ham radio TECHNIQUES

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Last winter and spring the West Coast experienced severe weather with flooding, land slides and heavy property damage. Radio Amateurs supplied emergency communications in many cases. One important point learned by all concerned with these emergencies is that disasters occur suddenly and unexpectedly. Advance preparation is absolutely essential. In general, communications from home stations were of little use; hand-helds and portable stations carried the larger portion of the communications burden.

During these emergencies, many emergency communication coordinators found that the common "rubber duck" antenna on the hand-held unit was not suitable for emergency use. A better antenna was needed, but it had to be inexpensive and also rugged. A successful emergency antenna had been developed in Arizona for the Scottsdale Amateur Radio Club and the Arizona Repeater Association, and that design has been copied for use by the Red Cross and other emergency communications organizations.

the 2-meter J-pole

As described by Jack Hanny, KB7CH, of Scottsdale, the emergency J-pole antenna is light enough to be rolled up and carried in a tool box or emergency kit.

The J-pole is made from a 55½-inch section of TV "ribbon" twin lead. A ¼ inch of insulation is removed at one end (**fig. 1A**) and the wires soldered together. 16 inches above the short, a piece of the ribbon line is notched out and one lead is cut open. A ¼ inch of wire is removed. The break is then taped or covered with heat-shrink tubing.

The next step is to measure 1½ inches from the shorted end of the ribbon line and then carefully trim away the insulation to expose the two wires. Be careful not to nick the wires. The feedline is attached at this point (**fig. 1B**). Solder the center conductor of a random length of RG-58/U coaxial cable to the long wire of the ribbon line and solder the braid of the coax to the short conductor.

Jack made his coaxial cable about 12 feet long and placed a matching plug for his hand-held unit at the free end of the line. He wrapped the short section of ribbon line to the coaxial cable with string and covered the joint with tape or heat-shrink tubing.

The last step is to punch a small hole in the insulating web at the opposite end of the ribbon line and tie a section of heavy string to the top end of the antenna. This makes it possible to support the antenna from the branch of a nearby tree. An extra length of RG-58/U cable can be made up with matching connectors to be used if the antenna is to be hung from a greater height.

more on the sloper

A lot of words have appeared about slopers during the past decade. There's no doubt that it works, but the theory behind this unusual antenna is obscure. In brief, the sloper is simply a ¼-wavelength (approximately) wire, fed at the top end supported by the station antenna tower or mast. The bottom end of the wire is anchored a few feet above ground. The coaxial center conductor feeds the wire at the top, with the shield of the line attached to the metal tower, which apparently works as a ground point.

Dick, WD4FAB, has broadbanded a sloper by increasing its effective diameter with a four-wire cage (**fig. 2**). The bottom ends of the four wires must be interconnected; if they are not, each of the individual wires will take on its independent characteristics, resulting in some unpleasant bumps in the SWR curve. The WD4FAB sloper is suspended at the 50-foot point on a 58-foot-high tower.

comparing an inverted-V with a 5-band trap vertical

Jim, KW2W, compared a 5-band trap vertical to an 80-meter inverted-V used with an antenna tuner for operation between 80 and 10 meters. Jim says he has a very good location for a vertical — on a sandy beach, only about two feet above the salt water level. The soil beneath the antenna is always moist with salt water. The 5-band vertical was mounted atop a 10-foot pipe driven

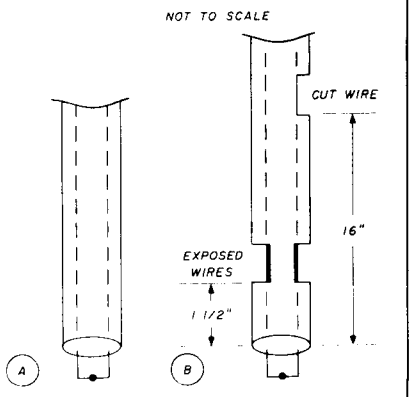

fig. 1. Construction details, 2-meter J-pole antenna.

into the soil and had two resonant radials for each band, for a total of 10 radial wires. The inverted-V was cut for the middle of the 80-meter band. The center of the antenna was about 50 feet high and the ends were about 15 feet high.

