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POPULAR COMMUNICATIONS

OCTOBER 2000

Scanner Users Get Mugged In Michigan

- Easy DX Targets—Central America And The Caribbean

HOT New Radio Products Page 42

- Monitoring NASA's Hypersonic X-43
- In The Spotlight: Globalstar's GSP-1600 Satellite Phone

DXing, World Band Tuning Tips, CB Scene, And Much More.

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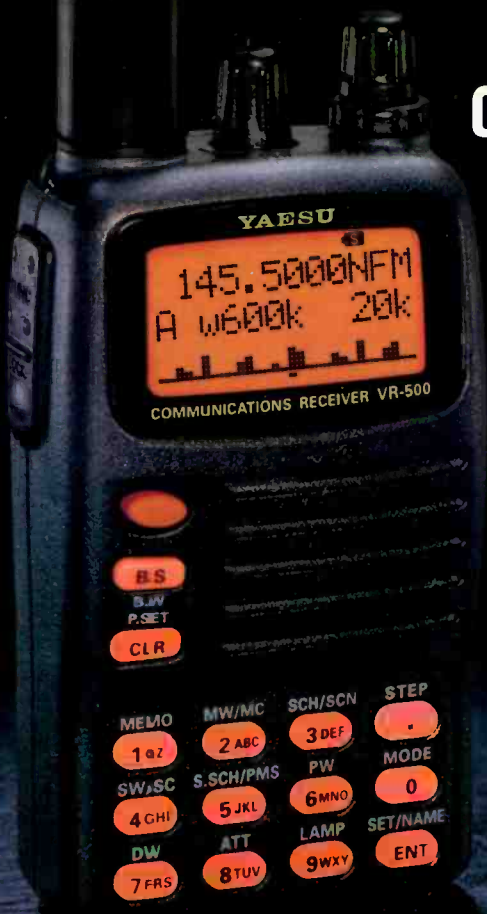

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On The Cover

Michigan's lopsided anti-scanner law is getting plenty of folks fired up. The sign is gone now, but unfortunately the law still stands. Get the latest on this and other radio-related news in this month's "Washington Beat" on page 62. (Photo by Mark A. Bajek)

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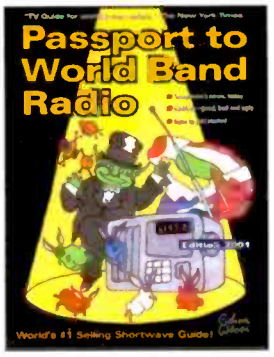

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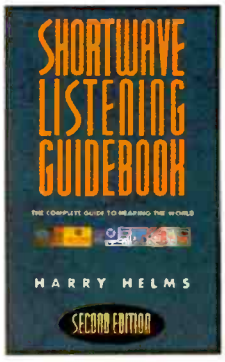

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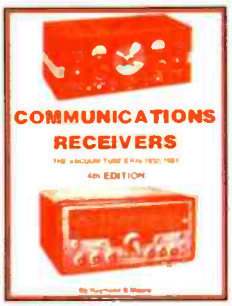

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TUNING IN

An Editorial

FRS: No-Code Lifesaving Radio

Just ask the eight hikers lost on Palomar Mountain in California what the Family Radio Service (FRS) is worth. They were lost for hours, yet survived thanks to a youngster's presence of mind and his FRS walkie-talkie. Young Christopher Moore was camping nearby with his family when he heard the group's call. With a park ranger's assistance, they were talked down to safety.

Then there's the Sandy, Oregon, report of a 70-mile — that's right, 70 miles— FRS call from two injured rock climbers who reached seven-year-old Fletcher Wold. His father contacted authorities who dispatched a rescue team.

The FRS road hasn't always been smoothly paved, though. Anti-FRS voices, including the Personal Radio Steering Group (a GMRS advocacy organization) fought long and hard to keep FRS from seeing the light of day, but lost the battle. They argued that FRS rules didn't preclude the playing of music, obscene or indecent language, business use, or even FRS repeaters. A major part of the argument against FRS was the interference issue. Licensed GMRS users were concerned about possible repeater interference and FRS turning into CB chaos-like radio. Shortly after we heard their concerns, we decided to test a few FRS units for ourselves. Our findings were reported in the July 1997 issue of *Pop'Comm* — no interference to any nearby GMRS repeater. We've since tested the little FRS transceivers in various U.S. locations, from the suburbs to mountaintop locations in the Northeast with the same results. (I did, however, make contact with another FRS user from atop Vermont's Bromley Mountain — a distance of more than 10 miles).

REACT Finally Reacts

In a recent message, REACT International, Inc. recommends its members begin monitoring FRS Channel 1, and the adoption of that channel as an FRS Emergency Channel. They're to be congratulated on such a proactive recommendation that can be a real lifesaver. FRS continues to evolve from a simple stay-in-touch short-range convenient and fun tool craved by the general public. As died-in-the-wool radio enthusiasts we can help them understand the benefits of these little half-watt marvels and how to get the most out of the radio in an emergency.

"Part of the problem of using FRS in an emergency is the possibility a CTCSS code has been programmed in the unit."

Part of the problem of using FRS in an emergency is the possibility a CTCSS code has been programmed in the unit. If I were a betting person, I'd wager that most FRS users aren't very concerned about programming in any of the privacy codes on their FRS radios. It's not that it's a difficult programming procedure, it's just another extra step in an already fast-paced world where immediacy is the name of the game. Of course, there *will* be times when families will use the CTCSS codes out of sheer necessity to avoid same channel interference, but as REACT correctly observes, what happens in an emergency if the codes *are* programmed in a FRS transceiver? Suppose young Susie is frantically calling for help down by the stream where her brother has just fallen into the water and no one hears her because the privacy codes are enabled. Let's get the word out about using FRS Channel 1 as a lifesaving emergency channel, and equally important, help folks understand the importance of keeping *FRS Channel 1 code-free*. While you're talking to them, make sure they know why making repeated calls for help — even if they don't hear a response — *can* be a lifesaver, just like CB Channel 9. Be sure they know to repeat their location and type of assistance needed.

(Continued on page 78)

BY HAROLD ORT, N2RLL, SSB-596

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— Passport to World Band Radio, 1998

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Richard Blows The Whistle On Cell Phones

Dear Editor:

Just found a lot of information on the ECPA on the Internet. I suggest you tell all the readers about it. I found it via the "Ask Jeeves" search engine site, at <www.aj.com> or <www.ask.com>. While it gives information mostly regarding "online users," it also gives a lot towards us scanner users.

Now as always, I question how anybody operating those small broadcast stations known as cell phones can expect privacy to be "ensured," when they are talking over a radio like any drive-time DJ? Besides, it's like that law that I understand is still on the record, making it illegal to whistle underwater in Vermont. It's impossible to enforce (with apologies to my friends in that state).

Richard C. Berger
Registered Monitor/SWL Station
KNY2SC.
Belle Harbor, NY 11694-1247

Ken Hit A Home Run

Dear Editor:

Bravo, Bravissimo, Mazultof, Congratulations to Ken Reiss for a great article on "Interference" in the Feb. 2000 issue. His explanation of this technical aspect of the hobby was fantastic. I actually understood every word. That's no mean feat for someone as technically challenged as I. This is definitely one article I will cut out and save.

Ken did a beautiful job of taking what could have been a very technical subject, and making it very understandable. After reading his article, I had a better understanding of RF interference than I did after a couple of military tech schools and more than 37 years with Uncle Sam.

I now have a pre-amp for my VHF/UHF scanners. I had it hooked up and was pleased with how it performed on the weaker signals in my area. But Ken's article really helped me understand just what the pre-amp was doing — and more importantly, what I shouldn't expect it to do. Thanks to his article, I know I will better employ that pre-amp and get it to work more effectively for me.

As a writer myself, my hat is off to Ken for his deft handling of a complex (at least to me) technical subject and making it understandable and useful to the average reader. He hit a home run with this one!

Ron Perron
Glen Burnie, MD

Monitoring More Than Channel 9

Dear Editor:

Apparently your December column points out that REACT and CB channel 9 aren't as synonymous as you would like. I do not know why the myth persists that REACT teams NEED to be monitoring CB Channel 9 all over the continent. Honest to gawd, Mr. Ort, if I were to solely monitor CB 9 here in southern California, I would be doing the public-at-large absolutely no good whatsoever.

CB is not dead (apparently) — but I *have* monitored it for days on end without hearing a single public assistance call. And I am right in the middle of the nation's largest county (San Bernardino) and Los Angeles county. The motoring public is using roadside callboxes, cell phones, GMRS, and amateur radio in lieu of CB-9. I can see it as I drive 24,000+ miles annually: CB antennas aren't mounted on vehicles as they once were.

Our region is fortunate to have organizations and repeaters on the amateur bands and on GMRS. W6FNO 146.820-no PL, for example, handles over 5,000 roadside assistance calls annually — and has been doing that for over a quarter-century. Located on Onyx Peak near Big Bear at 9,100 feet elevation, and linked with a repeater on Johnstone Peak in L.A. County, this system is well-known and has a great coverage area.

On the GMRS side, the Repeater Users Group has been in existence for about 20 years, and it has coordinated over 20 repeaters throughout southern and central California.

Effective REACT teams MUST survey their service areas, and use what will provide the most assistance to their publics. For all REACT teams to use only one mode of radio communication is foolish, UNLESS they have performed their homework, and have discovered that it is, indeed, the best manner in which to operate. Again, for us in the nation's most populous region of the most populous state, CB-9 is NOT the answer.

Clint Bradford, KAF3359/KE6LCS
Mira Loma, CA

Loved The Nextel Spotlight

Dear Editor:

I'm an electrical contractor in North Jersey and recently got a few Nextels for myself and my crews; and it doesn't get any better than these things! The way to go is taking the "business network" option which enables you to log-in anyone else's Nextel ID# (who is on the biz-net) into your phone; give it an alpha name and just push the button. I am connected with plumbing contractors, general contractors, factory supervisors running 24-7 shifts, and even the local deli guy for lunch orders. I traded-in the beepers and cell phones, and am also saving a little bit each month, but after using the Nextel's, I'd even pay MORE for them.

But before Nextel gets any ideas, the things aren't without fault. They're prone to the same "no service" and dropped cellular calls as the conventional cell phones. And, in the middle of a conversation, it sometimes sounds garbled, like the person is talking underwater. One thing I suggest if you're going to use them

out in a rough environment: get the insurance, which is a few dollars a month, and provides full replacement if lost or broken for any reason. Last thought: think very carefully before getting one for your spouse. It could be good, but it could be a real pain.

Jon Buchak, Pres., Northern Valley Electric Co. Lic. #6605 Bergenfield, NJ SSB-136M

One In Every Crowd

Dear Editor:

I'm not sure where this report should go in your magazine so I'll let you decide. On the night of May 19 at approx. 2100 hrs. EDT, a call was answered by the Maine State Police, Augusta Barracks from a ham operator who said he was receiving traffic from another ham in a mobile that was in distress. This was thought by the caller to be in the Topsham Area. Somehow, by the time I got off my caboose and searched out the ham frequency, the area had been narrowed to the Augusta/Manchester area, then further to Rt. 202 toward Manchester. (Note: The freq.'s being used were 146.665 and 146.880 in the 2-meter band). After about an hour-and-a-half, there were several responses from this supposed distressed ham that were incorrect and confusing. The area the mobile hams were in showed no sign of damage or indications of an accident, and one of the alleged distressed hams' responses indicated that he was near a body of water (There was none in the location alleged by the distressed ham). One of the base units monitoring the call said the call was a hoax and asked all units to return to their homes. This was apparently done.

