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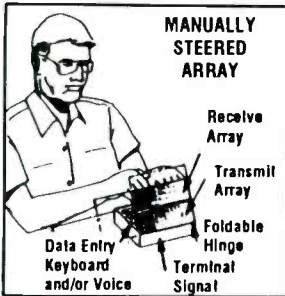
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This month's cover: USA, Haiku Valley, Oahu, Hawaii: US Coast Guard Omega Site. Aid to navigation on 3 to 13 kHz. Photo by Larry Mulvehill.

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BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Happy Birthday To Us

This issue of *POP'COMM* marks the beginning of the magazine's second decade of publication. It's hard for me to believe that ten years has flown by so quickly. It doesn't really seem like it was much more than maybe a year or two ago that Dick Ross and I sat down to talk about the specifics of what *POP'COMM* was going to be. Dick brought along his neatly done computations, estimates, cost figures, stats, graphs, and charts, plus notebooks containing demographics and projections. I brought along my dozens of scraps of papers and QSL cards containing scrawled notes about columns and authors I wanted to use in the magazine.

But that meeting wasn't a year or two ago. It took place during the late spring of 1982. Previous to that meeting, Dick and I had known one another for twenty years. At our meeting, I told Dick that his meticulously worked out numbers and crisp statistics have always impressed me, but were far beyond my comprehension. On the other hand, I had always suspected that Dick long regarded my little scraps and scrawled notes as being just slightly less organized than he was used to dealing with. But, after all those years, we had a good basic understanding of one another.

He looked over all of the bits and pieces, asking if they were for real, or if I had just tossed a bunch of loose papers from my desk into my jacket pocket. It was business as usual. Our mutual goal was to create something that hadn't been available to the SWL, scanner owner, and communications buff—a national magazine that was informative and useful, while still managing to be enjoyable to read and good looking. It was an idea we had spoken about for years. We had spent the previous several months discussing general plans for this magazine, and there really wasn't too much more to say beyond, "Let's do it!" The result was the first issue of *Popular Communications* in September of 1982. The issue was a roaring success, and the magazine was on its way.

POP'COMM has had many things in its favor. The subject matter we cover is intriguing and ever-evolving. Several of our regular authors have been with us right from day one. Others go back a long way here. The chemistry has been quite good and we all manage to deal with one another with a bare minimum of memos, temperaments, and friction.

Readers like to ask us if there is any special editorial philosophy for *POP'COMM*. It hasn't been anything that we sat down and planned out—or made a list of high sounding aims. Looking back at the past ten years, I suppose I'd sum up our view of things as ap-

proaching the communications hobby as something exciting, interesting, and enjoyable. When we think the hobby needs defending, we aren't afraid to take up the cudgel against those seeking to trample the rights of hobbyists.

Some people view the various aspects of communications with a certain amount of reverence and solemnity. This is good. It gives the hobby dignity. But there's plenty of this already coming at us from several other sources, so we wanted to do something different with *POP'COMM*. This wasn't a tough decision since I see communications as being fun, and I like letting this show through in our pages. Over the years, we have gleefully deflated the sanctimonious and the pompous. We even enjoy making sport of our own foibles.

Still, we haven't shied away from the possibility of creating serious controversy when there has been some point to be presented that is provocative and unlikely to be mentioned elsewhere. We have never set out to create controversy for its own sake. When a publication presents a situation or problem, if its coverage (or opinion) is honest, it may generate controversy. We aren't especially trying to irritate anybody, but some topics invariably bring in complaint mail from some annoyed readers.

Our coverage of various offbeat topics hasn't necessarily meant our support for every one of those things. We cover them in order to be informative, as well as fill our role as a catalyst to spark reader thought and discussion. Some people within the hobby would prefer that we ignore unpopular concepts, illegal practices, or things they don't personally endorse. We disagree, so scarcely an issue has gone by in ten years that we haven't managed to completely outrage at least a couple of readers. The trade-off is that we have spurred a healthy dialog and understanding in many other readers, as our mail indicates. And, even the readers that get annoyed don't appear to stay that way very long.

The mail we receive from readers remains the best running barometer for us to determine how we are being perceived at any given time. One example that represents the way we like to be perceived arrived from Martin Wincott, M.A., K2BRY, of East White Plains, New York. Martin, in writing about a recent issue, commented, "I was impressed and amazed! All of the articles were significantly interesting. The cover photograph and inner graphics were excellent, the textural mix

(Continued on page 76)

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LETTERS TO THE EDITOR

Don't Forget The DX'ers

An ad has been appearing nationally offering \$5 "Desert Storm" commemorative coins. The coin is "officially issued by the Hutt River Province, a principality in Western Australia." Are there any radio stations in the Hutt River Province? It doesn't show up in any station directories and isn't on the ARRL's DXCC list as a country.

Charles Solomon,
Rochester, NY

Hutt River Province is a 15,000 acre wheat farm in Western Australia that declared its sovereign independence from Australia in 1970. Since 1976, Hutt River Province's self-proclaimed Prince Leonard has issued the mini-nation's own paper money as well as numerous coins. This material might be intended more for sale to North American collectors and investors (who will collect and invest in just about anything) than for use in actual commerce. Within the Hutt River Province, at least, it actually is legal tender. We don't know if the money would be readily accepted as such anywhere else in the world.

Australia does not recognize Hutt as an independent nation, and we don't know of any other nation that does, either. So far as we know, radio transmission has not yet come to the Hutt River Province, but the idea of such a thing offers many devilish possibilities. — Editor.

Can't Nail It Down

I just acquired a very old (possibly WWII) Hammarlund receiver in fine working condition, but I can't identify the model due to the missing plate on the front panel. I would like to track down a manual or any information about this unit (serial number 4187B). Can anybody help?

Dominic Damdro,
4660 Wooddale,
Memphis, TN 38118

A picture is worth at least a dozen words, Dom. A photo submitted with your letter would have gotten your set ID'd in a few seconds, although tracking down a manual is another story, altogether. Can a reader figure out the model based only on the serial number? — Editor.

What's In A Name?

In the June issue there was a feature that mentioned the code names for governmental VIP's. That brought up a question. In 1986, I was a graduate student at Michigan State University, and was a candidate for the government service. FM-105, the hard rock radio station I regularly listened to, made some unusual remarks about George Washington. At about that time, men dressed in civilian clothes, and wearing dark glasses, began showing up around town in weird places. They looked like Secret Service or some other federal agents. I wonder if maybe "George Washington" might have been one of the code names for President Reagan.

T.B.,
Toledo, Ohio

"George Washington" sounds like it might have been the code name Pres. Reagan used for himself during in his daydreams. But seriously, we think the guys you saw and thought were federal agents were actually Jake and Elwood, the great Blues Brothers. — Editor.

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Radio's Incredible Rock Bottom!

Navigation Systems, Submarine Communications, Brain Waves, Earthquakes, As Well As Cosmic Whistles & Hisses Populate The Eerie Worlds Of ELF And VLF.

BY TOM KNEITEL, K2AES, EDITOR

Eerie . . . weird . . . a jungle . . . wild . . . are some of the terms that have described the goings-on in radio's fantastic basement—the rock bottom of the electromagnetic spectrum—that is to say, frequencies below 14 kHz. The Very Low Frequency (VLF) portion of this part of the spectrum runs down to 3 kHz. It's strange, but still not as strange as the Extremely Low Frequency (ELF) segment (below 3 kHz). The International Telecommunications Union (ITU) doesn't even have frequency allocations below 10 kHz!

Of all the rock bottom radio activities, the public may best know about the worldwide *Omega* radionavigation system. This system utilizes a number of frequencies 10.2 and 13.6 kHz being transmitted at high power from sites in South Dakota, Hawaii, Liberia, Norway, Australia, Reunion, Japan, and Argentina. Specialized receivers aboard ships and aircraft are able to match the *Omega* signals against one another to obtain precise location determinations.

The low frequencies are used because they travel great distances, even penetrating under water. They aren't affected by the constantly changing signal reflecting properties of the ionosphere. The ionosphere, in fact, acts like a duct or a wave-guide on signals using these frequencies. They remain constant at all hours, and in all seasons.

There are many other communications activities between 10 and 30 kHz. Mostly, they relate to the military. These are all non-voice and usually consist of encrypted narrow-shift RTTY transmitted with high power. The US Navy has several major stations around the world in this frequency range. This includes certain command aircraft. The Russian *Alpha* radionavigation operates here. The USAF's Strategic Air Command is on these frequencies, too. In addition, there are several standard time and frequency stations operating between 10 and 30 kHz.

Frequencies even lower than 10 kHz are used by the US Navy for encrypted communications sent to submarines while they are



The antennas at NAA, Cutler, Maine. This US Navy VLF station runs a million watts and can be received anywhere in the world, day or night. The antenna farm fills an entire peninsula. (US Navy photo.)

deeply submerged. Extremely high power is required, and traffic can be sent only at a very slow rate of speed. Frequencies used are below 3 kHz.

Now It Starts Getting Weird

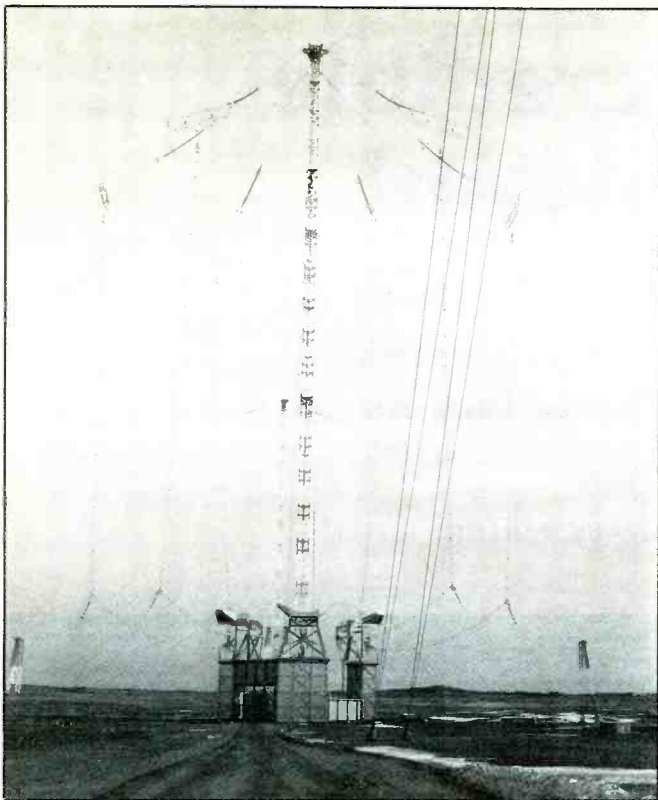
For the most part, when you drift below 10 kHz you begin getting into the realm of signals that aren't purposefully transmitted. That's where the real fun begins, for this includes the world of naturally occurring radio phenomena. Not all of the odd signals that turn up there are fully understood yet.

The human brain has several known fre-

quencies. These include delta waves (1 to 3 Hz) that show up during sleep. From 4 to 7 Hz there are theta waves, and they are related to mood changes. At 8 to 12 Hz we have alpha waves, which are sent out during relaxed periods. Concentration causes the generation of 13 to 22 Hz beta waves.

Our planet and its atmosphere are frequency resonant. There's a worldwide microseismic noise peak at 0.16 Hz. Signals thought to be related to earthquake activity have been detected between 0.05 and 10 Hz, thus offering some promise for quake prediction purposes.

There are natural cavity oscillations com-



One of the many towers used by USN station NAA to support its extensive wire antenna system. The VLF signals aren't affected by ionospheric propagation changes. (US Navy photo.)



The Watkins-Johnson WH-8718A receiver can tune down to 5 kHz. It's made in Gaithersburg, Maryland.



This QSL from USN station NAA was for reception on 17.8 kHz.

ing from the space between the earth's surface and the ionosphere. These have been known about for some 40 years and are called the Schumann Resonance. Now we are getting into the really weird stuff.

Snap . . . Crackle . . . Pop . . . Whistle!

During World War I, German physicist Henrich Barkhausen drove a test prod into the ground. He put another one into the ground a few hundred feet away. He knew these prods would pick up tiny electrical currents leaking out of telephone wires used by the Allies. The signals could then travel by cable to an amplifier behind German lines where Barkhausen could put on headphones and eavesdrop on Allied military communications.

This wasn't a sophisticated arrangement, but it had provided some worthwhile information. Problem was that his monitoring efforts were often jammed by a whistling sound. He knew the whistle wasn't intentionally being sent out by the Allies. Assuming it was in his own equipment, he took everything apart and checked it over. Everything looked OK. He concluded the whistling sounds were some type of natural phenomenon.

He later wrote about this, saying: "During the war, amplifiers were used on both sides of the front to listen in on enemy communica-

tions. At times, a very remarkable whistling note was heard in the telephone. So far as it can be expressed in letters, the tone sounded like *peou*. From the physical viewpoint, it was an oscillation of approximately constant amplitude, but of very rapidly changing frequency . . . beginning with the highest audible tones, passing through the entire scale and becoming inaudible with the lowest tones. The entire process lasted almost a full second."

As amplifiers came into wider use after the war, other listeners reported hearing these same sounds. Even the telephone company was noticing these sounds being picked up on their underwater cables. Engineers set out to track down the whistles, and their source.

They discovered that it was a long wave—a wave longer than those used by broadcasting or wireless stations. It was so low in frequency that it fell within the sound range of human hearing. All that was needed to hear it was an antenna to pick up atmospheric electric oscillation, and an amplifier to convert the oscillation directly into sound.

These signals were named whistlers. And their source? When there's a lightning flash, huge amounts of electromagnetic energy radiate in the spectrum. When some of this energy gets trapped in a magnetic duct, or natural wave-guide, whistlers may be generated. It doesn't happen with every lightning stroke, and nobody is exactly certain why not.

In fact, it wasn't until 1953 that researchers at Cambridge University determined that whistlers were generated by lightning.

The thing is that as whistlers were being studied, scientists discovered a whole array of other mysterious naturally generated radio signals in the ELF spectrum. These were dubbed with names like the tweek, the pop, the swish, the rumbler, the dawn chorus, the hiss, and the click.

By 1957, when the International Geophysical Year (IGY) had been scheduled, many individuals and institutions had directed their attention at the eerie signals being generated in the ELF spectrum. Stanford University established a facility at Siple Station, less than a thousand miles from the South Pole, to generate artificial whistlers. This consisted of a transmitter that sent out short pulses at powers up to 100 kW. The antenna was 13 miles long. Pulse length was increased until whistlers were generated, then the power was decreased until they stopped.

The receiving station was at Roberval, Quebec. The two stations were at conjugate points.

There is still a considerable amount of mystery surrounding ELF phenomena, and interest in listening to these signals has been on the increase within the communications hobby.

If you listen here, you might not hear a whistler immediately. You could hear only

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This commercial receiver is the Harris RF-590. It operates from 10 kHz. It's from the Harris Corporation, Rochester, New York.

pops, clicks, and hisses for a couple of days. Don't give up. Whistlers come from electrical storms taking place at least hundreds of miles from your own location.

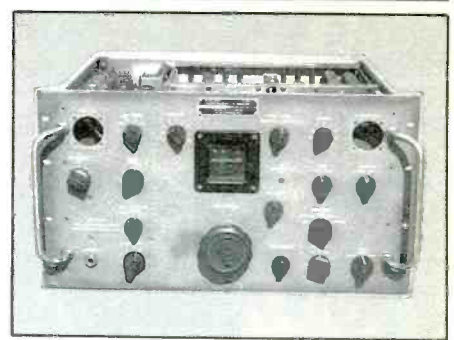
When a lightning flash occurs, it radiates energy in all directions, its groundwave signal causing static on AM broadcast radios. Some of the lightning's energy bounces off the ionosphere and comes to earth as skywave static. But, most importantly for ELF, some energy penetrates the ionosphere and starts traveling upward, parallel to the earth's magnetic field. Following those lines, the lightning's signal arcs 12,000 to 16,000 miles out into space and comes back to earth at a corresponding point in the opposite hemisphere, then bounces back to the point of origin. The higher frequencies arrive at the receiver slightly before the lower frequency components and the result usually creates a signal of de-

scending frequency. The trip is made at 186,000 miles per second.

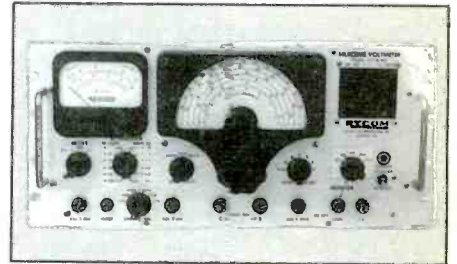
So don't worry about the weather where you are. Whistlers vary on both daily and seasonal bases. Best time to listen is between midnight and dawn, and during winter. At a peak activity period, you might receive ten whistlers per minute.

One thing you'll want to do is listen as far away as possible from electrical power lines. This is because the 60 Hz hum in power lines is an unwanted signal that will interfere with and blot out what you're trying to hear. The best place we have heard of for hearing whistlers was the Canadian Alouette satellite. Alouette once picked up whistlers when it was 8,000 miles above earth.

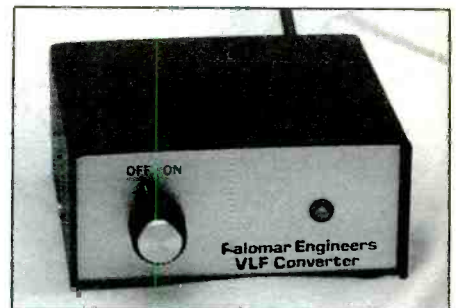
Of the other mysterious ELF signals, you may run into the dawn chorus. This is a series of closely spaced fast rising 1 to 5 kHz tones.



The R-389 is a VLF receiver that sometimes turns up on the military surplus market. (Photo courtesy Fair Radio Sales.)



A commercial VLF receiver that has turned up on the surplus market is the Rycom R-2174. (Photo courtesy Fair Radio Sales.)



The Palomar Engineers VLF converter.



The VLF converter made by MFJ Enterprises. (Photo courtesy Walter Logan III, Florida, Registered Monitor KFL4LF.)

It sounds like a lot of birds chirping. While often heard at dawn, it can come through at other times, too.

Hiss signals may vary in amplitudes over periods of about one second or remain stable for several hours. Seems to be related to auroral displays.

Swishes are hissing signals with a broad tone quality, like the sound of a whip being lashed through the air. They follow the same downward frequency sweep as a whistler and could be related to whistlers, or might be a whistler that has been subjected to reverberation. For a number of swishes have been known to follow in a series, with almost perfect spacing, like a signal train lasting as long as a few seconds.

Tweeks, according to recordings made on an oscillograph, start above 2 kHz, then reduce rapidly in frequency. They occur only around sunrise and sunset.

The click signals have a peculiar character. The pitch of the note invariably starts above audibility, often with a click, then rapidly decreases to a final low note of more or less constant frequency in the order of 300 Hz to 1 kHz. Duration varies, at times being only a small fraction of a second, but sometimes as long as 1/5 of a second.

Your guesses as to the exact sources of these strange signals are invited. Some are genuine mysteries!

How To Hear VLF/ELF

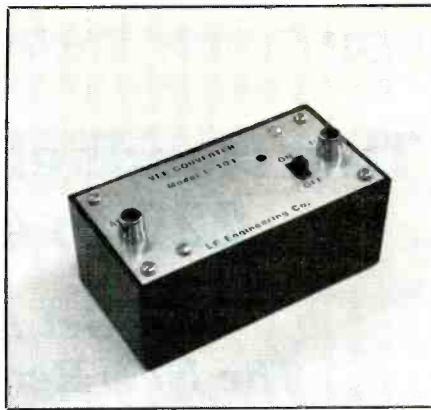
Some commercial and military communications receivers can tune down as low as 5 or 10 kHz. These are fine for monitoring VLF communications and navigation systems, although new units tend to be expensive (by hobby standards). You can often locate some VLF receivers in used condition at ham flea markets, or on the military surplus market. Fair Radio Sales, P.O. Box 1105, Lima, OH 45802, is a military surplus dealer known to carry certain models at times (write for their catalog). Some of the commercial and military receivers that tune down to 5 or 10 kHz include the R-389, RAK, RAL, RAZ, RBL, R-1134/WRR-3, R-2174/URR, SRR-11, R-1655, Drake R7 and R7A, TMC VLRB-1, RCA AR-8510, Racal RA-17, Harris RF505A, Hammarlund SP-600VLF, plus a number of Watkins-Johnson receivers such as the WJ-8711, WJ-8718, WJ-8940B, and the S301. These range from WWII to current manufacture.

A convenient and economical way for a hobbyist to tune in on Omega and other communications activities on frequencies 10 kHz and above is by using a VLF converter. All you need do is attach it to the antenna input of your communications receiver. The device then allows you to listen to the 10 to 500 kHz spectrum changed over to a shortwave band your receiver can handle. These do a good job. Check out the VLF converters made by MFJ Enterprises, Inc., Box 494, Mississippi State, MS 39762; Palomar Engineers, Box 462222, Escondido, CA 92046; and by LF Engineering Co., Inc., 17 Jeffry Road, East Haven, CT 06513.

If you want to monitor those eerie ELF frequencies along with their mysterious natural phenomena signals, you'll have to take a different approach.

Some hobbyists have gone the homebrew approach for listening to ELF phenomena. The antenna could consist of 200 turns of #25 enameled copper wire on a 4 ft. diameter wooden frame, tuned by a fixed 0.02 uF low-voltage disc capacitor. You could couple this to a two-stage solid-state amplifier using interstage coupling capacitors around 10 to 35 uf. The loop antenna would need to be rotated to the point where 60 Hz power line hum was at null.

Luckily, increasing hobbyist interest in ELF has come to the rescue. At least two commercially made ELF whistler type receivers are now available, and at low prices.

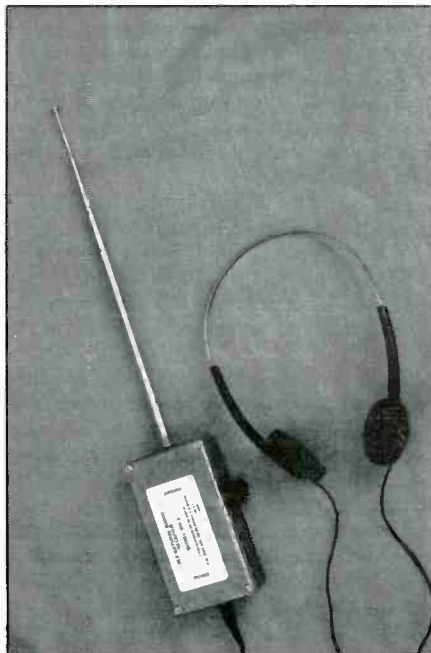


The VLF converter made by MFJ Enterprises. (Photo courtesy Walter Logan III, Florida, Registered Monitor KFL4LF.)

Conversion Research, P.O. Box 535, Descanso, CA 91916-0535, has a Model WR-3 receiver that covers 100 Hz to 11 kHz. It sells for less than \$50, and we have had some excellent reports on this unit from those who have used them. Contact Frank Cathell, K3YAZ, who is the honcho at Conversion Research for more information.

In fact, this company sells an interesting demo tape with a lot of ELF sounds on it. They also have another tape explaining ELF radio and its odd natural signals. If you're interested in pursuing ELF or learning more about it, send Conversion Research an SASE for their very informative ELF/VLF catalog.

LF Engineering (address given above), has an ELF receiver they call the L-500. The fre-



Want to hear whistlers and other ELF phenomena? This receiver for those frequencies is the WR-3 from Conversion Research.

THE LOWDOWN

A PUBLICATION OF THE LONGWAVE CLUB OF AMERICA

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MAY

1992

Enjoyment of ELF/VLF is considerably enhanced by a membership in the LWCA. The group's monthly *Lower* often covers these frequencies, offering lots of excellent information.

frequency coverage is 150 Hz to 10 kHz, and the price is below \$100. Check with the company for further information. LF Engineering offers several interesting VLF products.

Anyone interested in VLF/ELF will definitely want to join the Long Wave Club of America, 45 Wildflower Road, Levittown, PA 19057. The club covers everything between DC and the low frequency edge of the AM broadcast band. Membership is \$18 in the USA, or \$19 in Canada. It entitles you to a subscription to *The Lowdown*, which is the group's monthly publication. *The Lowdown* frequently has extensive coverage of whistlers and other VLF/ELF signals, including loggings, as well as experimental circuits and antennas. A fine group.

We have read about a newsletter called *Geo-Monitor*. It describes itself as being "dedicated to earthquake prediction, amateur geo-physical monitoring and earth mysteries." This includes ELF phenomena. A sample copy is available if you send a large (9X12-inch) SASE (US 52 cents) to the Editor, *Geo-Monitor*, Suite 400, 65 Washington St., Santa Clara, CA 95050.

Have a taste for the odd, the eerie, the unusual? Want to tune in on strange signals that the scientists are still exploring? Here's your chance, and you have some leads on how to get started with a minimum of fuss and expense.

You might even want to check out those signals to the submarines, the Omega signals, and stations operating at radio's incredible rock bottom.

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POP'COMM Reviews:

This Handheld Scanner Has 225 to 400 MHz!

We Get A Look At The New Realistic PRO-43

The folks at Radio Shack tell us that they have gotten a lot of mail from scanner users asking if and when a handheld would be available that included 225 to 400 MHz in its coverage. Now they've gone and done it with their new Realistic PRO-43.

The PRO-43 covers lots and lots of frequencies, namely 30 to 54, 118 to 174, 220 to 512, and 800 to 1,000 MHz. The two cellular bands are locked out at the factory.

The HyperScan feature scans at 25 frequencies per second, with scan/search at 50 f.p.s. There are 200 memory channels, grouped into 10 banks. Reception is automatically selected for FM or AM, as appropriate for the various band covered. A manual override switch is available to change AM/FM modes as desired by the operator.

Selectivity of the triple-conversion receiver at ± 10 kHz is -6 dB, and at ± 20 kHz it's -50 dB. The three IF frequencies are 608 to 611 (1st IF); 48.5 MHz (2nd IF); and 455 kHz (3rd IF).

Sensitivity is rated at 2 μ V. for 20 dB (S + N)/N at 60 percent modulation. FM sensitivity is rated at 1 μ V. for 20 dB (S + N)/N at 3 kHz deviation.

Other features include scan delays (2 seconds), priority channel (2 second sampling rate), memory saver, monitor bank, channel lockouts, keyboard lock, and an LCD display that shows the frequencies and operating status information.

The coverage increments in the various bands are interesting. In the 30 to 50, 137 to 174, and 220 to 225 kHz bands, it operates in 5 kHz steps. In the 118 to 136 kHz band the PRO-43 operates in 25 kHz steps. All other bands are set up for 12.5 kHz increments.

The rubber duckie antenna has a BNC connector. There's a belt clip attached to the unit. It operates from 6 "AA" batteries, and you can use either alkalines or Ni-Cd's (an AC charger/adaptor for the Ni-Cd's is an optional accessory).

This is a small unit, less than 6 inches tall, less than 3 inches wide, and a tad over an inch and a half deep. It weighs less than 9 oz. (minus the antenna and batteries).

One thing that you immediately notice about the PRO-43 is that, externally, it looks quite different than other Realistic handheld scanners. Better styled, more rounded. We liked the look.

The off/on switch-volume control and the



The new Realistic PRO-43 includes the 225 to 400 MHz UHF military aero band.

scquelch are on the top of the PRO-43, along with the earphone jack. The other controls are on the front of the scanner. They're well marked, and the operation of the scanner is actually quite simple. There's a well-prepared 30-page manual that comes with the PRO-43 to explain everything and answer any questions.

We took the PRO-43 out and ran it through the many bands it covers, discovering that it did well for itself. The 225 to 400 MHz band, which is one of the PRO-43's big features, produced activity on quite a few frequencies. We positioned our van at a spot more than 15 miles down the road from a busy AFB, and found this set very lively and ready for action on the UHF military aero band. It's always been a band we have liked, so every opportunity to acquaint monitors with these frequencies is looked upon with joy.

This scanner is \$349.95. We think the Realistic PRO-43 should find a ready market, what with its good features and excellent performance.

Reviewed by POP'COMM Staff.

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Gordon West

Optoelectronics has satisfied its customers for over 18 years – See for yourself what countless others have already discovered!



"I was encouraged by one of my readers words of wisdom, and bought the Model 2300. Your service was superb! After testing this unit I personally feel that all serious radio enthusiasts should own an Optoelectronics Frequency Finder"
 Ron Bruckman
 Radio Monitor's Newsletter
 Of Maryland

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Model	8030	3000	2600H	2810	2600HA	2210A	2300
Function	Freq, Period Ratio, Interval	Freq, Period Ratio, Interval	Frequency	Frequency	Frequency	Frequency	Frequency
Range	10Hz-3.0GHz	10Hz-3.0GHz	1MHz-3.0GHz	10Hz-3.0GHz	1MHz-3.0GHz	10Hz-2.4GHz	1MHz-2.4GHz
Display	10 Digit LCD w/Function Annunciators	10 Digit LCD w/Function Annunciators	10 Digit LCD	10 Digit LCD	10 Digit LCD	8 Digit LED	8 Digit LED
RF Signal Strength Indicator	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph
Hold Switch	Yes	Yes	Yes	Yes	Yes	No	Yes
Price	\$579.	\$375.	\$325.	\$259.	\$225.	\$179.	*\$99.
<small>Sensitivity: <1 to <10mV typical. Time Base: ± 1.ppm.; ± 2ppm add \$100. - LCD Models only. Nicads & AC charger/adaptor included except for 2300. *For 2300, available with NiCad installed & AC charger/adaptor, complete package \$128. A full line of Antennas, Probes & Carry case are sold separately. (One year parts & labor warranty.)</small>							

Olde Tyme Radio

Turning Back To The Golden Era

BY ALICE BRANNIGAN

With the radio playing a song about autumn in Vermont, it's easy to appreciate the old (but undated) picture postcard sent to us by an anonymous reader. That card shows radio station WDEV, Waterbury, Vermont, and we would guess at its date as the early 1930's.

As we head into autumn, WDEV seemed to us like a good way to get started this month. When we checked out WDEV, we learned that it went on the air July 16th, 1931, running 50 watts on 1420 kHz. The station was operated by Harry C. Whitehill, from 8 Stowe Street, Waterbury. He felt that WDEV would provide a welcome service to his small community (population 1776). WDEV was obviously a good idea, and people in other nearby towns soon wanted to be able to tune it in, also. By 1935, WDEV had upped its power to 500 watts and had moved to 550 kHz. In 1936, WDEV was being run by Mary Whitehill, who had taken over after Harry passed away.

Mary ran the station only long enough to arrange for its sale to Lloyd E. Squier and William G. Ricker, two Waterbury businessmen. Under the direction of Squier and Ricker, WDEV continued to grow. They

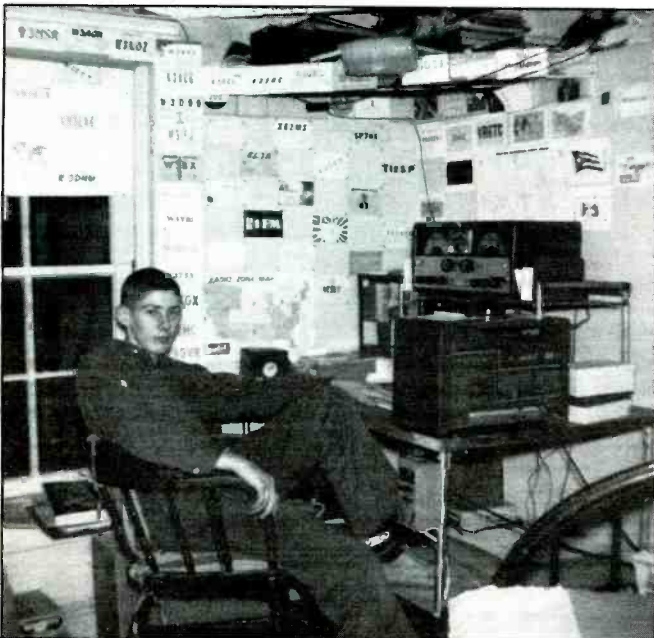


A 1930's look at broadcaster WDEV, Waterbury, Vermont.

moved the transmitter up on to Blush Hill, went to 1 kW, and eventually to 5 kW.

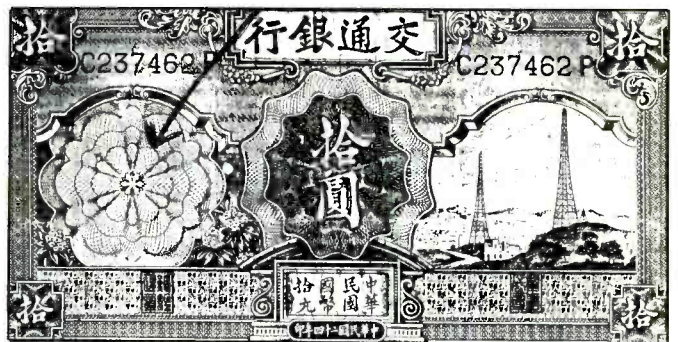
Since 1969, WDEV has been owned by Radio Vermont, Inc. The President of the station is Ken D. Squier, thus maintaining a long

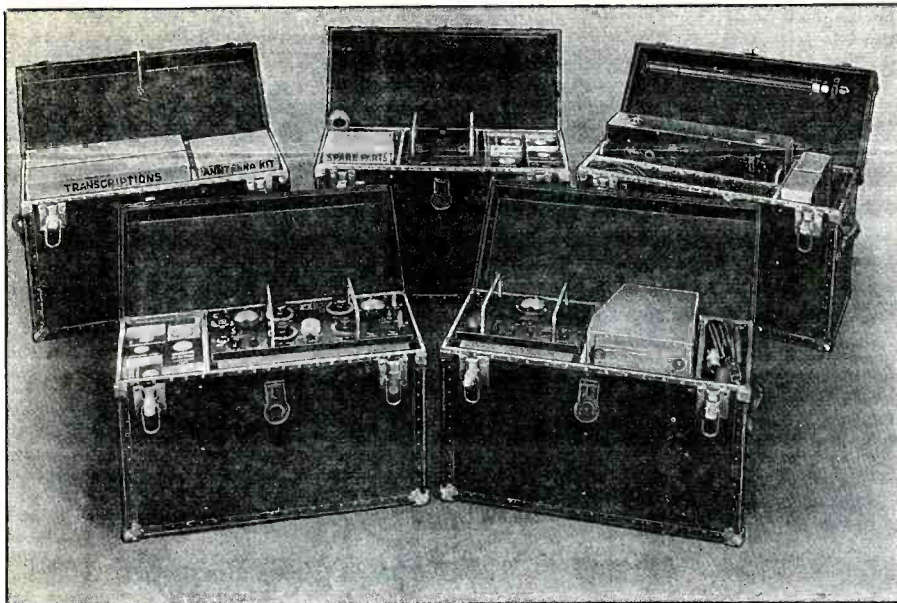
tradition of local ownership of this veteran station. The population of Waterbury hasn't grown much in 60 years, but now WDEV puts its signal out over a wide area, serving many counties.



This young SWL's photo from Pennsylvania in the 1950's ended up at a California stamp show in 1992. A reader asks us for answers.

This 10 Yuan banknote was once issued by China's Bank of Communications. There's a radio station shown at the right, and the arrow points to a watermark in the paper showing another radio station. This kind of money we like. (Courtesy Jay S. Jackson, KA5SBP.)





The Taylor TWT PP-50A portable broadcasting station equipment used during WWII. (Courtesy H. Scott Killgore, Calif.)

Our picture postcard of WDEV shows a country setting with a plain brick building. A 1930's vehicle is parked in front. To the rear of the building (right side of photo) can be seen a wooden pole about 25 to 30 feet tall, with smaller wooden posts leading to it. The wooden pole is probably one of a pair of poles supporting a wire antenna.

Dialing For Dollars

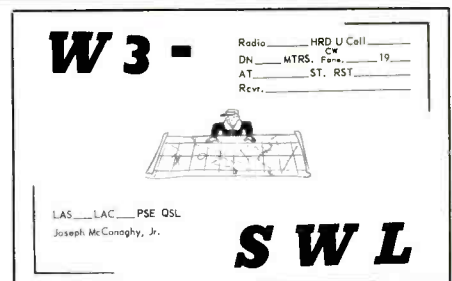
We have had some unusual things sent to us, but few items as curious as the radio money sent to us by Jay S. Jackson, KA5SBP, of Nacogdoches, Texas. This is a 10 Yuan national currency banknote from the "Bank of Communications," the Republic of China. The note is printed in dark red ink on silk thread banknote paper, with the name of a printer in London indicated.

There's no exact date we could determine on this banknote, but Jay reports that it's from the 1935 to 1949 era. The name of the bank is unusual, and there's even an engraving of a radio station with two large towers printed on the currency. There's also a hidden radio station in the form of a watermark on the paper. When held up to strong light, the area beneath the design reveals two more huge radio towers.

Jay reports that these notes are readily available to world currency collectors and are quite inexpensive. They make interesting curios for the communications hobbyist and history buff.

Where Is He Now?

The good stuff you find at shows and flea markets! Howard Singer, of Hollywood,



This 1950's SWL card accompanied the photo at the stamp show.

Calif., went to a stamp show and was looking through a box of covers (envelopes). He came across an old SWL card along with a candid snapshot of the SWL whose card it was. It made Howard curious, so he purchased the items and sent them here, observing it might be interesting to find out where this smiling young man is today, and if he is still involved in the hobby.

The SWL's name on the undated card is Joseph McConaghy, Jr., of Downingtown, Penna. The photo shows a radio shack well decorated with ham QSL cards from around the world. The only piece of equipment in plain view is a receiver that looks to be a Hallicrafters SX-99. That set was made between 1954 and 1958. Joe looks to be around 15 in the photo, so if it was taken 1957, he'd be about 50 today.

We checked out the name in recent amateur radio records and find that a ham with this name has the call letters K3JGJ, and resides in Downingtown, Penna. Born in 1942, K3JGJ is now 50 years old. So we'll take a stab that this is the probable answer.

The real mystery is how this Pennsylvania SWL card and photo ended up in California at a stamp show more than 35 years later!

World War II Broadcasting Feedback

In the May issue we wrote about G.I. combat zone broadcasting stations that were active during WWII. Mixed in with the mail from readers who liked this coverage were several gems of additional information.

H. Scott Killgore, of Station KMPG, Hollister, Calif., who told us that when he was in the US Navy during WWII, he met Bob Taylor. Taylor had designed a completely portable broadcasting station known as the TWT PP-50A, and sold about 100 of the units to the Signal Corps for use by Armed Forces Radio in war zones.

The station could run from 15 to 50 watts output between 1100 and 1500 kHz. The transmitter was crystal and MOPA controlled. Modulation was described as "special high efficiency," and Scott clarifies this by telling us "it was a crazy design along the lines of the Doherty system used by Western Electric." The station was powered from 110 or 220 VAC.

One of the features of the TWT-50A was

AUSTRALIAN ARMY AMENITIES SERVICE (BROADCASTING SECTION) L. H. Q. MELBOURNE, VIC.

TEST TRANSMISSION - STATION 9AF

The Australian Army Amenities Service appreciates your kind co-operation and acknowledges your report covering reception of test transmissions from this Station.

For your information, this Station is operated by this Service in conjunction with Broadcast Maintenance Section of the Australian Corps of Signals. Test transmissions were made from Williamstown, Melbourne, Vic., on a frequency of 1460 kcs, a wave length of 205.4 metres; power- 200 watts in the aerial; aerial- T-Type Flat Top with earth mat.

Your comments have been of great assistance to everyone associated with this station, which at the conclusion of these tests, will join the Army Broadcast Network of 21 stations in forward operational areas for the entertainment of troops.

G. M. JOSHUA Col.
Director.
AA Amenities Service.

A WWII QSL for a test broadcast of 9AF, of the Australian Army Amenities Service (AAAS). This is a great trophy. (Courtesy Dr. Adrian M. Peterson, Indiana.)

that it was modular, being able to fit entirely (except for the power supply) in five footlocker type trunks. In operation, the modules were removed from the trunks, placed on two adjacent desks, then linked together with plug-in cables. As soon as an antenna could be strung, the station was all set to go. In all, Scott thought Taylor had a good thing in this portable broadcasting station equipment.

