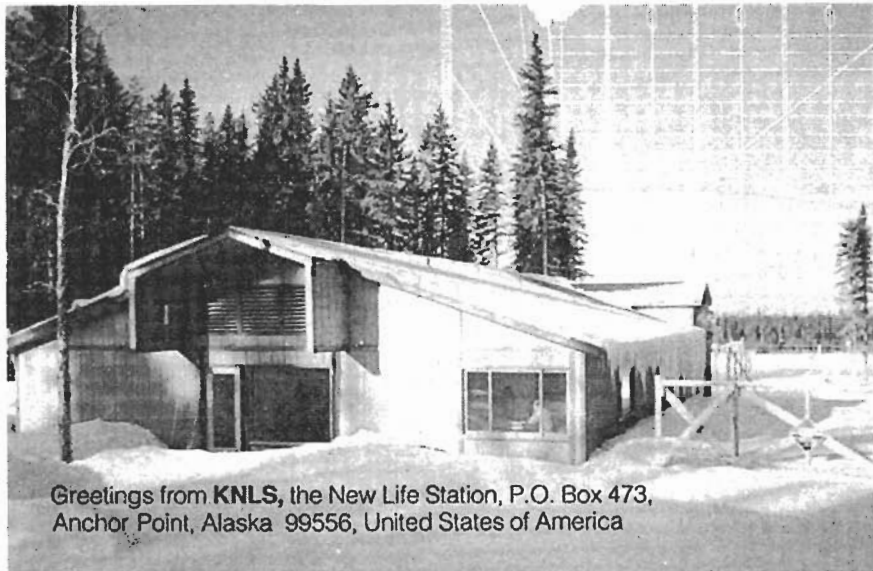
The postwar U.S. shortwave audience dropped drastically, mainly due to the popularity of television, and the elimination of shortwave bands on postwar home receivers. By 1960, the only two remaining private broadcasters were WRUL and KGEI, although WINB was added in 1963. That year, the FCC froze further applications for shortwave station licenses, until new rules could be written to account for changes in international shortwave broadcasting regulations.

That took 10 years, but afterward, four years elapsed before KTWR began broadcasting from Guam, which

went unnoticed. The first major change came in 1982, when WRNO Worldwide, of New Orleans, LA, began broadcasting, after which the FCC found itself granting licenses at an increasing rate fast. Here's a capsule look at the current private U.S. shortwave broadcasters:

- KGEI, of Redwood City, San Francisco, CA, was owned by GE for several years, then sold to Far East Broadcasting Company, a worldwide religious group. KGEI, "The Voice of Friendship," transmits mainly in Spanish to Latin America. It runs 50 and 250 kilowatts on 6.010, 6.075, 6.095, 6.150, 7.365, 9.615 and 15.280 Megahertz.

- WYFR, owned by Family Stations, Inc., of Oakland, CA, a large religious group, can trace its history back to WRUL of Massachusetts in the 1930's. The "Voice of Freedom" for the VOA in World War II, it moved to NY City and worked with the anti-Castro movement in the early 1960's. It was owned by CBS, the Mormon Church, and was WNYW (Radio NY Worldwide) for years. Family Stations bought it in 1972, changed to WYFR (Your Family Radio), closed WRUL, moved to Okeechobee, FL,



Greetings from **KNLS**, the New Life Station, P.O. Box 473, Anchor Point, Alaska 99556, United States of America

FIG. 1—KNLS OPERATES FROM THIS BUILDING at Anchor Point, AK.

and added several 100-kilowatt transmitters. Besides religious programs, WYFR works with Taiwan as VOFC (Voice of Free China), heard in the U.S. and Asia. Broadcasts go around the clock in many languages, on over 50 frequencies.

- WINB, owned by World Intl. Broadcasters, of Red Lion, PA, is a religious shortwave station. It uses 50 kilowatts, covering North Africa, Latin America, Western Europe, and the Mediterranean, in several languages, and broadcasts run 11 hours a day on 15.145, 15.150 and 15.185 MHz, and other frequencies.

- KTWR, on Guam, is run by Trans World Radio, a worldwide religious organization started in the 1950's. It has four 100-kilowatt transmitters covering China, Indonesia, India, Japan, SE Asia, and parts of the USSR. Trans World also has shortwave stations in Monaco, Swaziland, and Bonaire in the Dutch Antilles. KTWR airs in English and 10 other languages; English frequencies include 9.590 and 11.805 MHz.