The upshot of this whole thing was that some joker tied up one state cop, who may have been able to respond to another call that was more urgent, two mobile hams who might have been able to stay home with their families, as well as a base unit who might have been enjoying the evening with his family, and lastly this joker may have tied up a state police dispatcher who might have had another urgent call. A friend of mine, when I told him this story said that anyone with the bucks can go into any store that sells ham gear and get a rig no questions asked. We both said that perhaps in order to buy a ham rig you should have to provide some proof that you are in possession of a ham ticket. But, then we both realized that the as far as some merchants go, George Washington, Abe Lincoln, Dr. Ben Franklin, and other assorted presidents would be all the license needed.

Don Hallenbeck, Registered Monitor KME1CW

Dear Don:

This, of course, is one of those sad but true stories that gives not just the amateur community, but all radio enthusiasts a black eye. The negative PR lasts a lot longer than any good we do in the community, whether we're CBers or hams.

I encourage our radio community to talk candidly with public safety officials about helping them as an extra set of eyes and ears and tracking down criminals like you've mentioned, without getting in the way of officers doing their jobs. ■

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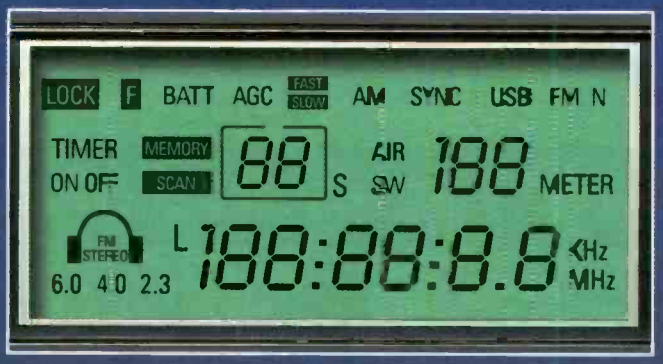

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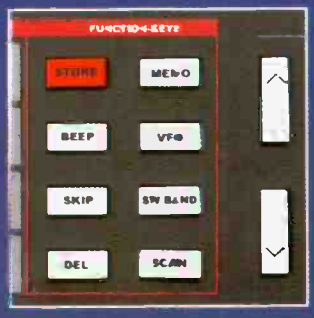

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The Need For Speed: Monitoring NASA's X-43 Program

Cutting-Edge Speed, Top-Flight Monitoring!

By Laura Quarantiello

Leave it to NASA to once again go where no man has gone before. The U.S. space agency is continuing to push the envelope of space and speed, this time with the X-43A experimental flight vehicle, an aircraft designed to fly faster than any air-breathing vehicle has ever flown. The first of three test vehicles was delivered in October 1999 to NASA's Dryden Flight Research Center at Edwards Air Force Base, California, in preparation for the first of four flights scheduled to begin a few months ago.

The X-43 is the latest in a long line of X-planes developed and tested by NASA to explore the cutting-edge of speed. Part of what NASA calls the Hypersonic Experiment or Hyper-X program, the X-43 is the culmination of more than twenty years of scramjet research, the quest to push an aircraft at hypersonic speeds without using a rocket engine.

The goal of the multi-year research project, according to NASA, is to "demonstrate air-breathing engine technologies that promise to increase payload capacity or reduce vehicle size for the same payload for future hypersonic aircraft and/or reusable space launch vehicles."

The key to increasing payload is eliminating the cumbersome, high-weight oxygen tanks normally carried by rockets. Instead, the X-43 will use a scramjet engine to capture air directly from the atmosphere and mix it with hydrogen to create propulsion. The scramjet is based on ramjet technology, which operates by subsonic combustion of fuel in a stream of air compressed by the vehicle's forward speed. A scramjet uses a ramjet engine, however the airflow through the engine remains supersonic. Scramjet testing in wind-tunnel facilities is limited, which is why actual Hyper-X in-flight research is so critical.

Artist's conception of the Hyper-X aircraft.

Hyper-X Program

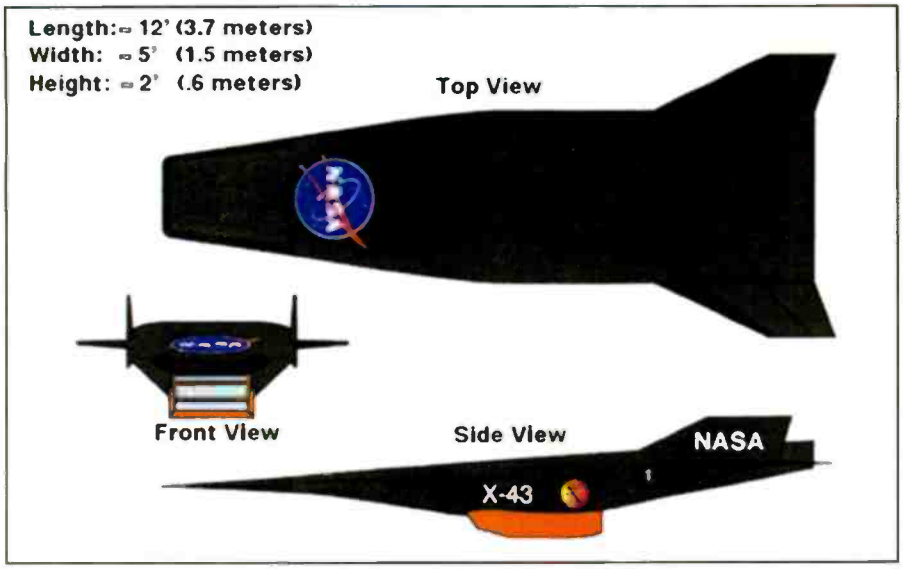
The Langley Research Center, Hampton, Virginia, and the Dryden Flight Research Center are conducting the Hyper-X program at Edwards AFB, California. Langley holds responsibility for hypersonic technology development, while Dryden will conduct flight research.

Phase I of the X-43 program is designed to flight-validate scramjet propulsion, the aerodynamics of hypersonic flight, and design methods. It will play out over the course of five years and cost approximately $170 million. Phase II is projected to take the data, technology, and design methods arrived at in Phase I and design and construct a larger, reusable hypersonic aircraft.

The X-Plane

Initial research in the Hyper-X Program began with design and wind tunnel testing conducted in early 1996 at Langley Research Center in Virginia. This led to construction of three flight vehicles under NASA contract by Micro Craft Incorporated of Tullahoma, Tennessee. Boeing-North America is responsible for detailed research vehicle design, as well as developing flight control laws and providing the thermal protection system for the vehicles. GASL, Incorporated is building the scramjet engine and fuel system, while Orbital Sciences Corporation of Dulles, Virginia, is designing and building four Pegasus-derived launch vehicles for the program. Accurate Automation Corporation provides vehicle instrumentation.

The 12-foot-long, unpiloted vehicles, known as the X-43A, have a wingspan of five feet and weigh in at around 2,200 pounds. The entire forebody of the X-43 is designed as an intake for airflow, while



The Hyper-X aircraft specs.

the aft section functions as the nozzle, making the aircraft a "flying engine."

The X-43 vehicles are scheduled to conduct four flights between January 2000 and February 2001; one at Mach 5, one at Mach 7, and two flights at Mach 10. Any speed above Mach 5 is considered to be hypersonic, the equivalent of about one mile per second or 3,600 mph at sea level. In comparison, the world's fastest air-breathing aircraft today is the SR-71, which flies at just above Mach 3.

Flight Operations

The X-43 will ride on the Orion 50S first stage of an OSC Pegasus XL booster rocket launched from a NASA/Dryden Flight Research Center B-52 carrier aircraft. This aircraft, on loan from the U.S. Air Force, is the oldest B-52 currently on flying status and is one of two aircraft used to air launch three of the X-15 test vehicles in the 1960s. The X-43's will be launched from altitudes ranging from 20,000 to 40,000 feet. The Pegasus booster will accelerate the vehicle to its test conditions at 100,000, where two small pistons will separate the vehicle from the rocket and allow it to fly under its own power. Following separation, the scramjet engine will be ignited for at least seven seconds to demonstrate forward thrust. Once this test is complete, the X-43 will commence a six-minute high-speed glide to collect hypersonic data.

All flights will originate from Edwards Air Force Base, and the actual X-43 launches will take place off the West Coast of California at the Western Space and Missile Center, located within Vandenberg Air Force Base (VAFB) airspace. The ground track of the vehicles will vary, but are projected to extend up 400 miles in length and remain completely over water. All flights will terminate on or near San Nicholas Island or the Channel Islands near Los Angeles. Recovery of the vehicles from a potential ocean impact is not planned at this time.

Listening In

Monitoring the flights of these hypersonic research vehicles promises to be a high point for aviation enthusiasts. The B-52 carrying the X-43 vehicle will take off from Edwards Air Force Base in California and fly out to the offshore Western Test Range. Those listeners who are lucky enough to reside close enough to Edwards to receive air traffic control communications will want to keep a listening watch on the following frequencies:

236.600	Tower
318.100	Tower
390.100	Ground
304.000	Command Post "Conform"
348.700	Joshua Approach/Departure
290.300	Joshua Approach/Departure
267.900	Flight Test
268.100	Flight Test
275.900	Flight Test
279.000	Flight Test
280.100	Flight Test
286.400	Flight Test
287.200	Flight Test

In addition, it is expected that aircraft such as the 30th Space Wing's ARIA (Advanced Research Instrumentation Aircraft) will launch from Vandenberg Air Force Base (see frequency list) in support of the test flights. ARIA utilizes 1,000-watt single sideband HF transmitters, as well as FLTSAT, LEASAT, and

LES satellites for data retransmission. Listeners will want to check these HF frequencies, where ARIA communications have been reported: **5145, 5837, 6750, 6889, 11205, 11407, 11414, 14497, 16246.**

NASA/Dryden Flight Research Center also maintains a series of VHF/UHF operations frequencies that may see use during these flights: **123.225, 123.375, 296.800, 314.600, 371.100, 382.600, 395.100.** Expect to hear NASA chase and photo aircraft here. Also, test range communications may occur on any of the Western Space and Missile Range HF frequencies listed at the end of this article, as well as on Pacific Missile Test Center frequencies.