Radio historian Dr. Adrian Peterson, of Indianapolis, Ind., brought to our attention that while American G.I. stations became quite well known, a similar, but lesser known, broadcasting network was operated for the benefit of Australian forces. The Australian Army Amenities Broadcasting Service, and associated forces broadcasting organizations, have operated more than 30 stations in the Mideast, Malaya, Pacific Islands, Australia, Japan, and Vietnam.

The first of these operations went on the air in June, 1942, and was at times used to entertain troops in the Middle East. A mobile studio had been sent to Palestine so that recordings could be made there for ABC use in Australia. But the van was also used as a studio for producing programs for troops in the area, with programs being sent out over local radio transmitters.

Australian forces in the Pacific theatre first started broadcasting on January 26, 1944. A 60 watt former ute transmitter was patched up and put on the air as RAAF Radio Madang, in New Guinea. At the time, it was the only broadcasting station in New Guinea. The studios were in the jungle, and programs were fed to the transmitter (2 miles away) via twisted telephone cable.

A month later, 9PA, in Port Moresby went on the air, being officially opened by Gen. Douglas MacArthur. In November, 9PA was moved to Madang and increased to 500 watts. The call letters were later changed to 9AA, and it was designated as the parent station for the AAAS 9A network. After the Aussie forces moved north, the station was closed in early 1946. In July, 1946, it was opened on 1250 kHz by the ABC with its old call letters, 9PA.

Adrian was a teen-ager in Australia during WWII and heard several of the AAAS network stations, even receiving QSL's from some. Station 9AF, with 200 watts, sent a full detail veri, listing the frequency as 1460 kHz. Some hobby publications of the time listed it as 1440 kHz. This station began testing in July, 1945, from Williamstown, Victoria.

Seeking Recognition For Early Broadcaster

We have mentioned Dr. Charles Herrold here several times previously. Many people claim that he was the world's first broadcaster, having put a station on the air in San Jose, Calif. as early as January, 1909. This 15-watt station was located at his College of Wireless and Engineering in the Garden Bank Building, First and San Fernando Streets. The station had no call letters, since there weren't any being issued to broadcasters until more than

ten years after this. Herrold simply identified as "This is San Jose Calling." His antenna required a mile and a half of wire to construct.

Voices and music came from this station, with the regular programs lasting as long as a half hour each. His audience was made up mostly of his students, listening on homemade receivers. In 1921, Herrold would be assigned broadcast station call letters, KQW. Lack of funds forced Herrold to sell KQW in 1925, but the station would keep those call letters through several owners and program formats. In 1949, it became present-day KCBS, San Francisco.

Herrold's programs included his reading the newspaper aloud and offering his thoughts on the headlines. His wife played some records and then announced the names of listeners who won them as prizes, courtesy of the music store that supplied them. There was even live music once in a while.

Despite the fact that Herrold's early broadcasting activities are all well documented, somehow he managed to fall between the cracks of broadcasting history. Although he easily appears to have predated other early broadcasters, few reference sources give the man any mention at all. much less call him the first broadcaster. Born in 1875, he died in 1948, without wealth, in obscurity, and with his work virtually unrecognized.

Therefore, we were pleased when Greg Reid, KC6ZWO, of San Jose, Calif., told us that Mike Adams, who is an associate professor of radio and television at San Jose State University, is taking steps to bring Charles Herrold the recognition for his work that is his due. For starters, Adams is researching material to be used in a one hour documentary about Herrold which will be shown on San



Another QSL from the AAAS station 9AF. (Courtesy Dr. Adrian M. Peterson, Indiana.)

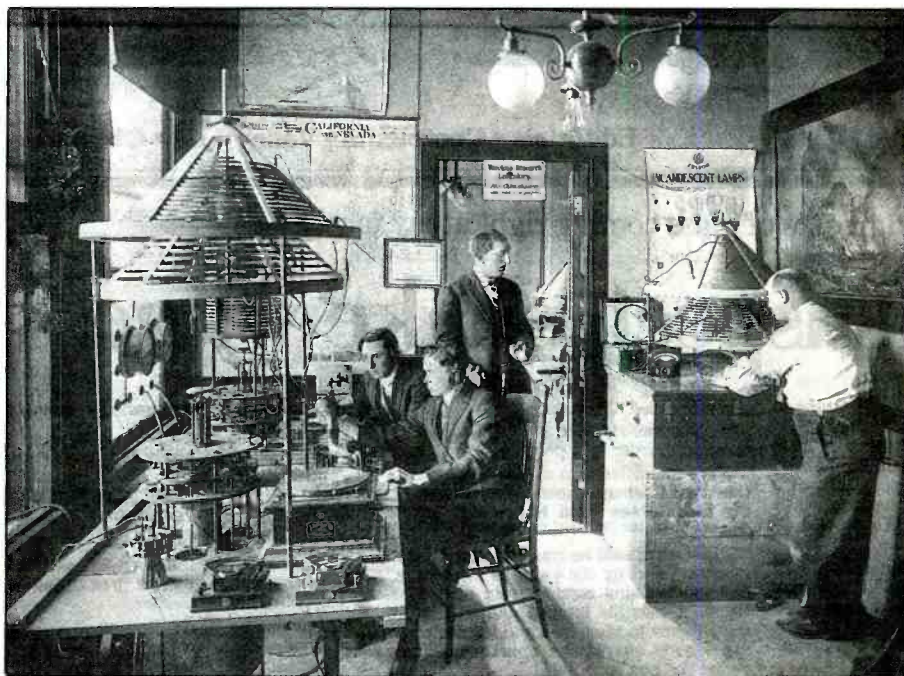
Jose's KTEH-TV/54, and then distributed to other TV stations around the nation. The early broadcasts were only one aspect of Herrold's work and productive life.

Moon Over Panama

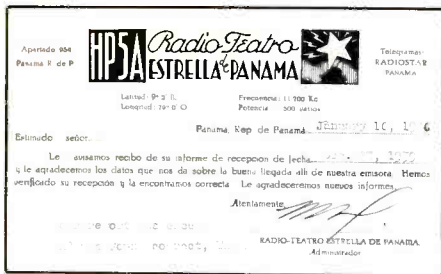
Those tropical nights in Panama City of the 1930's. All that's needed is Sidney Greenstreet, Bogart, and a ceiling fan to complete the image. Let's add to that a 1939 QSL card from shortwaver HP5A, *Radio Teatro, Estrella de Panama*. This translates into "Radio Theatre, Star of Panama." The station's interval signal was *The Anvil Chorus*.

HP5A began in 1937 with 500 watts on 11700 kHz, and was a sister station of 25 watt HOC, 1440 kHz. These stations were owned by Jose Jean y Jean, and, in 1947 (when HP5A went up to 2 kW) by Cadena Panama de Radiofision.

The tropical moon was on the wane, however. HP5A was not to last much after those years, and all that remained was their yellow and blue QSL card. Earl Bedford, Chappaqua, New York, kindly sent us one of these



Dr. Charles Herrold (standing in the doorway) during the very early days of his broadcasts from San Jose, Calif.



This 1939 QSL from HP5A, Panama City, exudes a wonderful feeling of the era. (Courtesy Earl Bedford, New York.)

veries to help us remember this station with the picturesque name.

Marconi, Again

Mail continues to arrive regarding the various contenders in the "who really invented radio" sweepstakes. Tesla has his backers, so does Marconi, as well as Loomis, Stubblefield, and several others. The general public perception is that Marconi invented radio, was granted the patent, and that's the end of any discussion. This is the point brought up in some of the mail that comes in supporting Marconi as radio's inventor.

For the record, let's point out that on June 21, 1943, the United States Supreme Court invalidated the 1904 American patent that had been awarded to Marconi for "Improvements in Apparatus for Wireless Telegraphy by Means of Hertzian Oscillations or Electrical Waves." In November of 1919, this patent (763,772), along with all assets of the Marconi Company were assigned to RCA.

The Court decided that a 1902 patent awarded to John Stone for a four-circuit

wireless telegraph apparatus was essentially the same as the device patented by Marconi two years later. The Court specifically named Pupin, Fessenden, Lodge, Tesla, and John Stone as persons whose works came ahead of those in Marconi's patent. Lodge was singled out as an inventor whose earlier designs anticipated the so-called Marconi circuits. Receiving antennas devised by Pupin and Fessenden were cited as earlier than the similar one later patented by Marconi as being his own.

In a dissenting opinion, Justice Felix Frankfurter felt it was inappropriate to show up 40 years after Marconi's patent to try to say that the man did not promote the progress of science. Justice Rutledge, who also dissented, said that Marconi had earned universal repute as the inventor of radio and had figured out how to extend radio communications from 80 miles to 6,000 miles. He felt that by revoking the patent, Marconi's status was reduced from that of a scientist to that of an electrical mechanic.

Nevertheless, claims of almost \$43,000, plus interest dating back more than twenty years, were paid based on the Supreme Court's decision. But it looks as though not many minds were changed.

That's a wrap for this month. Still a big stack of material on tap, but we hit the bottom of the page too soon! We thank everybody for the old radio QSL's, photos, postcards, newspaper clippings, station directories, questions, and suggestions, so generously submitted for use here.

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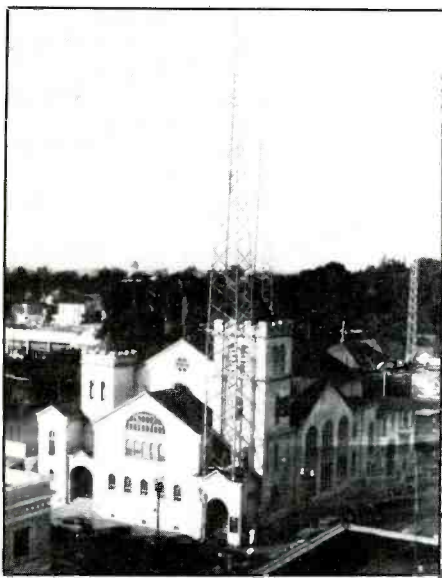


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CIRCLE 65 ON READER SERVICE CARD

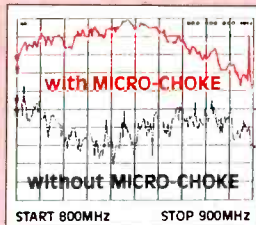


Station KQW, San Jose, as it looked in 1925 when it was sold to the First Baptist Church and became a religious station. By 1926, it was sold again. It was purchased by Fred J. Hart, who ran it as a commercial station. Today it's San Francisco's KCBS.



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Scanner Data

If you're fortunate enough to be a scanner owner located in certain areas, you're able to avail yourself of what are undoubtedly the nation's biggest and most comprehensive regional monitoring guides. These comprise the *Scanner Master* series, which are professional-level publications providing enormous amounts of useful data above and beyond simple frequency listings.

Within their respective coverage areas, they include state, county, and municipal agency listings for law enforcement, fire, forestry conservation, and other governmental activities. They also include listings for many transportation related communications systems, utilities, EMS, the news media, and



other systems of interest. Listings cover locations, licensees, callsigns, and base/mobile frequencies. In addition, there are many signal codes, frequency designators and usage listings, unit designators, PL tones, system explanations, and more.

Listings are according to county, then at the back of the book there is a frequency sequence listing of the public safety stations.

The New York/Northern New Jersey Guide (4th Edition) was issued in late 1990, and contains 560 pages. It covers New Jersey from Monmouth Co. northward; New York City and all of Long Island, plus all counties north along the Hudson River through Albany.

The Virginia/Metro D.C. Guide (3rd Edition), issued late 1991, runs 350 pages and covers the entire state of Virginia, the District of Columbia, as well as the Maryland Counties of Prince Georges, Howard, and Montgomery.

The Massachusetts Guide (4th Edition), issued 1989, covers the entire state and includes all business radio licensees. This edition is 520 pages.

The Florida Communications Guide, issued 1992, is a 424 page directory for the entire state. Special sections cover Disneyworld and other tourist attractions, the Kennedy Space Center, race tracks, and all non-trunked business radio licenses.

These books are \$29.95 each, plus shipping. They are available from Scanner Master Publishing Corp., P.O. Box 428, Newton Highlands, MA 02161. You can also get them from selected monitoring supply sources, such as Scanner World USA, CRB Research Books, as well as others. Check ads and catalogs.

Strictly Digital

Whether you like it or not, digital communications are a reality. It's no longer a matter of liking or not liking. You could have gotten away with that 3, maybe 4, years ago. At this point, we are all faced with having to understand and deal with this technology.

If you date back to the days of vacuum tubes, this is a world you might have had enter your dreams only after polishing off a large anchovy and pepperoni pizza just before bedtime. If your memories extend no further into the past than the era of semiconductors, you knew this day would come, someday.

Happily, it isn't as complex as we thought it might be, and now we are working with digital communications in relation to CW, ASCII RTTY, FSTV, SSTV, Baudot RTTY, AMTOR, Packet, and FAX. It's all done by microcomputer, and it's the fastest growing area in ham radio. It's also becoming a factor in cellular and other two-way activities.

In *The Radio Amateur's Digital Communications Handbook*, Jonathan Mayo, KR3T, tells you just about everything you need to know about digital comms, including their history, capabilities, and applications. Mayo amply covers all of the operating modes tuned to digital, as used on HF, VHF, UHF, and satellites.

Readers will learn how to set up an operational digital communications station, and then get an explanation of the latest equipment and accessories. Seven helpful appendices are provided in order to offer code charts, operating frequencies, and other needed information.

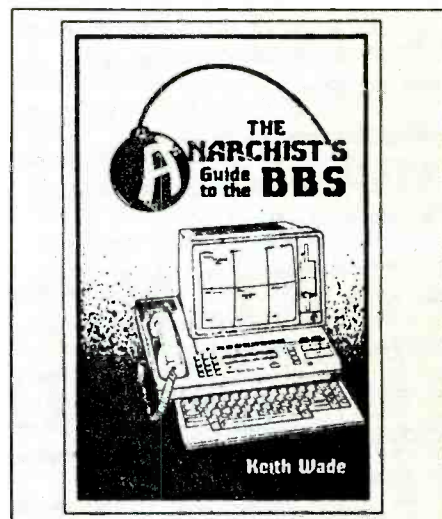
The book contains 224 pages, and has 93 illustrations. It is quite thorough. Mayo's book is also sufficiently broad in its concept to provide a wide scope for the average communications buff. Beginners should be able to appreciate the information with ease, while those already using digital will find it a worthwhile reference volume and memory jogger for areas that are fuzzy.

Here's a good way to surf in on the wave of communications as they'll be for the rest of the 1990's, and maybe beyond.

The Radio Amateur's Digital Communications Handbook, by Jonathan Mayo, is \$14.95, and available from the many dealers who carry TAB Books.

More Than Meets The Eye

As many communications hobbyists have come to know, there are many computer bulletin boards (BBS) dedicated to SWL's, scanner owners, and ham operators. These are places where people trade equipment, frequencies, news, rumors, and fantasies. They're often fun, and frequently useful.



The thing is that the world of the BBS is *lots* more than those boards devoted to letting communications buffs get together via their personal computers. That's what a wild book entitled *The Anarchist's Guide To The BBS*, by Keith Wade, is all about. Wade takes you inside a different BBS world, no less interesting, and regarded by many computer users with as much enthusiasm as communications hobbyists view their own dedicated BBS networks.

Some might describe this other BBS world as bizarre, strange, weird, or outright dangerous. Among the types of BBS I have heard of are those devoted to credit card criminals, computer hacking, very unusual dating services, sabotage, phone phreaking, odd religions and cults, collecting peculiar objects, bootlegged software, radical political ideas and groups, outlawed medical treatments, code breaking, ex-convicts, plus numerous others I hesitate to specify here. All of these BBS are buzzing away, some deeply underground. Once you can locate them, you can watch them in action, or join them — if you dare. They're hot!

This book serves as a basic intro for the novice looking to participate in the great BBS adventure, regardless of which area(s) of interest are present (including the more tradi-

tional). There are few rules governing computer networks. Mostly, they are anonymous and subject to virtually no restraints. Is it surprising that BBS have become the medium of choice for those who seek unlimited freedom of expression?

Chapters in Wade's fascinating book explain what a BBS is and what participation offers. You'll learn how to get started, and which systems are used—plus how to use those various systems to best advantage. You will learn about potential problems, and how to start up your own personal or club BBS with as little grief as possible. There's a listing of recommended additional reading, and plenty more. This is the complete, uncensored edition, with nothing removed.

Keith Wade is an expert on computer security. He spent six years delving the world of the underground BBS researching this fantastic journey through the fringes of the invisible electronics universe. What you find there will probably surprise you, and make you aware that a personal computer can be the hidden doorway to a world of intrigue you had ever imagined.

The Anarchist's Guide To The BBS is \$9.95, plus \$3.50 for UPS shipping (sent by 1st Class Mail to military addresses, Canada, AK, HI, PR, VI, and GU). It's available from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State please include \$1.08 sales tax.

Be sure to get your copy of CRB Research's latest catalog. It's free! Just circle 101 on our Reader's Service.

In Addition . . .

The Quick and the Dead: Electronic Combat and Modern Warfare, by Neil Munro, is an informative treatise on currently used EW systems. While it might be possible to nit pick over several things the author writes about specific systems, the basic information looked good to us and was presented in an easy to read style that makes for an excellent overview of the topic. He traces the history of EW from its roots in 1905, going right to Desert Storm. He also points out a number of very perceptive faults with our present military computer technology, especially in that the software the military now uses isn't much above civilian standards and is therefore too easily hacked or can be infected by viruses. This \$29.95 book is from St. Martin's Press. It should be available through most bookstores.

A nice booklet of railroad frequencies has been received. *Railroad Radio Frequencies: District of Columbia, Maryland*. Virginia runs 8 pages of listings and costs \$2.00, postpaid. It's from Jim Buscher, P.O. Box 5624, Arlington, VA 22205. Please include an SASE for more info.

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Subject: Comparative Gain Testing of Citizen's Band Antennas
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The antennas were tuned by the standard VSWR method. The results of the test are tabulated below.

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58



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The Charge of The Carders

Computer Criminals Are After Your Credit-Card Numbers – To Steal With, Sell and Swap

BY JOSHUA QUITTNER

The kid, from Springfield Gardens, New York, was a carder, of course.

He was doing what carders do: trying to talk a salesman into overnight-expressing him a \$4,000 computer system—and using a stolen credit-card number for payment.

The salesman was playing right along on the phone; he had also notified a co-worker to alert the New York State Police, said William Murphy, a customer service manager at Creative Computers, who described the event as it was unfolding on a recent morning. Murphy said that on a typical day, as many as a dozen times, carders would call and try to buy everything from modems to whole computer systems.

Murphy said that these days, the security people at Creative Computers are able to stop virtually all of them, either by not delivering the goods, or by delivering them UPS—that's United Police Service.

He sighed: "It's amazing that they even try."

But try they do. And at other places, they're successful. Where once hacking into a credit bureau was a kind of rite of passage for computer intruders, who generally did little more than look up credit histories on people like Mike Dukakis, now computer criminals are mining national credit bureaus, coming away with credit-card numbers to sell, swap or use for various purchases.

Underground electronic bulletin board systems help spread not only the passwords, but the techniques used to tap into different systems. In San Diego on April 30, for instance, police raided a bulletin board called Scantronics, which offered among other things, step-by-step manuals on how to hack into Equifax Credit Information Services and TRW Information Services, the largest credit bureaus in the nation, the *San Diego Tribune* reported.

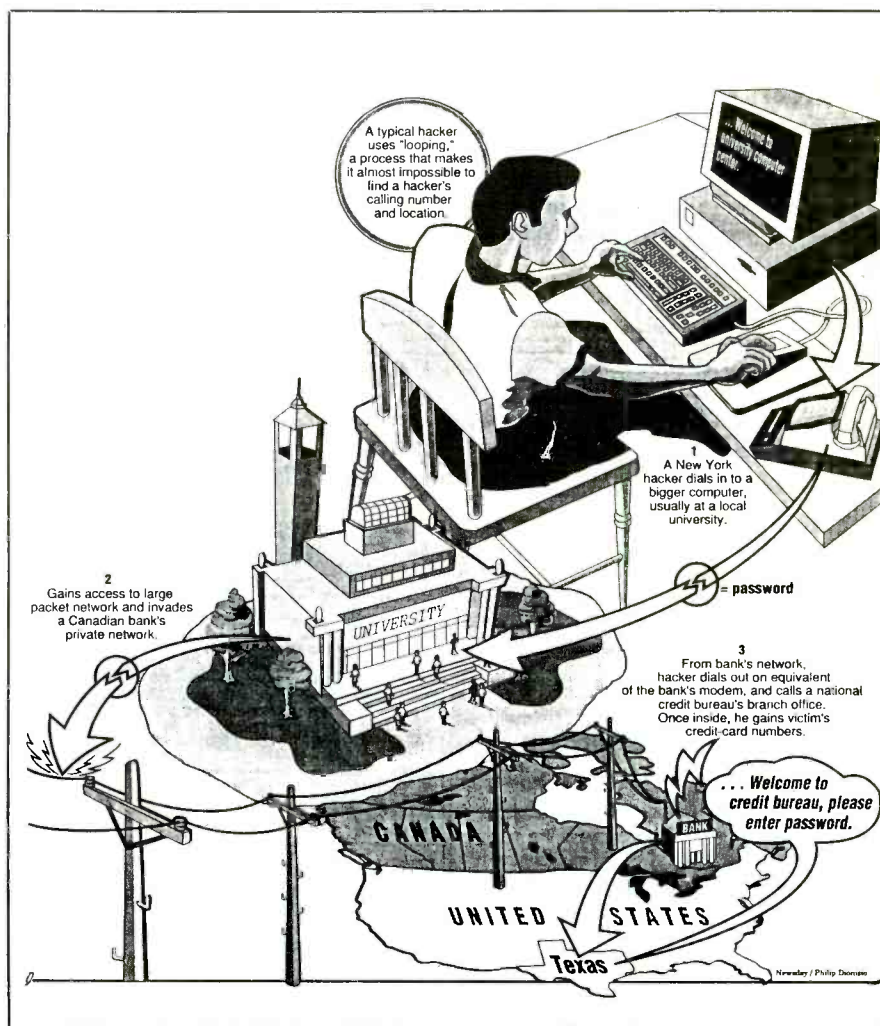
"The potential for fraud is enormous, it's almost limitless," said Joel Lisker, Mastercard International's vice president of security and risk management, who noted that computer intruders accessed "thousands" of credit-card account numbers in another recent case.

Mastercard is putting together a task force of its bank members to address the problem, and is considering inviting hackers in to learn what they can do to tighten up computer access to credit bureaus, he said.

Mastercard estimates it lost \$57 million to counterfeit scams last year; Lisker said it is im-

possible to say how much carders contributed. But based on the volume of arrests lately, he figures carding has become a big problem.

"It's kind of like a farmer that sees a rat," Lisker said. "If he sees one, he knows he has several. And if he has several he knows he



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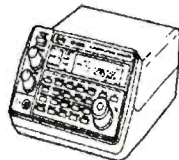
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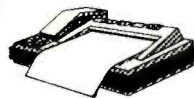
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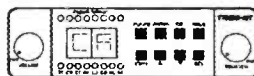
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Bearcat 200XLTN \$239.95 200 Channels 800MHz Keyboard Programmable. Ten scan banks plus search. Covers 29-54, 118-174, 406-512 and 806 956MHz (with cell lock). Features scan, search, delay, 10 priorities, mem backup, lockout, WX search, & keylock. Includes NiCad & Chrg. Size: 1 3/8 x 2 11/16 x 7 1/2. Wt. 32 oz. Fax Facts # 450



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has a major infestation. This is a major infestation."

"It's clearly something we should be concerned about," agreed Scott Charney, chief of the U.S. Justice Department's new Computer Crime Unit. Charney said that roughly 20 percent of the unit's current caseload involves credit-card fraud, a number that, if nothing else, colors the notion that all hackers are misunderstood kids, innocently exploring the world of computer networks.

"Whether such noble hackers exist, the fact of the matter is we're seeing people out there whose motives are not that pure," he said.

On May 11, New York Police arrested three teenagers in Springfield Gardens when one of them went to pick up what he hoped was an Amiga 3000 computer system from Creative Computers, at a local UPS depot.

"What he wanted was a computer, monitor and modem. What he got was arrested," said John Kearey, a state police investigator who frequently handles computer and telecommunications crimes. Police posed as UPS personnel and arrested the youth, who led them to his accomplices.

Kearey said the teens said they got the stolen credit-card number from a "hacker who they met on a bridge, they couldn't remember his name" — an interesting coincidence because the account number was for a next-door neighbor of one of the youths. Police suspect that the teens, who claimed to belong to a small hacking group called the MOB (for Men of Business) either hacked into a credit bureau for the number, got someone else to do it, or sent the low-tech route — "dumpster diving" for used carbon copies of credit receipts.

"Indeed, most credit-card fraud has nothing to do with computer abusers. Boiler-room operations, in which fast-talking con men get cardholders to divulge their account numbers and expiration dates in exchange for the promise of greatly discounted vacations or other too-good-to-be-true deals, are far and away the most common scams, said Gregory Holmes, a spokesman for Visa.

But carders have an advantage over traditional credit-card cheats: By using their PCs to invade credit bureaus, they can find credit-card numbers for virtually anyone. This is useful to carders who pick specific credit-card numbers based on location — a neighbor is out of town for a week, which means all you have to do is get his account number, stake out his porch and sign for the package when the mail comes. Another advantage is address and ZIP code verifications, once a routine way of double-checking a card's validity, are no longer useful because carders can get that information from an account record.

"It's tough," Holmes said. "Where it becomes a major problem is following the activity of actually getting the credit-card number; it's sent out on the black market to a vast group of people" generally over bulletin boards. From there, a large number of purchases can be racked up in a short period of time, well before the cardholder is aware of the situa-

tion. While the cardholder is not liable, the victims usually are businesses like Creative Computers, or the credit-card company.

Murphy said his company used to get burned, although he would not divulge the extent of its losses. "It happened until we got wise enough to their ways," he said.

Now, with arrangements among various law enforcement agencies, telephone companies and mail carriers, as well as a combination of call-tracing routines and other verification methods, carders "rarely" succeed, he said. Also, a dozen employees work on credit-card verification now, he said. "I feel sorry for the companies that don't have the resources to devote departments to filter these out. They're the ones that are getting hit hard."

In New York, federal, state and local police have been actively investigating carder cases. Computers were seized and search warrants served on a number of locations in December, as part of an on-going federal investigation into carding. City police arrested two youths in Queens in April after attempting to card a \$1,500 computer system from Creative Computers. (They were arrested when they tried to accept delivery.)

"It's a legitimate way to make money. I know people who say they do it," claimed a 16-year-old Long Island hacker who uses the name JJ Flash.

While he says he eschews carding in favor of more traditional, non-malicious hacking, JJ Flash said using a computer to break into a credit bureau is as easy as following a recipe. He gave a keystroke-by-keystroke description of how it's done, a fairly simple routine that involved disguising the carder's calling location by looping through a series of packet networks and a Canadian bank's data network, before accessing the credit bureau computer. Once connected to the credit bureau computer, JJ Flash said a password was needed — no problem, if you know what underground bulletin boards to check.

"It's really easy to do. I learned to do it in about thirty seconds. If you put enough time and energy into protecting yourself, you'll never get caught," he said. For instance, an expert carder knows how to check his own phone line to see if the telephone company is monitoring it, he claimed. By changing the location of a delivery at the last minute, he said carders have evaded capture.

JJ Flash said that while most carders buy computers and equipment for themselves, many buy televisions, videocassette recorders and other goods that are easy to sell. "You can usually line up a buyer before it's done," he said. "If you have a \$600 TV and you're selling it for \$200, you will find a buyer."

He said that while TRW has tightened up security during the past year, Equifax was still an easy target.

But John Ford, an Equifax spokesman, said he believes that hackers greatly exaggerate their exploits. He said that in the recent San Diego case, only 12 records were accessed. "It seems to me the notion that any-

A History of Hackers

- **Sept. 6, 1991:** An 18-year-old American emigre, living in Israel, was arrested there for entering military, bank and credit bureau computers. Police said he distributed credit-card numbers to hackers in Canada and the United States who used them to make unknown amount of cash withdrawals.
- **Jan 13, 1992:** Four university students in San Luis Obispo, Calif., were arrested after charging \$250,000 in merchandise to Mastercard and Visa accounts. The computer intruders got access to some 1,600 credit-card accounts, and used the numbers to buy, among other things: four pair of \$130 sneakers; a \$3,500 stereo; two gas barbecues and a \$3,000 day at Disneyland.
- **Feb. 13, 1991:** Two teenagers were arrested when one of them went to pick up two computer systems in Bellevue, Wash., using stolen credit-card numbers. One told police that another associate had hacked into the computer system of a mail-order house and circulated a list of 14,000 credit-card numbers through a bulletin board.
- **April 17, 1991:** Acting on a tip from San Diego police, two teenagers in Ohio were arrested in connection with an investigation into a nationwide computer hacking scheme involving credit-card fraud. Police allege "as many as a thousand hackers" have been sharing information for four years on how to use their computers to tap into credit bureau databases. Equifax, a credit bureau that was penetrated, admits that a dozen records were accessed.
- **April 22, 1991:** Two Queens teens were arrested for carding computer equipment.

body who has a PC and a modem can sit down and break in to a system is patently untrue," he said. "We don't have any evidence that suggests this is a frequent daily occurrence."

Regardless, Ford said his company is taking additional steps to minimize the risk of intrusion. "If one is successful in breaking into the system, then we are instituting some procedures that would render the information that the hacker receives virtually useless."

Also, by frequently altering customers' passwords, truncating account information so that entire credit-card numbers were not displayed, and possibly encrypting other information, the system will become more secure.

"We take very seriously our responsibility to be the stewards of consumer information," Ford said.

But others say that the credit bureaus aren't doing enough. Craig Neidorf, publisher of *Phrack*, an underground electronic publication "geared to computer and telecommunications enthusiasts," said that hacking into credit bureaus has been going on, and has been easy to do "as long as I've been around." Neidorf said that although he doesn't do it, associates tell him that hacking into credit bureau's is "child's play"—something the credit bureaus have been careless about.

"For them not to take some basic security steps to my mind makes them negligent," Neidorf said. "Sure you can go ahead and have the kids arrested and yell at them, but why isn't Equifax or any of the other credit bureaus not stopping the crime from happening in the first place? It's obvious to me that whatever they're doing probably isn't enough." ■

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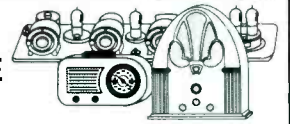
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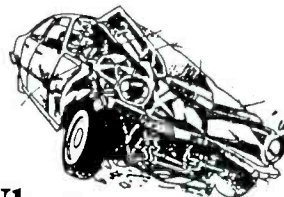
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CIRCLE 33 ON READER SERVICE CARD

Safety First: Some Antenna Erection Guidelines

Antennas are inherently dangerous to erect if certain precautions are not followed. It is not possible to foresee all of the situations that you might face in erecting an antenna. I would like to give you all possible warnings, but that is not even possible. You're on your own, and must take your own responsibility when installing an antenna. I can, however, give you some general safety guidelines. Knowledge of what you face, some hard-nosed sound judgement, and a good helping of common sense, are the best tools on any antenna job.

One rule that is an absolute is that no antenna should *ever* be erected where either the antenna, the feedline or any part thereof crosses over a power line (Fig. 1). EVER! This is a "no kiddie"—don't do it! Power lines look insulated, but there are often small breaks or weakened spots (especially a couple days or more after installation) that can bring the antenna into contact—lethal contact—with the hot power line. Every year or so we hear about an SWL, monitor buff or ham radio operator being killed by tossing an antenna wire over a power line. Avoid making yourself into a high power resistor!

The same rule applies to situations where the antenna can fall onto a power line if it fails. You have to examine the situation to see if there is any possible way for that antenna, or its support structure, to fall onto a power line if it breaks in any way whatsoever. Figure 2 shows a diagram of my lot in Virginia. A 23-foot mast is erected on the back of the house, and its 23-foot fall radius is plotted. It should not intersect either the power lines or the cable TV line.

Another caution is that you be physically fit to do the work. While the on-the-ground portions of the work is not usually too strenuous, any climbing at all, even on ladders can be taxing. Antenna materials are deceptively lightweight on the ground, but when you get up on even a small ladder, they are remarkably difficult to handle. Attempting to manhandle a 22 foot vertical once wiped my back out, and I consider myself fortunate that the pain hit me after I'd dismounted the ladder. Besides, if you could see me, you would wonder why a man my size was on any ladder in the first place (no snickering Harry Helms!).

Before using a ladder, learn how to use one. A lot of homeowners, whether putting up antennas or painting the upstairs windows, fall off ladders that were being used incorrectly.

If the wind blows even a few miles per hour, the danger is magnified considerably. I recall a friend—who is a large, strong bear of a man—attempting to install a 26-element television "all channel" antenna on the roof of his

second story house. The antenna was easily handled with one hand on the ground and with no wind blowing, but up on the roof it was a different story. "Big Al" was on the peak of the roof, when a gust came up suddenly and caught the antenna. It acted like a hang glider, and pulled Al off the roof, plunging down two stories to the patio below: he fractured his pelvis and busted a leg. Expensive TV antenna, I reckon. Be careful.

One good rule is to always work under the buddy system. Ask as many friends as are needed to safely do the job, and always have at least one assistant even when you think you can do it alone.

Always use quality materials and use good work practices. Antennas, being potentially dangerous, should always have the best of

both goods and workmanship in order to keep quality high. It is not just the electrical or radio reception workings that are important, but also the ability to stay up in the air and safe.

When planning the antenna job, keep in mind that pedestrian traffic in your yard could possibly affect the antenna system. Wires are difficult to see, and if an antenna wire is low enough to intersect someone's body, then it is possible to cause very serious injury to passersby. Even when the person is a trespasser, the courts may hold you liable for injuries caused by an inappropriately designed and installed antenna. Take care for safety not only of yourself, but of others.

One necessary reminder is that your local government might have some interesting

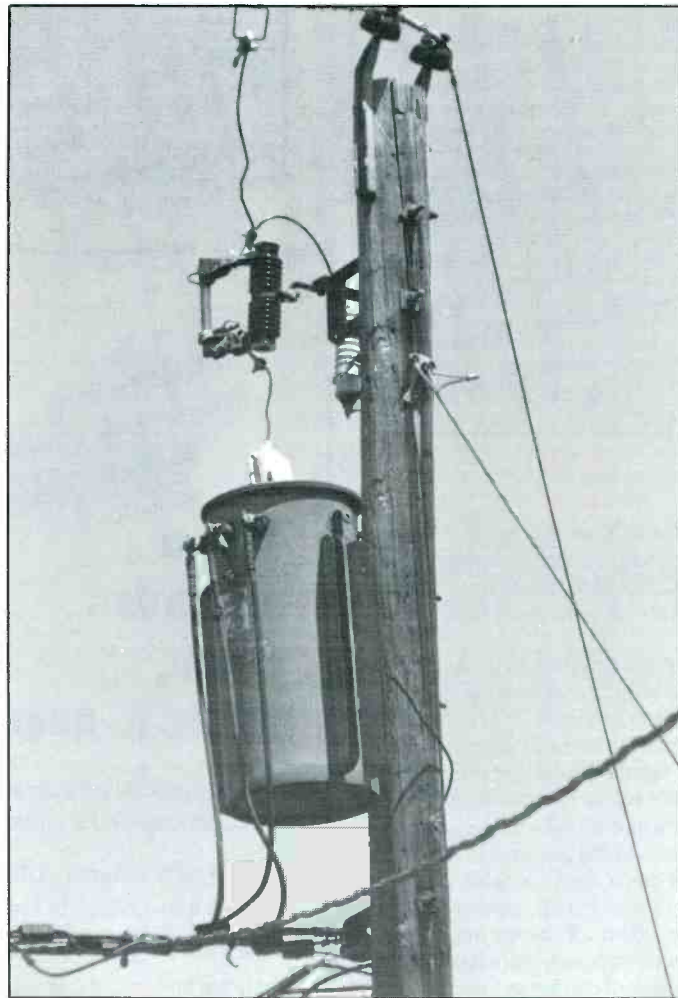


Fig. 1 — "Pole pig" transformer at the corner of my lot converts high voltage AC to the standard 220 volt (110-0-110 volt) residential power system. It, unfortunately, serves as a hazard to antenna erectors.

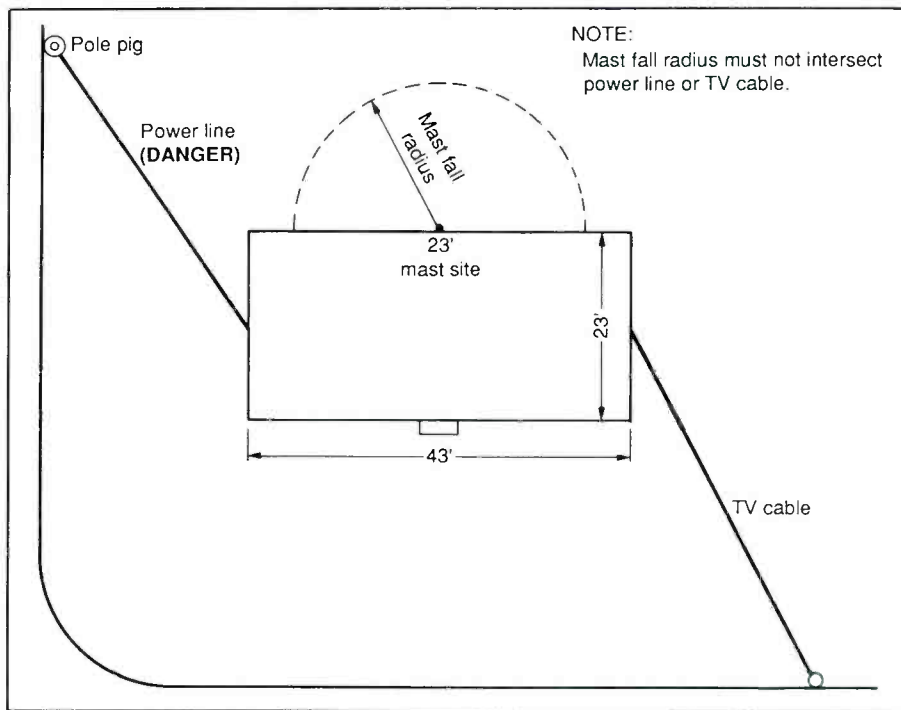


Fig. 2—Plot of my house and lot showing power line and cable TV line access. These lines limit antenna possibilities because of safety considerations.

ideas—legal requirements actually—concerning your antenna installation. The electrical, mechanical and zoning codes must be observed. There is a great deal of similarity between local codes because most of them

are adaptations from certain national standards. But there are enough differences that one needs to consult local authorities. Indeed, you may need a license or building permit to install the antenna in the first place.

One problem that SWL's and monitors face is that their antennas are not protected by the FCC as are ham antennas (local governments have limited rights to regulate ham antennas, only "reasonable" mechanical and electrical standards can be imposed), so it may be illegal for you to install any antenna.

About 30 years ago a friend of mine in a radio club found out that his county had an ordinance that said an outdoor antenna must be double its own height plus fifty feet from the nearest property line. He received a summons after a complaint from a neighbor. In a county full of quarter acre home lots, however, that was a ridiculous law. Very few outdoor TV antennas met that strict requirement! So Hal went to the court house and asked for 50,000 complaints forms. Using a local county directory, he proceeded to fill out the same complaint as he'd received against every homeowner in the area. The county board repealed the law during the next meeting.

Save all paperwork regarding your building permit, including inspection decals or papers, and the original drawings (with the local building inspector's stamps). If a casualty occurs, then your insurance company may elect to not pay off if you have violated an electrical, mechanical, building or zoning code. That clause may be overlooked by an enthusiastic antenna builder, but it could prove to be a costly oversight if something happens.

Joe Carr welcomes your suggestions for this column.

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COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Here are some interesting tidbits which appeared in *Military* magazine in past months.