- WRNO (Rock of New Orleans) is owned by Joseph Costello III, of New Orleans, LA, who also owns affiliated AM/FM stations there. Its early programs had FM simulcasts, but it's separate now and has some 40 religious programs, including rock, pop, New Orleans Saints football, and other sports. WRNO showed up in audience surveys halfway across the U.S., too far away to have been the AM station. It uses two 100-kilowatt transmitters, programs are nearly all English, and the main frequencies are

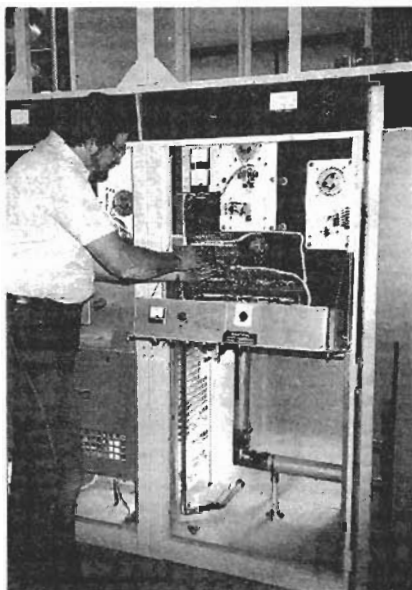


FIG. 2—PART OF THE TRANSMITTING FACILITY at WHRI in Nobelsville, IN.



FIG. 3—A CONTROL ROOM OPERATOR INSPECTING broadcast equipment at KUSW, in Salt Lake City, UT.

6.185, 9.495, 11.965, 13.760 and 15.420 MHz.

- KYOI, owned by Marcom, Inc., on Saipan in the U.S. Northern Marianas Islands, wasn't as successful. It

aired 24-hour "Super Rock" music to Japan, was announced in Japanese, and was programmed in Los Angeles, CA. However, despite shortwave sets being fairly common in Japan, it lost money and was sold to Herald Broadcasting (WCSN). KYOI uses 100 kilowatts in English on main frequencies 9.670, 11.900, 15.405 and 17.780 MHz.

- KFBS, the second shortwave station owned by the Far East Broadcasting Company (FEBC), whose main shortwave station is KGEI, reaches Asia with religious programming. KFBS has three 100-kilowatt transmitters, one formerly used by VOA, and airs in Burmese, Indonesian, Mandarin, Malay and Vietnamese. Main frequencies are 7.365, 9.465, 9.575, 9.830, 9.840, 11.980, 12.025, 15.305, and 15.375 MHz. FEBC also has other large shortwave stations in the Philippines and Seychelle Islands.

- KSDA, on Guam, is owned by Adventist World Radio, another religious broadcaster. It uses two 100-kilowatt transmitters, aimed at Asia in several languages about 20 hours a day on main English frequencies of 11.965, 15.125 and 17.685 MHz. There are smaller shortwave stations in Italy, Guatemala, and Costa Rica.

- KNLS (New Life Station), owned by World Christian Broadcasting, of Texas, started in 1983 from Anchor Point, AK, after two staff members were killed in a plane crash, and an arsonist burned down the 100-kilowatt transmitter. Main frequencies are 6.095, 7.355, 9.535, 9.750, 9.870, 11.700, 11.820, 11.960, 11.930 and 11.980 MHz. KNLS airs to Asia in Chinese, Japanese, English and Russian, but hasn't reached Europe due to severe HF absorption and refraction at the North Pole. This occurs during solar events like aurora, sunspots, proton events, or geomagnetic substorms, which expands the ionosphere. The bottom moves closer to the Earth, the top elevates, and the charged particle density increases, degrading HF propagation. A picture of the station from a listener-confirmation card is shown in Fig. 1.

- WMLK is run by the Assemblies of Yaweh, Bethel, PA, a religious group that took two years to convert an old 50-kilowatt AM transmitter to shortwave. They transmit a few hours a day on 9.455 MHz from a converted gas station. Programming focuses on the premise that salvation awaits only

those who worship God by the Old Testament name, Yaweh. The station call sign is a contraction of "Malek," or "Messenger."

- WHRI (World Harvest Radio), of South Bend, IN, is owned by LeSea Broadcasting, part of Lester Sumrall ministries. They also have AM/FM and TV operations, and were badly damaged by fire last year. However, WHRI missed minimal air time, as broadcasts were switched to a standby transmitter in Nobelsville, IN. There are two 100-kilowatt transmitters aimed at Latin America, the Middle East, and North Africa, on 6.100, 6.155, 7.355, 7.400, 9.455, 9.745, 9.765, 9.770, 11.770, 11.790, 11.980, 15.105 and 17.830 MHz. LeSea has several TV stations and a satellite up-link transmitter. Figure 2 shows an operator working on part of the transmitting facility at the station.

- KVOH (Voice of Hope), in Christian Southern Lebanon, is owned by High Adventure Ministries in California, and got started literally under the gun. Broadcasting has continued for several years, despite a rocket attack that destroyed the studios. They recently started KVOH from Rancho Simi, CA, in English and Spanish for the Americas using 50 kilowatts on 9.495 or 17.775 MHz. Their next project is to transmit from the Philippines to China.