The actual dates of the X-43 flights have not yet been determined, but you can keep up with the latest news on the Hyper-X program by visiting http://www.dfrc.nasa.gov/PAO/X-Press/update.html. ■

Western Space and Missile Center (WSMC)

Vandenberg AFB, CA

5736.5	Flight Test Common
3376	WSMC Control
4455	WSMC Control
4732	WSMC Control
6750	WSMC Control
6770	WSMC Control
7330	WSMC Control
8993	WSMC Control
13204	WSMC Control
18005	WSMC Control

Pacific Missile Test Center

5080 kHz	PMTC "Plead
127.550	PMTC "Plead"
254.900	San Nicholas Island Tactical Area Air-to-Ground
270.500	San Nicholas Island Tactical Area Air-to-Ground
280.700	PMTC "Plead"
313.300	San Nicholas Island Tactical Area Air-to-Ground

Vandenberg Air Force Base

34.350	Search and Rescue

Vandenberg Air Force Base

41.450	Range
49.750	Range
121.400	Range "Frontier"
228.200	Test Common
266.300	Launch Control
280.100	Range
280.800	Range
286.400	Range Common
287.200	Flight Test Support
296.500	Range
304.900	Range
326.200	Tower
336.000	Range
347.100	Range
349.300	Range Common
351.300	Range
352.800	Range
358.400	Range
384.000	Flight Test
384.800	Range
386.600	Range

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NEW! AR8200 Mark II B

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Pinpoint Accuracy! The Grundig 400PE does it all: pulls in AM, FM, FM-Stereo, every shortwave band (even aviation and ship-to-shore)-all with lock-on digital precision.

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Multi-function Liquid Crystal Display • The LCD simultaneously displays the time, frequency, band, alarm and sleep timer.

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Dimensions: 7.75" L × 4.5" H × 1.5" W

Weight: 1 lb. 5 oz.

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Dimensions: 5.75" L x 3.5" H x 1.25" W

Weight: 9.92 oz

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CIRCLE 160 ON READER SERVICE CARD

Communications & the '35 Hurricane Horror

Shortwave Bridged The Gap In Telephone Service

By Alice Brannigan

Editor's Note: *Alice will be taking a break from working on her monthly column so she may devote more time to another project she's been working on for several years. She hopes to be able to provide her column on an occasional basis.*

Sure, *La Nina* makes today's weather crazy. But our weather isn't crazier than ever! On September 3, 1935, a severe hurricane battered the Florida Keys with 140-mph winds (that's Category 5, the maximum level).

The Florida Keys are a chain of small islets stretching southwest between the Florida mainland and Key West. By the time it blew itself out a week later, 408 residents of Southern Florida had perished. With its low 892 Mb. (26.34 in.) barometric pressure, that storm is still listed in the NOAA's files as the second strongest Atlantic hurricane ever recorded.

Missing Link

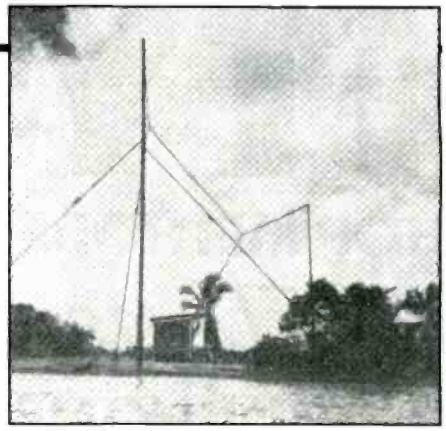
Among the damage it caused was the demolition of large sections of Henry M. Flagler's $50-million, 23-year old *Florida East Coast Railway* tracks and trestle along a 40-mile partially overwater stretch in the Florida Keys between Tavernier and Vaca Key. That included the telephone poles than ran alongside the tracks as part of the Miami-Key West segment of the only commercial voice communications link between the United States/Canada and Cuba. Except for the portion of the link that ran along the tracks, everything else in that circuit had consisted of either underground or undersea cables.

In some places the railroad's trestle washed away, allowing the poles to topple over. In other places, high water lifted the rails from the roadbed and the wind blew them against the poles, knocking them down. The damage to the communications and transportation facilities in the area was so severe, it took several days before the full extent of the devastation could be determined.

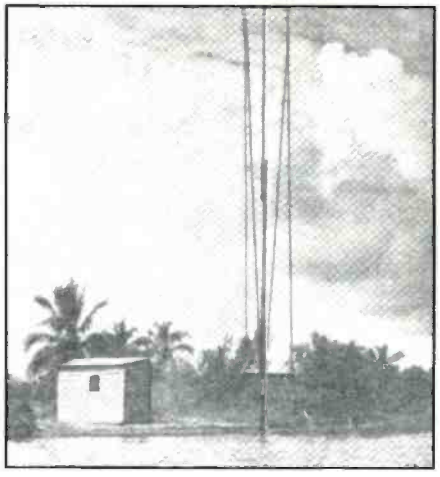
Living La Vida Loca

Why was this such a vital telephone circuit? Erase from your mind any images of today's drab and dilapidated Havana. Before Castro, in the pre-Las Vegas and Atlantic City casino 1930s, beautiful Havana was the festive playground of choice for executives, politicians, baseball stars, expatriates, honeymooners, café society, high-rollers, playboys, celebrities, gangsters and others whose finances The Great Depression hadn't depleted. Cuban 1000 Peso bills ($1,000 each at the time) filled their pockets. The Cuban government of President Fulgencio Batista allowed American mobsters to bankroll many luxury hotels, including high-stakes gambling casinos and dazzling anything-goes floor shows. Havana was always jammed with visitors. Sounds of rumba, meringue, bolero, and conga music echoed through its downtown streets.

More than simply a magnet for well-heeled North American tourists, Cuba was doing lots of business with us, exporting tobacco products, coffee, sugar, fruit, and shellfish. Cuba imported our automobiles, food, machinery, technology, chemicals, and petroleum products. So, considerable amounts of money flowed between Cuba and North America. Because of these factors, the telephone lines between Cuba and North America buzzed all day with personal and important business calls. Problems arose when suddenly the calls couldn't be carried over a landline circuit severed by a 40-mile gap of devastation. It was a situation that required an *immediate* solution. What to do?

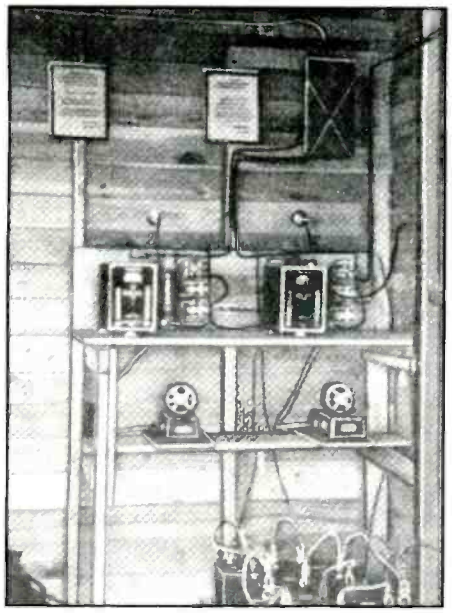


The vertical quarter-wave transmitting antennas were suspended from a cross wire strung between two masts.

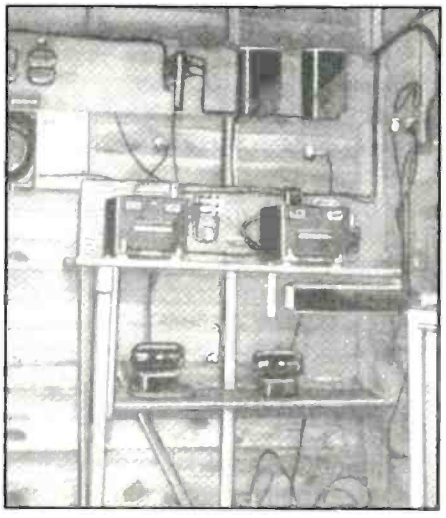


Only a single pole was used for the receiving antennas, one antenna being attached to each end of a cross-arm.

There was no way to restore the telephone poles until a decision could be made on rebuilding the railroad, or whether it was even worth rebuilding. How telephone communications could be quickly restored on the important U.S.-



In the transmitter shack, two 5-watt transmitters were mounted on a shelf with their dynamotors installed directly beneath them.



Mounting arrangements for the receivers, in their own structure, were similar to those for the transmitters.

Cuba circuit was altogether a separate consideration. It was decided to temporarily jump the 40-mile gap by means of an emergency point-to-point shortwave radio circuit. Applications for station licenses were rushed to the FCC.

Up & Running, Pronto!

Within eighteen hours after the decision had been reached to use shortwave, all equipment for two circuits in each direction were aboard a train bound from New York to Florida. Also aboard were representatives from Bell Telephone Laboratories to supervise the installation of the terminals.

The easternmost terminal was to be located near Tavernier, and the other one at Big Pine Key, 35 miles from Key West. Two work crews were sent by boat from Alabama and Louisiana to Key West, and then to Big Pine Key. Their job was to clear away the underbrush, set up antenna masts, and construct two eight-by-twelve foot radio shacks separated by 300 feet to house the transmitters and receivers. At Tavernier, a similar facility was built to be remote controlled from Miami by underground cable.

To say the very least, the crews worked under adverse conditions. The sites were covered with dense mangrove jungle, with mosquitoes and sand flies in droves. In addition, there were transportation difficulties caused by the remoteness of the terminal sites and the disruption of nor-

mal transportation services. Even so, the crews worked so quickly that the day after work had begun, initial two-way radio tests were being conducted. In the meantime, linemen were bringing in open-wire connections to Big Pine Key from Key West. Standard AM mode was used. Radio transmissions from Big Pine to Tavernier (west to east) used the 5 MHz band. The east-to-west transmissions were in the 4 MHz band.

The antenna arrangements were identical at both terminals. The transmitting antennas were single-wire quarter-wave verticals suspended from a horizontal support wire strung between two masts. The transmitting antennas were fed by coaxial cable. Located 300 feet away, the receiving antennas were wires suspended from each end of a cross-arm atop a single mast.

On September 21, the first circuit was formally opened for service, with the second channel going into full service a week later.

A Technical Triumph

It had been determined early in the game that a considerable amount of electric power was going to be required to operate the equipment. Since no commercial electric power was available anywhere near the sites of the stations, it was necessary to utilize the most efficient low-power equipment available. It was decided to use five-watt Type 19A transmitters and Type 12 receivers normally utilized for air/ground and ship/shore communications. The primary sources of power could be 12-volt storage batteries. Complete equipment for four channels (two in each direction) were shipped from New York to Miami, along with batteries and dynamotors. Half of the equipment was taken by truck to Tavernier. The remainder was loaded aboard a fishing boat for the 55-mile trip to Big Pine Key.

The batteries from the Big Pine Key station needed to be taken to Key West for recharging, and those in the Tavernier station had to be carried to Homestead for recharging. To conserve power, stations could be turned off by remote control from Key West or Miami when there was no traffic. Normally 80 percent of the calls originated during the daytime, so during the first few weeks the circuits operated only during daylight hours.

The shortwave link worked so well that during the daylight hours, callers were unaware that a radio link was in use. During night operations, however, callers sometimes complained of interference from static. For the first time, a radio link had been used this way as an emergency means of restoring service in an important telephone circuit.

Ultimately, the decision was made *not* to rebuild the railroad. An automobile causeway was built on the old railroad foundations, and was opened in 1938. At that point, the landline telephone circuit along the Keys could be restored, and the historic radio link became unnecessary.