The Soviet signal unit responsible for monitoring NATO radio traffic is reportedly still continuing to run monitoring operations from former East Germany territory.

Gorbachev, when talking last year about the recall of thousands of Soviet advisors to Cuba, made no mention of closing the huge electronic intelligence listening post at Lourdes, Cuba manned by some 2,000 Soviet military technicians.

Although supposedly all Cuban troops had been withdrawn from Angola, there are claims that as many as 20,000 Cuban troops are still there in communist Angolan uniforms.

I asked Dave White, ME to provide some DF bearings on the frequencies of some numbers broadcasts. The schedules and frequencies were 0030 UTC on 5264 and 6792 kHz; 0230 UTC on 6840 and 9958 kHz; 1030 UTC on 7725 and 10324 kHz; and 1830 UTC on 11491 and 16310 kHz. The various bearings averaged out to approximately 230 degrees from Dave's Maine location. He advised that the projected line goes through the general area of Warrenton, VA.

These numbers broadcasts feature short messages repeated for exactly ten minutes. I thought if I missed the beginning of the broadcast I could copy the remainder of the ten minutes and by noting the last group sent at the ten minute mark, I could then deter-



Ronald Tull, Yukon, Canada took this photo of the FCC office in Juneau, Alaska.

mine the proper sequence and know which group was the first and which one was second, etc.

However, after further study of the messages, both those sent by voice and those sent by MCW, I have come to the conclusion that the above theory is simply not so.

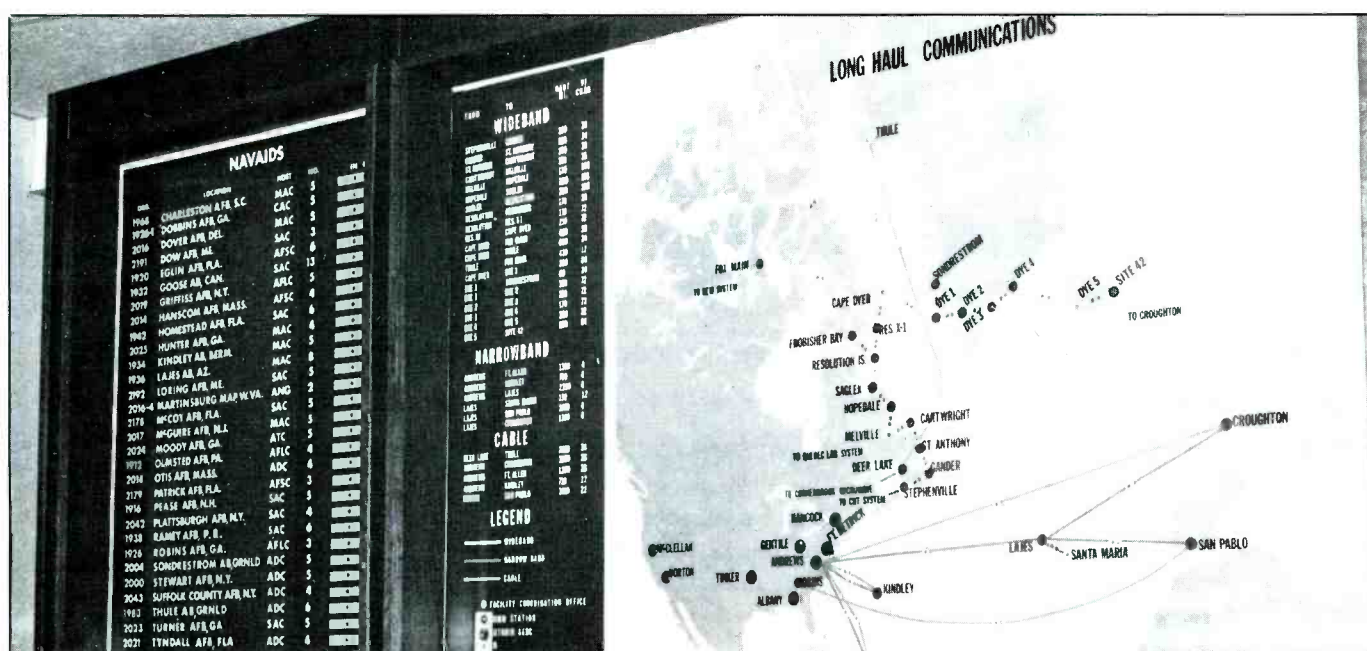
There are two points to consider in connection with these broadcasts:

- A). Each of these broadcasts was exactly ten minutes, in duration.
- B). The sending speed seemed to always

be the same regardless of the number of groups in the messages.

For illustration purposes let's assume a sending speed of GPM for a MCW transmission. Now, take a look at what happens to the sequence of groups in a message of 4 groups with 4 characters in each group. To identify the groups they have been designated AAAA for the 1st group, BBBB the 2nd, CCCC the 3rd, and DDDD the 4th.

During the first minute, the groups above are sent plus another AAAA. By the time the



Status monitor board for Air Force communications. Photo courtesy US Air Force.

end of the broadcast takes place, the last group turns out to be BBBB. Back tracking we incorrectly peg CCCC as the first group of the message.

If the message had 5 groups and was sent at 5 GPM, then the last group transmitted at the 10 minute mark would be the true last group of the message.

In comparing transmissions of the various daily schedules it was noted that sometimes a later sked would carry a message with the same group sequence as on a previous sked. However, there were also many instances of a later sked with the same groups but not in the same sequence as previously observed. This fact makes me wonder if these transmissions are dummy messages being sent as a traffic deception operation?

Simon Mason, England wrote, "Recently I heard a new twist to the 'counting stations' format. At 1328 I was tuned to a carrier on 16434 kHz when a 'warble jammer' came up on the frequency. At 1330 the usual YL/EE popped up and repeated the 4F groups '7380' and '8847' over and over until 1340 went off the air. This is similar activity to the YL/SS station on 6840 kHz at 0230. The YL is the one that counts 1-0 for 10 minutes followed by 10 tones, Count—etc. The warbler knew it would start at 1330."

First time contributor, Gordon Thompson, WV said, "My equipment consists of a Realistic DX-160 and a Realistic DX-440 receiver. My antenna is a 122 foot longwire. I have had an intense interest in SWL'ing and 'Ute' stations for several years."

Another first timer is Anthony Grice, NV whose station has a SONY ICF-SW7600 connected to a very old James Millen Company transmatch junior antenna tuner. The antenna is a dipole cut for 7 MHz which is located in the attic.

Todd Koch, IL writes that he is 25 years old and has been a SWL'er for 10 years. "My specialty is 'Utility' monitoring and my favorite station is the US Customs and DEA. 23402 kHz is pretty active between 0900-1800 hours and I hear a lot of 'Flint' ID's usually working Flight Ops. At night 8912 and 7527 kHz seem to be active frequencies with reports of suspect vessels or aircraft. For equipment I have a DX-440 and a Panasonic RF-2200 with a longwire antenna strung around my shack."

Roger Caldicott, MA told of two good DX captures. At 0430 he heard 3BM6, Mauritius between two very strong stations on 16978 kHz with a CW weather broadcast. At 1310 he heard UFL, Vladivostok with a CCW traffic list on 12955 kHz.

From an anonymous writer we received these interesting identification details for a mystery site. Here is what the letter said. "In the May '92 issue on page 48 you show two photos and relate a question from Patrick Griffith as to what is the site. I know it well, having worked there in the 1950's.

This site, near Pecatonica, Illinois was DAS, 'Domestic Auxiliary Station, call letters AF1XPG, and part of the US Air Force Proj-

Global Command Control System (GCCS) Station
606th Communications Group
Lajes Field, Azores, Portugal 09720

Dan Grote

Dear Dan,

It was great hearing from you. I received your letter on 22 Jan 92. My name is Michael Sears and I am the Chief Operator of the GCCS Station. My primary job is training personnel. I have been here in the Azores for 27 months. I've been in the Air Force for 5 years now. My first duty assignment was MacDill AFB which is located in Tampa, Florida. I have been a radio operator since joining the force. I will provide some information on the Azores as you requested in your letter. Once again, it was great hearing from you and please feel free to write again if you have any further questions.

THE AZORES

The nine inhabited islands of the Azores Archipelago are located in the North Atlantic Ocean about 2,300 miles east of Washington, D.C., and about 800 miles west of Lisbon, Portugal. Together, they form an autonomous region of Portugal.

The islands CORVO and FLORES—the two most western islands, SAO MIGUEL—the largest, and Santa Maria—are the two most eastern islands. In the center are five others: FAIAL, PICO, SAO JORGE, GRACIOSA, and TERCEIRA, where Lajes Field is located.

Terceira is about 20 miles long and 12 miles wide. It is oval in shape and its high cliffs rise steeply from the surrounding ocean. The hilly terrain of this island, and most of the vegetation is scrub bush. There are lush, green fields on the hills and slopes, products of centuries of hard work by the Portuguese who settled here when it was claimed as part of Portugal.

All of the islands enjoy a mild climate year round. The warmest season, when temperatures range between 65 and 85 degrees Fahrenheit, extends from May through October. During the remainder of the year, there are periods of high winds, frequent rains, and cloudy skies, with temperatures ranging from 45 to 70 degrees. Humidity is high throughout the year.

The local Portuguese people are simple, kind and ambitious. They seem torn between their farmer lifestyle and the luxurious European materialist trend. It is not unusual to see a Mercedes or a BMW parked in the same yard beside a donkey, and the owner seems to utilize them both.

They play soccer and table tennis very well. Although their eyes are usually light colored, they have a strong resemblance to Arabs. They welcome and entertain the curiosity of strangers with naivete and have no aggressive nature.



MICHAEL A. SEARS, Sgt., USAF
Chief Operator, GCCS

Letter received by Dan Grote, IL along with QSL.

ect 572, the DEW LINE. There were four sites in Illinois and these follow with site, tactical call and license information given: Streator, DMS, AF1XPD; LaSalle, DMI, AF1XPE; Oregon, DAI, AF1XPF; Pecatonica, DAS, AF1XPG.

All were built about 1953-1954 and were the prototype sites for a Distant Early Warning Line, later to be constructed from Cape Lisburne, Alaska to Baffin Island, Canada. The Illinois sites were the test bed, where equipment was tested, redesigned, tested again to establish that the bogies could be detected and a warning communicated. The prime contractor was the Western Electric Company, and R&D was by Bell Telephone Laboratories. About 1958 the sites were taken over by the Federal Electric Company (ITT) who used them for training the civilian crews that manned the DEW LINE sites. I believe Federal lost the contract at some point to RCA, and they took over the Illinois sites. It oscillated back to Federal (ITT), and last I

heard they were the operating contractor.

The Domestic Main Station, "DMS," at Streator transmitted by very high power ionosphere scatter propagation (40-50 MHz at 50 + kW) to Domestic Base Station, "DBS" at Holmdel, NJ. Communication from Pecatonica, "DAS" to Streator, "DMS" was by tropospheric scatter propagation, which worked in the GHz region. Additionally there were point-to-point and mobile systems working in the 150-170 MHz FM band.

Following the Illinois test phase, similar northern test sites were built at Anchorage, NBS, 7TPA; Barter Island, NMS, 7TPB; Bullen Point, NAW, (license info NA); Bagnall Beach, NAI, (license info NA); Demarcation Pt., NMI, (license info NA); and the Canadian Site, NAE, (license info NA).

All of the above were converted from test sites to operational locations in the late 1950's.

The DEW LINE was a victim of detente,

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/led/cation
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	with
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRX)

and an article in the *Washington Post* on July 7, 1991 announced its phase-out, to be completed in 1994."

Our thanks to this anonymous person for this enlightening rundown on the DEW LINE installations.

**Ute Intercepts
All Times UTC**

- 200:** Beacon YAQ, Kasobonika, Ont., Canada at 1107. (Crabill, VA)
- 206:** Beacon UKT, Quakertown, PA at 1149. (Crabill, VA)
- 233:** Beacon SUT, Southport, NC at 1058. (Crabill, VA)
- 236:** Beacon J, Toronto, Ont., Canada at 1101. (Crabill, VA)
- 242:** Beacon MMI, Athens, TN at 1113. (Crabill, VA)
- 248:** Beacon GGI, Grinnell, IA at 1218. (Crabill, VA)
- 250:** Beacon UGS, Athens/Albany, OH at 0721. (Crabill, VA)
- 260:** Beacon BVQ, Glasgow, KY at 0751. (Crabill, VA)
- 268:** Beacon RT, New York, NY at 1148. (Crabill, VA)
- 278:** Beacon XSD, Tonapah Test Range, NV at 1129. (Vaage, CA)
- 281:** Beacon DEQ, De Queen, AR at 1118. (Crabill, VA)
- 290:** Beacon YYF, Pentifcton, BC, Canada at 1143. (Vaage, CA)
- 299:** Beacon HW, Wilmington, OH at 1131. New for me. (Crabill, VA); Beacon LCR, Las Cruces, Crawford Municipal airport, NM at 1145. (Vaage, CA)
- 305:** Beacon RO, Roswell, NM at 1147. (Vaage, CA)
- 320:** Beacon U, Harbor Beach Light, MI at 1146. (Crabill, VA)
- 326:** Beacon MCY, Mercury, Dessert Rock, NV at 1153; Beacon MA, Midland, Farly Regional, TX at 1153. (Vaage, CA)
- 329:** Beacon LLE, West Bend, IN at 1155. (Crabill, VA); Beacon TAD, Trinidad, Las Animas County Airport, CA at 1154. (Vaage, CA)
- 333:** Beacon STI, Mountain Home, Sturgeon Municipal airport, ID at 1156. (Vaage, CA)
- 353:** Beacon ZES, Cape Scott, BC, Canada at 1218. (Vaage, CA)
- 361:** Beacon MNV, Madisonville, TN at 1050. (Crabill, VA)
- 362:** Beacon TC, Tuscaloosa, AL at 1047. (Crabill, VA)
- 383:** Beacon PI, Pocatello, Tyhee Municipal airport, ID at 1230. (Vaage, CA)
- 395:** Beacon YL, Yellow Lake, Man., Canada at 1048. (Crabill, VA)
- 397:** Beacon SB, San Bernardino, Norton AFB, CA at 1233; Beacon LLJ, Challis, ID at 1234. (Vaage, CA)
- 414:** Beacon LYI, Libby, Libie, MT at 1238. (Vaage, CA)
- 489:** VAU, Yarmouth NS Coast Guard in CW at 1402 w/notice to mariners that "Medway Head Light LL415 is operating properly. Cancel notice PMO852 DE VAU." (Caldicott, MA)
- 512:** UWFL, Soviet vessel Engure in CW at 0935 w/request for pilot Hoek Van Holland. (Boender, Netherlands)

- 3860:** Space shuttle at 0205 in USB. QRM on freq. (Thompson, WV)
- 4408:** Halifax CG Radio (SSB) Ice growth/Drift Information report for Cape Breton Island and Prince Edward Island from 2340-2345. (Caldicott, MA)
- 4455:** Numbers stn in AM at 2100. (Thompson, WV)
- 4470:** Blue Chip units hrd at 0224. (Thompson, WV)
- 4480:** CIP26 in SSB wkg CIP24 w/verification that msgs were recd via RTTY. Other than verifications, tfc is by RTTY. (These are Military CFARS stations). (Caldicott, MA)
- 4655:** Numbers stn in AM at 2106. (Thompson, WV)
- 5301:** YL/RR rptng 759 0000-0002 then into 5F. Also hrd at 0600 to same addressee. (Mason, England)
- 5565:** Nat. wx svc w/off-shore wx for Gulf of Mexico 2213-2231. (Thompson, WV)
- 5692:** USCG Traverse City, MI in SSB wkg a/c 6010 at 1326. A/c had just left ft deck and checked back in at 1346 w/normal ft ops report. (Caldicott, MA)
- 6605:** NY Radio in USB at 2102 w/aviation wx. Also hrd at 0254. (Thompson, WV)
- 6758:** YL/RR rptng 926 from 2200-2204 then into 5F. Ended w/Kanet. Also sent on 5301 kHz and is now a regular on these freqs at various times in CW and YL/RR between 1900-0700. (Mason, England)
- 7490:** WA3NAN, Goddard Space Center Amateur relay w/Shuttle info in USB at 2048. (Thompson, WV)
- 8294:** WGW, Caribe Tugboat, San Juan, PR in USB at 0452. (Margolis, IL)
- 8295:** Ship/shor phone in USB at 0343. (Thompson, WV)
- 8515:** 5AT, Tripoli, Libya in CW w/VVV DE 5AT at 2313. This stn on this freq sends tfc lists on the half hour 24 hours per day. (Caldicott, MA)
- 8819:** United 931 w/Rainbow, pp w/United Airlines. Chicago at 2257; Krasnodar Volmet at 2040; Alma Ata Volmet at 2045; Tashkent Volmet at 2150. All USB. (Boender, Netherlands)
- 8846:** Speed bird 38, (British Airways flight 38) in USB at 1720 w/comms to New York re flight info. Primary 8846 kHz and Secondary 11396 kHz. (Koch, IL)
- 8930:** Stockholm w/LND1449 at flight level 310 at 1525; w/American 55 at 1527 for rdo check; w/Delta 106 at 1542 at flight level 370. All USB. (Boender, Netherlands)
- 8939:** Riga Volmet at 2100, Leningrad Volmet at 2105, Moscow Volmet at 2110, Kiev Volmet at 2120; Rostov Volmet at 2125. All USB. (Boender, Netherlands)
- 9040:** YL/GG at 2330 w/Sierra Bravo x4 and electronic tones rptd. Then into 3/2F grps x2 for 498 and 527. (Johnson, NY)
- 10255:** YL/GG at 2100 rptng 750 x3, 341 91, 055. At 2107 five tones and into 3/2F grps. Rptd at 2114 after "Ich wiederhole" (I repeat). Off at 2120 w/Ende. USB mode I think (Johnson, NY). Every Sunday at 1100 YL/GG w/102x3, 03530, 049 in parallel w/8970 kHz. At 1105 five tones and into 5F grps. (Mason, England)
- 10631:** 5F grps in progress in auto Morse. Cuts zero as letter T. Down w/TTT TTT at 0105. (Ed.)
- 10985.8:** U/i w/hand sent CW at 0012 w/5L grps. (Ed.)
- 11176:** MAC 6061 wkg Croughton at 0858; MAC 4V5 wkg Ascension, pp to Rota Meteo and Phantom (MAC European Theater Airlift Control Center) at 2210; AAF, Ascension clg MAC 4V5, pp from Phantom at 2220, MAC 4L4 w/ Lajes Meteo, wx for 2130 hrs at 1815 and w/Ascension at 2000; MAC 523TW, on ground in Norway w/Croughton, pp's at 1510. (Boender, Netherlands)
- 11179:** MAC 40612 (C141) wkg Dover AFB, DE at 1137. W/msg re arrival at 1400 from an Alpha mission. 35K lbs on board, 6 pallets and 2 pieces of rolling stock (engines); a quick stop then on to Charleston, SC. Pilot then requested wx for both Dover and Charleston. (Caldicott, MA)
- 11200:** RAF Volmet wx bcsts in USB at 1650. (Koch, IL)
- 11214:** Trenton w/Sentry 67 in USB at 1330. Told to go to 13207 kHz then had phone patch w/Raymond 24. (Koch, IL)
- 11235:** Ascot 5739 (RAF Transport 5739) in USB at 1430 w/Architect (RAF Strike Command Integrated Communications System) w/wx and pp's. (Boender, Netherlands)
- 11300:** LAA 252, Libya Airways in USB at 2013 clg Cairo. (Boender, Netherlands)
- 11532:** YL/SS in AM at 0300 w/533 533 533 1-0.

- At 0310 Grupo 49 x2 and into 4F grps. Rptd at 0314, off at 0318 w/Fin. Also on 7422.5 kHz. (Johnson, IL)
- 12214.5:** Cut numbers in CW at 2303. Xmtr has that CLP1 sound. (Ed.)
- 12356:** OM/EE in USB at 0038. He called himself "Southbound Two" and said he was located in Bermuda. Gave wx for Caribbean to several boat Skippers. Last contact for evening was tug Elvina Hicks who had just left Cape Hatteras. This opr usually comes on about 2300 till about 0100 or 0130. (Grice, NC)
- 12601:** ZSC63, Cape Town, RSA in CW at 0236 w/callsign mkr. (Margolis, IL)
- 12637.5:** UMV, Murmansk, Russia in CW at 0354 w/UMV 3707 mkr. (Margolis, IL)
- 12955:** UFL, Vladivostok in CW at 1310 w/tfc list at extremely high speed keying. UFL preceded to communicate w/ships at a speed of approx 40 wpm. (Caldicott, MA)
- 13098:** WOM, Miami, FL in USB at 1630 w/pp for cruise ship Nordic Prince. Ship was going through Panama Canal. (Koch, IL)
- 13107:** WOO, Ocean Gate, NJ in USB at 1535 w/pp for Majesty of the Seas. Ship was on 12260 kHz. (Koch, IL)
- 13201:** Thule AFB in USB at 0850 w/MAC 67945 for wx info into Thule. (Koch, IL)
- 13285:** Hong Kong Volmet at 1715; Auckland, NZ Volmet at 1720. Both were USB. (Boender, Netherlands)
- 13301:** Houston Radio w/u/a/c in USB at 1317 having microphone problems, kept switching microphones. (Koch, IL)
- 13385.1:** Two speed key oprs handling 5F grps in CW at 1151. (Ed.)
- 13416:** YL/EE in RCS at 1203, slight echo to sig. Callup of 021 021 021 1-0 count then 10 tones at 1210. Foll by Count 210 x2 w/3 + 2F grps. (Ed.)
- 13485.8:** Tone foll by 3 tones superimposed on 1st tone. This foll by long raspy dash. Then same thing at much less sig strength as if being beamed in opposite direction. Brief pause then resumes sequence. Hrd at 1154. (Ed.)
- 13543.6:** U/i auto Morse stn w/5F grps, zero cut as T. Down at 1834 w/TTT TTT. (Ed.)
- 13635:** SLHFM's C, S and P operating under Swiss Radio Int. EE best at 1130 in stn's USB only. (Mason, England)
- 13775:** YL/EE rptng Alfa Bravo from 1100-1105 w/electronic tones. At 1105 5F grps for 804 and 299. (Mason, England)
- 13861:** U/i w/5F cut nbrs in CW (speed key) at 2309. (Ed.)
- 14180:** SS 5F grps hrd in progress in USB at 0405 and down at 0410 w/5 zeros. (Weil, MN)
- 14435:** U/i Auto CW stn w/451 x3 TTT etc at 2042. (Ed.)
- 14620:** OM/EE at 1900 rptng 620 x3 00000. No msg given. Off at 1904. (Johnson, NY)
- 14770.5:** Cut nbrs in CW at 1246. Xmtr has that CLP1 sound. Down w/AR AR AR SK SK SK at 1249. (Ed.)
- 14915.8:** After listening to this CW for awhile I believe this was opr key play. The speed key was set up so each character was multi-dit. Opr was sending Spanish numerals spelled out, i.e. Uno, Dos, Tres, etc. When he got to Diecinueve he stopped, apparently adjusted key then started in again with Uno, Dos, etc. (Ed.)
- 14930:** YL/EE at 2100 rptng 332 x3, 577 04, 034. At 2108 5 tones then into 3/2F grps. Numbers unevenly spaced. YL slow-speaking. Rptd at 2112 after "I say again." Off at 2117 w/end. Also on 11190 and 19380 kHz. Same format as YL/GG on 10255. (Johnson, NY); YL/EE every Friday rptng 332 x3, 57704, 034 in parallel w/11190 kHz. At 1206 into 5F grps and rptd same day at 2100 on same freqs. (Mason, England)
- 15035:** CHR, Trenton Military Volmet in USB at 1330. (Boender, Netherlands)
- 16326.9:** Numbers stn w/674 674 674 TTT etc. Hrd at 2120. (Ed.)
- 16659.8:** CWNX (u/i) in EE at 2103. Text concerned Philippines elections. (Ed.)
- 16978:** 3BM6 Mauritius Radio (Indian Ocean) in CW w/local wx. Opr sent forecast in very non-rhythmic style keying. (Caldicott, MA)
- 17015:** SLHFM's C and S at 1122. (Mason, England)
- 17106:** Station keying "S" continuously in CW at 1124. Week later stn was sending letter "F" on same freq at 1553. (Caldicott, MA) (More SLHFM xmsns.) (Ed.)
- 17019:** CW mkr 4LSDE UDK2 QXK 12459K at 1140 from Murmansk radio, Radio. (Mason, England)

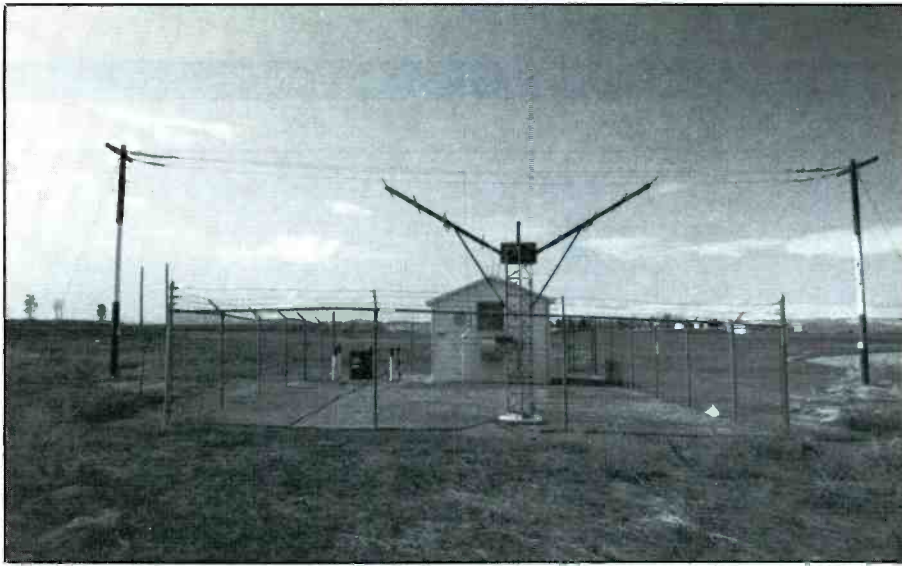


Photo from Patrick Griffith, CO shows the outer marker for the east end of Denver's Stapleton Airport. The poles support the VLF Beacon antenna and the "V" shaped beams are the 75 MHz "outer marker" transmitter.

17105: IRM, Rome Medical Advice & Amver service in CW at 1213. (Boender, Netherlands)
17165: ZSC, Capetown, South Africa w/channel mkr in CW at 0540. (Caldicott, MA)
17170: YL/EE rptd Mike India Whiskey 2 in USB 1915-1920. (Margolis, IL) (Mossad stn.) (Ed.)
17177: A7M, Bahrain in CW at 2020 w/channel mkr. (Caldicott, MA)
17242: WOM, Miami. FL in USB at 0800 w/pp for Tanker Aloha who enroute Puerto Rico going through Panama Canal. (Koch, IL)

17250: Halifax, Nova Scotia in USB at 2215 w/aviation wx. (Thompson, WV)
17370: YL/EE with 1-0 count and '188' from 2000-2010. Then 10 tones 'Count 219' and into 3/2F grps. Also on 14420 kHz. (Mason, England)
17916: Stockholm at 0800 w/Malaysia 943 who was trying contact another a/c. (Koch, IL)
17940: CG 101 w/Houston rdo in USB at 0930 w/pp's. (Koch, IL)
18195: YL/GG in USB at 1614 w/5F grps. Down w/Ende at 1616. (Ed.)
18200: Cut numbers in MCW at 1503. He is slopping

all over the band from about 18227 to 18185 kHz. Extremely strong sig. Down at 1513 w/AR AR AR SK SK SK. (Ed.)
18345.5: U/i in CW at 1533 w/5L grps (cut nbrs) using ANDUWRIGMT. (Margolis, IL)
18450: OM/?? in AM at 1825 w/3F callup rptd over and over. Then 2F x2 and into 5F text. Down at 1831 w/5 "NOL's." Maybe Czech language. (Ed.)
18460: AFA, Andrews AFB, MD in LSB at 2106 w/pp's. (Margolis, IL)
19185: U/i CW stn at 2059. Sounds like CLP1 xmtr. (Ed.)
20011: Numbers stn in AM at 0830 w/long characters in EE. (Koch, IL)
20740: YL/EE in RCS clg Charley Indio Oscar Two at 2046. Down at 2050!. Another day also hrd at 1745. Mossad. (Ed.)
20832: RNE33, PTT Moscow, Russia in USB at 1627. YL & OM in phone conversation in RR. (Margolis, IL)
20946: 8BY, u/i w/channel mkr rptd in CW at 1145. (Caldicott, MA)
20991: SLHFM's C, D, P at 1100. (Mason, England)
22222: YL/EE in AM at 1600 w/callup 104 until 1603 when off circa 2 mins. Bcst slowed down like "dying tape" when it stopped. Resumed, but was still slow and slurred. Off at 1622. Rpt at 1700 on 18880 kHz off at 1717. (Mazanec, OH)
22472: CBV, Valparaiso, Chile w/CW channel mkr at 2139. (Caldicott, MA)
23142: CKX, Portishead Aero, England in USB at 1507 w/pp's. (Margolis, IL)
23210: SHN33, Stockholm Aero. Sweden in USB at 1517 w/pp's. (Margolis, IL)
23285: Victor Bravo in USB at 1833 w/pp via HEB91, Berne Aero, Switzerland. (Margolis, IL)
23330.5: D3E, Luanda, Angola in CW at 1850 w/CQ/QSX mkr. (Margolis, IL)
23402: Atlas w/Flint 005 & ?, enroute to 931's location for couple days. Atlas then told them to go to Tango. (Koch, IL)
27095: YL/EE w/1-0 count and "512" from 1500-1510. After tones into 3/2F grps. CB users on nearby freq. (Mason, England)

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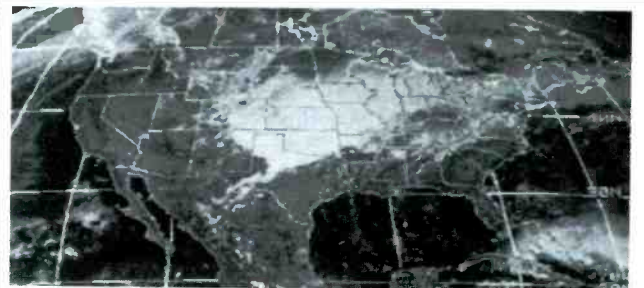
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CIRCLE 70 ON READER SERVICE CARD

September 1992 / POPULAR COMMUNICATIONS / 33

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

This is one of those rare times when we can announce the arrival of a new country on the shortwave bands! High Adventure Ministries' KHBN, located on the Pacific Island of Palau went on the air in the middle of April. Initially the power used was just five kilowatts, but by now it's likely up to the planned 100 kilowatt strength. The early schedule was from 2000 to 0800 on 11980 and 0800 to 1600 on 9830. Programming will be mostly or entirely religious. Apparently the actual, native spelling of the island is "Belau." Reception reports may be sent to Paul Hunter, Chief Engineer, High Adventure Ministries, PO Box 7466, Van Nuys, CA 91409.

Last month we mentioned the return of Dominican Republic station Radio Clarin in Santo Domingo. Well, it was a mighty short run—a matter of only a couple of days! Seems those broadcasts were just tests before the transmitter was to be shipped to Miami, Florida! Radio Miami International, which has an FCC construction permit for a shortwave station, has purchased the Radio Clarin transmitter and will use it for its own shortwave service to the Caribbean.

It would seem, therefore, that Radio Clarin is gone from shortwave for good. Radio Clarin was one of Latin America's best known stations back in the '70's, when it operated on 11700 featuring the popular shortwave personality Rudy Espinal and his "This Is Santo Domingo" program.

Radio Miami International has applied for call letters WRMI and it now seems likely that the Miami station will be running its own station on shortwave before the end of the year. Radio Clarin's last frequency—9950—will probably be among the frequencies used.

Kol Israel's situation continues to be very shaky, with further cutbacks in their shortwave service having been made. The current schedule is a shell of what it once was. Seems a fair chance now that Kol Israel could be lost entirely!

A seldom heard Costa Rican station is appearing again. Radio Universidad de Costa Rica has been monitored by several DX'ers on its 6105 frequency in our evenings, to sign off a few minutes after 0400. Programs are in Spanish only.

As they'd promised earlier, Radio Kuwait has gotten an English language service back on shortwave. Actually, it's a relay of a local service and is carried now on 13620 between 1800 and 2100.

The Voice of Turkey has not only resumed its English programming for North America, it has added the frequencies 7185 and 11710 to the long used 9445.

Speaking of English programming, Radio Nacional de Venezuela says it plans an increase in the length of its English segments—from the current ten minutes to a half hour.



The main building at the VOA Greenville transmitter site. Photo courtesy A. Nunnery, NC.

These will go on at 2230, 0030, 0330, 1130, 1430 and 1830 on 9450.

Radio Iraq has made more changes in its North American service. The broadcast runs from about 0055 to 0115 on 11945 and 17740.

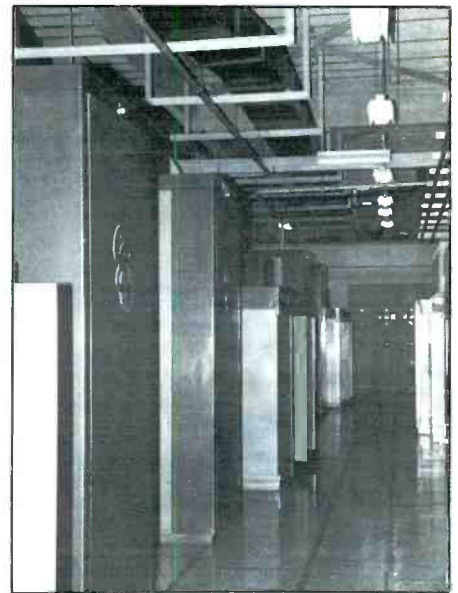
More fallout from the end of the cold war. The days of RIAS (Radio in America Sector) in Berlin are numbered. The American-owned station is scheduled to merge with local German domestic network, Deutschlandfunk sometime this year. It might be a good idea to chase this one down while it's still on if you haven't logged it before. Check the loggings section this month.

If you want to hear Deutsche Welle via transmitters in the former USSR here's the current line-up: 7305 at 1430-1650 in Hindi, Urdu and English; 7315 at 2230-2320 in Indonesian and 1400-1800 in German; 7340 at 2200-0000 and 1000-1400 in German; 7380 1100-1150 in Japanese; 7390 at 1200-0250 in English and 0300-0350 in Pashto and 17650 at 0800-0850 on Pashto, 1000-1050 in Persian.

The Mail: A huge thank you to Mr. A. Nunnery in Cary, North Carolina, who sent an entire roll of photos he took during a visit to the VOA Greenville transmitter site. We've included a couple this month. Mr. Nunnery says it is an amazing place!

Tony Bernhoffer sends along his shack photo and we're featuring it this month. Thanks, Tony. And, sorry, but we've not a clue as to your unidentified station near VOIRI on 9020. We'd guess it's a receiver fluke.

Louis Long in Wheeling, West Virginia



Greenville transmitters. (Photo courtesy A. Nunnery)

says the Voice of Free China has a US address: PO Box 192793, San Francisco, CA 94119-2793. Louis says VOFC says it has a dozen different QSL card designs.

Another shack photo this month comes from Tom Robertson of Louisville, Colorado. Tom's shack features a Beckman (Collins) 7700 general coverage receiver with a matching Beckman translator with scope and frequency counter. The receiver was designed for use by the military.

Daryl Rocker in Frankfort, New York reports he passed his no-code tech test and will soon have his ham ticket. Congrats, Daryl. Hope you'll still spend some time on the SWBC bands!

Emanuel Tavares Filho in Rio de Janeiro, Brazil is having problems getting QSL's from Syria and Tunisia and wonders what the answer is. Mainly, just to keep trying, even though you've been doing so for years. Both these stations are generally quite difficult, though they do have open periods now and again and it's a matter of just hitting the right time. Emanuel is a journalist, an SWL and a ham (PY1NEW). He'd like to hear from anyone who can log Nepal at night (POB 100.659, 24001 Niterio, Rio de Janeiro) as the 1200 hour is impossible for him.

Mike Comerford is in the Air Force, stationed in Panama and can't obtain IRC's. He wonders if it's OK to send dollar bills to stations. A lot of people do, Mike. Should think you could order IRC's through the mail.

Your letters and loggings are always welcome. Loggings must be by country, with cutting room between each item and with your last name and address after each. Spare QSLs, questions, answers, station news and schedules, clippings and such are always welcome. Shack and station photographs are very much wanted for use as illustrations. Sorry, none can be returned.

Here are this month's logs. Broadcasts are assumed to be in English unless otherwise noted as Spanish (SS), German (GG), Russian (RR), French (FF), etc. All times are in UTC.

SWBC Loggings

Albania: Radio Tirana, on 9760 at 0237 with sports, new IS. (Olele, Nigeria) 11825 at 0330. (Rocker, NY)

Antigua: BBC relay, 5975 at 0712 with "Newsdesk." (Foss, AK) 17840 at 1408 with sports. (Tucker, GA)

Armenia: Radio Yerevan, 17605//17690 at 0348, unid language (probably Armenian, ed). To 0358 sign off. (Tucker, GA)

Ascension Island: BBC relay, 11765 at 2345 in SS/EE with English language program for non-EE speakers. (Tucker, GA) 0858 on 17790 with cow bells, site ID. news. (Lamb, NY)

Australia: Radio Australia, 6015//15410 and 21490 at 0554. (Vaage, CA) 6020 at 1130 with Papua New Guinea Service in Pidgin English. (Bernhoffer, OH) On new 9475 to mideast at 0916, 13605 in Cantonese at 1407. Also 15240//15320//15365 at 0514. (Lamb, NY) 13755 at 1355. 17715//17795 at 0534. (Tucker, GA) 15365 fat 0649. 21740 at 0624. (Comerford, FL)

Time station VNG on 12984 at 0545 and 16000 at 0550. (Bay, MO)

Austria: Radio Austria International, 6015 (via Canada) at 0540; 0634. (Bay, MO; Comerford, FL) 13730 at 0329; 0348. (Long, WV; Foss, AK)

Belgium: BRT, 9930 at 2340 with "Radio World." (Rocker, NY) Here and parallel 13655 to 2355 close. (Tucker, GA) 9855//13675 at 1000 with "Brussels Calling." Also 21815 at 1000/ (Olele, Nigeria)

Bolivia: La Voz del Tropico, 4435.1 at 0045 with easy listening SS pops and SS announcer. ID at 0100. (Gasque, SC)

Radio Santa Cruz, 6135 in SS with language lesson at 1015 followed by ID and music. (Gasque, SC)

Brazil: Radio Marajoara, 4955 at 0225 in PP with ID, frequency, pops. (Lamb, NY)

Radio Cancao Nova, 9675 at 0702 in PP with religious music, IDs, religious talk. No sign of parallels listed for 4825 and 11940. (Lamb, NY)

Radio Nacional Amazonia, 6180 at 2336 in PP with "A Voz Nacional" call-in show. Off at 0046. Listed for 2200 close. (Lamb, NY)

Abbreviation Used In Listening Post

AA	Arabic
BC	Broadcasting
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/ious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel frequencies

Radiodifusora do Maranhao, 4755 at 2342 in PP with religious talk, IDs, marimba music. (Lamb, NY)

Radio Italiaia, 4805 in PP at 0140 with two men talking and multiple "Italiaia" IDs. (Gasque, SC)

Bulgaria: Radio Sofia, 11720//15160 at 0507 with feature on Bulgarian rock. (Lamb, NY) 15160 at 0419. (Tucker, GA)

Horizont Radio domestic service on 11660 via Plovdiv site at 0659 in Bulgarian. ID, news, "Phantom of the Opera" music. (Lamb, NY)

Canada: Radio Canada Int'l, 9750 at 0541. (Foss, AK) 11945 at 1859 in FF with ID, IS and "Radio Journal." (Lamb, NY) 13670 at 2200. (Long, WV)

CFCX Montreal, relaying CICQ, 6005 at 1445 with talk show. (Rocker, NY)

CHU time station, 14670 at 1755. (Bay, MO)

CHNX Halifax, 6130 at 0726 with ID, "Oldies Coast to Coast." (Lamb, NY)

CFRX, Toronto, 6070 at 0608. (Vaage, CA)

Central African Republic: Radio Centrafricaine, 5033.7. tentative ID at 0430 in local language, then music and talk featuring rooster crowing sounds behind announcer. Sudden off at 0450. (Gasque, SC)

China: Radio Beijing 9770 (via Mali, ed) with news at 0015. (Vaage, CA) 11600 at 1325 with "News About China," mailbox program. (Zamora, CA)

Congo: Radio TV Congolaise, 4765 at 2345 with music, talk in FF. noting return at 0500 and sign off. (Poulet, Brazil)

Croatia: Croatian Radio, Zagreb, 9830 at 0704 in Croatian with IDs, new age and folk music, presumed news. (Lamb, NV)

Cuba: Radio Havana Cuba, 6180 at 0447 with news and music. (Comerford, FL) 11760 at 0402 with world and Cuban news. (Tucker, GA) 0640. (Bay, MO)

Cyprus: BBC relay, 9770 at 2057 with EE lesson and into Hungarian at 2100. 15325 at 0603 in Polish with news, IDs and into unidentified language at 0615. (Lamb, NY)

Czechoslovakia: Radio Czechoslovakia, 7345 at 0000 with news and "Czech Scrapbook" program. (Rausch, NJ) Here and parallel 11990 at 0000. (Long, WV)

Denmark: Radio Denmark (via Norway), 9565 at 0230 sign on with EE ID, into Danish. (Rocker, NY) 0230 on 9615. (Bay, MO) 0030 on 9645. (Vaage, CA)

Ecuador: Radio Progreso, 5061.8 in SS with numerous mentions of Quito and Loja at 0222. ID 0230, more talk. (Gasque, SC)

Radio Nacional Espejo, 4769.5 in SS with drama at 0255, ID, mentions of Quito and Espejo, drama continued at 0231. (Gasque, SC)

HCJB on 11925 at 0511 with "DX Party Line." Also 11960 at 0528 with IS, ID Kikongo program. (Lamb, NY) 1515 at 0113 in EE. (Long, WV) 0324. (Foss, AK)

England: BBC on 9410 at 0400. (Tucker, GA) 9590 at 0417. (Comerford, FL) 15070 at 2100. (Tucker, GA) 15260 at 2204. (Vaage, CA)

VOA Woolferton relay, 7170 at 0407. (Rocker, NY) 0618. (Lamb, NY)



VOA Greenville's garage and fire truck. Feedlines sometimes throw off sparks and set the fields on fire. (Courtesy A. Nunnery)



Tony Bernhoffer of Toledo, Ohio likes his DX in an easy chair.