- KUSW, of Salt Lake City, UT, is one of only two commercial U.S. shortwave broadcasters. It's part of Carlson Communications, which owns an AM/FM outlet there, and several others in the western U.S. KUSW runs a pop format, and runs several commercials, though really big accounts like Coca-Cola haven't yet been obtained. KUSW airs 18 hours a day on 5.980, 6.010, 6.185, 9.852, 11.980, 15.225, 15.580 and 17.715 MHz. Figure 3 shows a control room operator inspecting broadcast equipment at the station, and Fig. 4 shows the transmitting towers there.

- WCSN (Christian Science Network), of Scotts Corner, ME, is owned by Herald Broadcasting, part of Christian Science Monitor. It airs a two-hour English news/features segment several times a day around the world. On weekends, the program is the "Herald of Christian Science" in English, French and German. WCSN runs 500 kilowatts on 7.365, 9.465, 9.852, 15.280, 17.640 and 21.515 MHz. As noted earlier, WCSN

bought KYOI, which now carries WCSN via satellite. Next year, WCSN will add WSHB in South Carolina, with a pair of 500-kilowatt transmitters aimed at Latin America.

- WWCR (Worldwide Christian Radio), of Nashville, TN, is a new religious broadcaster that may be starting up any time, perhaps by the time you read this. WWCR will be part of a multi-station group of AM/FM outlets in the south, and will have a 100-kilowatt transmitter, and sell program time to churches, other religious groups, and maybe even political groups or other stations that can't reach North America.

In contrast with AM/FM stations, shortwave stations are much more complex and expensive. The FCC won't grant international shortwave

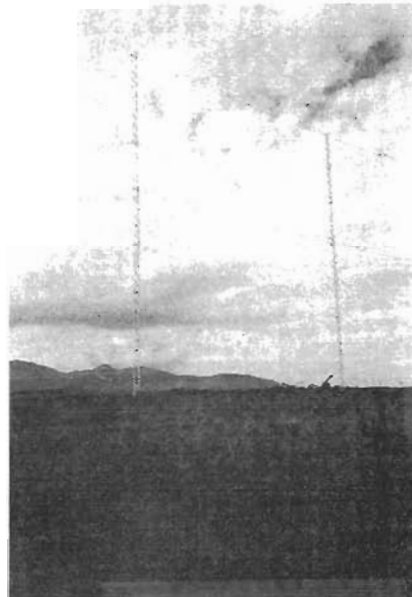


FIG. 4—TRANSMITTING TOWERS AT KUSW, IN Salt Lake City, UT.

broadcast station licenses unless applicants can prove there's a real need, that they have the technical, programming, and financial capability, and will serve the "public interest, convenience and necessity."

A key item in the FCC rules says that "any program solely intended for and directed to the U.S. doesn't meet the requirements for this service." Thus, these shortwave stations aren't supposed to broadcast to the U.S., but many obviously do. The key appears to lie in the use of the word "solely," which apparently allows a U.S. audience to listen in, so long as the programming is officially aimed elsewhere. Also, the physics of shortwave propagation make preventing

U.S. listeners from listening to the broadcasts impossible.

The FCC sets a minimum power level of 50 kilowatts as its requirements for international shortwave, whereas on AM, 50 kilowatts is the maximum; however, that's still small potatoes. WCSN is just one of many worldwide shortwave stations that now uses 500 kilowatts, and even 2.5 megawatt shortwave stations are common. The shortwave broadcaster needs complex directional HF antennas aimed at the desired area, along with requirements like minimum antenna gain, HF signal launch angle, bandwidth, and site selection. Once running, the right frequency has to be adjusted to reach a specific area, at a specific season and time of day. It's not just a case of needing only one transmitter, antenna pattern, and frequency, all the time.

An ordinary AM/FM station is expensive, but not when compared with a shortwave station. George Jacobs is a former official of VOA and Radio Free Europe (RFE), who now heads his own highly regarded broadcast-engineering firm, which acts as technical consultant to several U.S. shortwave broadcasters. According to him, a 50-kilowatt site with suitable antennas goes for about \$400,000, while a 500-kilowatt version can easily run \$2.5 million. And that's excluding the land, studio, and buildings, which can easily double the overall cost. He estimates the power cost for a 500-kilowatt site 18 hours a day for a year at over \$53,000.

So far, programming formats have been mostly of two types, and one has to wonder how much more audience potential exists for religious programming. Pop and rock formats, already filling AM/FM bands, are also heard on many foreign stations, both AM/FM and shortwave. The curtain hasn't fallen on this play yet, though. There are still a few more actors yet to arrive.

The oldest and largest religious shortwave broadcaster of all, HCJB of Quito, Ecuador, is planning a facility on Hawaii to better reach Asia and the Pacific. Other companies are reportedly considering shortwave stations California, Kentucky, and Florida. Beyond that, whether that strange world above AM, still alien to most in North America, will prove a good place for broadcasters in the 1990's, is yet to be seen.