That's a wrap for this time. We always appreciate input from readers. Our snail mail address is Alice Brannigan, *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801. The direct E-mail address here is <Radioville@juno.com>.

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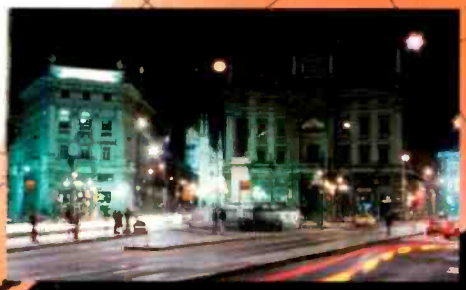

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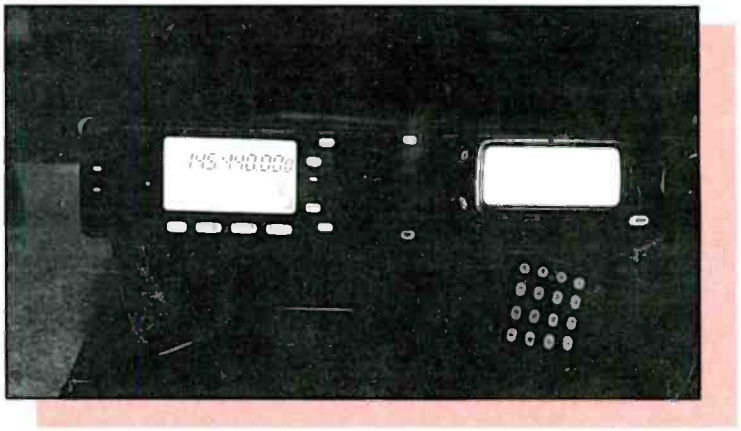
RADIO RESOURCES

Interesting Thoughts And Ideas For Enjoying The Hobby

Going Mobile On HF, Part 5: Mobile Transceivers

Ready to get started operating on the worldwide high frequency bands with your new General class license? This month we will offer you a photo roundup on the most important aspects of high-frequency mobile installation and a final tip for the first time you go on the air.



Radios at night need plenty of backlighting

The Right Radio

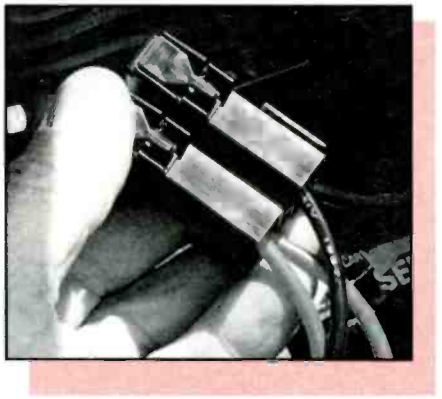
Choose your new high-frequency transceiver in person. Use the catalogs to help define features, but see the equipment LIVE so you can push the buttons, turn the knobs, and see what the display looks like during the day and night. Backlit keys and microphones are mighty important when operating after sundown. Will the new radio fit where you plan to mount it? Is the display compatible with your sunglasses during the day? You really need to get your hands on the equipment — turned on — to make the right decision on what may be the best radio for you.

More Power To You

Your 100-watt worldwide transceiver needs a minimum of a 20-amp power supply. For home, I would probably go with a 35-amp supply so it runs nice and cool during prolonged transmit periods. In a vehicle, your DC power MUST be taken directly from the battery. If you attempt to run your transceiver off of the cigarette lighter receptacle, you will probably blow your vehicle's accessory socket fuse, as the wiring going to these accessory sockets is not adequate for pulling 20 amps on voice peaks.

If the transceiver's power cable is not long enough to get to the battery, use a minimum of 12-gauge or 14-gauge positive and negative conductors to handle your current requirements. Do not rely on the vehicle chassis as the return battery negative path; always run two heavy conductors to the battery's positive and negative posts. Always be sure to fuse right at the battery posts in addition to the fuses already in line with your transceiver's power cable.

If you should experience alternator whistle on either transmit or receive, series in-line power filters are available to minimize the noise. However, the typical filter you would find for CB radio applications will not be adequate to handle the load. Twenty-amp filters are available at many auto stereo shops to handle the current requirements for those very loud vehicle stereo systems — and they work well in running ham gear, too.



Always fuse right at the battery terminals.

The All Important HF Mobile Antenna

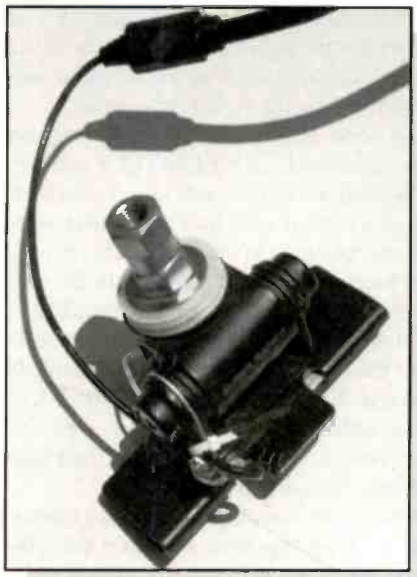
Try to mount your mobile antenna as high as possible at the *rear* of your vehicle. This keeps the antenna away from your engine noisemaker, and it also provides greater RF safety by keeping your metal roof between you and the business end of the RF energy coming out of the upper part of the mobile antenna.

If you're planning on going with lightweight, mobile, single-band or the all-band, center-loaded whip, the Diamond K400 antenna mount works well on metal vehicle lip edges. The mount may be rotated to almost any position, and four Allen screws securely hold it onto the lips of most vehicles. This could be a hatch, door or trunk lip, or anywhere else you can slip the mount over for a secure and tight fit.

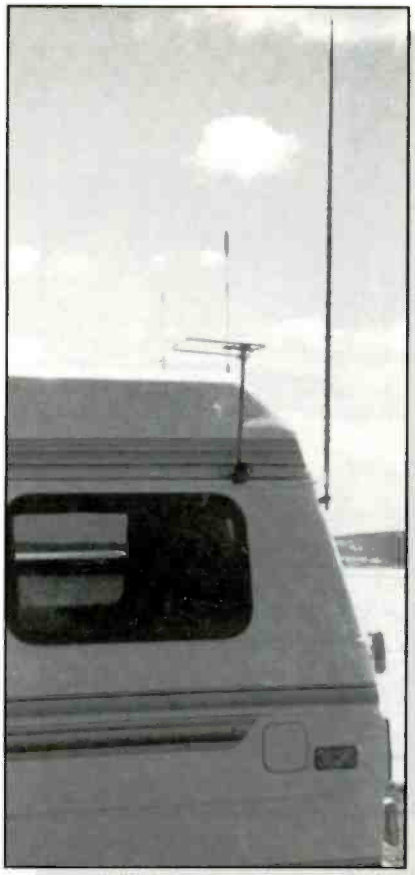
If you plan to operate your mobile from a pick-up truck with stake-bed holders, most ham stores carry stake-bed mobile whip mounts that work nicely to support your whip.

There are a variety of homebrew mounts that are structurally excellent to hold larger whips on the rear of most any vehicle. Center-loaded, major-sized whips like the big Texas products, as well as screwdriver-type antenna, would certainly require more than a lip mount to stay in place at highway speeds.

BY GORDON WEST, WB6NOA

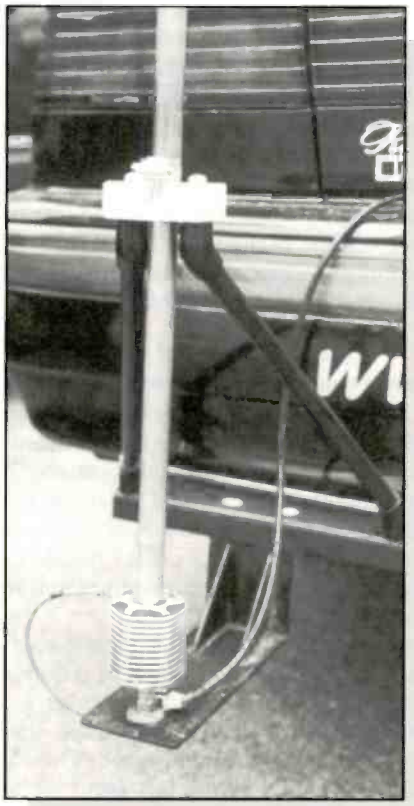


The Diamond K400 mount holds on to any trunk lip (or door).



Outbacker 6-foot antenna covers 10 through 160 meters and requires manual band-tap selection.

Gordon West shows off top-loading capacity hats for big signal results.



Antenna impedance matching coil.

Mounting them down low with upper supports helps strengthen the antenna system, but may require a feedpoint adjustment coil at their base. Usually one setting will cover all bands. The coil is an open-air winding that may require periodic cleaning. (It brings the impedance at the feedpoint to 50 ohms.)

Some of the larger open-coil capacity hat mobile antennas require an additional base impedance matching coil to terminate to your 50-Ohm coax feedline. This coil is *best* matched using the MFJ SWR Analyzer. Both the upper and lower coils must be kept clean and free of moisture build-up. The big open-coil mobile antennas are top performers, but need regular inspection!

The big open-air, center-loaded whips are many times capped with a capacity hat. This helps distribute the current to the top end of the whip to give your signal an added boost over the airwaves. To change bands, you would stop the vehicle and tap into a different spot on the center-loading coil. But these big whips truly deserve respect when you hear the amount of signal they put out on the airwaves from a mobile installation.

Some high-frequency antenna systems may incorporate more than one active resonating whip. These are usually tuned radiators that look passive when on other bands. This could allow you to mount as many as three or four whips on a single mast for in-motion, multi-band operation.

An alternate to the spider look on a vehicle is a single whip where band adjustments are accomplished by tapping into pre-determined sockets on the side of the whip. This is how the Australian Outbacker is configured, and it even works well in the snow!

Feeding a non-resonant whip with a fully automatic antenna tuner is yet another way to impress a signal onto the radiator. In several installations, we noticed that these automatic antenna tuners were fed into SEMI-RESONANT, 50-ohm-type whips. Most operators complained about the same thing; they would load on some bands, but not others. I would point out that the SGC fully automatic antenna coupler is specifically NOT designed to work with mobile whips intended for self-resonant operation. SGC offers the Model 303 mobile whip that is almost 11-feet long and specifically non-resonant on any ham band to complement its mobile automatic anten-

Alpha Delta's Don Tyrell and columnist Gordon West look over snow encrusted Outbacker HF whip at the AES Superfest snowstorm. This installation had an excellent signal into California

na tuner system. This antenna works far better than trying to force-tune a 50-ohm whip by placing a fully automatic trunk-mounted tuner at the feedpoint. On 50-ohm whips, make every attempt to place them as high up on the vehicle as possible in order to develop a feedpoint impedance that will create natural resonance of the antenna system. We found that inexpensive (around $20) single-band whips from companies like Ham Stick, Anttron, Valor, and Win-Tenna all sound terrific over the airwaves when mounted as high up on the vehicle as possible.