AFRTS feeder with baseball game at 0200 on 8975USB. (Starr, MI)

Finland: Radio Finland, 9560 at 0245. (Bay, MO) 11755 at 0520, a new time for EE, with ID, features ID'd as "YLE" as well as Radio Finland, though not at the same time. (Lamb, NY)

France: Radio France International, 15300 at 2032 with music, talk in FF. (Tucker, GA) 17650 at 1445 with FF lessons. (Zamora, CA) 21770 at 1600 with news, "Club 9516." ID. (Olele, Nigeria)

Gabon: Africa Number One, 17630, 0836 in FF with African music. (Poulet, Brazil) 1448 with FF pops. (Zamora, CA)

Germany: Deutsche Welle, 11705 at 0543, a new frequency to North America and no site ID, suspect Sackville, Canada. Also 13610 in SS to Latin America at 2335. (Lamb, NY) 13790 at 0603. (Foss, AK) 15185 at 0630. (Comerford, FL) 17765 at 1510. (Tucker, GA)

RIAS, Berlin, 6005 at 0255 in GG with US pops, ID, news. Co-channel QRM with BBC-Ascension. (Lamb, NY)

Radio Liberty (RFE/RL), 15130 from site in Spain at 1758. RR ID as "Radio Svaboda." (Gasque, SC)

Greece: VOA relay, Kavala. 15205 at 0400; 0510. (Tucker, GA; Rocker, NY)

Guam: KSDA, 13720 at 1759 with CC and EE IDs, EE program. Address given as PO Box 310, Hong Kong (Zamora, CA)

KTWR, 11650 at 1515 with "Radio Bible Class." (Zamora, CA)

Guatemala: TGNA/Radio Cultural, 3300 at 0424 with EE religious programming, into SS at 0430, off suddenly at 0431. (Lamb, NY)

Guinea: Radiodiffusion Nationale, 7125 in FF at 0633.

On new 9650 at 0724 in FF with news, sports, African music ID. (Lamb, NY)

Hong Kong: BBC relay, 11820 at 1349 with "Newshour" and "Dateline East Asia." (Lamb, NY)

Hungary: Radio Budapest, 11910 at 0209. (Rocker, NY)

India: All India Radio, 11620 at 0200 with news and Indian current events. (Rausch, NJ)

Israel: Kol Israel, 25640 at 2137 with "Spotlight," news brief and sign off at 2159. (Tucker, GA)

Japan: Radio Japan, 11735 (via Gabon) at 2305 with news, ID, "Let's Learn Japanese." (Zamora, CA) 11865 at 1740. (Bay, MO) 21610 at 0514 with news and music. (Comerford, FL)

Kuwait: Radio Kuwait on 13620 at 2042 with pop music, ID at 2057, news summary and off at 2059. (Tucker, GA)

Lebanon: Wings of Hope, 11530 at 2330 with EE ID, address for High Adventure Ministries, Limosol, Cyprus. Mostly religious programs. (Gasque, SC)

Liberia: ELBC. 7275 with news at 0710 tune in, 0714, then world news. Into local language news at 0718. Local music after 0730. (Gasque, SC)

Lithuania: Radio Lithuania, 17605 at 0021, woman with commentary and news. (Vaage, CA)

Luxembourg: Radio Luxembourg, 15350 at 2250; 0416. (Bay, MO) Tucker, GA (presumed in FF, ed)

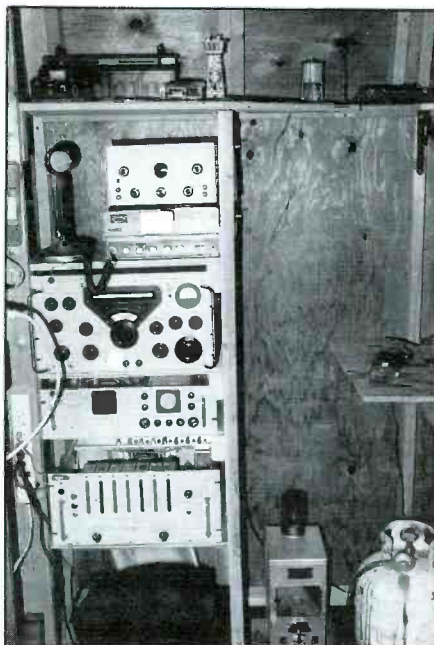
Madagascar: Radio Netherlands relay, 15150 at 1436. (Comerford, FL) 15570 at 1911 with "Research File." (Lamb, NY)

Mal: RTV Malienne, 11960 at 0653 with guitar IS, anthem, ID, program in FF. This sign on time is Sundays only. (Lamb, NY)

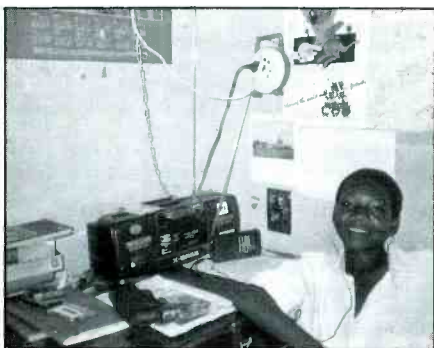
Malta: Voice of the Mediterranean, 9765 at 0600. (Bay, MO)

Mexico: Radio Educacion, 6185 at 0848 in SS with ID, spirituals and gospel music. (Lamb, NY)

Morocco: Radio Medi Un, 9575 at 2200 in FF with ID and news. (Poulet, Brazil)



Tom Robertson's Louisville, Colorado, shack features a nice old Collins receiver.



Christian Olele of Port Harcourt, Nigeria uses a listening post at his school.

(Rocker, NY) 11955 with IS at 0930 and unidentified language. 21830 at 0930 in EE. (Poulet, Brazil) 12050 at 1515. (Zamora, CA) 15240 at 0630 with some fine jazz. (Foss, AK) 17600 at 0550 with "Africa As We See It." (Comerford, FL) 17605 with mailbag at 2019. (Vaage, CA) 17690 at 0400. (Tucker, GA)

Radio Ala, 7370 at 0000 with ID in RR, songs. (Poulet, Brazil)

Radio Raqui (pronounced "Ra-Key") 14950 USB in RR at 0310 with interview with local musician, brief music bits to 0330, ID, easy listening music, time pips 0400, news and fade out (seemingly on purpose) at 0402. New RR domestic station, I presume. (Gasque) (Not familiar with this one at all, editor)

Saudi Arabia: BSKSA, 15060 at 0359 with time pips, ID in AA, Koran to 0411 and mostly talk afterward. (Gasque, SC)

South Africa: Radio RSA, 15230 at 0445 with news update and sign off. (Rocker, NY)

Radio Suid Africa, 4810 2 in Afrikaans and EE. US pops 0015, EE ID 0031 and into Radio Five at 0100 with similar format. (Gasque, SC)

Radio Orion, 4810 at 0051 with EE IDs, Elton John and others. Very good when tuned in LSB mode. (Lamb, NY)

South Korea: Radio Korea, 7550 at 2244 ending EE and into SS. (Gasque, SC) 9750 at 1225 with news, Korean, music. (Tucker, GA)

Spain: Spanish National Radio, 9530 at 0550. (Bay, MO)

Switzerland: Swiss Radio International, 9650 at 0230 and 12035 at 0200. (Bay, MO) 9885 at 0400. (Long, WV)

Syria: Radio Damascus, 12085 at 2015 with news, culture, comment. (Bernhoffer, OH) 15095 at 2158 with Arabic music, ID, news brief, anthem closing at 2208. (Tucker, GA)

Taiwan: Voice of Free China, via WYFR, 5950 at 0200. (Long, WV) 17750 (via WYFR) in CC at 2234. (Zamora, CA)

Tahiti: Radio Tahiti, 11827//15171 at 0435 with music and talks in FF and Tahitian. (Tucker, GA)

Turkey: Voice of Turkey, 15220 at 0416 with Turkish music. (Tucker, GA)

Ukraine: Radio Ukraine (new name) on 11770 (new frequency) at 0022 with news, "Ukrainian Diary." 15495 at 0555 in Ukrainian. Also 17605//17690 at 0208 in presumed Ukrainian. (Lamb, NY)

Radio Kangola Volmonevia/Radio Ukraine, 7970. Radio Kangola heard on this frequency 0305-0330 with talk and music and assumed Ukrainian. Radio Ukraine here next evening at 0030 in EE to 0059 IS and into RR. (Gasque, SC) (Kangola must be another very new one—we've no info on it, editor)

United Arab Emirates: Radio of the UAE, Abu Dhabi, 13605 at 2322 with IDs, "Islam And Humanity," press review. (Lamb, NY)

UAE Radio, Dubai, 13675 at 0340 with radio play. (Rocker, NY)

WJCR, Upton, Kentucky 7490 at 1613 with gospel music. (Rocker, NY) 0430. (Comerford, FL)

Radio Marti to Cuba via VOA transmitters, in SS at 0709 on 6030. (Foss, AK)

Vatican: Vatican Radio, 9600 at 2300I. (Comerford, FL) 15090 at 1755 to Africa, out of EE at 1800. (Bay, MO) 0529 in PP with IS, African music, ID, talk by the Pope. 17730 new African service frequency at 0628 in EE with IS, ID, drums, Sunday liturgy. (Lamb, NY)

A hearty thank you to the following reporters this month: David A. Gasque, Orangeburg, SC; Mike Comerford, Sneads, FL; Marty Foss, Pitkas, AK; Larry R. Zamora, Highland, CA; Daryl Rocker, Frankfort, NY; Edward Rausch III, Cedar Grove, NJ; Christian Olele, Port Harcourt, Nigeria; Louis Long, Wheeling, WV; Rodolphe Poulet, Rio de Janeiro, Brazil; Marie Lamb, Brewerton, NY; Mike Starr, Toledo, OH; Bjorn F. Vaage, Granada Hills, CA; Michael A. Bay, Kansas City, MO and Robert E. Tucker, Jr. Savannah, GA.

Thanks to all and, until next month, good listening!

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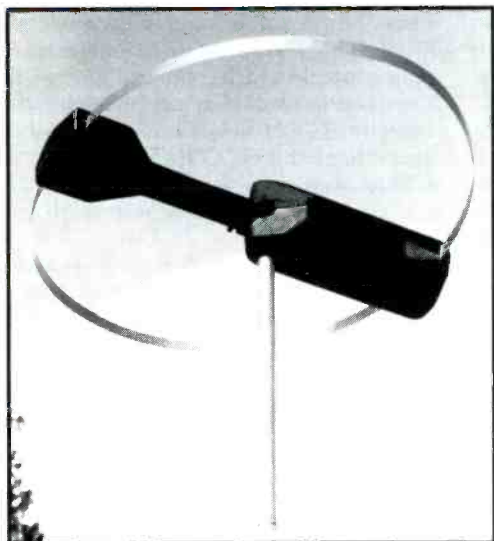
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Plan Your DX—Then DX Your Plan

Tuning around at random on a shortwave receiver is a lot of fun, especially if you're looking for stations that don't operate on regular frequencies or schedules. But if you're looking for broadcasters that are rare or unusual DX, then random tuning is more than a waste of your time—it's actually counterproductive! I get letters from readers complaining that they can't hear a certain station. Often, these people are trying to hear one of the stations whose QSL cards and letters I use to illustrate this column. However, their letters reveal they're trying to hear the station at a time or on a frequency where propagation is unlikely to let them hear the station. Sometimes the station has changed frequency, and they're trying to hear it on a frequency that's no longer being used!

Top DX'ers don't hear the good stuff by being lucky. They target certain stations and then *plan* how they are going to hear those stations. When they DX, they put those plans into action. Regardless of whether you listen to shortwave, the AM or FM broadcast bands, or just like to snoop around on your scanner, you have to do some advance planning to hear rare DX.

It Starts With Information

I am always amazed how some people don't realize the importance of having up-to-date information about the DX areas they are interested in. Doesn't it make sense that it's easier to hear a desired station or country if you know for certain what frequency it operates on and the times it's on the air??

The exact references you will need depends upon what frequency ranges you're interested in eavesdropping upon, but you need a good comprehensive reference (something akin to *Passport to Worldband Radio* or the *World Radio TV Handbook*) covering your area of interest, along with a source of regular news and loggings. You can satisfy the latter with a combination of *POP'COMM* and membership in various clubs covering your listening interests.

For a list of the currently active major radio clubs in North America, send a large self-addressed envelope to Richard D'Angelo, 2216 Burkey Drive, Wyomissing, PA, 19610.

Rich is currently the interim coordinator for the Association of North American Radio Clubs (ANARC), a confederation of major SWL clubs that works for the promotion of the DX listening hobby.

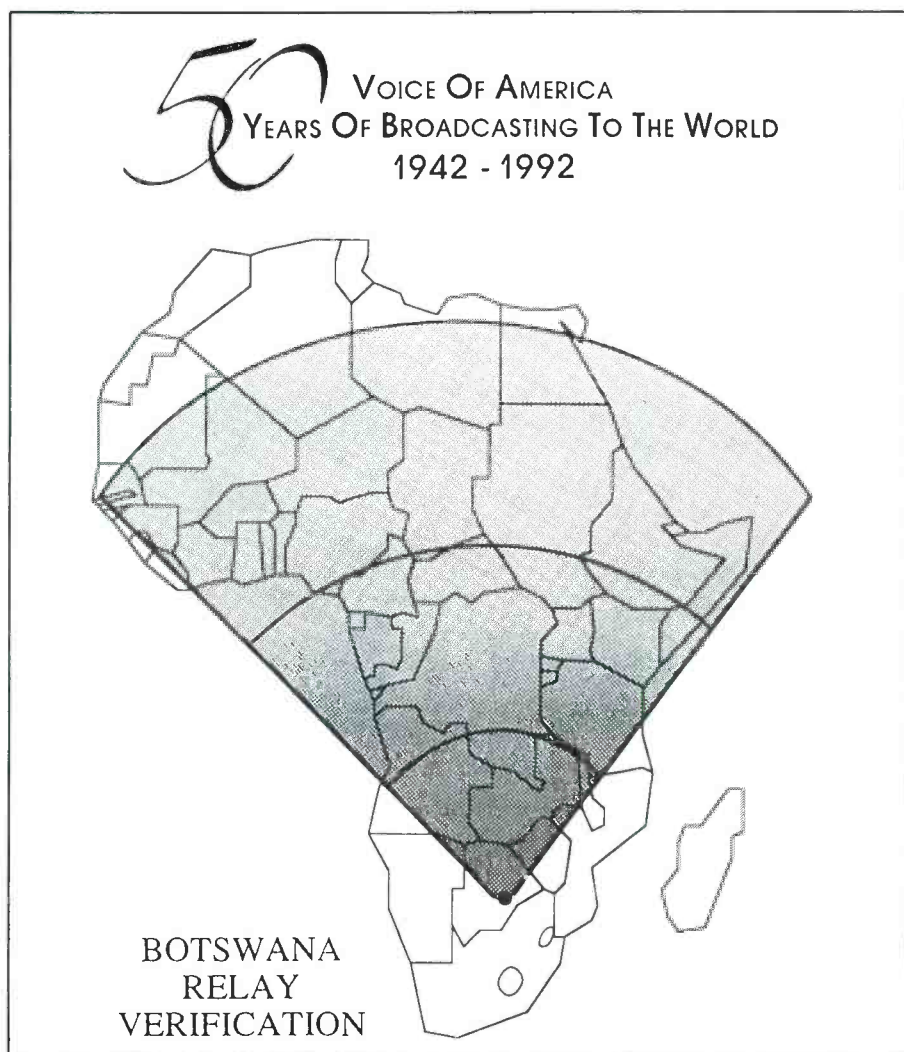
DX club bulletins often contain information only a couple of weeks old, and that's important when you're trying to catch such short-

lived DX as pirates, numbers stations, or clandestine stations. Moreover, club bulletins let you see what other people in your general area are hearing.

You also have to factor in interference when planning when and where to listen. If another, stronger station is on the same frequency as your target, you're out of luck. Often you can tell if an interfering station will make reception impossible, as when some pipsqueak station is on a frequency used simultaneously by the BBC or VOA. In such cases, you're better off just forgetting about hearing your DX target on such frequencies unless you feel the propagation path might favor your DX target instead of the powerhouse. This works for bands other than short-

wave. For example, my QSL card from KKHI, 830 kHz, in Hawaii brought a letter from a listener in Chicago who wanted to know how he could hear it. If this reader had listened to 830 kHz before he wrote, he would have to know that WCCO in Minneapolis has a 50 kilowatt signal that owns 830 kHz 24 hours a day, and there's no way KKHI can get past it!

Working from your information sources, you can put together lists of DX stations and countries you want to hear and the times and frequencies they operate on. Virtually every top DX'er has a "wanted list" of stations that still eludes them. When they hear one of those stations and cross it off the list, they then add another one to it—the DX quest never ends!



The Voice of America celebrates fifty years of broadcasting with a commemorative QSL.

But Can You Hear It?

Radio propagation changes throughout the year. Everybody knows that, you say? You'd be surprised how often people forget that when it comes to hearing some stations. A lot of SWL's persist in trying to hear rare tropical band DX below 5 MHz in the middle of summer or attempting to bag some Asian station operating on 19 meters late on a winter night. This is where a good working knowledge of radio propagation is important. It does you no good to know what's on the air when if you can't hear it anyway.

It's surprising how big a difference just a couple of months can make in propagation, but it's true. For example, the middle of August is one of the worst months for DX reception on frequencies below 5 MHz, primarily due to high signal absorption in the ionosphere because of the long days; there's also static from frequent thunderstorms. But the middle of October is one of the very best months for DX below 5MHz. The thunderstorms are gone and so is a lot of the static. Days are shorter—in fact, night and day are almost equal—and absorption of signals at lower frequencies is greatly reduced. The longer nights compared to August mean there is more likely to be a darkness path between the DX station and you. Finally, the length of the days in both the northern and southern hemispheres are approximately the

same, meaning better reception of signals that cross the equator.

The subject of propagation is too complex to cover in a single column (or even a couple of columns), so you'll have to read about it in books on radio reception and theory available from the companies advertising in POP'COMM. You don't have to become an expert, but you do have to know what's possible at which times and frequencies.

You'll also have to understand the effects sunrise and sunset have on reception. Let's go back to my reception of KKHI on 830 kHz. Most nights, 830 kHz is a jumble of WCCO and a couple of Mexican stations. However, as sunrise sweeps across North America, WCCO and the Mexican stations fade away. This gives people along the Pacific Coast a decent shot at KKHI in the interval between fade-out of the interfering stations and sunrise. But listen at any other time, or farther inland than the coast, and the odds are against hearing KKHI.

Being Persistent

"DX" means a station is hard to hear for one reason or another. You can't simply tune to a DX station's frequency at a time it's scheduled to be on and expect the station to roll in at a killer level. Much DX reception depends on propagation conditions being well above average; if conditions are "normal," you

won't hear the DX. Instead, you need super conditions!

There's not much you can do to improve propagation conditions, but you can recognize the reality that persistence will be required to hear most DX. Even after you've determined the best frequencies and operating times for reception, you may have to try again . . . and again . . . and again until you finally log that station. If you're easily discouraged, then you won't hear much DX. Case in point: since I moved to California in 1987, I've been trying without success to hear the station at St. Pierre et Miquelon on 1375 kHz. This island group is near the Canadian maritimes, and should be possible from my QTH in the winter months from my local sunset to their 0230 UTC sign off or at their 0930 UTC sign on. I've tried over 100 times to hear this station without success. Come this winter, I'll be trying some more! But note that I have a plan to hear this station and what would be a new AM broadcast band country for me, and that I'll keep executing this plan until I succeed or move to St. Pierre et Miquelon (whichever comes first).

An Actual Example: the VOA Botswana Relay

Late in 1991, the Voice of America announced that it would soon bring its new relay
(Continued on page 76)

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POP'COMM'S World Band Tuning Tips

September - 1992

Freq.	Station/Country	Time	Notes	Freq.	Station/Country	Time	Notes
2390	LV de Atitlan, Guatemala	0300	SS	5560	R. Miskut, Nicaragua	2300	SS
2410	R. Enga, Papua New Guinea	1100		5645	R. France Int'l	0000	FF
3200	Trans World Radio, Swaziland	0300		5905	R. Kiev, Ukraine	0300	EE
3210	R. Mozambique	0300	PP	5935	R. Czechoslovakia	0100	
3215	R. Oranje, South Africa	0300	EE/Atk	5935	WWCR, Tennessee	0300	
3235	R. Clube Marila, Brazil	0200	PP	5950	GBC, Guyana	0900	
3240	Trans World Radio, Swaziland	0345	close	5960	R. Monte Carlo	0400	via Canada
3250	R. Luz y Vida, Honduras	0230	SS	5960	R. Alma Ata, Kazakhstan	2200	EE
3260	R. Madang, Papua New Guinea	1100		6006	R. Reloj, Costa Rica	0700	SS
3270	Ecos del Oriente, Ecuador	1030	SS	6010	R. Mil, Mexico	0300	SS
3280	La Voz del Napo, Ecuador	0300	SS	6010	R. Mil Cuarenta, Venezuela	0830	SS
3295	INBS, Iceland	0630	Icelandic	6010	R. Mil, Mexico	1200	SS
3300	R. Cultural, Guatemala	0200	SS	6015	R. Austria Int'l	0530	via Canada
3315	SLBS, Sierra Leone	0600		6020	R. Netherlands	0030	
3320	R. Orion, South Africa	0245		6045	Deutsche Welle, Germany	0130	via Antigua
3225	R. Maya, Guatemala	1100	Ind. langs	6050	Caracol, Colombia	0100	SS
3360	LV de Nahuala, Guatemala	0305	s/off, indian	6050	R. Nigeria, Ibadan	2230	
3380	R. Chortis, Guatemala	0230	SS	6055	Spanish National Radio, Spain	0430	SS
3377	R. Nacional, Angola	0430	PP	6060	R. Nacional, Argentina	0930	SS
3385	R. E. New Britain, P/New Guinea	1100	pidgin	6080	R. Australia	1100	
3395	R. Catolica, Ecuador	1030	SS	6105	R. Universidad, Costa Rica	0200	SS
3500	LV de Guainia, Colombia	1030	SS	6116	La Voz del Llano, Colombia	1000	SS
3880v	R. Free Bougainville	0800		6120	R. Globo, Brazil	0900	PP
3925	R. Tanpa, Japan	0900	JJ	6130	R. Portugal	0700	sign off
3995	Deutsche Welle, Germany	0300	GG	6135	R. Santa Cruz, Bolivia	1000	SS
4331	R. Horizonte, Peru	1100	SS	6135	Swiss Radio Int'l	0230	
4450	R. Frontera, Bolivia	0100	SS5	6140	Australian Bc. Comm.	1100	
4509	R. Horizonte, Bolivia	0900	SS	6160	CKZU, Canada	1300	
4680	R. Nacional Espejo, Ecuador	0000	SS5	6180	R. Nac. Amazonas, Brazil	2200	PP
4740	R. Yunost, Russia	0200	RR	6180	R. Havana Cuba	0400	EE
4755	R. Ed. Rural, Brazil	0000	PP	6210	European Christian R., Italy	0630	
4765	RTVC, Congo	0355	FF	6210	Croatian Radio	0000	Croatian/EE
4770	R. Nigeria, Kaduna	0500		6245	Vatican Radio	0430	
4775	R. Portal da Amazonia, Brazil	0000	PP	6275	Radio Patria Libre	0115	Col. cland.
4815	RTV Burkina, Burkina Faso	0600	FF	6300	R. Venceremos, El Salvador	0230	SS
4815	Rdf. Londrina, Brazil	0130	PP	6670	R. Santa Monica, Peru	0930	SS
4825	R. Educadora Braganca, Brazil	0900	PP	6803	R. Ondas del Mayo, Peru	1100	SS
4830	R. Tachira, Venezuela	0200	SS	6840	CPBS, China	1200	CC
4845	ORTM, Mauritania	0630	AA	6910	R. Dublin Int'l, Ireland	0730	
4850	CRTV, Cameroon	0430	FF/EE	6910	R. Russia (feeder)	0230	RR
4865	La Voz del Cinaruco, Colombia	0300	SS	7125	Cyprus Bc Corp (via BBC tx)	2200	Greek, wknds
4865	Gansu PBS, China	1130	CC	7140	RTBF, Belgium	0500	FF
4870	ORTB, Benin	0457	sign on, FF	7185	Voice of Turkey	2300	sign on
4875	Super Radio, Brazil	0235	PP	7185	RTM, Mali	2130	FF
4875	V of Jinling, China	1100	CC	7190	Rep of Yemen Radio, Aden	0300	sign on, AA
4885	Ondas del Meta, Colombia	1000	SS	7205	Adventist World R., Italy	0800	
4890	ORTS, Senegal	2345	FF	7203	R. Lubumbashi, Zaire	0430	FF
4895	LV del Rio Arauca, Colombia	0430	SS	7215	Voice of the UAE	2300	
4900	R. Centinela del Sur, Ecuador	1100	SS	7220	All Union Radio, Russia	0100	RR
4904.5	R. National, Chad	0427	sign on, FF	7235	Deutsche Welle, Germany	0400	AA, via Malta
4915	R. Cora, Peru	1000	SS	7240	Croatian Radio, Croatia	0300	
4915	R. Anhanguera, Brazil	0700	PP	7250	Vatican Radio	0630	Latin
4920	R. RICA, Nicaragua	1030	SS	7270	R. RSA, South Africa	0400	
4920	ABC, Brisbane, Australia	1100		7305	Vatican Radio	0250	
4940	R. Moscow	0200		7315	Croatian Radio	0000	via WHRI
4950	R. Nacional, Angola	0400	PP	7315	R. Free Croatia	0330	via WHRI
4955	R. Marajoara, Brazil	0800	PP	7355	KNLS, Alaska	1200	RR
4970	R. Rumbos, Venezuela	0300	SS	7375	R. For Peace Int'l, Costa Rica	0200	USB
4990	Hunan PBS, China	1230	CC	7390	Deutsche Welle	1200	via USSR
5006	R. Apinte, Surinam	0400	DD	7400	R. Yerevan, Armenia	0338	
5015	R. Pioneira, Brazil	0230	PP	7400	R. Belarus, Belarus	0030	Byelorussian
5020	SIBC, Solomon Islands	0800		7465	Reshet Bet HS, Israel	0100	Hebrew
5025	ORTB, Benin	0600	FF	7475	RTV Tunisienne, Tunisia	0400	AA
5030	R. Catolica, Ecuador	0200	SS	7490	WJCR, Kentucky	0300	
5035	R. Aparecida, Brazil	0030	PP	9022	VOIRI, Iran	0030	EE
5035	RTVC, Central African Rep.	0428	sign on, FF	9115	R. Continental, Argentina	0030	SS feeder
5040	R. Ala, Russia	0330	s/pp	9265	Icelandic Ntl Bc Svc	0730	EE
5045	R. Cultura do Para, Brazil	0300	PP	9280	Voice of Asia, Taiwan	1000	CC
5047	RTV Togolaise	0600	FF	9325	R. Pyongyang, N. Korea	1300	
5055	TIFC, Costa Rica	0300		9395	V of Greece	1900	GG

Freq.	Station / Country	Time	Notes	Freq.	Station / Country	Time	Notes
9405	KFBS, Saipan	1500	RR	11880	R. RSA, So. Africa	1615	
9445	Voice of Turkey	2330	TT	11905	RAI, Italy	0230	il
9455	WCSN, Maine	0200		11920	RT Marocaine, Morocco	2000	FF
9475	R. Cairo, Egypt	0200		11945	R. Space, Russia	1500	RR
9480	TWR, Monaco	0645		11950	R. Havana Cuba	0000	
9486	R. Tacna, Peru	0400	SS	11955	Voice of Turkey	0400	TT
9505	R. Yugoslavia	2230	to Europe	11960	R. Sweden	1130	
9520	R. Veritas Asia, Philippines	1200		11960	RTV Malienne, Mali	0900	FF
9530	KHBI, Saipan	1400		11965	V of the UAE	1800	AA
9535	Trans World Radio, Bonaire	0300		11995	FEBC, Philippines	1530	
9540	R. Nacional, Venezuela	1100	SS	12025	KTWR, Guam	2300	
9545	R. Tirana, Albania	0530	sign on	12055	Deutsche Welle, via tx in CIS	0156	s/on
9555	R. Portugal	0230		12095	BBC, England	2100	
9560	R. Australia	0830		12105	Voice of Greece	2230	Greek
9565	R. Universo, Brazil	0500	PP	13605	Capital Radio, via Voice of UAE	2230	
9570	R. Romania Int'l	0300	SS	13620	R. Kuwait	2000	
9570	R. Korea, S. Korea	1400		13630	R. For Peace Int'l, Costa Rica	0200	
9580	R. Yugoslavia	0130		13635	Swiss Radio Int'l	2130	
9580	Africa No. One, Gabon	1900	FF	13650	R. Pyongyang, N. Korea	0000	
9585	HCJB, Ecuador	0600	German	13655	BRT, Belgium	2330	
9590	FEBA, Philippines	0130	QRM'd	13666	Voice of Europe, Italy	0100	
9600	BBC	0400		13675	UAE Radio, Dubai	2000	AA
9605	R. Unam, Mexico	0300	SS	13685	Swiss R. Int'l	0700	
9610	R. Norway Int'l	0200		13700	Radio Havana Cuba	0200	
9615	R. Veritas Asia, Philippines	1433	sign on	13753	Kol Israel	2100	Hebrew
9630	R. Oranje, South Africa	0500		14917.8	R. Kiribati	0600	
9645	R. Norway Int'l	0300		15050v	R. Patria Libre	0045	SS, cland.
9650	RTV Guineenne, Guinea	0700	FF	15070	BBC	1400	
9660	BBC relay, Cyprus	1445		15084	VOIRI, Iran	0430	Farsi
9665	R. Marumby, Brazil	2300	PP	15090	R. Damascus, Syria	2115	
9690	R. Beijing, China	0330	via Spain	15100	Kol Israel	2130	EE
9695	R. Sweden	0330		15110	Spanish National Radio	2330	
9700	R. New Zealand	1030		15110	All India Radio	2330	
9705	R. Portugal	0230		15150	R. Baghdad, Iraq	0030	
9720	R. Galaxy, Russia	2230	RR	15170	R. Beijing, via Mali	1600	
9725	Adventist World R., Costa Rica	1250		15170	R. Australia	1500	
9735	R. Oman	1945	AA	15185	R. Finland Int'l	2300	
9735	R. Nacional, Paraguay	2300	SS	15195	R. Japan	0500	
9745	R. Cairo, Egypt	0200		15200	R. Bangladesh	1230	EE
9746	R. Bahrain	2000	AA QRM-HCJB	15205	V of Palestine via R. Algiers	1700	AA
9750	R. Yerevan, Armenia	0330	Arm/EE	15208	R. Bangladesh	1230	
9750	R. Kiev, Ukraine	0300		15215	V du Sahara Libre (clandestine)	2200	via R. Algiers
9755	R. Monte Carlo, Monaco	0400	AA	15235	V of Great Arab Homeland, Libya	2000	AA
9760	R. Tirana, Albania	0130	Albanian	15260	VOIRI, Iran	0230	sign on
9760	R. Canada International	0630		15260	BBC, Ascension Island relay	0300	
9770	R. Beijing, China	0000	via Mali	15320	UAE Radio, Dubai	2300	
9800	R. Rossiy, Russia	0650	RR	15325	R. Japan	1500	vai Fr. Guiana
9830	Croatian Radio	0600		15340	R. Havana Cuba	0030	Quechua
9835	R. Budapest, Hungary	2200		15345	RAE, Argentina	2200	SS
9835	AWR, Russia	2300		15345	Trans World Radio, Bonaire	1230	
9870	Radio Korea, S. Korea	1600		15345	RTM, Morocco	1400	Berber
9870	R. Ukraine	0100		15350	BSKSA, Saudi Arabia	1800	AA
9880	R. Galaxy, Russia	2000	RR/EE	15365	R. RSA, S. Africa	0300	sign on
9950	All India Radio	2200		15400	Radio Finland Int'l	1500	
9985	WCSN, Maine	2355	sign off	15425	R. Portugal	1500	
11040	CPBS, China	0200	CC	15430	R. Austria Int'l	1330	
11455	R. Kisangani, Zaire	0400	s/on, FF	15445	VOA relay, Botswana	2100	
11515	R. Beijing	1230	CC/JJ	15470	R. Tashkent, Uzbekistan	1330	
11530	V of Hope, Lebanon	1400		15485	R. Vilnius, Lithuania	2300	
11550	RTT Tunisia	1800	AA	15505	R. Kuwait	2245	AA
11588	Kol Israel	1800		15525	R. Kiev, Ukraine	0000	
11620	All India Radio	2000		15530	R. France Int'l, via Hungary	0630	FF
11620	Vatican Radio	0145	SS	15550	Central People's Bc Stn, China	0230	CC
11650	KFBS, Saipan	1130		15565	KHBS, Saipan	0800	
11675	R. Rodonezh, Russia	1128	s/on, RR	15670	CPBS, China	0000	
11685	R. Ala, Russia	1230	RR	15750	R. Russia	1800	RR
11695	BRT, Belgium	0600	Dutch	17515	Voice of Greece	1515	
11705	R. Sweden	2330		17565	R. Australia	1600	
11710	RAE, Argentina	0100		17605	R. Vilnius, Lithuania	0000	
11715	R. Beijing, China	0330	via Mali	17630	Africa No. One, Gabon	0900	TFF
11715	R. Korea, S. Korea	1030	via Canada	17690	R. Minsk, Belarus	0030	
11720	R. Sofia, Bulgaria	0300		17705	R. Pakistan	0200	Urdu
11725	VOA relay, Botswana	0200		17725	V of the Great Homeland, Libya	2100	AA
11735	Radio SNC, Russia	1100	RR	17740	R. Yugoslavia	1200	
11735	R. Japan, via Gabon	2300		17740	R. Sweden	1300	EE
11740	R. Baghdad, Iraq	1700	AA	17740	R. Iraq Int'l	2330	
11755	R. Baghdad, Iraq	1930	AA	17760	New Wave Radio, Russia	1700	RR
11765	R. Sofia, Bulgaria	0600		17770	R. New Zealand Int'l	0445	
11770	R. Ukraine	0100		17795	R. Australia	0530	
11780	R. Nacional Amazonia, Brazil	2030	PP	17825	R. Sofia, Bulgaria	0030	
11790	R. Vilnius, Lithuania	2300		17845	Spanish National Radio	1800	SS
11795	UAE Radio	1600		17860	Qatar Bc Service	1300	AA
11800	R. France Int'l	0630	FF	17862	R. Nacional, Colombia	0300	SS
11810	FEBA, Seychelles	0314	s/on	17870	VOA Botswana relay	0400	
11810	R. Korea, S. Korea	0600		17890	Spanish National Radio	1200	
11810	R. Jordan	1400	AA	21465	RFPI, Costa Rica	0130	
11815	R. Brazil Central	0800	PP	21500	R. Sweden	1530	
11820	R. Tirana, Albania	0330	s/on	21510	V of UAE, Un. Arab Emirates	0630	AA
11827	R. Tahiti	0500	FF/TT	21515	Radio Portugal	1630	
11830	R. Anhanguera, Brazil	0030	PP	21580	R. Pilipinas, Philippines	0230	
11830	New Wave Radio, Russia	0700		21605	UAE Radio	1600	
11850	R. Tbilisi, Georgia	0445		21635	R. France Int'l	1230	
11855	AWR, Russia	0745		21740	R. Australia	0030	
11865	R. Japan	1400		21810	R. RSA, So. Africa	0230	
11870	R. Yugoslavia	0040		25730	R. Denmark, via Norway	1255	s/on, DD
11895	Voice of Turkey	2330					

Personal Communication Satellites

By the year 2001, which I must remind you is only 8 1/2 years away, you will be able to pickup your personal, handheld, satellite telephone and talk to anyone in the U.S. and Canada. The hand held phone will be slightly larger than a *Star Trek* communicator and flip open the same way with an antenna in the lid that is exposed when opened. You can, of course, have a satellite phone in your car, home and office. Even connect one up to your computer terminal and set a small satellite antenna on top of your video screen. This Personal Access Satellite System (PASS) is expected to be fully implemented by the turn of the century.

At the same time you are likely to have a Digital Satellite receiver in your home, car and office. It will give you up to 100, and possibly more radio channels to choose from. The terrestrial FM and AM radio bands will be antiquated. You \$300.00 digital, satellite receiver will bring you CD quality music of every variety, stock market reports, news, sports

weather traffic information and other specialized services. This service will be known as the Direct Broadcast Satellite-Radio Service (DBS-RS).

The people at NASA and the Jet Propulsion Laboratory (JPL) are now doing the research and development on these satellite systems. In the mid-80's JPL became involved in the development of the Land mobile satellite system. Known as MSAT, the technology that was refined during JPL research became the backbone of the current and Mobile Satellite service that is now being developed. It provides, radiolocation, voice and data communications for transportation and other industries. (See the April 90 & Nov. 89 issues).

The first successful demonstration of the feasibility of DBS-RS was conducted last December. NASA/JPL used a Comsat station located in Southbury Connecticut, an Inmarsat MARECS-B2 satellite and programming from NPR (National Public Radio) for

the experiment. During the experiment, digital signals were successfully transmitted from the ground station to the waiting satellite and back to a specially equipped van driving in the Washington D.C. area.