Over a period of time, Jim concluded that manmade and atmospheric noise was much less on the inverted-V and that reports received nearly always favored the inverted-V over the vertical.

Jim said, "I feel there's an antenna for every location — meaning that what works well in one place may work poorly someplace else. Antenna experimentation for a given location is worth the effort. The question of which antenna is better is really not applicable; the question of which antenna, *for a given location*, will perform better, is more precise."

the no-code license — a brief history

The present FCC proposal for a VHF/UHF "no-code" license brings back memories to old timers who remember the 1932 uproar over a similar suggestion.

1932 was a critical year for Amateur Radio. At the depths of the Great Depression, millions were out of work and industry was at a standstill. Many young men with plenty of time but little money turned to the fascinating hobby of shortwave listening. For a few dollars, or even less, an old battery-operated radio could be torn down and rebuilt into a simple shortwave receiver. Many newspapers carried columns about shortwave reception and shortwave clubs were founded for avid young listeners all over the country.

These enthusiastic SWLs soon discovered the Amateur bands, particularly the phone stations. Amplitude modulation was exclusively used for voice transmission in those days and the signals could be readily received on a one or two tube receiver.

A direct result of the SWL hobby was an expanded interest in Amateur Radio. Thousands of listeners yearned to be Amateurs and would have been — except for the bothersome task of learning the Morse code! Why was the knowledge of code required for "radiophone" operation, especially on the "ultra-high" frequencies above 10 meters?

The interest in a no-code license came to a head in May, 1932, when *Short Wave Craft* magazine, edited by Hugo Gernsback, announced the formation of the "Short Wave League" (**fig. 3**) devoted to "the Amateur who is not interested in code, but who is interested in the transmission of voice only." The Short Wave League had no dues or membership fees. The charter of the League was vague, but the editorial in the issue announcing the formation of the League was specific: the goal was to be the lifting of the code restriction on the Amateur "extra-short wavelengths." The May, 1932, editorial in *Short Wave Craft* promised that if "a sufficient number of letters were received, they would form a basis of negotiations between the League and the Federal Radio Commission."

In this manner the request for a no-code VHF license was created. Looking back, it seems unclear whether the Short Wave League was merely a gimmick to increase magazine circulation, or in fact represented an authentic desire for a no-code Amateur license. For a year or so *Short Wave Craft* was full of angry letters to

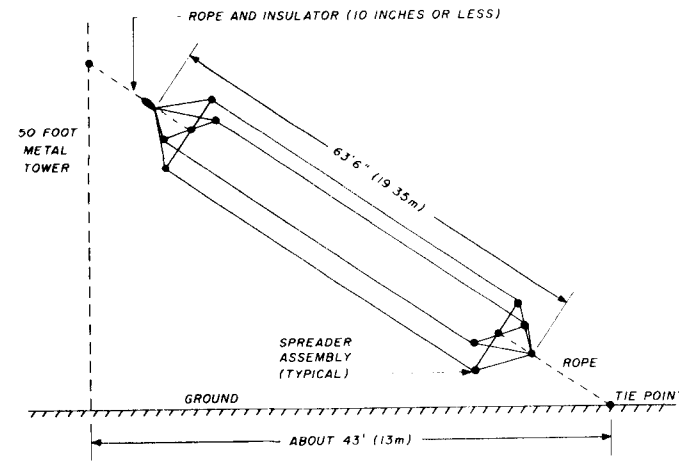

fig. 2. 80-meter WD4FAB broadband sloper. Spreader assemblies are made of 36-inch long fiberglass tubes. The four antenna wires are tied together about 24 inches past each spreader assembly. A nylon line may be required from the crossover point of the spreader to the outer insulator to prevent bowing. The SWR plot of the antenna falls below 1.4-to-1 at 3.5 MHz; 1.25-to-1 at 3.8 MHz and 1.4-to-1 at 4.0 MHz. Feedpoint resistance of the antenna may be changed by altering the slope angle. The resonant frequency is adjusted by changing length — no climbing necessary!