Going On The Air

I suggest 10 meters or 15 meters during the day for your first contact. These two bands are fun ones for the casual operator. You simply pick your first contact station by tuning in a conversation and waiting until the operators have completely finished their QSO. Write down the call signs, and be prepared to call either station that you think may have the time to give you your first signal report. Just by listening to an ongoing conversation, you can easily judge whether or not the other station you are planning to call has a few more minutes for your first contact.

As soon as you are sure both stations have signed off, IMMEDIATELY call one of the stations by their call letters, and then announce your call letters phonetically, and maybe throw in the fact that this is your first time on the worldwide bands. Be sure to give your own call sign phonetically.

Make your call within three seconds after the other stations have signed off. If you wait 30 seconds, chances are they will have either turned off their rigs, or switched to another frequency. Just like fishing — timing is everything!

Close-talk your high-frequency microphone. Most rigs may put out a full 100 watts when your lips are within a half-inch of the mike, but if you are three or four inches away from the microphone, most rigs will barely put out 20 watts! This is because most mobile high-frequency transceivers are designed with the noise-canceling microphone circuit, so to get good healthy power output, you must have your lips almost right to the plastic.

Explain to the other station that this is one of the first times you are on the air, and talk about what you have done to install your own equipment, and all about that fancy antenna system off the rear of your vehicle. Many times they may have helpful suggestions on even more ways to make it sound better on the airwaves.

First-Contact QSL

Ask your first station for a first-contact QSL card. Going onto the high-frequency airwaves is a very special event, so tell them that their card would be appreciated. You should also send back a confirmation card, or even a postcard of your local area if you have not yet ordered in your personalized QSL cards.

Finally, keep in mind that mobile operation of ham radio equipment requires DRIVING SAFETY FIRST! Never get so engrossed in what you are doing that you lose track of the importance of SAFE DRIVING and working ham radio mobile. Statistics show that cell phone gabbers are four times more likely to create a fender-bender than the driver with both hands on the wheel and keeping a sharp eye out. So wait before you go "mobile in motion" until you really get a feel for all the excitement there is in working thousands of miles away with that brand new, high-frequency, mobile transceiver you just installed in your vehicle. And good DX, too! ■

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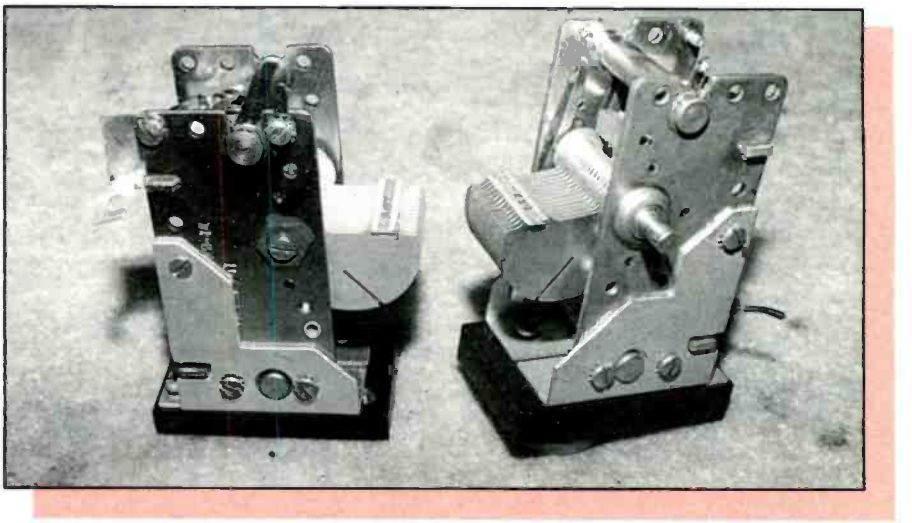
THE RADIO CONNECTION

A Look Behind The Dials

Another Source For Tuning Capacitors, And Ronnie's Philco Saga

This is vacation season, so I will be dipping into "The Radio Connection" mailbag to help with material for this column. It's just be too nice out to spend time in the shack working on new projects! But first, I want share with you a good source for high quality surplus tuning capacitors. Fair Radio Sales has been offering 475-pF single-section capacitors at their Website for the past several months. These are very high-quality capacitors, featuring silver plated rotor and stator plates, and also silver-plated wiper assemblies. The stator insulators are also ceramic, so these beauties should be much better in the loss department than the more common inexpensive tuning caps using aluminum plates and Bakelite insulators. By low-loss I mean high-Q, or more technically, a reactive component (inductive or capacitate) that has very low resistance losses. Using high-Q components in a crystal set or regenerative receiver means better selectivity, and being able to hear more stations because the tuned circuits, besides tuning more sharply, will also have less losses.

The Fair Radio capacitors have been removed from surplus URM-25 signal generators, hence the Fair Radio part number — C123-URM25 — refers to the parts number reference for the capacitor and the equipment it was salvaged from. As I write this, they are still in stock and being offered for $9 each. I have two on hand for future "Radio Connection" projects. Reach Fair Radio Sales at 1016 East Eureka, P.O. Box 1105, Lima, OH 45802. Phone 419-227-6573 or FAX them at 419-227-1313. You can also visit their Website at www.fairradio.com. A $10 order minimum applies.



One view of the Fair Radio capacitors removed from URM-25 signal generators.

Welcome Back Todd!

Reader Todd Warr was kind enough to drop us another line since his first appearance in the column about two years ago. Todd seeks advice on his Philco 89 radio:

"Hi Peter! It's been about two years since I communicated with you. You published photos of my radios in your column. I have really enjoyed your articles on the Philco 89 project; I've just acquired one myself! It is in very good shape, but I have a question.

What is the difference in the power supply filter caps part numbers 8166 and 8166? The literature says they are both the same value, but one is taller than the other — one is 600 WVDC and the other 800 WVDC (Working Volts Direct Current)?

By the way I have gotten some killer tips from you. Thanks to you I am getting better restorations!"

Todd, like most Philco chassis' the model 89 underwent several revisions throughout its production lifespan. A quick check of my Rider volume III for the Philco 89/19 chassis shows the set originally used a pair of 8095 6-uF capacitors; and that these were changed during production to part numbers 8165 and 8166 as in your radio. In volume VII, the model 89 code 123 chassis is using a pair of 8-uF 7558 filter capacitors.

Here is the rub. Rider relied on the generosity of the various manufacturers for the schematics shown in his publications. Unfortunately, often the parts data was often sketchy at best. I've seen schematics sans resistor values in ohms, and many early sets also didn't show capacitor values. In the case of the Philco 89, the filter capacitor surge and operating voltages are not shown. I would guess the higher voltage 800-WVDC capacitor was on the input side of the filter choke, and therefore subject to a fairly high ripple voltage (AC component). This is rough service for an electrolytic capacitor. The manufacturer may have used a different capacitor with a higher voltage rating and other characteristics best suited for input side filtering duty.

A second consideration is that the voltage applied to the caps might be considerably higher than the normal operating voltage of the set since the rectifier tube (a directly heated cathode type 80 full wave rectifier tube) would begin emission before the cathode heated tubes in the set. Most modern electrolytic filter capacitors have a surge voltage rating that is designed to temporarily withstand momentary over-voltage conditions. I'd personally select any modern 10-uF 450-VDC-filter cap for use in any of the model 89 sets. 10-uF is a reasonable choice for replacing 6- or 8-uF filter capacitors.

If the voltage rating bothers you, use two 22-uF 450-volt capacitors in series, with each capacitor paralleled with a 220K-Ohm 1-watt resistor to equalize the voltage drop across each capacitor, as I show in **Figure 1**. With 250 volts across

BY PETER J. BERTINI <RadioConnection@juno.com>

"I spent a lot of time listening to that old Philco tabletop set."

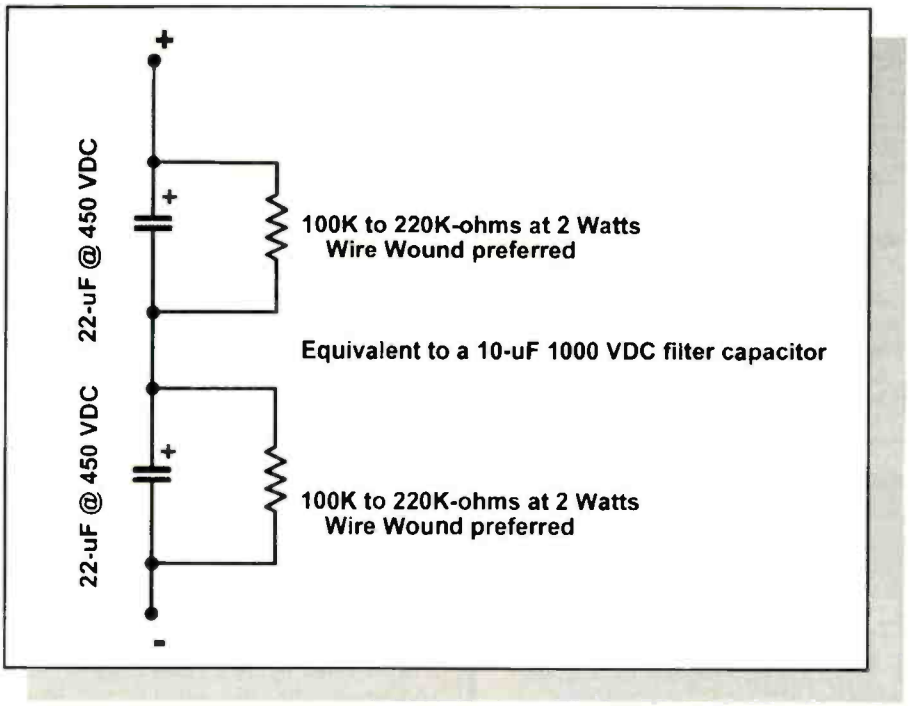
each resistor, the actual power dissipated as heat will be less, but it is important to provide a safety margin. Also, it is best to use metal film or wire-wound resistors since carbon composition types often undergo radical shifts in value with age or over long periods of heating. This brings up a good topic for a future column in "The Radio Connection," using capacitors or resistors in parallel or series.

Reader Ronnie Miller's Philco Saga

A radio's dial is a window to its soul. Early dials, when backlit by the set's pilot lamps, often would reveal multicolored legends and markings for exotic ports of call such as Holland, Italy, Germany; or services such as *aviation* or *amateur*. What youngster could resist the siren call of a shortwave receiver? I received a lovely letter from Ronnie Miller of Texas, and I've been meaning to run it when the opportunity arose. Ron's letter is fairly lengthy, and I while I would normally edit for size and content. I was so taken I've decided to run it pretty much as written because it pretty well describes radio's last heyday before television finally took root in rural America. Ron's story is probably typical of many of us of the baby-boom generation, and is being scribed here for posterity as a fascinating snapshot of radio in the late '50s just before television. Also, Ron's plight with his Philco 610 radio dial will strike a cord with many restorers who've similarly erred!

"Dear Peter, I have been enjoying your column. Let me say up front, I am desperate for help in locating a part to complete Philco restoration, but there is a long story behind it. I get the feeling you may be the kind of person who will understand the story I am about to unravel. At the risk of boring you, I think I'll ramble a bit. Hope you don't mind a long letter — this may be a record setter.