Researchers are hoping to develop digital transmissions with CD quality stereo fidelity. The digital receivers will have a selectable data rate for the different type transmissions it will receive. For example, voice services can have as low as 2.4 to 4.8 kbps (Kilo Bytes Per Second). AM broadcast can maintain sound quality at 32 kbps. The U.S. Information Agency (USIA) is sponsoring JPL's receiver development. They control the Voice of America, Radio Liberty and Radio Free Europe among others.

The University of Texas is working with JPL on Propagation studies. This is important because of the proposed frequency bands for this service. NASA is proposing, at the WARC '92 convention, that both PASS and DBS-RS use the 20.30 GHz bands (k

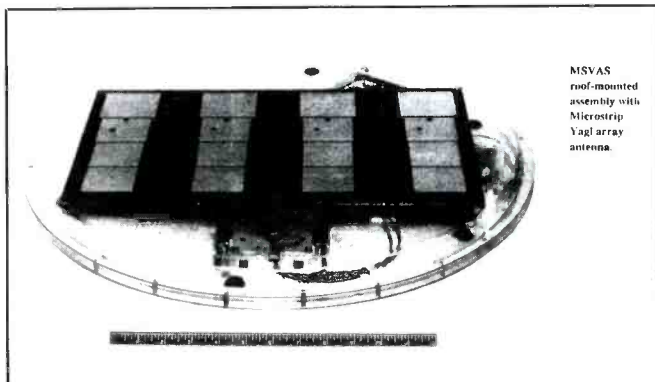
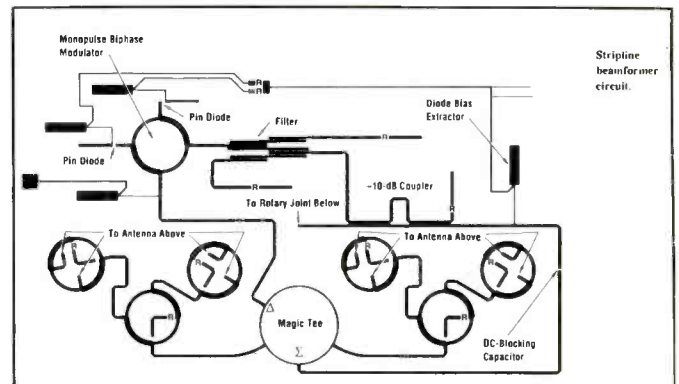
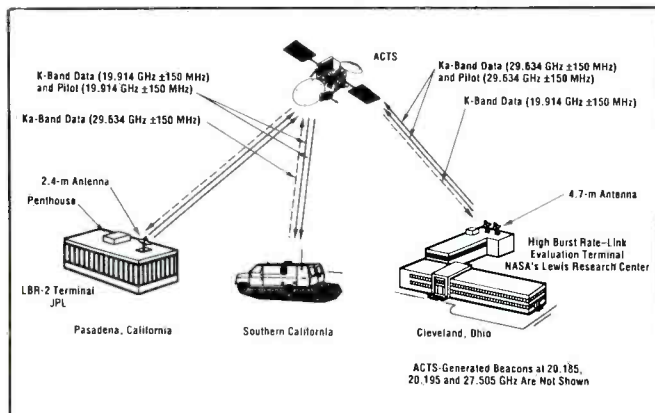


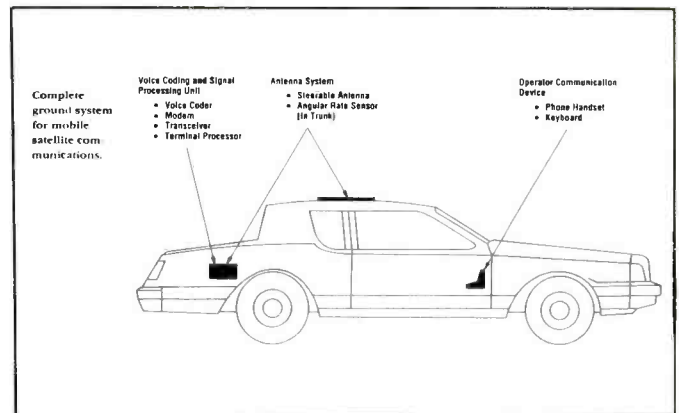
Figure 1



(Courtesy JPL)



(Courtesy JPL)



(Courtesy JPL)



Coming Soon!

October 2-4

The 1992

Monitoring Times Convention!

in
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GREAT Seminars:

Friday, October 2:

Radio Law
 Trunk Busting Basics
 Who's Who on the Spectrum
 Beginner's Aero Monitoring
 Pirate DXing
 A Professional Monitoring Post
 Choosing an SW Receiver
 Beginner's QSLing

Saturday, October 3:

Surveillance
 Digital Communication Services
 Aero Monitoring
 Beginner's Q&A
 TVRO: The State of the Art
 Setting Up Your Scanner Listening Post
 Monitoring Federal Communications
 Beginner's on the Frequency Spectrum
 When to Accessorize
 The International Broadcasters
 Beginner's Scanning
 Receiving Antennas: Will a Wire Work?
 Trunk Busting Basics
 SW Domestic News Monitoring
 Beginner's Utilities
 Digital Communication Equipment
 Aero Monitoring
 Beginner's Computers

Sunday, October 4:

Military Monitoring
 Radio Law
 Mystery & Intrigue
 Beginner's Antennas
 Scanner Experts Forum
 SW Experts Forum

GREAT Companies on exhibit:

AIE Corp.	J & J Enterprises
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Austin Antenna	Lowe Electronics
Auto Security & Access.	Official Scanner Guide
Bearcat Radio Club	Optoelectronics
Cellular Security Group	Passport to World Band Radio
Christian Science Monitor	Radio for Peace International
R.L. Drake	Shortwave Paradise
DX Computing	Somerset Electronics
Grove Enterprises	Universal Radio
Ham Radio Business Council	V-Communications
ICOM	Worldcom Technology

Come join in on the fun! Here are some of the spectacular events that will be going on throughout the weekend:

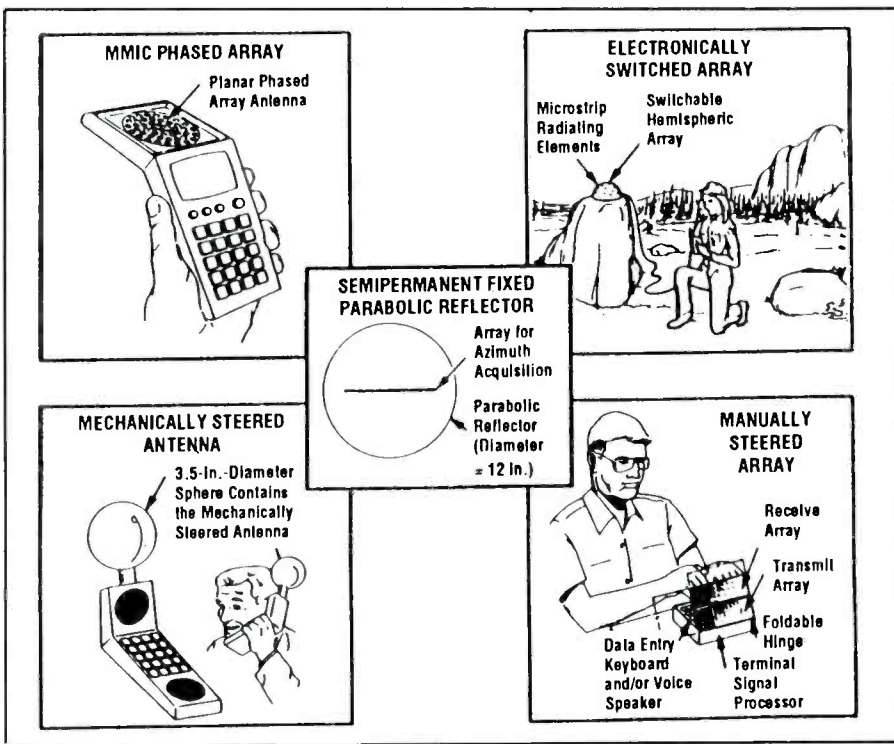
● Saturday Night Banquet. A festive feast with friends and family! Includes an all-you-can-eat buffet of tender meats, fresh vegetables, delicate fruits, refreshing drinks and towering desserts, highlighted by a special guest speaker!

● Hidden transmitter hunt. Ready your receivers and freshen your frequency counters, because this year, we've got a REAL challenge planned! Object of the game is to chase down the person, place or maybe even plant that has the hidden transmitter. Fun and prizes abound during this highly popular event.

● Sunday Swap meet. A friendly gathering of our guests who set up their own displays and swap, buy and sell all the gadgets they want! Always filled with great bargains and hopeful people, the swap meet is a fun place to be.

Registration is \$40; banquet fee is \$21.95. Call 1-800-438-8155 and charge it to MC/VISA/DISCOVER or write MT Convention, P.O. Box 98, Brasstown, NC 28902-0098.

CALL TODAY! Come join the fun at the 1992 Monitoring Times Convention in Atlanta, Georgia on October 2, 3, and 4. Transportation to Atlanta is available by plane, train or bus! Don't miss the hottest new convention in decades.



(Courtesy JPL)

and Ka respectively). These bands are susceptible to several undesirable propagation effects. Shadowing occurs while you are driving your car in a metropolitan area and a tall building comes between you and line-of-sight view of the satellite causing signal loss. Even a tree or telephone lines can attenuate the signal by 20 dB. This results in a high error rate in data reception.

A technique called interleaving can spread an error rate out over time allowing the decoder to recover more of the signal and lessen the effect.

The only practical way around the shadowing effect in cities is to install terrestrial relay stations. These will work much like 2 meter Amateur Radio repeaters.

The greatest challenge to DBS-RS is reception at fixed locations. As the satellite signal travels through a building, such as your house or office building, it is weakened. This is

especially true at higher frequencies. The higher you go the worse the effect. At 20.30 GHz high losses are experienced in buildings as standing waves and frequency dependent nulls are developed as the signal bounces off walls.

Diversity reception, placing multiple antennas about the building at locations where the signal is strong, seems to be the most practical way to correct this effect. In addition, doppler shift is high at these frequencies, rain on the antenna attenuated the signal significantly and mobile antenna have to be intelligent enough to automatically track the satellite as the car changes direction.

The mobile antenna technology developed during the MSAT testing will provide the basis for PASS and DBS-RS systems. A prototype antenna (figure 1) is roof mounted and stands 1 1/2 inches tall and approximately 18 inches in diameter. It consists of four element yagis

of stripline design and only 1/8th of an inch thick. It has an azimuth beamwidth of 30 degrees. The elevation angle covers from 20 to 60 degrees above the horizon. As the vehicle moves, azimuth is tracked by sampling the variations in signal-to-noise ratio. This information is fed to an inertially stabilized tracking system that incorporates a high performance gyro.

How does NASA refine such a complex satellite system as the DBS-RS or PASS? The first thing NASA does is build a prototype satellite capable of testing each system. This satellite is called the Advanced Communication Technology Satellite (ACTS).

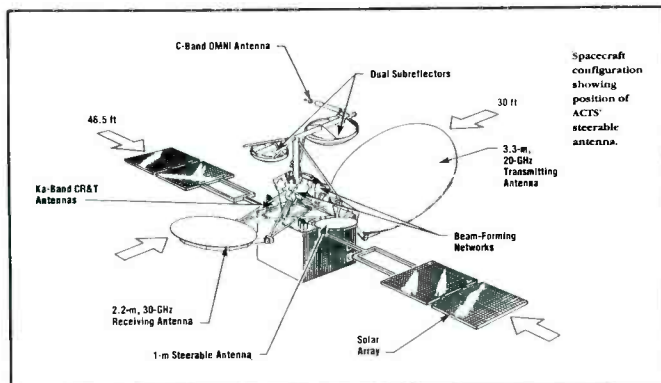
Some of NASA's early ACTS can still be heard on the 137 MHz band. These were launched in the 60's and early 70's for advanced research projects at that time. The latest ACTS may be in orbit by now. Testing is to begin in early 1993. It is to be launched from the Shuttle. So far the program has been on schedule.

The ACTS is 35 feet across with solar panels deployed. It weighs in at 3,270 lbs, operates in the K/Ka-bands and will be located at 100W. ACTS will have a single 30 foot (3.3m) 20 GHz antenna for downlink and a 2.2m receiving antenna for 30 GHz, a single steerable antenna, one Ka and an omni-directional C-band antenna. The actual satellites deployed for this service will carry 142 spot-beam antennas for continuous coverage of the US and Canada.

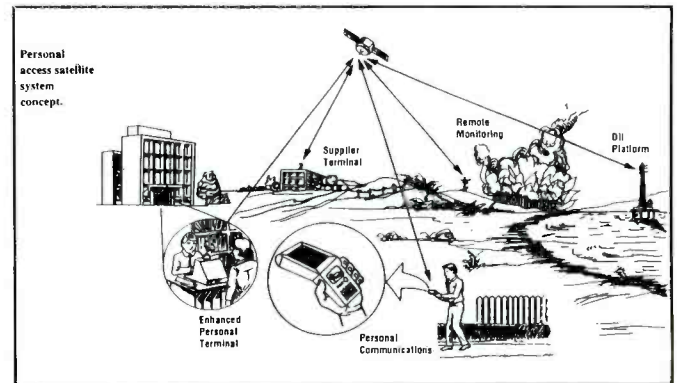
The mode of operation for the first ACTS test will be Frequency Division Multiple Access (FDMA), because of its dependability. Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) will be refined as the research progresses.

Narrow data rates for the digital transmissions will be standardized. For example, voice communications can tolerate as low as 2.4 to 4.8 kbps. This will conserve transponder space. Other services such as FAX and Packet type data communication will also be made available. The first ACTS FDMA experiments will be conducted on a frequency of 29.634 GHz uplink and 19.914 GHz downlink. Keep your eye on this frequency in '93.

That's all for this go around. ■



(Courtesy JPL)



(Courtesy JPL)

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Radar Detectors Featuring X- and K-Bands

Maxon Systems Inc. has two new radar detectors which provide the basic benefits of its more expensive models at entry level prices. The Maxon Expressway™ Series 20, priced at \$120, and the Expressway Series 10, at a suggested retail of \$100, provide quick response and early notice of X- and K-band police radar activity.

The new models use superheterodyne circuitry, detect instant-on and pulse-type radar, and incorporate anti-falsing circuitry to minimize response to non-police microwave transmissions. The detectors also feature newly designed styling which complements the interior of today's automobiles.

The Maxon Expressway Series 20 offers the superb performance quality and many of the features found on the company's higher priced models. The unit is sensitive to instant-on and pulse-type radar. In addition to its superheterodyne X- and K-band detection and anti-falsing circuitry, the Expressway Series 20 has a 5-phase sequential LED signal strength indicator to alert a driver of the prox-



imity of the radar source, adjustable volume control for the alert speaker, and City/Highway switch to further reduce false alerts in crowded urban areas.

Accessories include spring visor clip, straight power cord, pressure sensitive hook & loop fastener strips, and spare fuse. The Maxon Expressway Series 20 measures 4-1/2"(D) x 2-7/8"(W) x 1"(H).

At a \$100 suggested retail price, the Maxon Expressway Series 10 can be profitably sold for the lowest retail price in the industry. Designed for the motorist wanting top-quality detection and notification, but constrained by a tight budget, the new model incorporates Maxon's new styling, superheterodyne X- and K-band detection circuits, anti-falsing circuitry, and is sensitive to instant-on and pulse-type radar.

Proximity of the radar signal is indicated by a pulsating amber alert lamp. As the distance between the car and the signal source shortens, flashing becomes more rapid as does the frequency of the audio alert.

The Expressway Series 10 also provides a two-position volume adjustment for the alert speaker and a City/Highway switch to further reduce false alerts in urban areas.

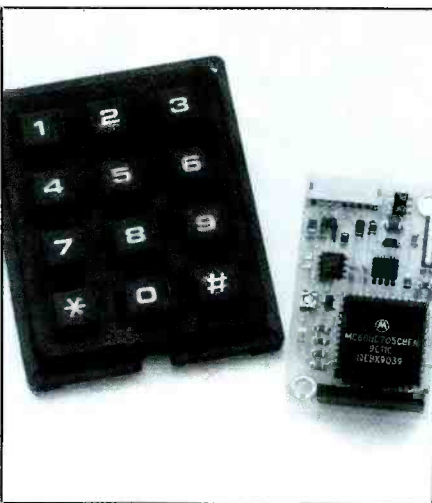
Accessories include spring visor clip, straight power cord, pressure sensitive hook & loop fastener strips, and spare fuse. The Maxon Expressway Series 10 measures 4-1/2"(D) x 2-7/8"(W) x 1"(H).

For further information about this and other Maxon products, contact Maxon Systems Inc., 8610 NW 107th Terrace, Kansas City, MO 64153 or circle 105 on our Readers' Service.

Automatic Morse Station Identifier

Communications Specialists announced availability of a new Morse Station Identifier for commercial, public safety, and amateur radio applications. Designated as ID-8, the unit offers field programmability via a 12 button keypad that is included with each unit. At the miniature size of 1.85" x 1.12" x 0.35", the ID-8 fits well in tight places. Programmable features include: Eight changeable messages (200 characters total); CW speed: 1-99 wpm; ID interval timing: 1-99 minutes; ID hold-off timing: 0-99 seconds; CW tone frequency: 100-3000 Hz; "front porch" delay interval: 0-9.9 seconds; CW or MCW operation; courtesy tone: ON/OFF; activate/inhibit ID: HIGH/LOW. The circuit utilizes a CMOS microprocessor for low voltage, low current operation, and is crystal controlled for high accuracy. All programming is stored in a non-volatile EEPROM, which may be reprogrammed with the included keypad.

The ID-8 sells for \$89.95, and is in stock for immediate delivery. For more information on the ID-8 and other tone signaling devices, contact: Communications Specialists, Inc., 426 West Taft Avenue, Orange, CA 92665-4296, or circle 106 on our Readers' Service.



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AP wire photo received on 20.738 MHz using MFJ-1278 with MFJ-1289 Multicom.

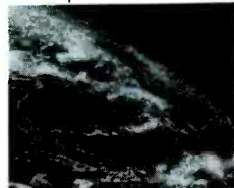
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Squelch Electrical Noise (The Right Way)

If your emergency vehicle is all decked out with sophisticated communications and navigation electronics, chances are you have a high on-board electrical noise level. The natural tendency is to turn your squelch controls up to the point that the noise silences, yet strong signals on frequency can still trip the squelch circuit and get through. A high squelch setting will make it impossible for weak signals to sneak through, and you might be losing half of your traffic that is buried within your emergency vehicle's circle of noise.

That's right, every vehicle that is turned on emits a certain amount of electrical noise on the radio frequency band. Engine noise is usually centered between 2 MHz to 20 MHz. It might cover up high frequency signals up to 10 feet away. When was the last time you pulled up to an older Ford pickup truck, and couldn't hear a thing until they pulled out from the intersection? Your vehicle may be doing the same thing to your antenna system.

At VHF frequencies, your alternator, electronic tachometer, and instrument cluster could be generating substantial noise to cover up weak incoming FM signals. Some of the noise may be radiated along your DC wiring, and come in your radio system via 12 volts. But the more common noise is radiated directly from your noise sources to your antenna, probably mounted within 5 feet of the engine compartment.

Step one in tracking down noise is to drive into an open area, away from overhead pow-

er lines, and away from buildings or other running cars that might be putting out radio frequency interference. Sometimes an open field, or a stadium parking lot will work quite well in isolating you away from nearby noise sources.

Turn off your vehicle, and make sure that everything else directly wired to your battery system is off. Then turn on your principle radio system. This could be a high frequency ham set, a 10 or 11 meter transceiver, or your VHF and UHF equipment.

Now tune in a weak signal. You want just enough signal in order to hear it above the noise floor on your radio equipment. Got it?

Start up the engine. Is the signal still there? If it disappears into the noise, your engine is generating electrical interference coming through on your receiver. However, if the signal is still there, try turning on other electronics. Rev up the engine, and selectively switch on different equipment.

The more stuff that gets turned on, the worse the reception—right? Probably so. But something in your mobile unit is going to foul up everything—quick, like that on-board laptop computer, or maybe that global positioning system navigation receiver, or maybe even your little radar detector sitting on the dash.

Your next step in resolving noisy radio reception is to clean up your 12-volt DC lines. Noise filters may be placed in series to help minimize the alternator "sing" heard over an un-squelched radio receiver. Alternator sing-

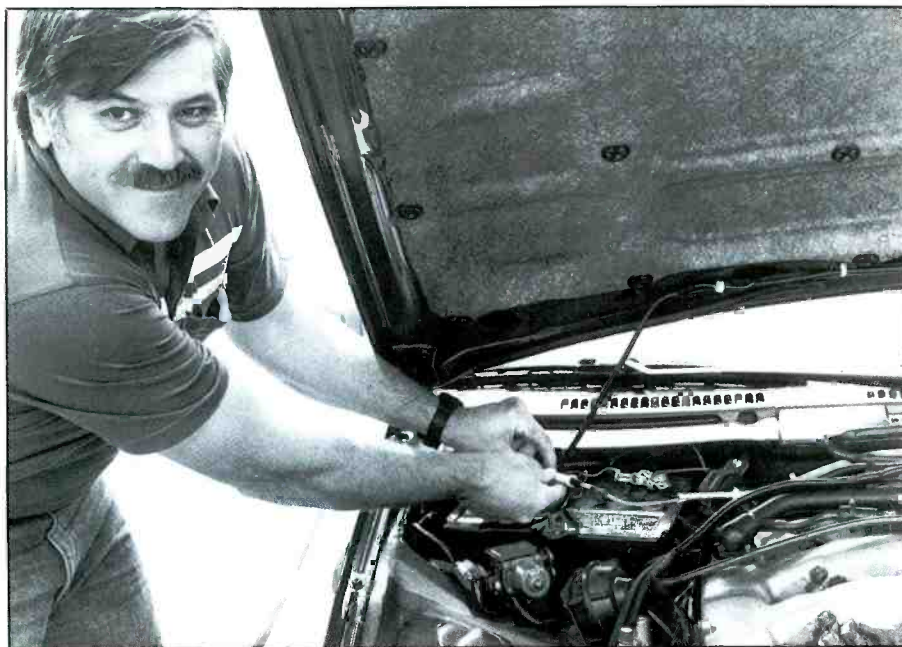
ing will continue even after you have disconnected the antenna circuit. This means the noise is coming in via the DC cables. An alternator filter, placed right at the alternator, usually does the trick nicely. There are other specific filters, sometimes placed on the equipment, that will help minimize induced 12-volt DC line noise.

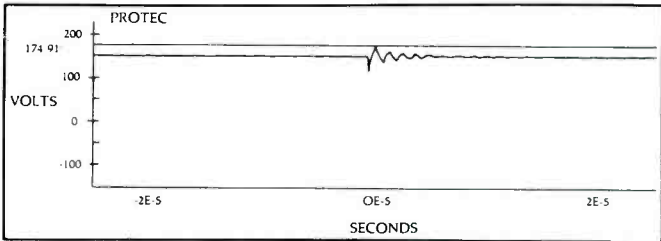
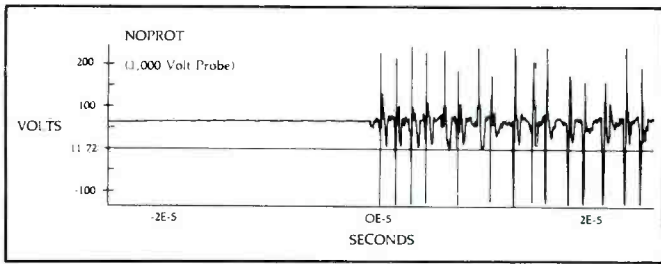
Grounding your onboard electronics with silver-tinned strap will also help reduce the noise floor being radiated directly to an antenna. Things like personal computers, navigational receivers, and even some of your vehicle's instrumentation can radiate hash to a nearby antenna. Grounding the metal components all together with strap, and running the trap down to your vehicle frame, will help reduce the noise emitted by these mini-computers. There are even clear conductive screens that may be placed over specific readouts to help minimize any noise escaping via the panel displays. Display tube interference is easily identified by covering up the display with grounded kitchen aluminum foil. If your noise floor dramatically drops after you have "foiled" the readout, chances are you are a candidate for the relatively expensive but effective tube shields.

You can also use that foil to help localize interference sources. Wrap an inexpensive AM portable radio in some foil to minimize its receiving capabilities, and then move the AM radio around your dashboard to pinpoint noise sources. You might need an earphone to really hear the individual sounds of static.



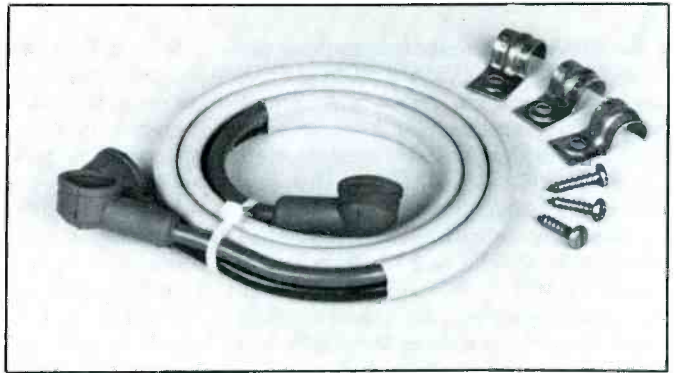
Line filters may install in series off the equipment hot lead in the engine compartment.





Voltage spikes like these may be minimized by special line filters. Graph (A) shows voltage spike without spike filter, (B) shows the difference a filter makes.

Resistor high-tension wiring must be engine-manufactured approved before its added inside the hood.



When your little "sniffer" AM radio is right next to a noise source, you will probably hear the annoying interference, loud and clear. The foil-wrapped radio allows you to get right down to the offending component, for which you would then ground, isolate, or shield.

Trying to squelch out noise with the squelch control is not *the* solution to your noise problems. Identifying the noise source, and then filtering it or shielding it is the best way to go. So check out your noise floor today, and see if you might improve your reception by reducing electrical noise.

Noise filters: Newmar, Newport Beach, CA, 714/751-0488.

EMI clear conductive screens: Southwall Technologies, Inc., Palo Alto, CA 94303, 415/962-9111.

12-volt spike protectors: Control Technology, Louis, MI 39521, 601/466-4550, and Marine Technology, Long Beach, CA 90806, 800/772-0796.



A small AM radio wrapped in foil to cut down sensitivity, "sniffs" out noise coming from the engine compartment.

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BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

An Ill Wind: Top rated country music stations WCMS-FM/100.5, and WCMS/1050, of Virginia Beach, Va., suffered the ultimate indignity. A severe storm came through town and knocked down the stations' three towers located at I-264 and South Military Highway. One of the towers fell on the transmitter building and squashed it a bit. The towers had been 539 ft., 250 ft., and 230 ft. in height. Luckily for WCMS/WCMS-FM, there are some good people working in radio who rose above inter-station rivalries in order to help get the stations back on the air.

Engineers from local stations WWDE, WNVZ, WMXN, WAVY-TV, and WFOG showed up to offer their aid. In short order, the WCMS-FM signal was returned to the air with 12 kW (instead of the usual 50 kW), using a transmitter and 120 ft. tower loaned by rocker WNVZ. Getting the AM signal back on the air was a bigger challenge, but many were seeking a solution.

This information came in from G. Stewart Tyler, WA4JUO, of Suffolk, Va.

New Equipment: Religious broadcaster WOLC/102.5, of Princess Anne, Md., collected \$80,000 for a new transmitter. It was installed five years ago, replacing the ten year old unit that had been in use. Now, the station is collecting funds for other equipment that also needs replacing to the tune of almost \$81,000. This includes a microwave STL transmitter, remote transmitter operating monitor, audio processor, studio control board, distribution amplifier, digital audio equipment, control switcher between transmitters, wattmeter, and about \$35,000 worth of tower lighting. For more information, contact Maranatha, Inc., Station WOLC, P.O. Box 130, Princess Anne, MD 21853.

This information passed along to us by Samuel Bozman, Salisbury, Md.

Watts With 100.1 MHz?: Richard Moore writes that he can't figure out why FM stations operating on 100.1 MHz can only be heard near their transmitter location, and not beyond. He drove across Arkansas and noticed three stations like this.

We can't offer any particular reason why this one frequency should offer limited coverage. Best guess is that it's more than likely related to the fact that stations in rural areas often run low power and don't have high antennas. They don't all congregate on this one frequency, though, so you would probably have discovered other similar limited-range stations had you tuned around the band during the same trip.

Call Home: The FCC has been wondering about the status of several AM broadcast stations that have been dark for at least a year without receiving proper FCC authority. Letters were therefore sent to the station licensees stating that the FCC is inclined to revoke the station licenses, unless the licensees can offer up some good reasons why the licenses should remain in effect. The stations are KBRS, Springdale, Ark.; KOKY, Jacksonville, Ark.; WAGF, Dothan, Ala.; WAPR, Avon Park, Fla.; WDAT, Amory, Miss.; WFRK, Coleman, Fla.; WKJL, Parrish, Ala.; WORL, Oak Ridge, Tenn.; and WPSC, Pageland, S.C.

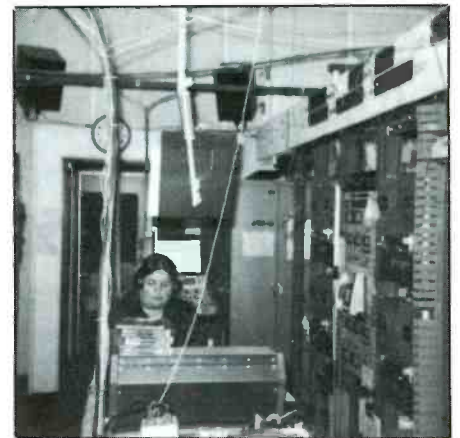
Send Money: The FCC told the licensee of KLAS-TV, in Las Vegas, Nev., of an apparent \$12,500 liability for illegally broadcasting commercials for promos conducted by various Las Vegas casinos. The FCC said these are lotteries. The FCC defines a lottery as "a scheme containing the elements of prize, chance, and consideration."

The TV station argued that the contests did not contain the consideration element because of provisions for free participation in contests. The FCC was not impressed with this, taking the position that even though the contests had provisions for free entries, these were not available on a basis equal to entries available to paying customers.

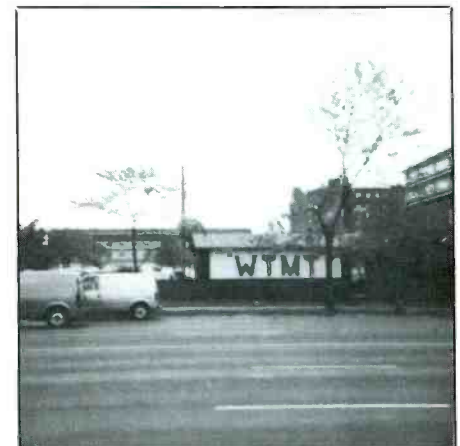
The economy of Las Vegas is based upon legalized casino gambling. Our dictionary defines a scheme as "an underhanded plan or plot." The casino promotions did not violate any state or local laws, so this was hardly "a scheme." These promos were well within acceptable community standards, and



WFPK/91.9 and WFPL/89.3, in Louisville, Ky., use this tower atop the Public Library. (Courtesy R. C. Watts, Louisville, Ky.)



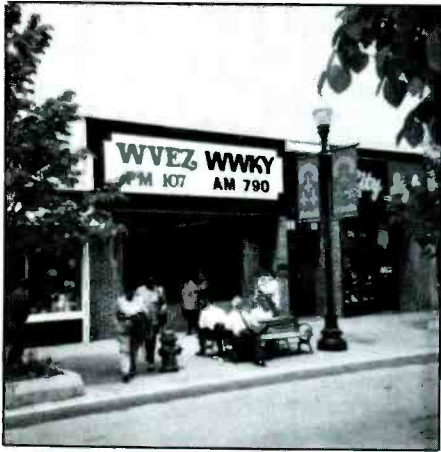
Lori Boyd, KC4FED, at the WFPK/WFPL controls, in Louisville, Ky. (Courtesy R. C. Watts, Louisville, Ky.)



WTMT/620, "Hot Country 62," in Louisville, Ky., operates from here. (Courtesy R. C. Watts, Louisville, Ky.)



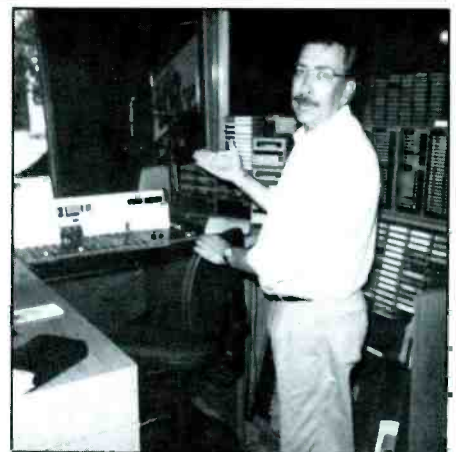
Bumper sticker from KAYZ/103.1, Ed Dorado, Ark. (Courtesy Richard Moore.)



The studios at Louisville's WWKY/790 and WVEZ/106.9. (Courtesy R. C. Watts, Louisville, Ky.)



Commercial production facilities at WWKY/WVEZ, Louisville, Ky. (Courtesy R. C. Watts, Louisville, Ky.)



Jeff Leonard, Program Director at WWKY/WVEZ, Louisville, Ky. (Courtesy R. C. Watts, Louisville, Ky.)

part of why Las Vegas attracts business. Nobody was hurt, misled, or cheated. People go to Las Vegas to gamble. For a Las Vegas TV station to have been slapped with a \$12,500 fine for this seems unrealistic, unfair, and just plain ridiculous.

In another FCC action, the agency informed WSKS-FM, of Milledgeville, Ga., that it was aware that the station failed to light its antenna tower, and that the FAA wasn't informed that the tower lights were inoperative. The FCC notified WSKS-FM that these rule violations subjected the station to a \$20,000 fine. Sounds like a scheme to reduce the national debt.

Groundwave Curve: Last April, the FCC adopted a new set of AM groundwave propagation curves. These curves (Graphs 1 through 20) are now available and may now be purchased for groundwave propagation

analysis. For further information, contact Thomas Lucey, 2025 M Street N.W., Room 8111, Washington, DC 20554, telephone (202) 254-3394.

Some New AM'ers On The Horizon?: Last spring, the FCC lifted its freeze on AM station applications and modifications. This two-year ban was ended as the FCC's new AM rules went into effect, extending the AM band up to 1705 kHz, and incorporating very tough (some think [too] tough) new requirements that the FCC hopes will cut down on nighttime interference.

Opening the gates doesn't signify that there will be an immediate stampede to put new stations on the air, nor to shift existing stations into the newly extended portion of the band. Broadcasters are leery of the new tech standards regarding interference and what it might take to meet those standards. Existing

stations now going to be required to cut nighttime interference to other stations by 10 percent when they upgrade or make any other major changes to their facilities. Broadcasters tend to believe requirement will stall facilities changes, rather than bring them about.

One broadcast engineering consultant expressed concern that, based upon the FCC formulas for reducing interference, certain stations might actually create more interference than before they attempted to meet the new criteria.

An Unhappy Return: The FCC turned down a request for review filed by Voices North, Inc., which sought reinstatement of its application for a new FM station in Warner Robins, Ga. The application had been returned when the applicant's bank refused to honor the check after it had been deposited by the FCC.

Voices, in seeking review, claimed that its case was unusual because the original check sent to the FCC bounced due to the wrongful conversion of funds by its president. Under those circumstances, they felt the application should be reinstated. They contended that the FCC delayed issuing a Public Notice announcing the return of its application, so they didn't have any opportunity to send in another check for the fee and straighten out its previous failed fee payment attempt.

The FCC said that the filing deadline had passed, and that the wrongful conversion of funds by the president was no basis to allow a resubmission after the deadline. The FCC claimed that it has no obligation to inform applicants of fee defects in time to allow them to take corrective action before a filing deadline. In any event, the FCC said that the Voices application had been filed on the last day before the deadline, so any Public Notice announcing the return of the fee would have been too late to be of any help, anyway.

Headed For A Ham Ticket: Jim Buchanan, afternoon deejay at WICC/600 in Bridgeport, Conn., may well have his Novice Class ham ticket by the time you read this. Jim bought an Alinco DJ-160 with a power pack



WICO/94.3, in Salisbury, Md., has this good looking sticker. (Courtesy Samuel Bozman, Salisbury, Md.)

Requesting Changed AM Call Letters

Now	Seeks	
WACB	WTYM	Kittanning, PA
WAVO	WWEV	Decatur, GA
WEHN	WFLP	Northeast, PA
WQBS	WSKN	San Juan, PR

Changed AM Call Letters

New	Was	
KCTQ	KMDY	Thousand Oaks, CA
KFFR	KCFA	Eagle River, AK
KFGI	KKMJ	Rollingwood, TX
KIDN	KKMX	Hayden, CO
KIVA	KZRQ	Corrales, NM
KKIC	KWIV	Douglas, WY
KPYK	KTER	Terrell, TX
WCRJ	WJGC	Jacksonville, FL
WCRY	WNBR	Fuquay-Varina, NC
WDSY	WEEP	Hampton Twp., PA
WKGF	WOKD	Arcadia, FL
WKKP	WZAL	McDonough, GA
WMRE	WKHL	Hughesville, PA
WNFO	WCOG	Ridgeland, SC
WTRO	WDSG	Dyersburg, TN

Requesting Changed FM Call Letters

Now	Seeks	
KMRJ	KQPM	Ukiah, CA
WBPT	WSRX	Naples, FL
WKOA	WRNN	Mansfield, OH

Changed FM Call Letters

New	Was	
KATG	KYBC	Comfort, TX
KCGQ	KTXI	Gordonville, MO
KFGI-FM	KFGI	Luling, TX
KFMG	KDMG-FM	Pella, IA
KHWK	KPAH	Tonopah, NV
KIDN-FM	KKMX-FM	Hayden, CO
KKIC-FM	KATH-FM	Douglas, WY
KLRZ	KMZM	Larose, LA
KPAC	KAPD	San Antonio, TX
KPEL-FM	KXKW	Erath, LA
KQFX	KDXR	Borger, TX
KQRC	KVRK-FM	Leavenworth, KS
KZRQ	KIVA-FM	Santa Fe, NM
WBZD	WCBZ	Bowling Green, KY
WDSY-FM	WDSY	Pittsburgh, PA
WEEP-FM	WXEB	Chateaugay, NY
WERT-FM	WKSD	Paulding, OH
WFXK	WCAS	Tarboro, NC
WGNN	WJZX	Dresden, TN
WISK-FM	WPUR	Americus, GA
WISP	WAYP	Holmes Beach, FL
WJPA-FM	WYTK	Washington, PA
WLMS	WDSP	Lecanto, FL
WMRE-FM	WKHL-FM	Salladasburg, PA
WMXL	WLAP-FM	Lexington, KY
WNSR	WQHC	Nashville, IL
WXNJ	WWOC	Avalon, NJ

in anticipation of the big event. Jim's on WICC every day, but his Sunday *Cavalcade of Hits* program (from 2 to 7 p.m. Eastern) is devoted to 78 and 45 rpm. platters from

approximately 1935 to 1960. At 7 p.m. on Sunday, WICC runs recordings of old time classic radio programs.

Format Changes: Ed Holbrandt, of Texas,

wrote to observe that it seems broadcasters are becoming more and more prone to changing their programming formats. He says that in years past, a station's format was

Computer Aided Scanning

a new dimension in communications from Datametrics



Now Radio Shack PRO 2006 owners for the first time have access to the exciting world of Computer Aided Scanning with the highly acclaimed Datametrics Communications Manager system. Computer Aided Scanning is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

The Datametrics Communications Manager provides computer control over the Radio Shack PRO2006 receiver.

Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.

Uses innovative Machine State Virtualizer technology (patent pending) hardware interface by Datametrics.

Comprehensive manual includes step by step instructions, screen displays, and reference information.

Extends receiver capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.

Simple 4 step installation - no soldering or modification to normal receiver operations.

Datametrics, Inc

Computer Aided Scanning system \$ 349

PRO2006 receiver w/interface installed and CAS system \$ 749

Manual and demo disk \$15

Requires Radio Shack PRO 2006 receiver and IBM PC with 360K memory (640K for full channel capacity) and parallel (printer) port.

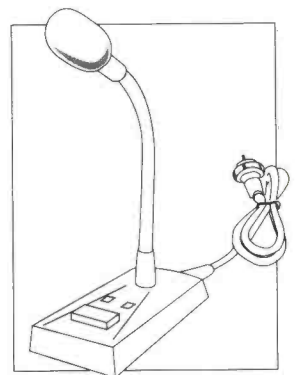
Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr, Suite 8A, Coconut Grove, FL, 33133. 30 day return privileges apply.

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BASE MICROPHONE WITH UP/DOWN SCANNING

High-Fidelity Wide band frequency response give your station that broadcast studio sound!

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Model H HR-2510/LINCOLN
Model I RCI 2900/2950



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Issaquah, WA 98027
206-222-4295 FAX 206-222-4294

Applications Filed For FM Frequency Changes

KXHM	Orland, CA	105.5 MHz	Seeks 106.7 MHz, 25 kW.
WHCJ	Savannah, GA	88.5 MHz	Seeks 90.3 MHz.

Changed FM Frequencies

KGVM	Gardnerville, NV	99.3 MHz	Moved to 99.2 MHz.
WIOZ	Southern Pines, NC	107.1 MHz	Moved to 106.9 MHz.
WRRC	Lawrenceville, NJ	100.1 MHz	Moved to 107.1 MHz.

Cancelled

WEMX	McConnellsburg, PA	103.7 MHz	
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Permits Granted To Construct New FM Stations

AR	Lake Village	103.5 MHz	6 kW
AR	Sherwood	102.1 MHz	2 kW
FL	Zolfo Springs	106.9 MHz	6 kW
GA	Cedartown	88.3 MHz	6 kW
IA	Keokuk	105.9 MHz	50 kW
IA	Stuart	107.9 MHz	2.75 kW
KS	Winfield	95.9 MHz	50 kW
KY	Garrison	98.3 MHz	2.6 kW
LA	Haughton	103.7 MHz	3 kW
LA	Lake Charles	105.3 MHz	50 kW
ME	Searsport	101.7 MHz	6 kW
MI	Bridgman	97.5 MHz	3 kW
MO	Chillicothe	88.9 MHz	3 kW
MS	Pearl	93.9 MHz	6 kW
NY	Fort Ann	91.7 MHz	1 kW
PA	Oil City	96.3 MHz	3 kW
WY	Casper	90.3 MHz	100 kW

Applications Filed For New FM Stations

AR	Stamps	95.5 MHz	3 kW
IA	Epworth	97.3 MHz	
LA	Mansfield	104.7 MHz	25 kW
MI	Flint	88.9 MHz	3 kW
NC	Harrisonburg	92.7 MHz	6 kW
NM	Raton	90.9 MHz	1 kW
NY	Jamestown	88.1 MHz	265 watts
NY	Olean	91.3 MHz	115 watts
OH	Rio Grande	90.9 MHz	2.4 kW
OH	Sandusky	89.5 MHz	2 kW
SD	Brookings	90.7 MHz	
TN	Clinton	89.9 MHz	200 watts
WV	Point Pleasant	88.1 MHz	3 kW

Applications Filed For AM Facilities Changes

KTUC	Tucson, AZ	1400 kHz	Drop to 757 watts, diplex on KJYK tower.
WCOG	Ridgeland, SC	1430 kHz	Drop to 714 watts.
WJDM	Elizabeth, NJ	1530 kHz	Increase to 1 kW days.

Changed AM Facilities

KSAI	Saipan, MP	936 kHz	Dropped to 5 kW.
WNNZ	Westfield, MA	640 kHz	Increased nights to 15 kW.
WPIE	Trumansburg, NY	1160 kHz	Increased to 5 kW/310 watts.
WTRB	Ripley, TN	1570 kHz	Dropped to 28 kW/534 watts.

New FM Call Letters Assigned

KARP	Hampton, IA
KIXA	Baker, CA
KLVV	Ponca City, OK
KMYI	Kirtland, MI
KTFR	Claremore, OK
KVUQ	Olathe, KS
KVYJ	Helena, MT
KVYK	Giddings, TX
WCSE	Bridgman, MI
WGKU	Vanderbilt, MI
WJCK	Cedartown, GA
WRNJ-FM	Belvidere, NJ
WTKF	Atlantic, NC
WUAE	Wakefield, RI
WUAF	Valley, AL
WUPK	Marquette, MI
WWYA	Morris, IL
WWYB	Hanover, NH
WXXZ	Matilda, PA

something that was changed only rarely, but now stations seem to have little allegiance to their formats. He wonders if we have noticed this, or if it's just his imagination.

I think you've got something there, Ed. Broadcasters are certainly feeling the pinch of the tight economy. Some stations have used a format for so many years that they may feel it is growing stale for them. If today's tough economy means that it is no longer producing the same revenue for them that it once was, there's less risk now for them to hop over to a different format that they would like to try, which may also be a less expensive for-

mat to run. Another possible reason for dumping one format for another is to cash in on the same type of sound of another local area station that is having particular success with a certain format. For instance, quite a few Top 40 stations have recently started switching over to Adult Contemporary, Classic Rock, and Oldies formats because these formats are paying off for others.

Not every format change works out for the better. Some are total flops. Some animosity from among the disenfranchised listeners and sponsors is always to be expected, but the hoped for trade-off is a bountiful harvest of enthusiastic new listeners and sponsors. If they can't be made to materialize, then the station faces serious problems.

Changing formats is a risky business. When you see a station completely changing its format, you can take two things for granted. First, the format they got rid of was either stagnating, or too expensive, or wasn't producing listeners and/or sponsors (even if it once did). Second, the Program Director has his fingers crossed, and his resume is typed up and ready to mail out "just in case."

We are looking at the studio clock and the sweep second hand is on the way to the top of the hour. That means we'll be here, same time, same station, next month. We are always looking for bumper stickers, news clippings about broadcasters, recent AM or FM QSL's, station photos, station news, and your questions or comments.

ICOM™ R7000 Sweeping 1300 Channels/Min.

DELTACOMM™ 1.04 gives you a custom interface and optimized software that will not just control but will maximize the potential of your R7000. Spectrum log at speeds in excess of 1300 channels/min. while automatically generating a histogram of frequency/activity. Advanced priority channel monitoring and program control, by channel, of remote tape recorders during scanning. Here are a few (there are many more) examples of the advanced features DELTACOMM has to offer:

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- Auto histogram and scan file creation during spectrum log.
- Scan file channel lock-out feature allows scanning around channels without removing that frequency from database.
- Resume scan and maximum monitor values unique on each channel scanned.
- Each frequency within a scan file has an area (40 characters wide) for channel information.
- Auto frequency detection and storage during search and spectrum log.
- User friendly installation program reduces need for DOS knowledge.
- Full support of serial ports COM1-COM4.
- On-screen HELP reduces need to refer to user manual.
- REQUIREMENTS: MS-DOS microcomputer with minimum 512K memory. DELTACOMM's performance is proportional to baud rate setting, style of display card and type of computer used.



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CIRCLE 55 ON READER SERVICE CARD

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

We just knew that somewhere there must be a good argument for cellular privacy and secrecy. It may have been found, and in Sweden. It seems that the Swedish military reserves conduct regular weekend maneuvers. Many of the reservists who go on these maneuvers bring along their own handheld cellulars in order to call their families, friends, and to conduct business during their off hours. The Swedish Ministry of Defense pulled the plug on these doings and has told the reservists to leave their cellulars home when they show up for duty.

Military Intelligence has come to the conclusion that a potential enemy could monitor the cellular channels and determine the locations of the forces, and also glean other intelligence tidbits from the conversations of the reservists.

Nationwide System On Tap?

Fleet Call, Inc., filed a petition with the FCC seeking to speed up the creation of a nationwide digital wireless communications network. This network would compete with nationwide systems now being proposed by providers of cellular, paging and mobile data services.

This petition proposes that the FCC auction off blocks of unlicensed channels in the 800 MHz Specialized Mobile Radio (SMR) spectrum. Those channels are expected to be used by SMR operators to provide a variety of mobile communications services, including nationwide roaming.

The proposal focuses on unlicensed 800 SMR spectrum in the core areas of approximately 180 of the 306 Metropolitan Service Areas (MSA's), and in virtually all of the adjacent Rural Service Areas (RSA's). Those areas have a combined population of more than 110 million.

In most of the top 30 MSA's, all of the SMR channels are licensed and in use, so the auction proposal would not apply in those areas. Fleet Call operates in six of the largest MSA's (Los Angeles, New York, Chicago, Dallas, and Houston), which encompasses 41 census MSA's and covers a population of 61-million.

Under the Fleet Call plan, the FCC would create "innovator blocks" of up to 105 vacant channels in each MSA or RSA. The increased capacity and high quality services that can be made possible by having 105 channels available are expected to attract the investors and service providers needed to build advanced digital SMR networks. In those areas where 105 channels aren't available, the FCC would create smaller blocks of at least 42 channels.

Congressional approval would be needed to auction off exclusive usage rights to the "in-



The Telemobile Inc. System 35 community radiotelephone.

novator blocks." The auctions would be conducted as competitive, sealed-bid processes. Bidders would be free to submit an individual bid for a block of channels in a single metropolitan area or an aggregate bid covering blocks in multiple service areas. In return for acquiring rights to a significant channel block, operators would be required to utilize advanced, spectrally-efficient technologies. We saw nothing in the Fleet Call proposal that would discourage or prohibit the practice of dealing in the frequency blocks. That is, bidding on them without the intention of actually providing communications services, but, in-

stead, simply sitting on those rights until they could be sold to someone else for a profit.

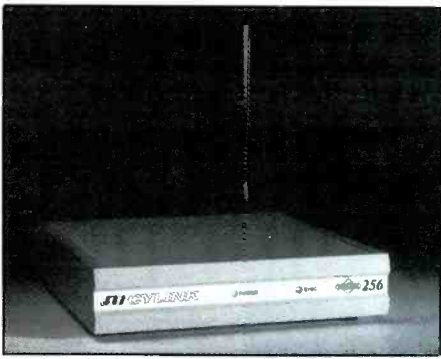
Funds brought in by the auction would be turned over to the U.S. Treasury's general fund.

In operation, the proposed Fleet Call network would use base station equipment made by Motorola and Northern Telecom, Inc. These companies are investing \$300-million in the Digital Mobile Networks. Matsushita Communications Industrial Co., Ltd., will supply subscriber equipment. Matsushita has invested \$45-million in Fleet Call's stock.

SMR services include dispatch, car phone,



L. A. Cellular is providing complimentary service and 20 transportable phones for a half-year test program being run by the police-assisted Community Watch program in Los Angeles. Here, Barbara Gallen (from left), founder of the Miracle Mile Neighborhood Patrol; Assemblyman Terry Friedman, creator of the new telecommunications program; Deputy Chief Glenn Levant of the LAPD West Bureau, and Michael Heil, president of L. A. Cellular, make it official.



The Cylink wireless unit operates in the 902 to 928 MHz band.

and other two-way radio services used primarily by fleets of vehicles. The DMR networks would improve the quality and enhance the scope of those services and allow Fleet Call to serve millions of subscribers in its markets, greatly expanding its capacity over the existing analog technology.

The DMR system concept calls for local service areas to be divided into sites, each using a low-power transmitter. This allows a given channel to be reused at non-adjacent local sites. Multiplexing techniques will allow several stations to use a single channel at the same time.

Fleet Call, Inc., is located at 201 Route 17 North, Rutherford, NJ 07070.

Community Radiotelephones With Privacy

Telemobile Inc., brought out a low-cost community radiotelephone system for sharing a common exchange line with a number of subscribers, but providing complete communications privacy for each individual subscriber. Called System 35, it operates on a single phone line per channel with up to 35 subscribers per channel operating in the system.

The system can begin with a single line, single channel for up to 35 subscribers and expand 1 channel at a time to a total of 480 within about a 35 mile radius. The subscriber systems include 6 point-to-point as well as mobile and portable phones, each with privacy features that stop other subscribers from listening in. If the line is busy, a computer advises other waiting subscribers when the line becomes available. An intercom feature allows one subscriber to call another without tying up the line.

This system is ideally suited to communities with a small population spread out over a wide area, or in areas where the phone company has only limited service available.

This is manufactured by Telemobile, Inc., 19840 Hamilton Ave., Torrance, CA 90502.

Cellular Police Aid

Police in White Haven Borough, Penna., felt that a cellular telephone would be a useful tool to have in the local police car. The agency's chief made the request of the borough council, saying that it would be useful during those situations that could preferably be handled more suitably via the cellular than on the standard police radio.

When the story of this request appeared in the local press, an anonymous donor offered to provide the agency with a gift of a cellular phone valued at \$600. The council estimated the cost of using the phone and felt that it would fit into the budget, so the unit was accepted.

The police were pleased, saying to the borough council that the cellular would be useful, for instance, when there was a fatal accident. They didn't want to put the name of the deceased out over the police radio because so many local residents have scanners. They felt there was a privacy aspect involved.

Police also observed that the frequency used by the borough's police band handheld made it unsafe to use during a bomb scare because it might trigger an explosion. They felt the cellular would be better and safer to use in this type of situation.

This information sent along to us by Rich Rockman, WB3EGD, of Hazleton, Penna.

Point-To-Point No-License

Cylink has new wireless point-to-point connectivity products that make it possible to set up links within buildings, without a license and without hard-wired connections. These are "plug and play" high-speed connections that operate under FCC Part 15 "no license" regulations in the 902 to 928 MHz band. They set up in minutes. You just plug your voice, computer, videoconferencing, or LAN equipment into the back of one of Cylink's AirLink modems at each site. You set a few switches and you're ready to go.

The modems range from the 2-wire voice (AirLink VF), to the AirLink digital models 64, 128, and 256. The model 256, for instance, operates at 256 kilobits per second. Each unit has a range of up to 1,000 feet using its built-in antenna. This can be extended to 10 miles using an optional Yagi (directional beam) antenna. The wireless modems interface with EIA 530, RS-232D, V.11 and V.35 connections. Prices start at \$2,500.

For more information, contact Cylink, 319 North May Ave., Sunnyvale, CA 94086.

New 900 MHz Band Cordless Phones

New 900 MHz band digital cordless phones have been brought out by VTECH Commun-



VTECH introduced some new digital cordless phones using the new 900 MHz technology. This is the Tropez 900 model.



Autotalk promises drivers in Los Angeles highly detailed traffic reports at the touch of a button on a keyboard.

ications. The Tropez Platinum's major features include caller ID, 2-line capability, digital clarity, 16-bit security (65,000 code combinations), mute, flash, hold, 20-number memory, two-way paging, tone/pulse dialing, speakerphone, 4.5 talk time, 43 hours standby, scratchpad, and a low price of \$399.

The Tropez 900 model is a generally similar unit, but without the speakerphone or caller ID, and having a 16-number memory. The suggested retail is \$269.

Although range is not specified, it is described as being "5 to 10 times that of regular cordless phones." What with 46/49 MHz cordless phones offering about 1,500 ft. (or more) range, we would have to assume that these units are offering a range of up to 15,000 ft., which is almost 3 miles. Good stuff.

For more information, contact VTECH Communications, 8770 S.W. Nimbus Ave., Beaverton, OR 97005.

Drive-Talkie

Nine of the nation's busiest freeways are in the Los Angeles area. Now, a company called Autotalk, Inc. promises to make driving in Los Angeles at least a little easier. It's an inexpensive car radio accessory that lets drivers hear free, continuous, regionally spe-

Let Your Computer Control Your Radio! with SCANCAT

Once you use the SCANCAT computer program with your radio, you will never operate your radio again without it! SCANCAT Version 4.5 controls the following radios:

- ★ AOR 2500, 3000
- ★ JRC NRD-525, NRD-535
- ★ DRAKE R-8
- ★ KENWOOD R-5000, TS-440,
- ★ ICOM R-71, TS-450, TS-711, TS-950
- ★ R-7000, R-9000
- ★ YAESU FRG-757GX, FRG-9600

UNIVERSAL FEATURES

- ★ Create Frequency Databases
- ★ Scan between ANY frequencies
- ★ Up to 400 frequencies/file
- ★ Scan by ANY increment & delay
- ★ Built-in TNC comm program
- ★ Share ANY radio's file



AOR-3000, ICOM, NRD-535, FRG-9600 FEATURES

- ★ Auto signal detection/scan stop
- ★ Auto logging to diskfiles
- ★ Spectrum analysis with spectacular graphics
- ★ Save/load radio's memories to disk

Version 4.5 also includes SCANPORT. SCANPORT allows you to download your favorite BBS or import most columnar frequency lists to a running SCANCAT file.

CALL or write for FREE information or for our \$5.00 fully operational demo disk. We are so convinced you will buy SCANCAT, we'll even refund the cost of the demo and postage when you purchase SCANCAT!

Requires MS-DOS compatible computer w/RS-232C serial port

Interface control cables available - please call!

\$49.95 + \$5.00 P & H
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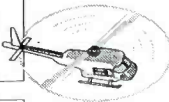
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Autotalk, Inc.™

Provides free, continuous, regionalized, traffic reports plus receives TV sound

Traffic reports

Information is provided by helicopters, airplanes and mobile units giving up-to-date accuracy.



Information is also obtained from the California Highway Patrol (CHP) as well as sensors placed in the highways by Caltrans.

All-traffic broadcasts

Special equipment installed at a TV station facility continuously broadcasts traffic reports. The information is broadcast over the Second Audio Program (SAP) channel of the station.

Targeted reports

An Autotalk, Inc. traffic reporter downloads reports via telephone and encodes messages by region. Users can select either all reports or up to four specific regions. A computer chip inside Autotalk, Inc. determines whether or not a traffic message is within a region the user has

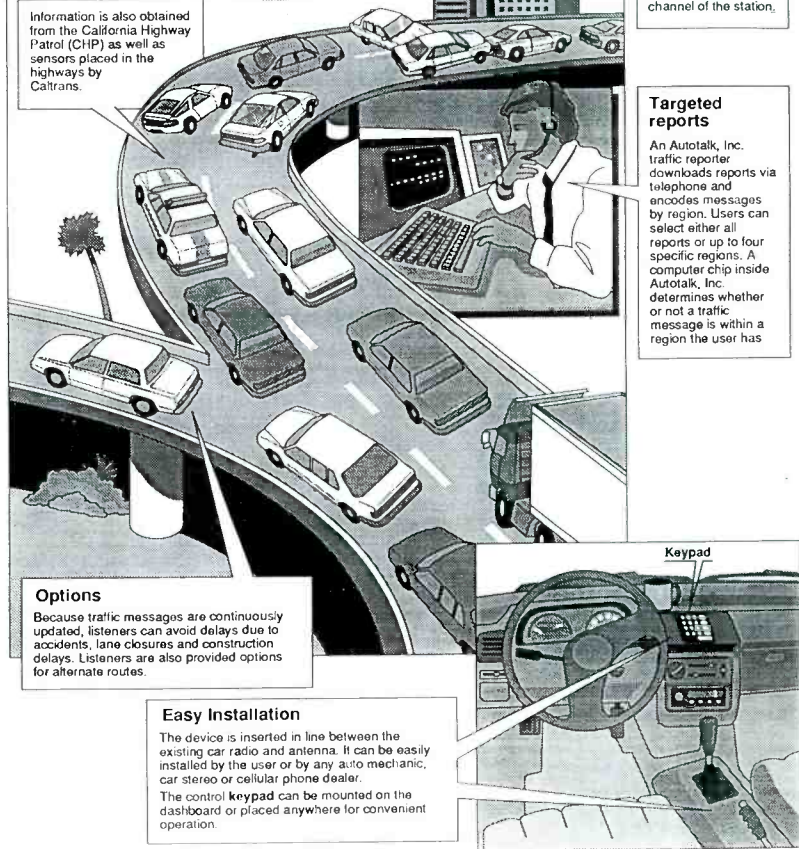
Options

Because traffic messages are continuously updated, listeners can avoid delays due to accidents, lane closures and construction delays. Listeners are also provided options for alternate routes.

Easy Installation

The device is inserted in line between the existing car radio and antenna. It can be easily installed by the user or by any auto mechanic, car stereo or cellular phone dealer.

The control keypad can be mounted on the dashboard or placed anywhere for convenient operation.



This is how the Autotalk system operates in Los Angeles, and is planned to be operating in other cities within the next three years.

cific traffic reports, while they drive. It also brings in the audio portions of TV programs.

By pressing a few buttons, drivers in the Los Angeles area will receive the Autotalk reports for their route. These reports are far more detailed and comprehensive than the general "quickie" traffic reports that go out on regular broadcast stations. They include construction areas, lane closing delays, alternate routing, driver safety tips, and interesting traffic facts.

The information is gathered directly from a variety of sources, including the Caltrans Traffic Operations Center, commuter TV, the CHP, and the Shadow Traffic Network. The reports are then sent out prefaced by special "region codes" that can be deciphered only by the Autotalk unit.

The signals are transmitted on the Secondary Audio Program (SAP) channel of KVEA-TV, TV Channel 52. The Autotalk

device will pick up the audio portions of any TV program. The device sells for a suggested retail price of \$129, and is intended to be inserted between the vehicle's existing radio and antenna. Once the receiving adapter is purchased, the traffic information is free and there are no user fees.

Within the next five years, Autotalk plans on opening up its service in 30 cities. San Francisco will be next to start up.

For more information, contact Autotalk, Inc., 3350 Scott Boulevard, Building 4102, Santa Clara, CA 95054.

Plenty of interesting things this time, and we'll have more in October. Hope you will join us. We are interested in your thoughts and newspaper clippings concerning car phones, beepers, and other personal communications devices. We also want information from manufacturers and service suppliers.

27 MHz COMMUNICATIONS ACTIVITIES

Many operators have a special place in their hearts for Cobra's 2000GTL AM/SSB deluxe base station. Since this tried and proven favorite has long been one of the most spectacular (legal) base stations on the market, we decided it was certainly worthy of coverage here. What with Christmas only a few months away, now's the time to begin hinting around about what you want.

From its sleek aluminum front panel and oversized illuminated meters, to its built-in 6-digit frequency counter, the Cobra 2000GTL is a class act. Features include a receiver with a 6-pole crystal lattice filter in its advanced SSB receiving circuitry. A monolithic crystal filter assures optimum rejection of inter/cross modulation, while a ceramic filter provides maximum adjacent channel rejection. The transmitter has a logarithmic speech processor to deliver the best possible talk power without flat-topping or splatter.

Other features: mic gain, clarifier, RF gain, tone control, ANL/NB, PA, tape/headphone outputs, on-the-air and mode indicators, S/RF meter, Modulation/SWR meter, and matching external speaker.

On top of your desk, this looks and sounds like a zillion dollars worth of equipment. The MSRP of this spectacular station is \$749.95. For more information on the Cobra 2000GTL deluxe SSB/AM base station, contact the Cobra Electronics Group, Division of Dynascan Corp., 6500 W. Cortland Street, Chicago, IL 60635, or circle 103 on our Readers' Service.

A Look Back

What with all CB modern electronics equipment being solid state, it's easy to forget that almost all CB equipment in the 1960's was designed around vacuum tubes. That excludes the equipment made by a company called Cadre Industries Corp., of Endicott, New York.

At least as early as 1960, Cadre was producing their Model 500 all-transistorized CB

transceiver. Selling for about \$200, this was a compact, full-power 5-channel unit that had a tunable receiver. It could operate from house current or 12 VDC. The circuit contained 18 transistors, 8 diodes, and offered a speech clipping circuit. Receiver sensitivity was 0.5 μ V. CB'ers were not yet weaned from their trusty vacuum tubes, so this was not a very popular unit, despite its excellent design.

By 1963, Cadre had updated and expanded its line of all-transistorized CB radios. Externally, all Cadre models looked pretty much the same. The Model 500 was replaced by the Model 510, selling for \$210. There was a Model 515 that was like the Model 510 but had no manual tuning. It sold for \$195. The Model 525 had rechargeable batteries for portable use, plus a built-in charger and 117VAC power supply. It sold for \$270. The Model 520 was a 12VDC-only model that could be operated from a vehicle, or from an external Cadre battery pack (that could also be used with the Models 510 and 515) containing a shoulder sling and whip antenna for field use. The combo CB rig and battery pack weighed less than 9 lbs.

These were all excellent radios, far ahead of their time in both concept and design. They were well made, too. Problem was they just never caught on with CB'ers. Too bad. Cadre soon faded out of the CB scene and devoted its innovative energies to other pursuits.

What's An Export Radio?

Several letters a month arrive asking us to explain the meaning of the term "Export CB Radio" as commonly used on the air, and seen in some sales literature. It's sort of self-explanatory, supposedly being a transceiver intended for use *only* outside of North America in any and all unspecified nations that may have CB regulations that might allow its use. It can't legally be used in North America primarily because it runs too much power, and/or it can operate on frequencies above/below the authorized 40 CB channels.

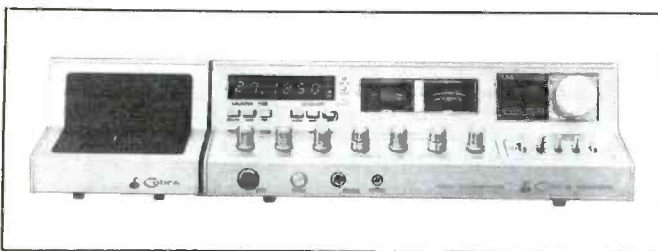
There probably are some places in the world where the CB use of these sets is allowed, like Lower Slobovia, or Shangri-La. I could be wrong, but I suspect that the potential CB use of these sets might well be simply intended for use by domestic operators seeking to run higher power than is allowed, and to operate on unauthorized frequencies. The large amount of mail we receive asking about Export sets leads me to believe that some people have paid top dollar to purchase so-called Export CB Radios, perhaps not realizing that the sets don't qualify for legal CB operation in the USA or Canada under existing regulations, and they aren't really "CB" radios at all.

Which specific regulations a person elects to follow is a matter of their own choice. I'd hope that the regulations are followed, at least as closely as possible. Surely, I would hate to see someone get hung because they didn't know enough about the equipment they're using.

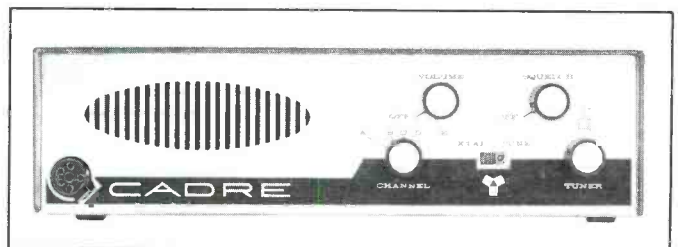
Transceivers I have recently seen described and offered for sale as so-called Export CB Radios include: Hunter; Tri Star 120, Tri Star 240, Super Star 121, Super Star 2400, Super Star 3300, Super Star 3900, Jupiter, Connex, Pluto, Galaxy Plus 33, Galaxy Plus 44, Galaxy Jupiter, Galaxy Saturn, TEK HR-3950, Mirage 88, Counter, Turbo, and Grant DX.

Here's an example of a typical Export CB radio. The Galaxy Jupiter (which is a first cousin to the Super Star 3900, and is sort of like an expanded capability version of the Cobra 148GTL) operates in SSB/AM/FM/CW from 26.515 through 29.205 MHz, running 25 watts in AM mode, 35 watts PEP in SSB mode.

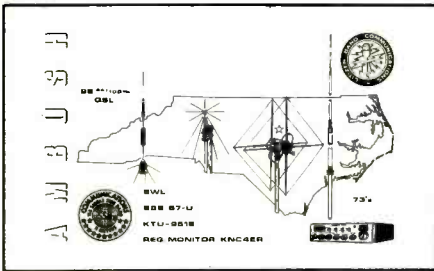
So-called Export CB Radios may include units originally designed and intended for 28 MHz ham radio use. These have been privately modified after they left the factory, being made illegally operable on unauthorized frequencies in the 27 MHz range. For example, we were recently sent an ad for an "Export CB" modification kit offered for sale that



The spectacular Cobra 2000GTL SSB/AM base station. Start hinting that you want one for Christmas.



All of the Cadre transistorized CB radios of the early 1960's looked like this one, for the most part.



This good looking QSL came through from Albert Nunnery, SSB Network member SSB-67U, and Registered Monitor KNC4ER. He would like to swap cards with other readers.

purports to let owners of any of several popular 28 MHz ham transceivers (Realistic HTX-100, Uniden HR-2510, and Uniden HR-2600) turn them into radios that can operate illegally in several segments of the frequency range 26.000 to 28.000 MHz, in addition to using their pre-existing 28 MHz capabilities.

For those who have been asking what the Export CB talk is about, we hope this provides some clarification as to what these radios are. What it boils down to is that you aren't allowed to legally use them for CB in either the USA or Canada, although they are widely offered for sale to CB operators. "You pays yer money, you takes yer chances."

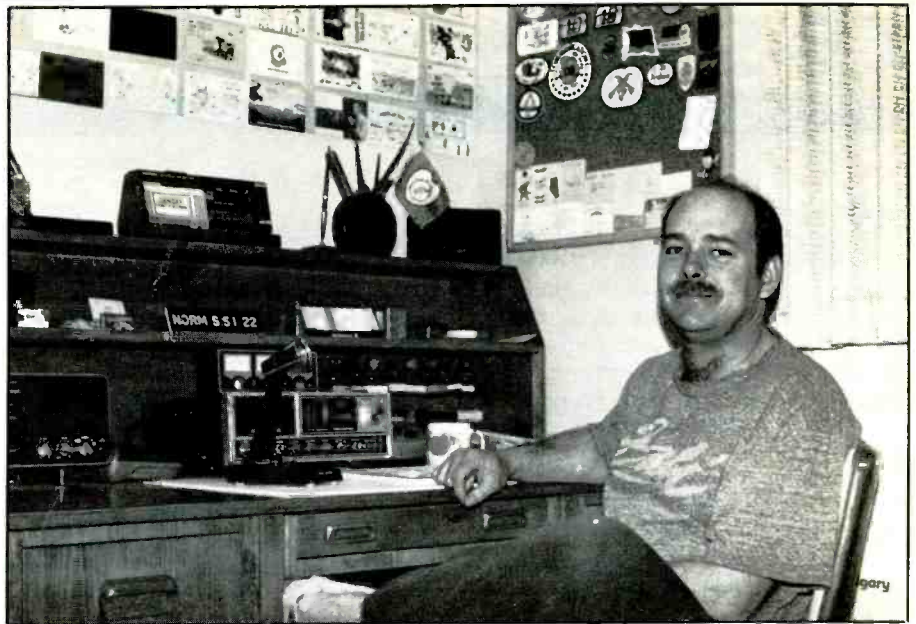
Other Mail

Speaking of taking chances, a note from Stanley D. Mayo, of Winslow, Maine, lets us know that David Plourde, a CB'er in Lewiston, Maine, was written up in the newspaper as being proposed for a \$10,000 FCC fine. This was for running too much power, and came on the heels of an FCC investigation conducted after his neighbors complained about interference to their radios, TV's, and other electronics equipment.

A sort-of complaint came in from Albert A. Nunnery, SSB Network member SSB-67U, Registered Monitor KNC4ER, and ham KD4LLX, of Cary, North Carolina. Albert would like *CB Scene* to be 10 pages long every month. He reads *POP COMM* cover-to-cover, and then he has to read the entire magazine cover-to-cover at least two more times while he's awaiting the next issue to come out. He shows up so often at the local bookstore waiting for the new issue each month that they practically lock the door when they see him coming down the street. These kinds of complaints we like, Albert!

Albert would like to swap QSL cards with other CB operators, scanner monitors, and SWL's. His address is: Albert A. Nunnery, SSB-67U/KNC4ER, 1228-F Hamilton Ct., Cary, NC 27511. He's got a good looking QSL, too.

We received a press release (but no photo, so we can't show you what it looks like) about



Here's Norm, SSI-22, from Calgary, Alberta. He's into 27 MHz comms, but likes to SWL, too.

a new CB antenna. Frankly, the press release went on for two pages but never actually says in so many words whether this is a base station or a mobile antenna, but we suspect it's a base station job. It carries a \$99.50 price tag. We can tell you for sure that it is called the CP-40, it is claimed to be "bi-directional and can act like a beam antenna." It provides a circular polarized signal, which is claimed to provide improved coverage over either the vertical or flat side signals sent out by other CB antennas. It can be assembled in 15 minutes, and will load up from 26 to 30 MHz,

so it can also be used in the 28 MHz ham band.

No, the press release provided no information about how much power it can handle, its SWR, size, or any of those other antenna type things. The circular polarity sounds like it has a lot of fine possibilities, but we'd really like to have a few more specs and a picture of this sky hook before we shelled out a hundred bucks to dazzle our neighbors with the amazing sight of one on our house, or vehicle, or wherever it goes.

If you want more information on the CP-



This smiling guy is Tony, also known as 2AT111.

40, your best bet would be to contact the fellow who told us that he is manufacturing them. He is Robert R. Provost, 220 Riverside Avenue, #E-3, Burlington, VT 05401.

Overseas Notes

When they shut down the USSR, they opened up the CB. How about CB'er Oleg, 50MT114, P.O. Box 4673, Ulyanovsk, 432063, Russia. Says he is a 100 percent QSL'er from his home town, located 1,000 km east of Moscow. Oleg has been a radio hobbyist for sixteen years, and has used homebrewed radios. His profession is personal computers. Thanks to Tony, 2AT11, for letting us know about Oleg.

From our old friend Michael, 13AT102, of Berlin (formerly East Berlin), we received some information on CB regulations in several nations. The information was printed in German, which is not a language we translate too easily. We think we got it close, though. We would assume that references to 40 channels, unless otherwise noted, relate to the same 40 channels used in North America. Remember that actual operations may vary from this information, which represents what the regulations allow:

It appears that Switzerland has 40 FM channels with 4 watt radios. There are 22 channels allowed for 0.5 watt AM/SSB activities, plus 80 channels in the 933 MHz band.

Spain has the same channel and power arrangement as the USA and Canada.

Former Czechoslovakia has 20 channels of 4 watts, AM/SSB/FM. These relate to our channels 1, 3, 4, 5, 7, 8, 9, 11, 12, 13, 15, 16, 17, 19, 20, 21, 24, 25, 26, and 27.

Turkey has 4 watt AM operations on 40 channels.

Hungary has 40 channels of AM/SSB/FM with 4 watts AM/FM, 12 watts PEP on SSB.

New Zealand allows 15 watt PEP SSB from 26.330 to 26.760 MHz.

Belgium has 22 channels, allowing AM/SSB/FM with 0.5 watt. Denmark is similar, except with only AM/FM (no SSB).

Germany permits 40 channels of 4 watt FM, 12 channels of 1 watt AM, 22 channels of 0.5 watt FM, 12 channels of 0.5 watt AM/FM, and 12 channels of 0.5 watt AM.

Finland has 23 channels of 5 watt AM, 22 channels of 5 watt FM.

France has 40 channels of 4 watt FM, 1 watt AM, and 4 watt PEP SSB.

Greece permits 40 channels of 5 watt AM.

Great Britain allows 40 channels of FM between 27.601 and 27.991 MHz, plus 20 channels of FM on 934 MHz.

Ireland has 40 channels of 4 watt FM, 2.5 watt AM.

Italy offers 40 AM/FM channels with 4 watts. There are 34 AM/FM/SSB channels for business users.

Former Yugoslavia has no official regulations, but 40 channels are in general use with 4 watt transceivers.

Malta forbids CB radio.



A genuine CB QSL from Oleg, 50MT114, in Russia. We received it via Tony, 2AT111.

Netherlands has 40 channels of 2 watt FM, 22 of 0.5 watt FM.

Norway allows 22 channels of 0.5 watt AM.

Austria has 12 channels of 0.5 watt AM/FM, plus 22 of 0.5 watt FM.

Poland permits 40 channels of 4 watt AM/FM from 26.960 to 27.400 MHz.

Portugal offers 40 channels of 5 watt AM/FM, 15 watt PEP SSB.

Those were all of the nations included in the data Michael sent us. Keep in mind that CB is still not allowed in some nations, espec-

ially those with guerrilla or other rebel activity. In such areas, governments go to extremes to keep CB equipment out of the public's hands. They fear that CB radios will be readily put to use for anti-government paramilitary communications, in conjunction with sabotage or espionage activities, and for propaganda broadcasting.

We'll clear the channel for now, and hope to catch you on the flip flop. Send us your own QSL's, DX station QSL's, station photos, CB questions, CB related newspaper clippings, and comments on 27 MHz activities. ■

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SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

The summer's just about over and vacation scanning is about to turn into survival scanning in many areas of the country. It sure is fun to take along the scanner to the amusement park or while hitting the sights while on vacation, on the other hand, when the weather starts turning cold and nasty, it pays to keep an ear on road crews and other essential services if you need to get about. Only your scanner can bring you "instant updates" that you can't get on your favorite AM or FM radio station.

From a reader in Jasper, Indiana, who prefers to remain anonymous, says that she can hear cellular phone calls on the UHF band on her scanner. She wrote in response to the letter from Morris Murphy that appeared in this column in the April issue. In that column, Morris discussed how cellular phone calls could be heard on scanners in the UHF band and I suggested that what actually might be being heard was the scanner's front end being overloaded by a nearby cellular tower.

Our reader in Indiana says that she is hearing cellular calls on frequencies such as 452.625, 454.200 and 460.800. She owns a Radio Shack Realistic Pro-57 scanner and can hear the cellular calls quite clearly. Sometimes calls to cellular service centers can be heard, too. She lives about two miles from a cellular tower, which is only about 100 feet from a state police tower. In addition, the only antenna used on the scanner is inside a brick apartment building with the window facing away from the tower.

So what gives? There could be several explanations here, none of which may be right. Without doing an on-site test, it is hard to diagnose such a problem through a letter. One possible explanation could be that the reader lives near a major road and cars are traveling right by her window and the signal is pounding into the scanner, even though the cell phone is transmitting only 3 watts. It may also be that another signal on one frequency is mixing with the cellular phone frequency producing a product, (mixing of the two frequencies) that is producing a third frequency on which the two signals are heard.

There may be an even simpler explanation. You may just be hearing telephone patches being made. For instance, there may be a radio user on 452.625 in your community that has the capability to place phone calls over their repeater system. The same might apply to 460.800, a business band frequency if you are more than 50 miles from a major airport. The 454.200 frequency is a mobile phone and paging frequency, and if you are hearing phone calls on that frequency, it's likely you might just be overhearing conventional mobile telephone service. However, without being there and hearing what our



R. C. Watts of Louisville, Kentucky, snapped this tower in Shelbyville, Kentucky. The tower is located at the headquarters of Shelby Rural Electric Co-op. According to my records, the utility dispatches its power crews on 158.265.

reader is listening to, it's hard to pinpoint an exact answer to her question. Perhaps the intrigue of the hobby makes it fun!

Robert Bucko from Jeanesville, Pennsylvania, says he enjoyed reading Chad Gates' story on "Hearing Those Helos" in the March issue. He wonders about what frequencies are used by television news helicopters. He wonders if they are in the aircraft band or another band. He has a local TV station's news frequency programmed into his scanner, and hears the station call out to their copter, but never hears a response from the helicopter.

There could be several possibilities here. First, you may just not be hearing the copter because it is far away. Usually TV news copters are used by stations to dispatch a news team to a remote site—fast. Seldom will you find the news copter used to cover local stories. It's just too expensive to put up the copter when you could have someone in the studio drive out to the assignment in 15 minutes or so.

Another possibility is that the station does not own the copter and doesn't have any radios permanently mounted in the aircraft. If they are leasing the copter, the news team on board may just be carrying a low-power walkie-talkie and you may just not hear them because it is low power. However, the TV station may have several remote receive sites on their frequency and can try to pick up the best

signal when conversing with the crew.

Even still, the TV station may be using even another frequency for the news copter to talk back to the bases. I've seen this in some UHF systems employed by TV stations. For instance, if reporters and the base station for a TV station use 450.350 for routine communications, the helicopter might talk back to the station on 455.350. One reason for this might be to avoid interference to other stations in nearby cities on 450.350. Remember, the higher the copter goes, the wider its signal can be heard. Likely you'll find the second frequency within the same range as the routine frequency.