I am 54 years old, and I grew up during the tail end of the Golden Age of Radio in a small fishing town on the coast of Texas about 20 miles North of Corpus Christi. Memories of Fibber McGee, Amos and Andy, Jack Benny, and so many more are so clear in my mind. Television came late to South Texas; there was no way to get network TV signals down there for many years. Because of a serious long illness, my father was not able to consistently work. Money was scarce. TV was out of the question in our household. A couple of neighbors had sets. I remember occasional gatherings in one neighbor's small living room to watch snowy images from Houston, some 200 miles away. The only way you could tell if the person on the screen was a man or woman was by the voice.



Schematic of how two 450-VDC 22-uF capacitors in series can be used to substitute for a 10 uF (11 uF actual capacitance) filter capacitor with a rating of up to 1000-WVDC.

In our house, radio remained the only contact with the rest of the world until 1960 or so. And a wonderful thing it was. The sounds came to us day and night, to entertain and inform. We (at least I) needed no more. I spent a *lot* of time listening to that old Philco tabletop set. I was only a kid, and of course I had the neighborhood kids for friends and did the all the usual things kids in the early '50s in small towns did while growing up. But, I was somehow much more attracted to that wonderful box on the living table than any of my friends. Even during the day, when mom listened to Stella Dallas, One Man's Family, Ma Perkins, and others, I would stay within hearing distance and kept busy with toys and other personal belongings.

Each night the routine was the same. We would all finish our daily tasks, eat supper, take our baths, turn out the lights, go to bed and listen to the radio shows. The house was small, and we could all easily hear from our separate bedrooms. I cannot think what life would have been in our household without that old Philco radio.

As I grew I became more curious as to how the radio worked. I remember bothering my mother many times with that question. At first I thought somehow the sounds came through the cord that plugged into the wall. But, mom said no — they came through the air and were picked up by the aerial wire that stretched across the top of our house. During the day when mom or dad would permit, I would sit in front of the radio and tune up and down the dial to see what was available to hear. Then I noticed another knob that my parents seemed never to use. I was getting braver, and day decided to find out what that pointed knob was for. First, crackles and pops — the little strip of light in dial window moved up to a different scale — and I discovered Shortwave! At first mom was upset, she was afraid I would break the radio, but as soon as she was sure it was O.K. she left me alone to 'experiment.'

I found I could hear the guys on the fishing boats in the Gulf of Mexico talking to each other on the old 2 to 3 mc. AM marine band. They were strong — we only lived about a mile or so from the harbor. I discovered all kinds of other strange and interesting noises, sounds, and signals. This was *great*! Now I was more fascinated by this wonderful radio than ever. Mom would say, 'Why don't you go out and play with your friends more?' She

1960 or 1961. Corpus Christi had a station by then and somehow network signals were then available. The TV became the mainstay of my mother's evening entertainment. I gained total ownership of the Philco tabletop radio. I listened to the old radio shows as long as I could still find them. More and more of the stations were going to DJ and music programming. KTRH-740 kc from Houston still had some drama and mystery shows on Sundays up into the early 1960s. I still sadly remember the Sunday afternoon when they announced that they were about to broadcast the last episode of *Suspense*. I knew a wonderful part of my early life was about to fade forever, and there was nothing I could do to stop it — an early lesson in life.

Not too long after gaining ownership of the old Philco radio, it quit working. I was not knowledgeable enough yet to fix it myself, but by then I had acquired several other radios discarded by neighbors as they obtained their TV sets. One day I finally talked my mother into taking the Philco to radio shop in town to what would be the cost to get it repaired. Time passes and things happen. For reasons I cannot clearly remember any more, we never went back to the repair shop to find out about the Philco.

I became a teenager, got my ham license, graduated high school, went to technical school and earned an AS degree in Industrial Electronics, a First Class Radiotelephone FCC license, and went into broadcast engineering work in Corpus Christi. I was working in TV when we went from black-and-white to color. After military service during the Vietnam era, I left broadcasting to work at Motorola in the automotive electronics division. The lure of good health coverage and retirement plans was too much to resist! It was a good move. I have been able to enjoy a goal of early retirement. Now I have time to do a lot of the simple things in life that my wife and I enjoy.

Many times during the last thirty or so years I have thought about that old Philco table top radio that I had started with, and wished that I could somehow wave a magic wand and have it back. I didn't even know the model number, but an image was still clear in my mind of what it looked like, both inside and out.

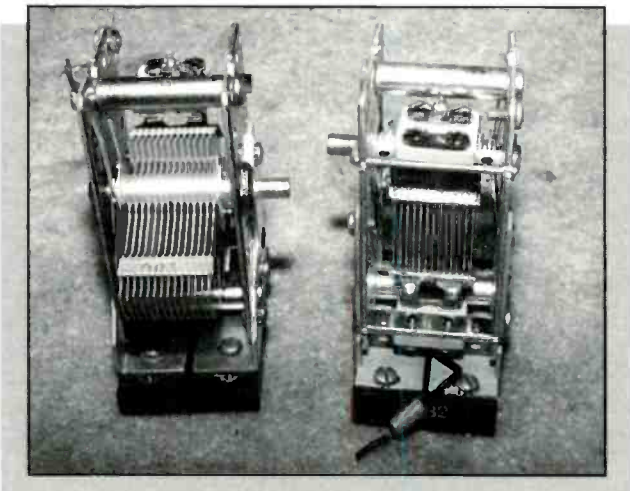
About six weeks ago I was walking down Main Street in the town where my wife and I both live, and stopped dead in my tracks! There in the window of a rather plain little antique store was the Philco tabletop staring back at me! Could it be the same radio? I would know that set anywhere. I went in and looked it over carefully, front and back. No restoration work had been done, and it was in excellent condition for a radio that was 61 years old. The speaker cone was completely intact, the cabinet in good condition, no obvious signs of abuse, etc. After examining the innards I knew I had probably found a radio that probably was not *my* original Philco, but it was definitely the exact same model. A deal was made, and I left with a radio in my arms that I had long resolved I would never live to see again.

So began the work of bringing it back to life. Carefully removing the chassis and speaker I inspected, brushed, vacuumed, and cleaned. Only one component had ever been replaced — one of the electrolytic cans. I decided to keep the set in as original condition as possible, and only replace parts as necessary to restore proper operation. I learned my beloved Philco was a model 37-610 code 121. A very great surprise was that the two remaining can capacitors appeared to be OK; no hum, and they weren't getting warm to the touch. I've restored several other pieces of tube-type amateur radio equipment and All-American-Five type broadcast receivers through the years. In most cases, it has come down to a complete shot gunning of all paper-dielectric capacitors, the electrolytic caps, and some of the resistors. Thanks very much for the information on

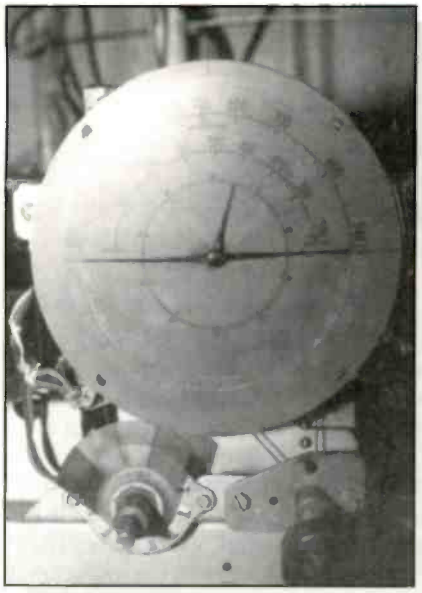
couldn't understand why I wanted to spend hours in front of that radio. It wasn't normal.' (I did spend time with the other kids, but when I was by myself I was fooling with that radio as much as I could!)

I remember discovering the hams (I guess they were on 80 or 40 meters). Here were these guys talking about *radio* — antennas, transmitters, modulation, receivers, and 'band conditions.' It was wonderful! I was getting my questions answered just by listening to them talk to each other. And so it went. Time went by, dad passed away, and I continued growing and learning about radio. Most was just by reading anything I could get hold of. There were no local hams in our little town (that I knew of, anyway) until later in my teen years. None of the other boys in the neighborhood could be coerced into any real interest in radio, so I was pretty much on my own.

Eventually mom was able to afford a TV set which we got somewhere about



Another view of the Fair Radio 475-pF tuning caps. Note the quality construction featuring ceramic insulators and silver-plated rotor and stator plates.



Early radio dial scales were often screen-printed on cellulose dials. While age and improper storage, or the presence of smokers often dull their bright colors, avoid the temptation to clean them!

how to rebuild the Philco block capacitor bands—I had two of them in my Philco. Had I not read your article, I would have just pulled them out and replaced them with individual capacitors!

After a careful alignment, it *lives!* Life is good! Now to the sad part of my long, long story!

I carefully disassembled the vernier drive mechanism for the tuning capacitor while marveling over the detail, precision, and quality of the dial drive mechanism design and the materials used. Split gears drives on both the tuning cap and the dial drive to eliminate backlash. The vernier drive is as good as any I have seen on some expensive modern test gear. I lovingly reassembled everything, oiling and re-packing with *Lubriplate* as appropriate. It tunes like a velvet marvel! Now, here I get careless!

The dial is, of course, covered with a dull film. An application of Windex on a cloth to the light bar, and all the plastic parts associated with the band change mask assembly have been completely successful! By this time I was getting a little brave, I decided to try Windex on one end of the dial, just to make sure no harm would be done lettering and dial markings. Uh oh. It started to *blur*! Panic! Now what do I do? Well, surely plain water won't hurt it! After all, I've cleaned many dials on All-American-Fives with Windex and rinsed with clear water with no ill effects at all. Under the faucet we go. *Oh no!* The translucent red lettering and lines simply dissolved away, and I am sick! I put everything away, and didn't sleep very well at all that evening.

The next day a closer examination reveals the damage. The water hit maybe a third of the dial before I pulled from under the faucet. Where the water hit, the red is either missing completely, or partially dissolved and streaked, and the black markings and numbers are blurred. The dull film in this area did wash away, leaving a stark contrast between the washed and unwashed areas.

So here I am with the one radio above all that always meant the most to me back, and am completely satisfied with all aspects of the restoration up to this point. Now I have this horrible mistake staring at me. Finally, to the point of my long letter. Can you possibly help me locate a replacement dial for my treasure? The original dial is **Philco part number 27-5203**. Some I have talked to tell me this dial may have been used on other sets. Surely I am not the first to run into this situation. I realize the search could take some time, but I have waited over thirty years to get one of these sets; a little more time is nothing at all. I will of course use my radio with the damaged dial until I arrive at some solution.

By the way, I am amazed at the sensitivity and selectivity of the 37-610. With no RF amplifier stage, it even does a very good job of rejecting images on short wave. The dial calibration on the broadcast band is perfect from 530 kc to 1600 kc. (Most of the water damage is on the short wave scales.) Philco obviously, and wisely, put a lot of importance into the issue of being able to find a station by knowing its frequency. Digital displays — who needs 'em!

Thank you very much for your time and for listening to the ramblings of a nostalgic old man for whom radio has been his whole life. It started out as a simple life, and I plan to have it end that way when the time comes."