While the news copter will also be equipped with an AM aircraft radio, its use is primarily for contacting airports and other aircraft while in flight. If a station has two or more helicopters, or there are other stations with helicopters in your area, then it's possible that the copters might use a frequency on the AM aircraft band for coordination. You'll probably catch such a use if the copter contacts that other copter (or perhaps even a plane!) on the regular news frequency, and tells them to switch to the aircraft radio while giving out the frequency. However, such usage for the most part is rare.

Robert Bucko also includes a list of frequencies for the Hazleton, Pennsylvania, area: 155.670, Pennsylvania State Police; 154.370, Hazleton fire; 151.115, Hazleton streets; 154.325, area fire mutual aid; 155.925, Lower Luzerne County police; 154.130, Hazle Township fire and rescue; 155.670, Pennsylvania State Police Hazleton barracks base to car; 155.910, Pennsylvania State Police Hazleton barracks cars to base; 154.755, Pennsylvania State Police car to car; 159.045, Pennsylvania Turnpike north-east extension; 158.835, Pennsylvania Emergency Management Agency; 161.070, Hazleton Area Railroad; 155.160, paramedics and Geisinger Medical Center Life-Flight helicopter; 153.170, WNEP-TV news; 47.28, 47.30, 47.38, Pennsylvania Department of Transportation crews; 123.000, Hazleton Municipal Airport; 158.175, Berwick nuclear power plant; 37.62, 37.66, Pennsylvania Power and Light Co. Thanks for the great list, Robert!

Leon Giles of Garland, Texas, writes in asking about how to monitor the FBI and Drug Enforcement Agency. He's also looking for signal codes for various police departments in the Dallas, Texas, area. For the signals, you may want to check with several stores in your area that sell scanners. I haven't walked into a scanner shop anywhere in the nation yet that didn't have local information from frequencies to codes that were available for the asking.

It used to be easy to catch FBI units. For the most part, they operated with repeater outputs in the 163.7-164 MHz range and mobiles and bases in the 167.1-167.8 MHz range. Then some additional ranges at the top end of the 162 MHz range started being used. And now, the FBI can pop up just about anywhere from 162 to 174 MHz.

For instance, they can be heard with repeaters in the 165-MHz band with mobiles using 173 MHz frequencies. They might also pop up on 164 MHz. Some of their communications are digitally encrypted these days. All you'll hear on your scanner will be static if you tune in encrypted FBI calls. If you hear them in clear works (unencrypted), and have a decoder for CTCSS, FBI signals have a fingerprint of a CTCSS tone of 167.9 hertz on a nationwide basis. The CTCSS tone helps identify the agency.

On the other hand, the DEA has a CTCSS fingerprint of 156.7 hertz. If you stumble across communications in the 418 or 419 MHz band, you're likely tuned into DEA communications. There's still a fair amount of clear-voice communications by DEA agents. Mobiles and some low-power units have been heard in the 415, 416 and 417 MHz bands.

However, it's not uncommon to find federal agents using local agents' frequencies during a joint investigation. For instance, if your local country detectives are pulling down a big bust and they have coordination from federal agency, the local agency may give the federal agent assigned to their case a walkie-

talkie so they can communicate back and forth easily. And for what it's worth: never overlook cellular use by undercover folks. They use it. A lot.

What are you hearing on your scanner? Have you snapped any photos of your listening post recently? What questions do you

have? We try to answer as many questions as possible through this column. Send your frequency lists, comments, questions and photos of listening posts and dispatch points to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2909. ■

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BP SY UI MM UA DZ BU NO JK NZ
BV KDJ JI VL LV DL HP
NUNFXJLBGNNNNGOORUODSDRDYIGODP
IW ED TY RR ID RY NA JX OT OD
JLY TD NI SX VO IZ RK BB
GUVAGUSKUHIRLJQONGXJFYIZU
DG ZJ UD ZK DO PE VH SC YX AW
KC AD JB NG TN OT SK PE EF KS
WDXAEHDDDKJFENTMUSDAADFFOYNZS
ZO SK VG GS KL GB GZ ZS KD WI
BF FK CD MD ZH BO OY BD GI YK
EIPDQVHMDOVPMHJCMXPXURIDRIPMAHD
AI CL UF WF DZ EK TO AF CH ME
CS DC UL UX NI NW RO VN PE EE
AICUKYHUNTDGSSNRKLODBREIJNYITO
BO KM ZY JM AD PU YI OY OP SB
XC RW WC KN Z PI WB AF EO
AKOVULLJKRHKVRAEKRVFXJSPHACMU
BI HZ CI PS HJ BB IL AH
AP FM ZX JZ KI TA AP MR JS FR
TFNDJAXLEKPMHDPAYHSDCFBSJENQSG
GZ U OX AD AH ER UD
SD VJ AH NHK FN ZK YP
BRSCFFVSWRSEJMMYQHVUOQGOHDA
PJ UV AK FJ FN TH CB OD XY XJ
AAB VJN DU AF ZV KJ
DHDJBJUEZFBROUCARDMPTZKMKOSBGU
XS RO JK WM JY HA XJ IV BZ DU
NV CH KI ZJ DL IP OX RU RD AH
HUURKRYNNHYXOEITICKGCHPMJCLYL
XN BV NG AX UNCD FX CH KO SO
CC TJ RL CN YA U YW LM K GWHEGFWEYTRFYQZFKSAPKFRMJMFUEK
W TD AN PK RJ EN
PNHUKKMBYKUDFLFREDEDWICORNRDL
CD GAXJ AH XU CB JF DV WD G7

FR TU ZE XY DP SE SR NO ZX CP
XKOYFURHKKYRJABDFESLIPTORB
VK UU SB NJ FZ XN KO RZ SK ZF
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HT AI KS FF NO AD XO SP YH BD

JCRAVAJONSIBABMRDJKPSIDWCTUJILBYXPRLDXNDZDARAXTPRHHUNHYMEVL

WZ MH ON CZ BV KD IR XH GV OV

MHJTTGGTUIKKSXSXRDLPIPNNNHRLCBZRAZRDEHCBYMLHSMPFYJARJFNKN

BE YB DU YC WL PL WH AC IL RO

FBINZMHHFVQDXFPDASCZUDXIEIXTWSKRSXKQVRYFQKHNYGATKSKAKRPIQOX

YA LD DV XI AD YH KX HN GD YK

UVEDPSIDUCMFCASSJUCWXHONCMAUNMLTTOHKJMTMTVDNEEVUWHYUWDTNWW

3W NO YD KS PK UB UD KB FX GR

LAIUCGMAJGFXYNMCANHKWKWCZNCYFLMNEFUNIMTVDZTOXSKCORKLYDPF

EX GX NN EL TO JS GX TC ZD LW

DHCWGBDFGKRPCVYSHZAMBAFOSDHHIYOOPAJCNDXDETVRNXGWSLF

OZ

ADF EA OR XW WR VZ MW

ZBENYXIHNVFFICGCGMLWYGIFFDYZCNKWXZOUTEEDVDNGSMWUEHCVDLHDR

IK MT FZ ZC AD JK VO RZ OI OY

UJOMZJYYPBQRHFSJYDAKTYDORONXFLUOJDIITZUMIFRBNVBCOIOEDDRFVP

CT NO IR AP BK YL GO DE ES DE

W? X? G? K? Q? E? G? A? I? P? Y? O? K? K? U?

UKMRYXKTDOKYCLTIITLZ7YKTLKKBSQTCZESVFPUGTYPSGGZWTIMRDAKAVN

HP JT JE WC AY OM SF IO UD TK

YPCEJDESMMWYXHOHFEBFNVOBJICRZDTUATGFPJKDHHJZSVQDMJOSMKNWKO

AD JR XN EN PV ID FA SM YA BS

DRKJDAUZNCDCRYCFJYDASSNJLJUGNSVVUNBJKTDWECDFDOYQVCKDTHSFTCK

UA CP ZL AC JC UR RF ID OS DV

3PHJBJKJONSJHUXNDRMFRZHXJLJLDKORHITHDZNXLIJUNWSDXZTYFONDUVL

DD UU UH SL PU IR AY AY IC IP

AJLJENXPKXPRAEMSSGASDXMJDJRCLUFFUDOFVJZLFQDIDUJQXBUDDMKJUK

EX UR ZI ZV NW PJ JS DH KS WJ

NLAIPRDRKFWYKSAKNHYROVJUGSEFS

IZG RV NI JN FS AN TD RI PH

KRLTORWIDWHEBKSJHIDPKSVUFSZIFUDBLJHOJSLZXFZLULOVYSATZSZEFX1

EC VD YC MK KO UM KR BA XF BR

UDDGVADAWXEHILMZBQHSPIHFNJXSSPYW1XPMSJARRIVXZFXWNBQGLIAP

ES BR KD LD AC KT DG LM XL

UVKKTNYLSSDVAABWZUQDZJRNESUYUZYWWSXCDLGMZFHILSJGDRFRPBJUK

HJ MZ QZ

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SK VZ

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EZ FO TS OM JD WS NI OY IA YO JILJOCISDRDFKRADRVDRFRDWH

QT UQ EV ZS OX FE YX UA KE KH LKYFLHIJZOXLKHZIRBRNZFBAYYZHA

NN LW VU EB JA JE SX LM LP GK

KR IK SF DN NO HP FO ZO OI NA ZDRCLRRZSUJKICOUAFTAKGQZIDAP

RV DZ FR RT XX XC CU KR XR PR XNNPBKCVRUFLQVNFVWX11FIFTGSD

PS BP RO CA WT YP FT XJ DL EV

FS UC AF RA YA HB JZ HL NJ AE NZBNBRKUKFSDDNNDRCKYRXTXTNBEHL

UY FN WE OF HF AV ZC BQ DV GP GFDHVD

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Figure 2

Abbreviations Used in The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Connection mode
FF	French
foxes	"Quick brown fox . . ." "test tape"
GG	German
ID	Identification/led
MFA	Ministry of Foreign Affairs
nx	News
PP	Portuguese
RYRY	"RYRY . . ." "test tape"
SS	Spanish
tfc	Traffic
w/	With
wx	Weather

- 122.8: CFH, Canadian Forces Meteo, Halifax, NS, w/coded wx, 75 baud at 0345. (Ed.)
- 147.3: DDH47, Pinneburg Meteo. Germany, w/RYRY, 50 aud at 1025. (Ary Boender, NLD)
- 518: GNI, Niton R., England, w/NAVTEX navigational warnings, FEC at 0823. (Boender, NLD) Un-ID w ZCZC GA07 & rpt on distressed vessel Dora in NAVTEX B/C at 0300, FEC. (Ted Hay, ON, Canada) The "G" in ZCZC GA07 indicates that the B/C is from NMG, USCG, New Orleans, LA—Ed.
- 1622.4: Un-ID w encryption, ASCII, 300 baud, at 0411. (Ed.)
- 4002: YRR2, Bucharest Meteo, Romania, w/coded wx at 2120, 50 baud. (Boender, NLD)
- 4171: C4RG, Carina (Cypriot cargo ship—Ed.), w/an ETA msg, ARQ at 2117. (Boender, NLD)
- 4174: OEMI, Enns (Austrian cargo ship—Ed.), w/a shopping list, ARQ at 2100. (Boender, NLD)
- 6334.2: MTO, Royal Navy, Rosyth, Scotland, w/an availability tape, 75 baud at 0510. (Ed.)
- 6432.4: Un-ID w/encrypted msgs separated by RY's & "vmgtcnjbh," 75 baud at 0513. (Ed.)
- 6867: Un-ID in ARQ at 0449. Sig. was chirping away but now words could be seen until 0459 when NNNN appeared on the screen, foll by more chirping w/o text. (Ed.)
- 6963: Un-ID idling, 0352 to past 0422, ARQ-E/72. (Ed.)
- 6987.5: Un-ID w/a garbled msg containing foxes, ARQ-M2/96, channel A, at 2255. (Fred Hetherington, FL)
- 6995.3: Un-ID w/a garbled msg in EE, ARQ at 1045. (Hetherington, FL)
- 7000.8: Un-ID idling a very long time, ARQ-E/96. Tuned in at 0045. At 0245 the c/s "D5F" was heard in CW atop the RTTY sig. (Hetherington, FL)
- 7380: USN MARS sta, NNN0ASA w/administrative t/c at 1401, 75 baud. (Ed.)
- 7396.3: Possibly HSW64, Bangkok Meteo, Thailand, w/coded wx, 50 baud at 1444. Buildup of atmospheric static soon obliterated the sig. (Ed.)
- 7520: BZP57, Xinhua, Yurymqi, China, w/RYRY at 0015, 75 baud. (Harold Manthey, NY)
- 7625: HZN47, Jeddah Meteo, Saudi Arabia, w/coded wx at 0020, 100 baud. (Manthey, NY)
- 7626: TZH, ASECNA, Bamako, Mali, w/RYRY at 0011, 50 baud. (Hay, ON)
- 7690.4: TUH, ASECNA, Abidjan, Ivory Coast, w/RYRY + at 0315, 50 baud. (Hay, ON)
- 7749.6: GYA, Royal Navy, London, England, w/foxes & 10 count MTT. Said xmtg on F5 & F6. Was 75 baud at 0559. Msg sent to MTT at 0606. (Ed.)
- 7774.5: OST38, Oostende R., Belgium, w/tfc list foll by soccer scores. Was FEC at 0415. (Ed.)
- 7870.3: Un-ID has been heard here in ARQ for a couple of years. Never seen w t/c so must be solely a receiving sta. Last time heard was at around 0200. (Hetherington, FL)
- 7912.9: 9JZ, Lusaka Aero, Zambia, w/FLLS wx data at 0454, 50 baud. (Robert Hall, RSA)
- 8215: Un-ID in ARQ w the foll selcals: PVTC at 0518; VYEV, 0520; URXM, 0524; CQFE, 0528; RXXR, 0531; & BKYU, 0534. (Ed.)
- 8330: Un-ID w/5F msgs, 50 baud last 1915. (Boender, NLD)
- 8493: Un-ID w/encrypted msgs separated by RY's + "VNGTCNJBH," 100 baud at 0539. (Ed.)

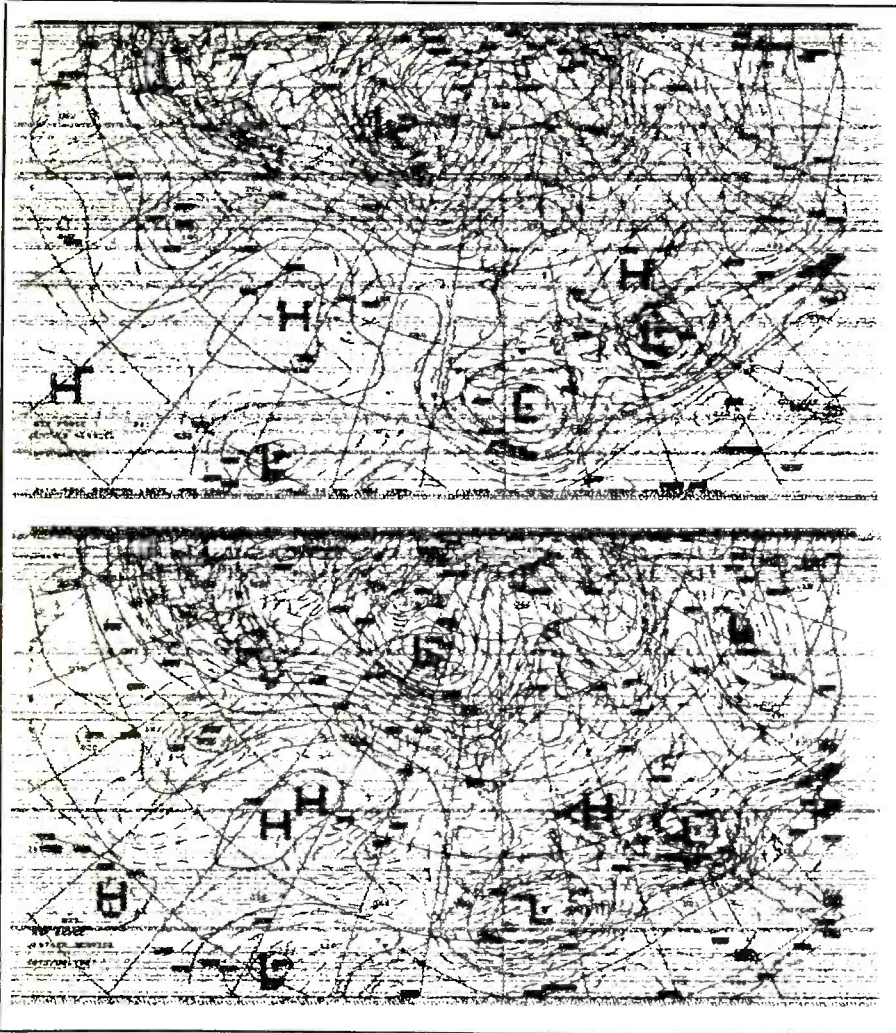


Figure 4

23593, and 23547.7 kHz. Speeds are all at 100 baud and the shifts at 370 or 425 Hz. The Swedish frequencies are most active between 1000 and 1600 UTC. Nothing is heard outside these times. SWED-ARQ appears to be called "UDTEX" by the Swedes.

Excellent report, Bob. Always appreciate hearing from you.

A station using the call letters "CMB" ran a foxes test tape recently on 15705.54 kHz at 1136, 85/75N. Whoever cut the test tape took his finger off the keyboard figures button momentarily, causing some of the numbers in the 10-count portion to become letters (see figure 6). While receiving the transmission, I turned on and off the unshift on space option to see how the end of the tape loop would appear. Does anyone have a clue to the identity of "CMB"?

The FEC-S Teletype mode is rarely reported by RTTY monitors, possibly because it's not used too often. MFA, Jakarta, Indonesia, I discovered, used that mode on 19766.6 kHz at 1251 UTC. The speed was 96 baud.

An unidentified station is using the ARQ-E mode at a pretty fast rate of speed—288 baud. The station sent encrypted traffic on 16312.6 kHz at 1720 UTC, and 20456.5 at 1756.

The packet radio station from KF2XEW, Rochester, NY, which identifies itself as "RFC" in RTTY transmissions on 14646.5 kHz (discussed in April's RTTY column), may be the RF Communications Group division of Harris Corp., Rochester, NY according to a source who asked not to be identified. RF Communications does "a variety of communications work in the U.S. and overseas," the source said. Can anyone help identify two other members of the packet radio net, PI9STC, Staelduin, Netherlands, and VE9LBQ, CRB, Ottawa, ON, Canada?

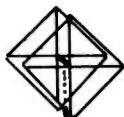
In last month's column, there was an illustration of a radiofax broadcast showing one page of a Russian-language newspaper. A few days after turning in the column to be edited I was able to pickup the first page, showing the masthead, of another edition of the newspaper (see figure 7). The broadcast is from Vladivostok Radio and begins running at 1700 UTC on 19745 kHz. The fax decoder setting is 60/288.

RTTY Intercepts

48.8: Possibly the Strategic Air Comm., Silver Creek, NE, w EAM-type msgs separated by RYRY. Was 50 baud VFT at 1611. (Ed.)

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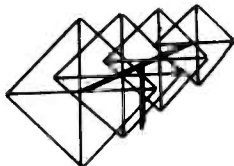
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UBMIR-1* >KD4LDH (UA)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >KD4LDH:
H(elp) H [CR] or ? [CR] displays this help file
UBMIR-1* >KL4LDH:
J(log) J [CR] displays a list of callsigns heard (optional date/time)
UBMIR-1* >KD4LDH:
K(ill) K n [CR] deletes message number n (only to/from your callsign).
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >KD4LDH:
L(ist) L [CR] lists the 10 latest messages.
UBMIR-1* >KD4LDH:
R(ead) R n [CR] reads message number n.
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >N3GEX (DM)
UBMIR-1* >KA2DRV (DM)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >KD4LDH:
M(ine) M [CR] lists the 10 latest messages to/from your callsign.
UBMIR-1* >KD4LDH:
R(ead) R n [CR] reads message number n.
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >KD4LDH:
R(ead) R n [CR] reads message number n.
UBMIR-1* >KD4LDH:
S(end) S (callsign) [CR] begins a message addressed to (callsign).
UBMIR-1* >KD4LDH:
Text: End each line with [CR]. End message by
UBMIR-1* >KD4LDH:
R(ead) R n [CR] reads message number n.
UBMIR-1* >KD4LDH:
S(end) S (callsign) [CR] begins a message addressed to (callsign).
UBMIR-1* >KD4LDH:
Text: End each line with [CR]. End message by
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >KD4LDH:
R(ead) R n [CR] reads message number n.
UBMIR-1* >KD4LDH:
S(end) S (callsign) [CR] begins a message addressed to (callsign).
UBMIR-1* >KD4LDH:
Text: End each line with [CR]. End message by
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >WB2YLR (DM)
UBMIR-1* >KC4ZSZ (DM)
UBMIR-1* >WB2YLR (DM)
    
```

Figure 5

- 9046.3: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC, 75 baud at 0600. (Ed.)
- 9285.1: TNL, ASECNA, Brazzaville, Congo, w/wx & t/cinfo, ARQ-M2/96, channel A, at 0513. (Hall, RSA)
- 9293.1: Maung Aero, Botswana, w/"de MN" + RYR, 50 baud at 0518. (Hall, RSA)
- 9377: Un-ID idling at 1344, ARQ-E3/100. (Ed.)
- 10153: Un-ID w/5F msgs, 75 baud at 2037. (Boender, NLD)
- 10215.4: Coded wx? 100 baud at 0141. (Hay, ON) Yes, it's coded wx from HZN48, Jeddah Meteo, Saudi Arabia—Ed.
- 10258: Un-ID U.S. Mil., w/AP/UP/nx, 50 baud FDM, channel B03, at 1239. (ed.)
- 10418.8: "DE CBFA" at 2356, ARQ-M2/96, channel B. (H, ON) This is a Chilean mil. sta.—Ed.

- 10421.5: OEC, MFA, Vienna, Austria, w/msgs in GG + 5L grps, ARQ-S5/96 at 2036. ("Gal of Liberia," Italy)
- 10580: HMF46, KCNA, Pyongyang, North Korea, w/nx in EE at 1519, 50 baud. (Ed.)
- 10892.7: WWJ40, FHWA, Washington, DC, w/an exercise msg to WWJ42, Providence, RI, ARQ at 1957. (Ed.)
- 10893.7: In Spanish at 0115. 50 baud. (Hay, ON) This is a nx B/C of LRB39, Telam, Buenos Aires, Argentina—Ed.
- 11012.8: SUU, Cairo Meteo, Egypt, w/coded wx, 75 baud at 0023. (Ed.)
- 11039.3: DDH9, Pinneberg Meteo, Germany, w/coded wx, 50 baud at 1954. (Ed.)
- 11075.5: "CBNFD" in Chile w/msgs in SS to "CBMFA," ARQ-M2/96 at 1153. (Hetherington, FL)

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TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB AVZZZZZZZ
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 4567 890 1.2 -=====
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 4567 890 1.2 -=====
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 4567 890 1.2 -=====
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 4567 890 1.2 -=====
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB AVZZZZZZTV
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB
OTNNNN
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB AVZZZZZZZ
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RE T THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB AVZZZZZZZ
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB AVZZZZZZZ
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 RTYU IOP CHB AVZZZZZZZ
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 4567 890 1.2 -====0
TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 123 4567 890 1.2 -=====0
    
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Figure 6

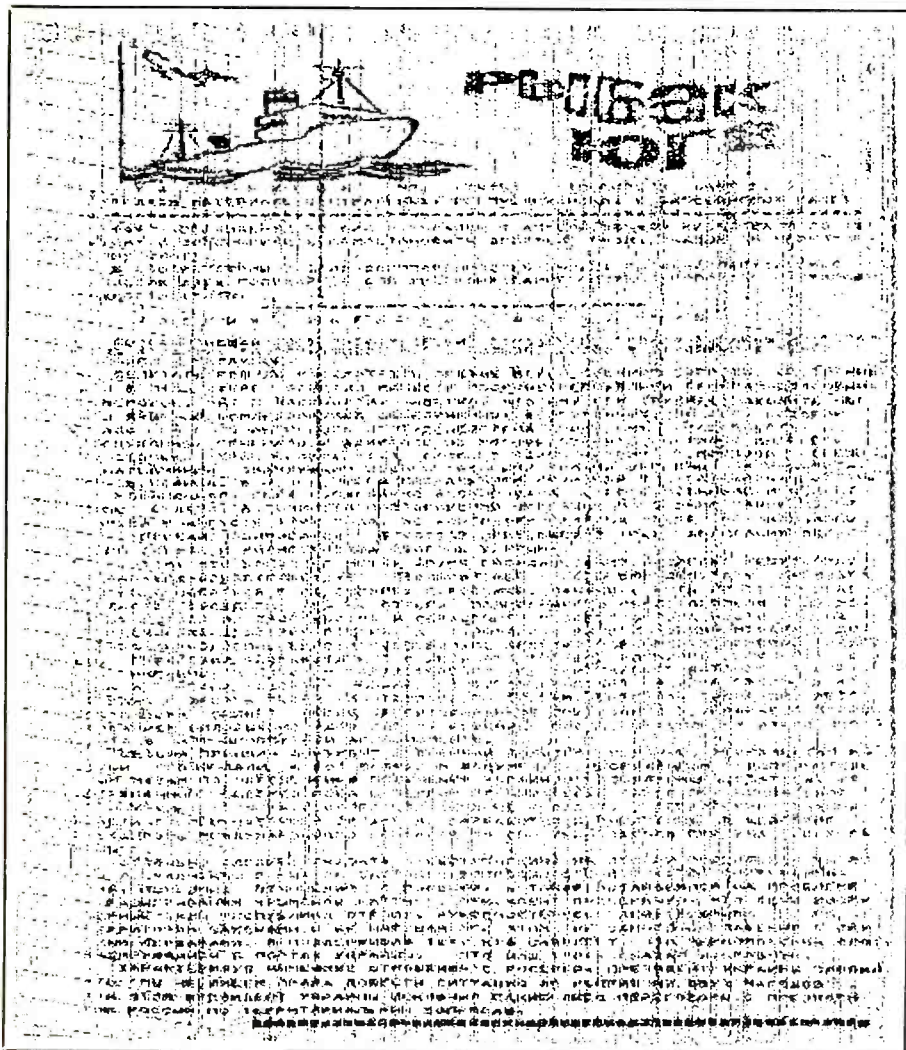


Figure 7

11112.8: RFHJ, French Navy, Papeete, Tahiti, w/nx in FF at 1140. ARQ-E3/100. (Ed.)
11198: "L.YNX" w XXMP selcal in ARQ at 0023. (Ed.)
111246.7: KNY29, Egyptian Emb., Washington, DC, w/msgs in AA & EE to Cairo at 2000. ARQ. (Hetherington, FL)
11410.3: "Nutshell" of the USAF w/scrambled msgs to "Bear Trap" at 1920. TTY mode undetermined. ID'd via USB voice comms on 11408. (Ed.)
11430: HMF55, KCNA, Pyongyang, North Korea, w/nx in FF at 2159, 50 baud. (Ed.)
11485.4: TUH, ASECNA, Abidjan, Ivory Coast, w/RYYR at 0652, 50 baud. (Ed.)
11507.5: STK, Khartoum Aero, Sudan, w/RYYR, 50 baud at 0105. (Ed.)
11515.2: TZH, ASECNA, Bamako, Mali w/RYYR at 0655, 50 baud. (Hall, RSA)
12148: SOM230, Warsaw R., Poland, w/nx in Polish at 1452, FEC. (Ed.)
12216.2: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC at 0816, 100 baud. (Ed.)
12256: 5YD, Nairobi Aero, Kenya, w/RYYR at 0444, 50 baud. (Ed.)
12317.3: Un-ID USN w foxes, 10 count, + "testing," 75 baud at 1535. (ed.)
12536.7: Egyptian Emb., Islamabad, Pakistan, w/5L grps, ARQ at 0337. The freqs around here are meant to be used by ship RTTY stas. (Ed.)
12714: UXN, Arkhangelsk R., Russia, w/telegrams in RR, ARQ at 1611. (Ed.)
12739.9: Un-ID w/encrypted msgs separated by RY's + "vmgtcnhbh" used for sync purpose, 100 baud at 1622. (Ed.)
13073.5: "C37A" w/a clerical msg to "6XM8," foll by encryption, 100 baud at 0110. (Hetherington, FL)

13375: RCF, MFA, Moscow, Russia, w/fc at 1640, 75 baud. (Boender, NLD)
13380: CUA67, CPRM, Lisbon, Portugal, idling at 0853, ARQ-M2-242/96. (Ed.)
13415.1: PCW1, MFA, The Hague, The Netherlands, w/TVPQ selcal at 1444 & TVMC selcal at 1457. ARQ QRT at 1500. (Ed.)
13520: FSB72, Interpol, Paris, France, w/encryption, ARQ at 1800. (Boender, NLD)
13552.9: AFRTS, Los Angeles, CA, w AP/UPI nx, 50 baud FDM at 1551. At 1555 a msg was sent to all AIN re radio B/C sked. (Ed.)
13563.3: 3MA22, CNA, Taipei, Taiwan, w/nx in EE, 50 baud at 1415. (Ed.)
13737.1: 5YD7, Nairobi Aero, Kenya, w/RYYR at 2010, 50 baud. (Hall, RSA)
14355: Un-ID in Mexico w "radiograma" (s) consisting of plaintext wx in SS, w headers reading "pronostico meteorologico de Ensenada, B.C." Was 75 baud at 1449, 1518, 1521, & 1524. (Ed.)
14374: AGA1HA, USAF MARS, Hanscom AFB, MA, calling AGA7BI, packet at 1626. (Ed.)
14382: GXQ, Royal Army, London, England, w/RYY's & foxes, FDM, 50 baud, at 2305. (Ed.)
14478.5: OEC, MFA, Vienna, Austria, w/a telex in EE, ARQ-S6/96 at 1406. (Ed.)
14484: RFLIG, French Navy, Cayenne, French Guiana, w/a clerical msg at 0140, ARQ-E3/96. (Ed.)
14518: Possibly OEC, MFA, Vienna, Austria, w/5L grps signed "schulstion culik best erbeten." Was ARQ-S6/96 at 1933. (Hall, RSA)
14634: MTO, Royal Navy, Rosyth, Scotland, w/an availability tape at 2142, 50 baud. (Ed.)
14674: Nx in FF appeared to be from Belgrade, Yugoslavia, 75 baud at 1526. (Ed.)

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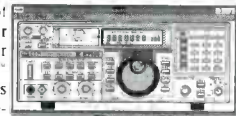
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14676: Un-ID w 5L & 5F msg separated by RY's, 75 baud at 1510. "QRU SK" at 1544. (Ed.)

14688: MFA, Bucharest, Romania, w/encryption, ROU-FEC/164.5 at 1508. To CW a moment later. (Ed.)

14760: NNNOGKF, USN MARS, Nazareth, PA, w/ARQ t/c to NNNOGKE, San Diego, CA at 1642. (Ed.)

14786.5: 9PL, Kinshasa Aero, Zaire, w/aero wx, 50 baud at 2259. (Ed.)

14795.5: Un-ID idling for hours, ARQ-M4-242/192. Tuned in at 0037. (Ed.)

14806: "BPA" w/RVRY at 1524, foll by 5L grps, 75 baud. (Ed.)

14814.3: CLP65, Cuban Emb., Managua, Nicaragua, w/crypto after ZZZZ, 75 baud at 1615. (Ed.)

14878.3: AAA6USA, U.S. Army MARS, Ft. Sam Houston, TX, calling AAA3USA, packet at 0310. (Ed.)

14968.3: SAM, MFA, Stockholm, Sweden, w/5L grps, Swed-ARQ at 1534. ("Gal of Liberia," Italy)

15705: YZJ6, Tanjung, Belgrade, Yugoslavia, w/nx in FF at 1145, 50 baud. Nx was badly garbled by the xmsn of "CMB" 500 Hz higher in freq. (Ed.)

15705.5: "CMB" w/"test" + foxes & 10 count, 75 baud VFT at 1136. (Ed.)

15845.3: SUA289, MENA, Cairo, Egypt, w/nx in AA at 1534, 75 baud. (Ed.)

16043.75: AAA3USA, U.S. Army MARS, Ft. Meade, MD, w/msgs to AEM1USA, packet at 1230. (Ed.)

16071.7: Un-ID Egyptian diplo w/telexes in AA, ARQ at 1911. (Ed.)

16111.1: HBD68, Swiss Emb., Guatemala City, Guatemala, w/5L grps at 1209, ARQ. (Ed.)

16136: BXR66, Xinhua, Yuryumqi, China, w/nx in EE, 75 bauds at 1305. (Manthey, NY)

16246.9: VOA, Tangier, Morocco, w/RVRY to VOA, Greenville, NC, 75 baud at VFT at 1404. Was // 16248.3. (Ed.)

16279.5: CLP1, MFA, Havana, Cuba, w/pren-saminrex, 50 baud at 1746. (Hall, RSA)

16312.6: Un-ID w/encryption, ARQ-E/288 at 1720. (Ed.)

16427: Possibly Santiago Meteo, Chile, w meteo msg to SCEFYMYX, King George Island, Antarctica, ARQ at 1200. Also w t/c to meteo sta. SCVYMYX, QTH unknown. SCCY is mentd and may be this sta. SCCY is at Coyhaique/Teniente Vidal. The circuit ID of "SM" implies, however, Santiago to Magallanes. (Hetherington, FL)

16965.1: ZRH, Fisantekraal Navrad, RSA, w/coastal wx at 1204, 75 baud. (Hall, RSA)

17432: DFZG, MFA, Belgrade, Yugoslavia, w/RVRY & a telegram, 75 baud at 1359. (Ed.)

17434: Un-ID w/RVRY at 2031, foll by 5F grps, 50 baud. Went to CW at 2034. (Ed.)

17443.2: BZG48, Xinhua, Yuryumqi, China, w/nx

in FF at 1120, 50 baud. (Hall, RSA)

17470.1: BZS28, Xinhua, Yuryumqi, China, w/RVRY at 1122, 75 baud. (Hall, RSA)

17472.3: RPFN, Monsanto Navrad, Portugal, w/RVRY & foxes, 75 baud at 1503, foll by encryption to RTP1 at 1525. (Ed.)

17524.5: "EGWR," USAF, Croughton AB, England, w/coded wx at 1828, 75 baud. (Ed.)

17589.8: HZN49, Jeddah Meteo, Saudi Arabia, w/coded wx at 2024, 100 baud. (Ed.)

18041.5: TCY4, AA, Ankara, Turkey, w/nx in Turkish, 50 baud at 1130. (Ed.)

18056.7: Un-ID Egyptian diplo w/msgs in AA & 5L grps, ARQ at 1220. (Hetherington, FL)

18108: Un-ID aero sta. w/coded aero wx, 1602-1725, 75 baud. (Ed.)

18173.5: STK, Khartoum Aero, Sudan, w/aero msg at 1440, 50 baud. (Ed.)

18305: Un-ID w/5L grps at 1345, 75 baud. (Manthey, NY)

18308.5: Un-ID w s/off msg in FF at 1603, FEC-A/192. This is a French diplo channel. (Ed.)

18356: Un-ID w several 5L msg, 75 baud, 1646-1711. RY's separate msg. S/off w QRU SK. (Ed.)

18388.7: 5AF, Tripoli Aero, Libya, w/aero wx at 1457, 50 baud. (Ed.)

18602.8: VOA, Greenville, NC, w/RVRY, 75 baud VFT at 1358. (Ed.)

18755.8: Interpol, Kathmandu, Nepal, w/t/c to Asian Interpol stas, 1031-1043. FEC. (Ed.)

18768: Un-ID w/encryption, ARQ-E/192 at 1415. (Ed.)

18816.1: Un-ID North Korean diplo w/nx in KK, 50 baud at 1350. Appeared to have gone QRT after possibly experiencing QRM from a ship xmtng in ARQ on 18816.2 (next item). (Ed.)

18816.2: WSKD, the American tanker "New York Sun," w/ETA msg & pos rpt., ARQ at 1350. (Ed.)

18832.6: SVA, Athens R., Greece, w/nx in Greek, FEC at 1602. (Ed.)

18860: ZAT, ATA, Tirana, Abania, w/RVRY, 50 baud at 1648. (Ed.)

18972: DFZG, MFA, Belgrade, Yugoslavia, w/RVRY at 1358, 75 baud. (Ed.)

18962.2: Polish Emb., Ottawa, ON, Canada, w/FL grps & telexes in Polish, POL-ARQ at 1259. (Ed.)

18972.1: DFZG, MFA, Belgrade, Yugoslavia, w/t/c, 75 baud at 1506. (Ed.)

19010.3: Un-ID w "ods ods m30063" in ARQ in 1402, then went QRT. (Ed.)

19026.4: PWX33, Brasilia Navrad Brazil, w/RVRY & SSGS at 1202, 75 baud. Also logged another day on 19027.3. testing at 1235. (Ed.)

19117.5: MFA, Jakarta, Indonesia, w/t/c in Indone-

sian, 1245-1345, ARQ. (Ed.)

19121.5: MFA, Jakarta, Indonesia, w/telexes in Indonesian, ARQ at 1258. (Ed.)

19215.8: Un-ID w 4F grps, 50 baud at 1323. To CW at 1326. (Ed.)

19254: Un-ID w 5F grps, 75 baud at 1411, then to CW w "V K." (Ed.)

19313: 4UZ, UN, Geneva, Switzerland, w t/c in EE that mentd "investigation," "Baghdad," "census," and "food distribution." Was ARQ at 1422. Sig was very weak and badly broken up. (Ed.)

19350.2: Un-ID w/encrypted msg separated by RVRY + "vmgtcnjhb," 75 baud at 1750. (Ed.)

19362.3: Un-ID w/foxes + "1234567890 times." Was 75 baud at 1624. (Ed.)

19567.5: Possibly MFA, Rome, Italy, w/msgs in II, 1219-1227, ARQ. (Ed.)

19748: 6VU79, Dakar Meteo, Senegal, w/coded wx at 0324, 50 baud. (Hay, ON)

19766.6: MFA, Jakarta, Indonesia, w/5L grps & telex t/c in Indonesian to Hong Kong. Was FEC-S/96 at 1251. (Ed.)

19850.2: MFA, Bucharest, Romania, w/encryption, ROU-FEC/164.5 at 1545. (Ed.)

19928.6: Possibly OEC, MFA, Vienna, Austria, w/5L grps, ARQ-S6/96 at 1356. S/off in GG at 1417. (Ed.)

19882: Un-ID w/4L grps, 1344-1400, 50 baud. (Ed.)

19932.1: RFGW, MFA, Paris, France, w/circulars in FF & 5L grps to several embassies, 1503-1600, ARQ6-90/200. (Ed.)

19932.2: French Emb., Madrid, Spain, w/5L grps & t/c in FF to Bogota, Colombia. Was ARQ6-90/200 at 1525. (Ed.)

19941.8: SNN299, MFA, Warsaw, Poland, w/nx in EE at 1603, POL-ARQ. ("Gal of Liberia," Italy)

19980: 9BC33, IRNA, Halgheddarreh, Iran, w/nx in EE, 50 baud at 1612. (Ed.)

20049.3: "EGWR," USAF, Croughton AB, England, w/coded wx at 1600, 75 baud. (Hetherington, FL)

20132.2: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC, 75 baud at 1429. (Ed.)

20148.3: ACC60, Ft. Dietrich, MD, w/msgs to "HK3," FEC at 1615, foll by t/c in packet mode & SSB phone. Returned to FEC w more tests & msg. Guatemala, Venezuela, Brazil (PTO2). Bolivia (CPEM) are involved w the tests. Training msg were sent to PTO2 & CVL5D. (Hetherington, FL)

20157: 5KM, Bogota Navrad, Colombia, w/RVRY at 2005, 75 baud. (Hetherington, FL)

20456.5: Un-ID w/encryption, ARQ-E/288 at 1756. (Ed.)

20696.9: SAM, MFA, Stockholm, Sweden, w/5L grps at 1511, SWED-ARQ. Also monitored with similar t/c on 20699.9 at 1500 & 20703.9 at 1528. ("Gal of Liberia," Italy)

20853.1: Un-ID w/garbled text, ARQ, 1359-1402. Sig had a 425 Hz shift. (Ed.)

20911.5: Un-ID w foxes, 10 count, & "test," at 2048, 75 baud. (Ed.)

20944.9: SNN299, MFA, Warsaw, Poland, w/msgs in Polish, POL-ARQ at 1325. ("Gal of Liberia," Italy)

21859: DFZG, MFA, Belgrade, Yugoslavia, w/nx in EE, 75 baud at 1445; and Tanjung nx in SC at 1700. (Ed.)

22659.5: UMV, Murmansk R., Russia, w/telegrams in RR at 1355, 50 baud. (Ed.)

22880: French Emb., Brasilia, Brazil, w/encryption, ARQ6-90/200 at 1312. (Ed.)

22888: DFZG, MFA, Belgrade, Yugoslavia, w/cryp-to after XPPXPXP, 75 baud at 1638. (Ed.)

22955.3: ISX22, ANSA, Rome, Italy, w/nx in FF at 1617, 50 baud. (Ed.)

22980: French Emb., Buenos Aires, Argentina, w/encryption, ARQ6-90/200 at 1304. (Ed.)

23050: CLP55, Cuban Emb., Georgetown, Guyana, w/t/c at 1643, 75 baud. (Ed.)

23065: CLP55 w/t/c, 50 baud at 1602. (Ed.)

23273: Italian Emb., Brasilia, Brazil, w/5L msg + freq. lists, ARQ-E/96 at 1448. Much fading, therefore a lot of misprinting. Went QRT at 1509. (Ed.)

23370: HZN50, Jeddah Meteo, Saudi Arabia, w/coded wx, 100 baud at 1525. (Manthey, NY)

23520.2: Un-ID North Korean diplo w 5F msg & text in KK, 50 baud at 1622. To CW for s/off at 1629. (Ed.)

23976.2: Egyptian Emb., Accra, Ghana, w/telexes in AA, ARQ at 1642. (Ed.)

23977: LOR, Puerto Belgrano Navrad, Argentina, w/5L grps at 2008, 75 baud. (Ed.)

24871.7: RFHJ, French Navy, Papeete, Tahiti, w "controle de voie," at 2118, ARQ-E3/96. (Ed.)

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FOCUS ON FREE RADIO BROADCASTING

Here I am again with another boat load of pirate loggings. Off we go. Cliff Dehaven in Texas heard the **The Voice of Shakerag** on 7415USB at 0315 with address as PO Box 17534, Atlanta, GA 30316. Cliff, along with Pat Murphy provided copies of the QSL, pictured this month. The Shakerag program is done for the Radio Bob Communications Net (RBCN), says Cliff.

David Gasque in South Carolina heard this (time?) with Radio Bob, Shakerag, Hounddog and Roadkill in the studio and lots of humor features.

The Irish pirate *Radio Fax* was heard by Bob Ross, Ontario, on 6205 at 0240 with rock, IDs. Wants \$1 for QSL's. Ed Rausch in New Jersey had them at 0345, on another day at 0355 and a third time at 0415 to 0500.

Skip Harwood in California had **FCC Radio** on 7427 at 0520 with heavy metal and saying QSL's via any office in care of Jim Zoulek. I'll bet!

Another Harwood log was **Weed Radio**, 7415 pro-pot use at 0445 & saying to QSL via the "Signals" shortwave program. Again, I wouldn't take that seriously. Rausch heard them at 0420, saying "25 watts from the great southwest."

He-man Radio was found by Lont Marr, Ohio on 7415USB to 0023 with fake commercials and music. Address as Box 109, Blue Ridge Summit, PA 17214. Jerry Kretchmer, Indiana had them on 7417.5 at 0027. Pat Murphy in Virginia noted this one on 7417.4 to 0100 sign off. Incidentally, congrats to Pat who recently QSL'd his 100th pirate station! Not many have managed that, Pat! Gasque had this on 7415.7 at 0028.

KCMR - Magic Carpet Radio was found by Harwood on 7425 at 0310 with rock oldies. Operator noted he'd be off the air for a few months.

Wireline Radio was noted by Rausch on 7417USB at 0450 playing 60's comedy and announcing the Blue Ridge address. 85 watts. Ross had them to 0501 close.

WRAR (We Rock and Rap) heard by Christopher Cuomo, PA, on 7417.5 at 0020 with what sounded like young teens (Funky Chuck, D. J. Jazzy and the Fat Cat). Address given as Box 605, Huntsville, AL 35804.

Midnight Radio heard by Harwood on 7415USB at 0230 giving the Blue Ridge address. Gasque had them at 0214 saying how as sponsored by Coors Light. Radio Kaeding, Michigan had them at 0219 with fake commercials. Kretchmer had them at 0217 with a fake FCC recruiting commercial.

Radio Hello was logged by Dehaven on 7415 at 0320. Cliff says it sounded like a youngster in a conversation with a girl whom Cliff could not hear at all.

WSKY - Whisky Radio, noted on 7415 at 0304 with mostly 60's and 70's oldies, mentions of WSKY pennants available for \$1. Also aired a Voice of Bono Broadcast. Also noted by Rausch at 0300.

CISC on 7414 at 0605 with Pirate Rambo and airing a part of the "Signals" program, says Harwood. Blue Ridge address. On 7413 to 0246 sign off, barbs directed at Voice of the Night, and relay of WLIS. Kaeding had them at 0220, Dehaven had them at 0222 with Canadian rock and fake commercials and Rausch at 0200.

Live Wire Radio heard by Rausch on 15050 at 0145 with Bill Lewis playing rock, hello to American pirates. Said 100 watts to a half wave dipole.

WVOL - Radio Voice of the Loon with Captain Willie was logged by Rausch on 7420 at 0044.

Voice of the Night noted by Dehaven on 7415 at 0355 promoting a coming two hour broadcast featuring several stations. Gives PO Box 452, Wellsville, NY address.

WBBS, 7417 noted by Gasque with game show parody, comedy bits, off with piano version of the Star Wars theme.

RFM was heard by Kaeding on 15052 at 2217 also with a game show parody, instrumental music, fake commercials and Blue Ridge address.

WHIZ, 7415USB heard by Gasque to 0157 close, with music by Roger Waters and a "sound collage" of some of VOTN's material. No maildrop yet. Murphy had this at 0132.

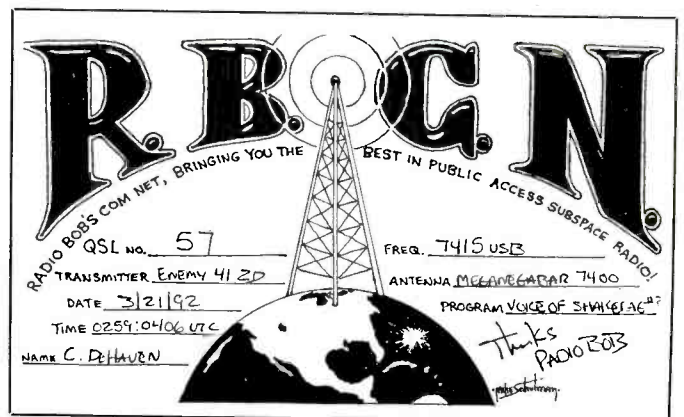
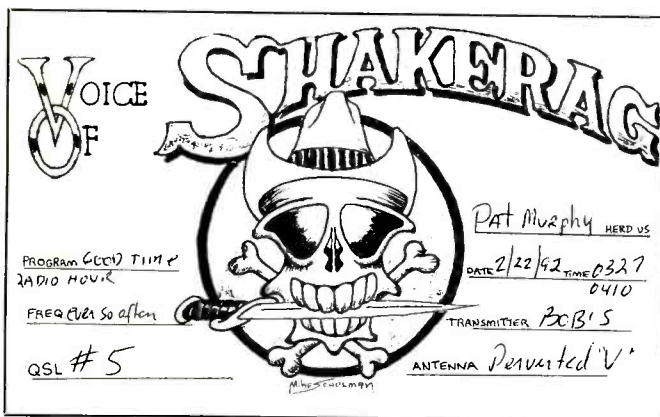
Jolly Roger International was another Harwood log, on 7415 at 0400 with the Chambers Brothers and JRI in the Sky.

Other loggings: Pat Murphy reports KXKVI on 7416 at 0450 (no QSL info); Rock and Roll Radio on 7415 at 0524, also without QSL info and WRMR, 1620 at 0500 and again, no mention of QSL's.

David Gasque had WCYC on 7415 giving both Wellsville and Merlin (Canada) maildrops. He had the Voice of Laryngitis on 7415USB, moving to 7417 later to avoid VOA splash and WGOP "Conservative Radio" on 4717.1USB at 0155 with "interview" with the Clintons, with bits of songs as their answers.

Finally, Pat Murphy advises of the "Pirate Packet" which operates at 300 baud on 27.540. Pat says there are some very strange stuff here!

Keep those loggings coming! Also copies of QSL's that can be used as illustrations, as well as any other pirate radio news you run across. ■



The Voice of Shakerag program aired on the Radio Bob Communications Network (RBCN) has its own QSL, as does RBCN. Thanks to Pat Murphy and Cliff Dehaven.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

New York Pirate Shut Down, Equipment Seized

U.S. Marshals, with the assistance of staff from the FCC's New York Office, seized radio equipment in the Flatbush section of Brooklyn, NY. The equipment was used to operate an unlicensed radio station on 1260 kHz. The seizure of "RADIO GUINAN" took place under Federal civil forfeiture provisions initiated by Assistant U.S. Attorney, Christopher Lehmann, of Brooklyn, NY.

Engineers from the FCC's New York Office located the station using mobile radio direction finding equipment. The pirate station was managed by Jean Lucien Borges of the Guinan Community Information Center and was the subject of a previous FCC investigation in November, 1991. This investigation was initiated by complaints from radio stations WADO and WFME. The station was inspected by FCC engineers and was subsequently issued a written warning. The FCC referred the case to the U.S. Attorney, Civil Division, after the station ignored the warning and went back on the air.

Unlicensed radio operation is a violation of Section 301 of the Communications Act of 1934, as amended. Penalties for unlicensed operation include fines of up to \$100,000 and/or one year in prison. The U.S. Department of Justice is proceeding with civil action against the equipment. Christopher Lehmann, Assistant U.S. Attorney, is handling the case.

"We hope that this action sends a message to future would-be pirate radio operators. Unlicensed radio operators cannot disregard Federal Authority," said Alexander Zimny, Engineer-in-Charge of the New York Office.

Illegal CB Equipment Seized

U.S. Marshals, with the assistance of agents from the Federal Communications Commission's San Francisco Office, confiscated illegal radio equipment from the Yak Yak Shack in Corning, California.

Twenty-seven pieces of illegal radio equipment were seized. These included twenty CB linear amplifiers (capable of operating at power levels in excess of the limits set by FCC Rules) and seven CB transceivers modified to operate on unauthorized frequencies. The use of such illegal radio equipment can cause harmful interference to communications of safety-of-life services (such as law enforcement, aviation, or marine), as well as to lawful CB users and home electronic entertainment equipment.

The marketing, manufacture, and use of illegal radio equipment violates Section 302(b) of the Communications Act of 1934, as amended. Violators face potential criminal penalties of up to \$100,000 in fines and/or up to one year in prison.

FCC Denies Petitions To Reconsider Its Policy Statement, Standards For Assessing Forfeitures

The Commission denied petitions to reconsider its Policy Statement, Standards for Assessing Forfeitures released August 1, 1991. On its own motion, however, the Commission adjusted the Policy Statement to meet the base forfeiture amount for failure to comply with prescribed tower lighting and marking requirements \$8,000 for all services.

In 1989, Congress amended the Communications Act of 1934 to increase substantially the maximum dollar amounts of forfeiture the Commission could impose. The Act now gives the Commission authority to assess forfeitures of up to \$25,000 against broadcasters, cable operators or applicants for such facilities, \$100,000 against common carriers or applicants for such facilities, and \$10,000 against others. Additionally, there is a limit of \$250,000 on forfeitures for continuing violations involving a single act or failure to act for broadcasters, cable operators or applicants for such facilities, and \$1,000,000 for common carriers or applicants for such facilities. A limit of \$75,000 applies to continuing violations involving a single act or failure to act by others.

The Policy Statement was designed to assist both the Commission and licensees in adjusting to these statutory increases. In adopting the Policy Statement, the Commission retained discretion in situations that may arise in individual cases, and did not consider the Policy Statement to be a binding rule. Consequently, the Commission issued the Policy Statement without conducting a rulemaking proceeding pursuant to the Administrative Procedures Act (APA). The Policy Statement explicitly stated that the notice and comment provisions of the APA did not apply and cited the exception to general rulemaking requirements reserved for general statements of policy.

A number of petitioners sought reconsideration of the Policy Statement claiming that, in reality, it was a substantive rule, not a general statement of policy and therefore was improperly adopted without notice and comment.

The Commission disagreed, pointing out that at the beginning of the Policy Statement, it expressly indicated its intent to retain discretion in specific cases. The Commission reiterated that while the Policy Statement may act as a guide in particular cases, the Commission and the staff do not intend to be bound by it, and intend to apply the guideline's flexibility. The Commission also stated that it and the staff remain committed to deciding every forfeiture case on the basis of the specific facts and equities presented in the

record of that case. In light of the fact that the Policy Statement simply provides some general guidelines that may be used in special cases, the Commission decided that various other concerns raised by petitioners would be more appropriately addressed in the context of specific cases.

With respect to tower lighting and marking violations, the Commission decided that, because licensees in various services share towers, it is appropriate that the base forfeiture amount should be the same for all services, and it set \$8,000 as the base amount for such violations in all services. (Previously the base amount for tower markings and lighting violations had been \$80,000 for common carriers, \$20,000 for broadcasters and cable operators, and \$8,000 for others.)

Power For Fire Radio Service Increased

The Commission increased the maximum transmitter power permitted for the Fire Radio Service frequency 153.83 MHz from 10 watts to 100 watts and has deleted its availability for use in fixed operations.

This change will result in more efficient on-the-scene fire-fighting communications capability between mobile and portable units with minimum interference.

The Commission said increasing the maximum power for 153.83 MHz will enable its use in vehicular mobile units, such as those installed in fire-fighting vehicles, and will allow both portable-to-portable and mobile-to-portable communications needed during on-the-scene fire communications.

The Commission said that while it would be overly restrictive to limit 153.83 MHz exclusively to on-the-scene fire-fighting operations, by not allowing future fixed use and by limiting its use to mobile operations, it would be providing the necessary flexibility for improved fire communications with minimal risk of interference. Stations currently authorized to use 153.83 MHz for fixed operations will be permitted to continue such operations indefinitely, but with a maximum transmitting power to 10 watts.

Use Of 406.025 MHz For ELT's Proposed

The Commission proposed amending Part 87 of its rules to authorize use of the frequency 406.025 MHz for Emergency Locator Transmitters (ELT's) on aircraft. These amendments are in response to a request from the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce.

ELT's are small, battery-powered transmitters carried on aircraft, used to transmit a distress signal. Currently, only the frequen-

cies 121.500 and 243.000 MHz are authorized for aircraft operations. These distress signals are detected by overflying aircraft, nearby land stations monitoring the distress frequency, or by low orbiting satellites that are part of an international satellite system, COSPAS/SARSAT. ELT's and other beacons operating on these frequencies use analog signals that have "blind spots" where activated beacons cannot be detected by satellites.

The 1983 World Administrative Radio Conference for the Mobile Services allocated the 406.0-406.1 MHz band for the exclusive use of low-power, earth-to-space emergency position indicating radiobeacons. Because the 406 MHz signal is digital, it is able to be stored and retransmitted once the satellite is over a ground station. This gives the system world-wide coverage with no blind spots. The proposed use of 406.025 MHz for ELT's will permit the use of digital technology, aid search-and-rescue personnel and give a more accurate location of the beacon.

Systems Of Records Exempt Under Privacy Act Proposed

The FCC proposed exempting two new systems of records from certain provisions of the Privacy Act of 1974. The exempted records would be "Criminal Investigative Files" (FCC/OIG-1) and "General Investigative Files" (FCC/OIG-2).

The first system will contain records on individuals, including present and former FCC employees, who are or have been the subjects of investigations conducted by the FCC's Office of Inspector General (OIG) involving criminal allegations of fraud and abuse with respect to programs or operations of the Commission. The second system will contain investigative material compiled for general law enforcement purposes.

Under the Privacy Act, an agency that maintains systems of records pertaining to individuals must comply with certain procedures for the disclosure of information contained in the system of records. Certain systems of records may be made exempt from the procedures required by the Privacy Act if they are maintained in conjunction with activities pertaining to the enforcement of criminal laws. Systems of records containing investigative material compiled for general law enforcement purposes also may be exempt. The records maintained by the FCC's OIG fall within these two categories and, therefore the Commission proposed amending its rules to reflect the establishment of these two systems of records that would be exempt from certain Privacy Act provisions.

FCC Affirms Decision By Managing Director Denying Request For Return Of Hearing Fee

Country Investments Limited Partnership was denied review of a decision by the Man-

aging Director denying its request for a refund of its hearing fee. Country was an applicant for a new FM Station on Channel 288C1 at Idaho Falls, ID.

Country's initial request for refund was denied because the settlement agreement it had entered with the sole competitor had been filed after the Notice of Appearance deadline and, thus Country was not entitled to a refund.

Seeking review, Country stated that retention of its hearing fee, notwithstanding the late filing of its settlement agreement, was an arbitrary application of the Commission's rules that would discourage future settlement agreements by competing applicants, contrary to express FCC policy. Country noted that it notified the FCC at the time it filed its Notice that the settlement agreement would be submitted immediately following its formal execution. Country argued that denial of the refund was unjustified because the Commission had only to pass on the merits of the agreement to select the appropriate licensee, rather than expend extensive resources to select a licensee through adjudication.

Affirming the Managing Director's decision, the Commission reiterated that hearing fees and other fee payments must be timely filed. Without a timely tendered fee payment or a timely filed settlement agreement, Country's application was subject to immediate dismissal. Upon dismissal, any subsequently filed settlement agreement would have been rendered moot. Therefore, Country paid its obligatory hearing fee and thus preserved its status as a party to the comparative proceeding in order to protect its interest in the settlement arrangement. The Commission rejected Country's argument that a refund was justified merely because it had informed the Commission via notification in the Notice of Appearance that a settlement agreement was forthcoming. The Commission said that absent the filing of an actual settlement agreement, it cannot be assured that a final settlement agreement in fact has been entered. Thus, Country has not satisfied the clear requirements of the Commission's rules and no refund is warranted.

Rules Adopted For Implementing Advanced Television (ATV) Service; Further Comment Sought On Additional Proposals

The Commission decided a number of critical issues, and seeks further comment on additional proposals, affecting the implementation of advanced television (ATV) service in the United States. The Commission's action complements its regulatory reform initiatives designed to increase investment in new communications technologies and speed their introduction.

This is the fifth in a series of Commission actions since 1987 which refines the Commission's regulatory approach to ATV and

will ultimately lead to the selection of a terrestrial broadcast ATV system. ATV refers to television technology that provides improved audio and video quality.

Second Report and Order

Last October, the Commission proposed policies and rules for implementing ATV service in this country. Based on those proposals, the Commission adopted a number of implementing rules, the most significant of which are as follows:

— The Commission will make a block allotment of frequencies for ATV broadcasting and will limit initial eligibility for those ATV frequencies to existing broadcasters for a period of two years; it will also allow others to apply for ATV licenses where opportunities for additional allotments can be found.

— The Commission will consider all allotment issues and issue a draft Table of Allotments in June 1992.

— The Commission adopted a two-year deadline for initial applications by broadcasters for a paired ATV channel, and a three-year deadline for construction of an ATV facility.

— The Commission will: a) use vacant non-commercial reserved channels only when no feasible alternative exists for assigning ATV channels to existing broadcasters, and b) pair vacant noncommercial allotments with an ATV channel except where that possible ATV channel pair is needed to permit ATV service by an existing broadcaster and careful engineering analysis uncovers no other practicable alternative.

— The Commission will continue the secondary status of low-power television service stations vis-a-vis new ATV operations, but will also continue to permit displaced low-power service stations to file noncompetitive applications for another channel in the same community. The Commission concluded that low-power service stations should be free to broadcast in either the ATV or NTSC (National Television Systems Committee) mode. The Commission plans to initiate a proceeding to consider whether some low-power television service interference protection rules should be changed in an attempt to mitigate some of the effects of potential displacement.

— The Commission will condition selection of an ATV system on a winning proponent's adoption of reasonable and nondiscriminatory patent licensing policies, but declined to take further action on this issue at this time.

— The Commission encourages the ongoing work of the Advisory Committee on compatibility issues and, for the most part, declined to take additional regulatory action on these questions at this time.

— The Commission directed the Advisory Committee to address new audio developments as well as proposals for flexible apportionment of audio and data in the selection of a system, and to consider analogous instances of extensibility as they arise.

Further Notice of Proposed Rulemaking

The Commission is also seeking comment

on a number of other proposals to resolve outstanding questions in order to fully implement ATV. Specifically, the Commission proposed:

—To rank, in the event of a spectrum shortfall, the class of parties initially eligible for ATV frequencies in this order:

- a) licensees and permittees with constructed facilities and program test authority;
- b) permittees with unbuilt facilities; and,
- c) applicants.

—To allow broadcasters a fixed period of time to negotiate channel assignments once a final Table of Allotments has been put out for public comment, and, in cases where broadcasters are unable to agree, to make channels available on a first-come, first-served basis.

—To suspend the dual network rule to permit networks to give their affiliates a second feed for ATV.

—To require low-power service television stations to convert to ATV at the point that full service broadcast stations would be required to do so.

—The Commission put broadcasters on notice that when ATV becomes the prevalent medium, they will have to “convert” to ATV (surrender one of two broadcast channels and cease broadcasting in NTSC), and that it will be necessary to establish a date certain for conversion. As a preliminary matter, the Commission proposes setting a conversion date 15 years from the date either an ATV standard or a final Table of ATV Allotments is effective, whichever is later. The Commission also seeks comment on a proposal to review in 1998 the propriety of any conversion date established.

—The Commission concluded that a 100 percent simulcasting requirement should be implemented at the earliest appropriate time. The Commission tentatively concluded that a 100 percent simulcast requirement should be adopted not later than four years after the initial five-year application/construction period has passed. The Commission seeks comment on whether simulcasting should be phased in prior to this point (for example, by requiring 50 percent simulcasting two years after the five-year application/construction period has passed, and moving to 100 percent two years later). The Commission also seeks comment on whether simulcasting should be required at a point earlier than four years from the end of the five-year application/construction period.

—To consider the merits of the Advisory Committee findings concerning new developments in ATV technology, including its findings that these new developments are not sufficiently concrete to allow timely testing and do not merit further consideration in selection of an ATV system.

Finder's Preference Program – Checklist

The FCC recently established a Finder's Preference Program in the private land mo-

bile radio services. *Report and Order*, PR Docket No. 90-481, 6 FCC Rcd 7297 (1991). The Finder's Preference Program provides incentives to eligible persons who submit information to the Commission that results in the recovery of unconstructed or non-operational private land mobile radio channels licensed on an exclusive basis in the 220-222 MHz, 470-512 MHz and 800/900 MHz bands (including 900 MHz Phase I SMRS). Persons assisting the Commission in finding unused channels in these bands are entitled to a “preference” for those channels ultimately recovered.

The Commission established specific guidelines for filing finders' preference requests. *Report and Order*, 6 FCC Rcd 7306 at para. 52. These guidelines were established to reduce the likelihood of abusive practices (e.g., frivolous filings) and to increase the Commission's ability to administer the program smoothly and expeditiously. The Commission specifically cautioned that finders' requests not conforming to these guidelines would be dismissed without action.

To avoid summary dismissal, each finder's preference request must comply with each of the elements below at the time it is filed with the Commission:

1. State that you are requesting a finder's preference. Then, provide the name, address and call sign of the target licensee, even if you believe the licensee is not in business.

2. List the location and frequencies of the licensed facility; do not just refer, for example, to “the 800 MHz band.”

3. List the Commission rule(s) that you allege the target licensee is violating; include any benchmark dates the target licensee missed.

4. Provide your statement—who, what, why, where and when—about the violation(s) you allege; have any witnesses provide separate statements. You have the burden of proof and must make a *prima facie* case; avoid general or conclusory statements.

5. Submit all statements under oath or under penalty of perjury pursuant to Section 1.16 of the Rules. Example: “I declare under penalty of perjury that the foregoing is true and correct.” Just “subscribing” before a notary does not meet this requirement.

6. Serve, e.g., by mail, the target licensee with a complete copy of your request on or before the day you file your request with the Commission. The only exception to this is noted in item 8.

7. Certify that you have served the target licensee. Anything else, such as advising the licensee that you have filed a finder's preference request, is insufficient; the licensee would not know your specific charges against it and would be unable to respond. (If your request has merit, successful service will speed our determination—leading to your award letter—so serve the FCC address of record and any “last known address” where you believe the target licensee may be located.)

8. Consensual preference requests—file

well before the existing licensee's construction and operation (8th month or 1 year) deadline.

File the existing licensee's cancellation request with the finder's award request. The finder will assume the existing licensee's construction and operation deadline if the Commission grants an award letter and the finder's timely application.

Consensual finders may file their application (Form 574) when filing their award request. File your application separately following regular application requirements; reference that you filed a consensual finder's request for the channel(s) you seek.

Consensual finders are not required to serve the existing licensee. This is the only exception to the service requirements (items 6 & 7).

Both the existing licensee and the finder must certify that they have not and will not give or receive any direct or indirect compensation in connection with the consensual license cancellation.

(A “consensual” finder's request is where a finder gets an existing licensee to cancel its license voluntarily because the existing licensee will be unable to construct and operate by its deadline.)

9. Use Form 155 (the FCC fee form)—unless fee exempt. The fee for finders' preference requests is currently \$105.00 per channel, the fee code is PDX. Call (717) 337-1212 for more fee information.

10. Do not file an application (Form 574) for the targeted channels until you receive a finder's preference award letter from the Commission. You will have 90 days from the date of your award letter to file an acceptable application with the Commission. Consensual finders may file their applications as noted in item 8.

11. Each finder's preference filing must stand on its own and must not cross-reference to other filings.

Finders' requests found deficient will be summarily dismissed and the applicant's filing fee and place in line forfeited. The Commission's Rules and the *Report and Order* govern over the general guidance provided by this notice.

For further information call Peter Daronco at (202) 632-7125.

Procedures For Measuring Electromagnetic Emissions From Digital Devices Adopted

The Commission amended Part 15 of its rules to permit the use of the American National Standard, C63.4-1991, for compliance measurements on digital devices (formerly called computing devices). Part 15 requires digital electronic equipment, including personal computers, to meet radio-noise limits in order to control interference to radio communications.

Current Commission measurement proce-

dures were adopted in 1983 and both the industry and the FCC recognized that revision of these standards was required.

The Commission also amended Part 2 of the rules to replace the present site attenuation requirements with the criteria in C63.4 for a test site used for testing digital devices. C63.4 represents a joint effort between industry and the Commission to reach a consensus agreement on state-of-the-art procedures for measuring the electromagnetic emissions from digital devices. It is also intended to harmonize these procedures with international test procedures for such devices.

The Commission encourages the use of this procedure for testing digital devices as soon as practical. Digital devices which are verified for compliance or for which an application for certification is filed on or after January 1, 1994, are to be tested using this procedure.

FCC and U.S. Customs To Reduce Paperwork On Imported RF Devices

The Federal Communications Commission and the U.S. Customs Service have begun a "paperless" program for the importation of certain radio frequency (RF) equipment. The new program is expected to eliminate the processing of some 500,000 FCC Forms 740 each year.

FCC Chairman Alfred C. Sikes and Customs Commissioner Carol Hallett signed a Memorandum of Understanding, agreeing to process electronic data required on FCC Form 740.

FCC Chairman Sikes, noting that this new system would result in imported equipment like microwave ovens, radios, television sets, and computers being available to consumers in a considerably shorter amount of time, said "This is exactly the type of initiative President Bush encouraged all government agencies to undertake in his State of the Union Message when he challenged us to streamline and speed up our procedures. We have found the Customs Service to be an enthusiastic and resourceful partner in this undertaking and look forward to beginning our work with it."

Customs Commissioner Hallett said, "The government keeps reducing the burden of paperwork for the importing community. We are listening to our trade constituency and to other federal agencies, then streamlining the importing process. I must commend the FCC on their outstanding support during the year and a half it has taken to develop the interface."

Currently, all imported RF equipment must have an attached FCC Form 740 which indicates that the device meets FCC standards for importation.

Under the new system, the Customs Service will inspect the items as it has always done but will now be equipped to scan for the Form 740 information and forward it weekly to the FCC. The new system will provide better con-

trol for enforcement purposes and expedite the handling of shipments containing RF equipment. It will also reduce the number of forms handled by the Commission's Field Operations Bureau from 40,000 per month to less than 4,000 per month.

Rules Concerning License Renewal For Low Power Television Stations

The Commission modified the rules governing the text and timing of broadcast announcements required of locally originating Low Power Television (LPTV) operators to more accurately reflect LPTV licensing renewal obligations.

Licensees will no longer be required to broadcast information suggesting that there is a public inspection file at the station containing the renewal application and other information on the license renewal process. The Commission also adjusted the timetable for LPTV broadcast renewal announcements to reflect that licensees do not necessarily operate on a set broadcast schedule.

Currently, LPTV licensees that locally originate programming must broadcast their an-

nouncements on their stations, while other LPTV operators are only required to publish their announcements in a local newspaper. Both types of announcements must inform the public that the licensee has applied for renewal of its license.

The Commission will continue to require locally originating LPTV operators to broadcast their renewal announcements, but eliminated references that are inapplicable to LPTV licensees. The Commission declined to adopt a newspaper notice for locally originating LPTV operators. The Commission concluded that the best way to obtain informed comments concerning the licensee and past operations of a locally originating LPTV station is to require the broadcaster to notify its viewers over-the-air of its renewal application.

Finally, the Commission will require non-originating LPTV operators and FM and TV translators, now subject to a newspaper notice, to inform the public in the newspaper notice that it may participate in the renewal process. The Commission said that while these services do not originate programming, it is interested in obtaining public comment on these services during renewal time on matters such as EEO or technical violations. ■

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Entries will be considered on the basis of their story being especially interesting, unusual, or even amusing. We reserve the right to make any editorial changes we deem necessary to improve style or grammar.

Each month, we will select one winner. The author will receive a 1-year gift subscription (or subscription extension if already a subscriber) to *Popular Communications*.

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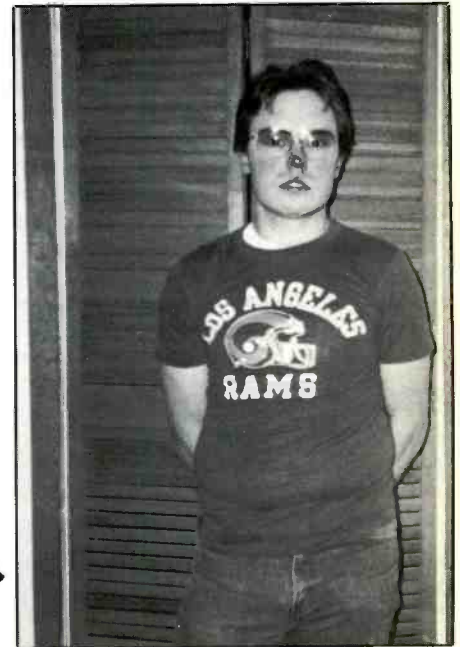
This month's winner is David W. Baltes, Buffalo, New York. David wrote:

"You might say that my hobby began at the age of four. That's my earliest memory of joining my two older brothers listening to their Hallicrafters S-120 receiver.

"When my brothers were in military service, Dad would dust off the S-120 from time to time for some listening, and I was invited to join in. Eventually, the old S-120 gave out, but my interest in radio continued.

"I got in CB radio and that kept my enthusiasm going. In 1982, I received a Panasonic RF-2200 receiver as a present. That put me back into the SWL'ing business. Fortified with my copy of *POP'COMM*, I began logging DX stations. Since that time, I have been a devoted shortwave listener."

David W. Baltes, of Buffalo, NY, tells us he was a little more than a tot when his older brothers allowed him to listen along on their Hallicrafters.



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Beaming In

(from page 4)

was varied and stimulating, the copy brightly lucid and readable without difficulty. This is just what those of us who are concerned with the future of radio need: a stepping-stone journal, as well as a valuable and exciting publication in itself."

Another example of the type of letter that lets us know we are on the right track arrived from David A. Bush, of Kamloops, British Columbia. Dave told us, "I felt compelled to write and tell you that your magazine is absolutely perfect. At least for me and for others of like mind, your publication is exactly what we need. Do not change a thing. I enjoy all of your articles, and I read every issue reverently, cover to cover, and not too fast, either; in order to prolong the reading pleasure." We receive a lot of letters like those from Martin and David. We don't usually print them in the magazine because, frankly, they're so darn flattering that after reading a few months' worth you'd start thinking we must be giving out new Cadillacs as gifts to everybody who sent them in. However, just because we don't normally print them, it doesn't mean they aren't important to us. They mean a lot because they let us know that we are giving you what you want, need, and expect.

It's interesting to us that a noticeable percentage of the letters we receive specifically mention that readers appreciate our not wasting space in *POP'COMM* with the rumors, innuendo, sniping, and similar "cheap shots" that started turning up in recent years in several hobby publications and newsletters.

You Should Know

(from page 39)

in the African nation of Botswana into service. To celebrate, the VOA would offer a special QSL for the first batch of reports they received. I decided to go after it.

I first needed to know when VOA-Botswana would be on the air and which frequencies it would use. I found that information in the January, 1992 edition of the *Journal* published by the North American Shortwave Association (a sample copy is \$2 from 45 Wildflower Road, Levittown, PA, 19057). I wanted to hear it in English, and the *Journal* carried its complete schedule. I evaluated the schedule... let's see, 0300 to 0500 on 7265 kHz. Ah, forget it; that section of 40 meters is a real zoo at that time. English was also scheduled from 0300 to 0430 on 11940. Hmmmm... this seemed more promising. I whipped out my copy of *Passport to World Band Radio* and saw what was cooking on 11940 then. Oops! Radio Romania International had its North American service scheduled at that same time. In addition, Radio Moscow's Chinese service and Radio Jordan also share that channel at that time. And propagationally it would be a stretch, although

This low calibre material just isn't what we think the hobby is all about.

Certainly, the most obvious and significant strengths any publication can have are the acceptance and support it receives from the industry and its readers. In this respect, we have lot for which to be thankful. *POP'COMM* has made many industry friends within those areas of the communications hobby we cover. Industry people recognize that our pages offer an excellent and direct way of reaching people they want to tell about their products and services.

The readers are the real key to where and why it has happened for us here at *Popular Communications*. I have edited several different radio magazines over the years, yet I've never done another magazine that has attracted such an enthusiastic group of readers as *POP'COMM*. Mail arrives here from scientists and engineers, from teen-agers, from prison inmates, from military personnel, from federal agents and police officers, doctors, retirees, farmers, diplomats, members of the clergy—and that's in addition to everybody else. Communications is the common denominator that appeals to this broad spectrum of readers, that slices through so many other barriers.

The mail is great. It ranges from serious commentary to helpful suggestions, from station loggings to letters that are wildly funny. I get a special kick out of the quirky sense of humor so many of our readers display. Like a few years back when the annual Pulitzer Prizes for journalism were awarded. I opened the mail one morning and out popped a subscription renewal along with a rubber chicken with a note from a reader express-

certainly possible. I didn't rule out 11940 altogether, but I wanted something better.

The next frequency was 15445 kHz, with English scheduled for 1600 to 2200 UTC. Hey! That immediately looked promising, since signals from Africa usually boom in on 19 meters at that time.

Checking *Passport* again, I saw that frequency was generally empty from 1600 to 2200... mainly just Radio Pakistan, which would probably be covered by VOA. My plan was then to listen at 15445 kHz for the 1600 sign on of VOA-Botswana. The next day, I was waiting on 15445 kHz just before 1600, and was rewarded by the VOA interval signal. A report resulted in the QSL card you see accompanying this month's column.

The moral of this little story? Like a lot of good things in life, DX doesn't just happen. It's something you have to plan and map out in advance. Sound like a lot of work? To me, the opposite is true. To locate VOA in Botswana by random tuning would have taken a lot of time and effort. Not to mention luck. Doing my homework let me hear it the first time I tried!

ing disappointment that *POP'COMM* didn't win a Pulitzer Prize. The sender wrote that he had awarded us his own personal *Pullet Surprise*. That rubber chicken award from a hobbyist meant more to us here than Mr. Pulitzer's prize.

As I reported last year, when an eerie rumor was circulated that I had been arrested for publishing military frequencies during Desert Storm, an equipment manufacturer had FEDEX deliver me a pizza adorned with hacksaw blades and QSL cards.

One reader has written many times regarding his being infuriated that TV Channel 37 was long ago reserved exclusively for radio astronomy purposes. He saw this as an infringement on broadcast frequencies. I suppose that all of us have some personal cause that others may look upon as slightly weird. This is his, and he has been determined to get this channel returned to the bank of assignable UHF-TV channels. I have seen copies of his angry letters to the FCC, to astronomers, and to elected officials. He has sent me pins and bumper stickers. Based upon the many impassioned letters he's written, I responded offering him courage to continue his crusade. I'm a sucker for bizarre causes. If this crazy cause isn't for real, then it's a great joke.

I can't enumerate every one of the wild things that come through here, but I did want to give you at least some basic feeling of the rich and strange sense of humor displayed by our readers. Never before seen anything quite like it.

It takes the combined and coordinated efforts of an effective team of extremely dedicated business personnel, and many talented creative people to bring you *Popular Communications* each month. And, of course, the input of our knowledgeable columnists and authors, ably coordinated by Jeanine O'Connor, *POP'COMM*'s Associate Editor. No editor could hope for better ingredients to mix together to make a magazine. Communications has fascinated me since I was a youngster, so my own participation in the process of bringing out *POP'COMM* seems to me more like an extension of my hobby than what most people would consider "work." Nothing to complain about in this area, I enjoy every minute I'm doing my part in putting *POP'COMM* together.

Nevertheless, what *POP'COMM* is about, is what you, our readers, are about. Without the wonderful and energetic support, loggings, suggestions, complaints, comments, ideas, acceptance, articles, and encouragement we have received for the past ten years, *Popular Communications* would never have grown. We might not have even lasted. So, in addition to making *POP'COMM* a joy for us, you have also made it a concept that has worked, and has become known throughout the world. We never forget that here—and as we enter our second decade, we are still staunchly dedicated to continue being responsive to serving the needs of those with whom we share this most exciting and challenging of all hobbies.

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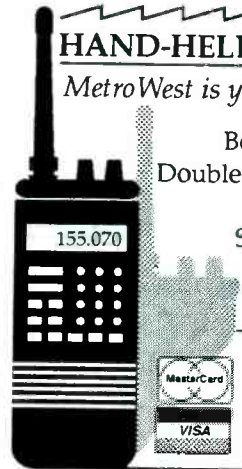
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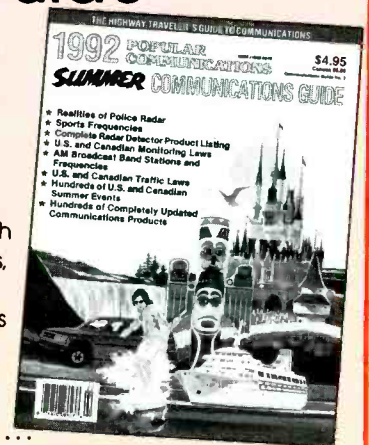
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Antenna: BNC
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Mobile Mounting Bracket.	MM1	\$14.90
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Specifications:

Coverage:	100KHz-2036MHz
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IF:	736.23, (352.23) (198.63) 45.0275, 455KHz
Increments:	50Hz and greater
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