Ronnie Miller

Ronnie, thank you for a great story. I am sure many hams, shortwave listeners, and vintage radio collectors can relate to your story. It could have been written by many of us! As for a solution to Ronnie's dial problem, next month, folks, I am out of space for this issue. ■

SCAN TECH

Trunking, Tips, Techniques, And Mods

How To Scan Trunked EDACS Systems

It really hasn't been all that long ago that the words "trunking system" would strike fear into even the most dedicated scanner maniac. The systems were just difficult at best to listen to, and many were almost impossible given the number of channels, amount of traffic, and the actual operation of many of the trunking systems with a conventional scanner.

There was a great relief when the RadioShack PRO-90 and Uniden's BC-235 were announced. Finally,a monitor, had a way to at least scan Motorola trunking systems! While Motorola does provide equipment for the lion's share of the public safety trunking systems in use around the country, which doesn't do you much good if the system you want to listen to isn't from Motorola.

The most common alternate system was Ericcson's EDACS, or Enhanced Digital Access Communications System. It seems these were particularly nasty systems to scan with a conventional scanner because of some "anti-scanner" techniques deliberately or otherwise built into the system. Most EDACS systems are "transmission trunked" which means that every time the person talking unkeys the transmitter, a frequency hop is made for the reply. Early EDACS systems also left the transmitter of the original message on the air for several seconds, even broadcasting tones or GE's "we bring good things to life" jingle. Of course, the users of the system are completely unaware that this activity is happening; their radios are under control of the computer system running the show and these extraneous noises and channel hopping are not heard by them. Imagine a busy system of 20 or 30 channels and trying to find the reply to a particular conversation. Not fun for scanner listeners at all.

EDACS – Capable Scanners

Over the past year, scanners have been introduced that can put all this behind us. We now have EDACS capable scanners in the form of the BC-245, RadioShack's PRO-94 and 2052, as well as others. But there is still a lot of confusion over how to get a system programmed into one of these radios, so after a few letters and E-mails, I thought we'd better take a look.

Unfortunately, I'm at a bit of a disadvantage as there is not a local EDACS system for me to experiment with. I have managed to find a few in my travels, so hopefully I've got enough information to provide some assistance and not steer you in the wrong direction!

The Uniden Bearcat 245 was the first scanner to even offer the option of EDACS system reception. There still aren't a lot of them, and the 245 is one of the best handhelds. You might also consider RadioShack's PRO-94.

It's also important to note that just like Motorola's Astro system, EDACS systems can be fully digital or analog, or a combination. The important distinction is how is the audio information that we want to listen to transmitted? If it's analog (traditional FM radio signals) then our trunk tracker can follow and listen to it. If the audio itself is digital, we're sunk. There is currently no scanner on the market that can decode this for us. Stay tuned, things could be in the works, but for now, if you're stuck with one of these systems, you're out of the race. Have you tried air band scanning?

Some systems use digital modulation only on those channels or conversations that need to be protected. That's how this technology should be used, and I certainly don't want anyone to think that I would complain for a minute when officer safety or critical operations are involved. On those systems, you'll be able to follow the analog conversations, which may be particular channels, or perhaps the digital scrambling will only be used when necessary. Once you get the system programmed, you'll be able to tell, but it would be worthwhile to try and find someone who can tell you for sure that the system you want to listen to is not fully digital all the time. If you can't, program the frequencies into a traditional scanner and see what you hear. If all you hear is noise on all the channels, don't bother buying a trunktracker!

There is also some newer type EDACS systems (mostly on the 900 MHz bands) that the trunktracker II does not follow. Fortunately, most of these are used for business systems that have to cover an extremely wide area (like a whole state).

Getting It Programmed

Getting a trunked system programmed correctly into the scanner is about 90 percent of the problem. Once you've got it in there, you can fine-tune the settings and parameters until it works the way you want it to (or at least works the way the

BY KEN REISS <armadillo1@aol.com>

scanner was designed to work). Programming a trunked system of any sort is not just a simple matter of punching in frequencies and forgetting it. And here's where most of the problems seem to lie. Let's take a step-by-step look at how to get a system into the radio.

It is very important to realize that the trunking mode is a special setting on the scanner. You're either in the trunking mode, or you're not, and you have to know the difference. The word TRUNK appears or flashes on the display when you are in it. Keep that in mind as we go forward. If you're not in the trunking mode when you need to be, you'll be entering information as a conventional scanner would, and it will work just like a conventional scanner.

Press and hold the TRUNK key. After about two seconds, you'll hear two beeps and the BANK and TRUNK indicators will begin to flash. You're in the TRUNK programming mode.

Next, select a bank that's empty that you want to put the trunking system into. An empty bank works well because it will allow you to enter all the frequencies, and keep the trunking and non-trunking data separate in your scanner. There are some operational advantages to this later.

The next step is to select the type of trunking system that you're about to enter. There are several variations here, but the one we're after for an EDACS system shows on the display as Ed. Finally, we're ready to start entering the frequencies.

Order Counts!

Motorola systems have a tricky device called a fleet map that must be entered correctly in order for the scanner to trunk those systems correctly. Fortunately, for many systems, the scanner's default fleet map is correct and you don't really have to do anything but accept that. For others, it takes some work to figure out the correct settings.

There's good news and bad news for EDACS systems. The good news is that you don't have to worry about fleet maps or other settings. The bad news is that you do have to get the frequencies into the scanner *in exactly the right order*, or it won't work correctly.

The first place to check is the directory that came with your scanner. All trunking scanners come with a directory of some of the more common public safety systems across the country. If your system is listed, there's a good chance that someone else has done the homework for you and what's in the directory will be correct.

The new RadioShack PRO-2052 and even newer PRO-2067 are about the only base/mobile units currently available . This will change rapidly as trunking systems become more popular, as trunking becomes a more common feature.

Enter the information that you see there.

If not, you may have some experimentation to do. On many systems, the frequencies are entered in numerical order from low to high, or vice versa. If one of those doesn't work, then start yourself a list of what you've tried and what you haven't, and have fun. If you get something worked out, let us know here at *Pop' Comm* so that we can pass that on to other readers in your area.

You'll know whether or not it's working by pushing "hold" on a particular conversation ID number and seeing if you can follow that channel. If you hear both sides of the conversation, and whenever you hear that dispatcher (if you can identify a voice) it's always the same ID number, you're on the right track.

It sounds terribly complicated, but it's really not. Just a lot of programming and reprogramming, combined with a little patience is all that it takes. Once again, remember that this only applies to EDACS systems. If you're listening to a Motorola system, and you're not hearing full conversations, then you need to experiment with fleet map settings.

See What You Can Find

Once the frequencies are in, press the SEARCH button to begin looking for ID numbers. You won't have long to wait on most systems before you begin to hear some activity. Make notes of what you're hearing and what the ID numbers are. In no time, you'll have identified the main channels. It may take a little longer to identify the stuff that doesn't get used often (it may take some time just to find them). Once again, patience pays off.

The trunktracker uses an Agency-Fleet-Subfleet system of ID numbers to identify the group that's talking. The first two numbers before the dash are the agency. You should find that all of the police use the same agency number, while all the fire is on another. This information will help you identify who's talking on unknown channels, and at the same time be very useful in putting together the talkgroups and scan lists that you want to listen to on a regular basis.

The most difficult part of getting any trunking scanner to work correctly is to get it programmed! Push and HOLD the trunk button to enter the program mode.

It is also possible to display talkgroups in decimal form e.g. 1019 instead of the 10-123 format. You might decide you prefer this method once you've put your scan lists together (although I really can't think of a reason) but for searching you'll want the AFS display. To switch back and forth, use the SVC button (press and hold).

Once you've identified that the police is agency 02, you can tell the scanner to search for only things in that agency. Enter 02 followed by a decimal point followed by Enter. Now only groups in agency two will be heard. In addition to preventing the dogcatcher from interfering with your police or fire traffic, it will help narrow the focus of your search.

I strongly recommend that you spend enough time with the scanner in the "open" (searching for anything) mode to discover what the main agencies are on the system. That way you can go back later and find them faster if it becomes of interest. Sometimes special events or emergencies involve multiple departments and you can often learn more about the real situation on some of these "offbeat" channels than on the main police and fire channels.

Scan Lists

Once you've identified the talkgroups that you're interested in, you might want to think about creating scan lists. Scan lists in a trunking system work just like banks in a conventional scanner. You can turn one or more of them on or off in order to narrow or expand your focus as events unfold.

You can also separate districts or other logical talkgroups using scan lists. For instance, our local system in St. Louis is a Motorola base Type IIi system. I've found that putting the districts I'm interested in together with TAC channels into a couple of talk groups lets me focus the activity depending on where things are happening. By hitting just scan list 1, for instance, I can get districts one and two, the TAC channels, and a couple of detective channels that I like to monitor. Pressing 2 adds districts four and five into the fray. Between those four districts and extra channels, the scanner is almost never quiet. If it gets too boring, however, I have all the districts together (there happen to be nine of them) in another group without the TAC channels.

The system is pretty busy, so I rarely use the all district group unless something is happening in another district, and then I switch that list on just long enough to find the district of interest and press hold. Once the action calms down, I go back to my regular program.

I have found that the easiest way to program the ID lists is to make a list on paper first. Get together the ID's you're interested in and think about how they might group together in ways that would enhance their usefulness to you. Once you've got those together, it's pretty easy

The bank indicators will begin to flash. Press the number for the bank you wish to put your trunking system in. You must do this before you enter any frequency data!

to program the radio. . .almost like typing in frequencies.

To enter the IDs into a list, make sure the scanner is in the trunking mode on the bank that you programmed with your EDACS system. Once trunking has started and the search mode is running, press MAN to go to the list mode, and use the up and down arrows to select the channel you want to program. The 245 has 10 scan lists per trunking bank and each list holds up to ten entries. Tracking more than 100 groups is probably counterproductive anyway, so don't worry too much about capacity. You won't be able to keep up with traffic on that many talkgroups.

Enter the ID you want to store. On an EDACS system in AFS mode, you'll use the decimal point for the dash. So you'd enter 02 a decimal point, followed by 022 and then Enter to enter talk group 02-022. Press the up or down arrow and enter the next one. As you step through ID number 10, the ID List indicator will change at the top. Keep your eye on which list you're putting things into so that you can retrieve these channels later.

Once you've programmed the IDs you're interested in, press SCAN instead of "search" to enter the list-scanning mode. Now any activity that appears on an active scan list you'll hear. To activate or deactivate lists, you press the corresponding number while the radio is in scan mode. This works just like a bank in conventional mode. It's probably also important to note that if you press SCAN before any IDs have been programmed in, the scanner will indicate that it is scanning, but since it has no IDs to look for, it won't ever stop on any conversations. The search mode is used for that type of operation.

Troubleshooting

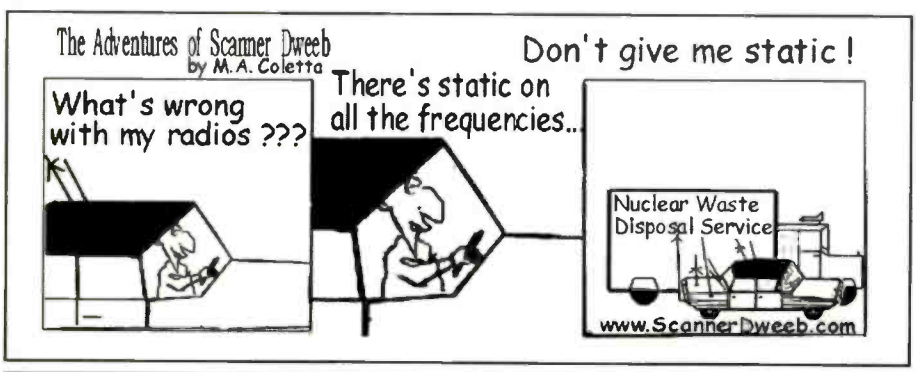
Well, that's our summary of EDACS trunking. Most of the problems that I've encountered are programming related. Somebody missed a step (usually, the scanner wasn't in the trunking program mode) and it's operating like a conventional scanner. Or they didn't put ID's into the scan lists, and they're hearing nothing. Either one isn't a lot of fun, and doesn't take advantage of your trunktracker's capabilities. If you have trouble, try another bank and start over. Hopefully, you'll be tracking with the best of 'em very soon.

Frequency Of The Month

Let's jump up to the 800 MHz band this month. Our frequency is **860.7125**. Write or E-mail and tell me what's on that frequency in your area, and we'll enter you into the drawing for a subscription or extension. If it's not used in your area, tell me that too, and we'll still enter you into the drawing. Please put the frequency you're entering into the subject of the E-mail, or on the envelope so we make sure it gets into the right place!

Your Input Needed

I'm always looking for your questions and suggestions. You can write me at Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126, or via the new technology at armadillo1@aol.com. Until next month, Good Listening! ■

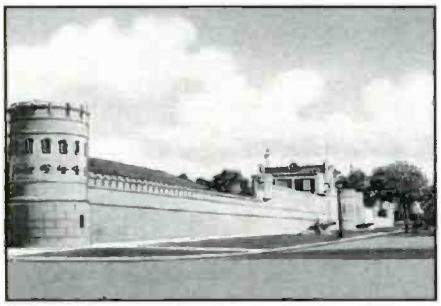


DX At Our Doorstep

Targeting Central America And The Caribbean

By Gerry Dexter

Back in the days of the ancients (the 1950s) — before the Internet, satellite systems. DNA, political correctness, even (ohmygod) rock 'n roll — the shortwave broadcasting scene was light years different than it is today. And nowhere on the globe can you find a better example of that disparity than in Central America and the Caribbean.



Radio Nuevo Mundo, TGIB, in Guatemala City, used 6140 back in the 1950s.

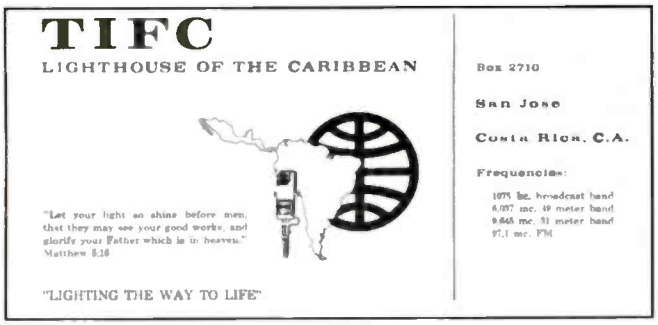
Even though the area today isn't exactly bereft of shortwave broadcasting activity, there's a lot less than there was in the good old days. Consider the places that were active then, but now are not. From the Caribbean, we could hear broadcasts from the Windward Islands (Grenada), Jamaica, Trinidad, Martinique, and Guadeloupe.

Long before the now-defunct BBC/DW Montserrat relay was closed due to volcanic activity, Radio Montserrat had a very low-power transmitter operating on 90 meters. The Turks and Caicos had a once-a-week 10-minute broadcast no one in North America ever managed to hear. It wasn't until the station increased power, moved to 4788 in the 60-meter band and went on a regular schedule that VSI8 was logged by DXers fortunate enough to be active then.

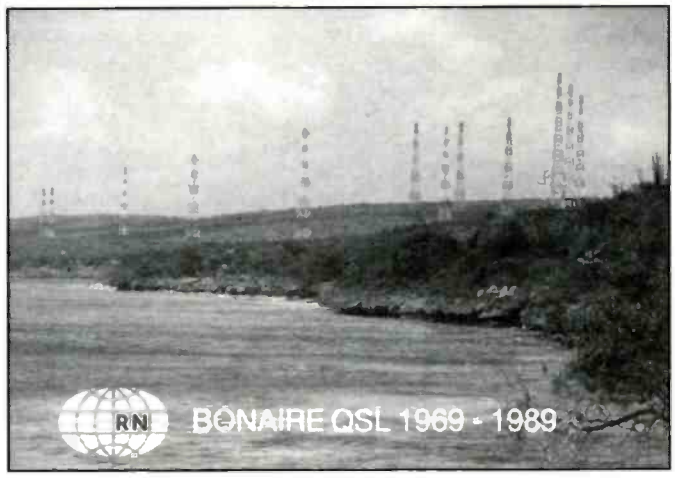
Caribbean countries such as Haiti and the Dominican Republic had a number of active stations. Haiti, for example, had as many as 15 active or semi-active shortwave stations in the mid-1950s. La Voz Evangelique — more widely known as 4VEH — was the last to leave. The glories of Communism reduced the 15 or so active Cubans down to just the government mouthpiece Radio Havana Cuba (and sometime later, the other government mouthpiece, Radio Rebelde).

In Central America, every country was represented on shortwave. El Salvador listed about 15. Today, zero. (It has always seemed odd that, even during the civil war there in the 1980s, the govern-

COUNTRY	STATION	FREQ.	SCHEDULE	NOTES
Anguilla	Caribbean Beacon	11775	1000–2300	Relay Dr. Gene Scott
Antigua	Caribbean Relay Cp.	5975	2100–0700	BBC relay
Costa Rica	Faro del Caribe	5055	2000–1400	
Costa Rica	R. Exterior de Espana	3210	0200–0400	relay in SS
Costa Rica	Radio 88 Estereo	6075	1000–0500	
Costa Rica	Radio Casino	5955	1030–0000	irregular
Costa Rica	Radio for Peace Int'l	6975	0000–0800	EE/others
Costa Rica	Radio Reloj	4832	24 hrs.	irregular; alt. 6006
Costa Rica	Radio Universidad	6105	1300–0600	
Costa Rica	University Network	9725	morn/eves	Relay Dr. Gene Scott
Cuba	Radio Havana Cuba	6000	0000–0700	
Cuba	Radio Rebelde	5025	24 hrs.	
Dominican Rep.	Onda Musical	4780	2300–0300	
Dominican Rep.	Radio Amanecer Int'l	6025	1000–0400	
Dominican Rep.	Radio Barahona	4930	2300–0400	irregular
Dominican Rep.	Radio Cristal Int'l	5012	2100–0100	
Dominican Rep.	Radio Villa	4960	2300–0600	irregular; ex–R.Cima
Guatemala	La Voz de Atitlan	2390	2100–0330	
Guatemala	La Voz de Guatemala	6180	2230–2330	irregular
Guatemala	La Voz de Nahuala	3360	2100–0300	
Guatemala	R. Cultural Coatan	4780	2330–0200	
Guatemala	Radio Buenas Nuevas	4800	2200–0500	irregular
Guatemala	Radio Chortis	3380	2300–0500	
Guatemala	Radio Cultural	3300	24hrs.	
Guatemala	Radio K'ekchi	4845	2200–0300	
Guatemala	Radio Mam	4825	2000–0000	also try 1030 s/on
Guatemala	Radio Maya	3325	2230–0330	
Guatemala	Radio Tezulutlan	4835	2100–0400	
Guatemala	Radio Verdad	4052.5	1110–0030	M–F
Guatemala	Union Radio	5981	1100–0200	Adventist World R.
Honduras	La Voz de la Mosquita	4910	2300–0300	irregular
Honduras	La Voz Evangelica	4819	1030–0330	
Honduras	Radio Costena	4930	1200–0500	aka Ebenezer 1220
Honduras	Radio HRET	4960	0100–0300	irregular
Honduras	Radio Litoral	4830	1200–0030	irregular
Honduras	Radio Luz y Vida	3250	2200–0400	
Honduras	Radio MI	5890	1200–0600	aka LV Misiones Int.
Mexico	Radio Educacion	6185	0000–1200	
Mexico	Radio Huayacocotla	2390	2100–0100	
Mexico	Radio Mexico Int'l	9705	2230–0400	1300–1600
Mexico	Radio Mil	6010	24 hrs.	
Mexico	Radio UNAM	9600	1300–0700	
Mexico	Radio Universidad	6045	1300–0500	irregular
Mexico	Radio XERTA	4800	24 hrs.	irregular
Neth. Antilles	Radio Netherlands	6165	2330–0530	relay station
Nicaragua	Radio Miskut	5770	1200–0230	irregular
Puerto Rico	Armed Forces Radio	6458.5	24 hrs.	SSB relay



TIFC — "The Lighthouse of the Caribbean" — has been on the air from Costa Rica for decades and is still going strong.



Radio Netherlands celebrated the 20th anniversary of its Bonaire Relay in 1989. →

ment in San Salvador did not hit up Uncle Sam for money to get its Radio Nacional back on the air.)

The official British Honduras Broadcasting Service was active on three different frequencies. Long since renamed Belize, the country's government broadcaster is off shortwave. There were a dozen or so stations active in Panama and, of course, none today. Nicaragua, too, had many active stations. A number of them could be easily picked off due to their use of oddball frequencies in the high 7-megacycle range (the powers that be hadn't come up with "hertz.")

Signal Hunting Today

Well, it's fun to get into nostalgia and reminiscing, but it doesn't help us much in hunting for signals today. What's out there now? There are about 46 active stations on just 11 "radio countries" on the air in Central America and the Caribbean today. Many of them — such as Antigua — are so easy you can almost log them just by opening your shack window! A couple will leave you pulling at your hair and saying words that would horrify your mother. But most really don't take a huge amount of effort, assuming you're not one of those who are reluctant to explore the tropical bands below the 6-Megahertz area. (To some, those areas are kind of like those ancient maps with unexplored areas described as "here there be dragons.")

COUNTRY	STATION	ADDRESS
Anguilla	Caribbean Beacon	Box 690, Anguilla, British West Indies
Antigua	Caribbean Relay	P.O. Box 1203, St. John's
Costa Rica	Faro del Caribe	Apartado 2710, 1000 San Jose
Costa Rica	Radio 88 Estereo	Apartado 827-8000, Perez Zeledon
Costa Rica	Radio Casino	Apartado 287, 7301 Puerto Limon
Costa Rica	Radio Exterior Espana	c/o Apartado de Correos+C35 C29156.202, E28080, Madrid, Spain
Costa Rica	Radio For Peace Int'l	Apartado 88, Santa Ana
Costa Rica	Radio Reloj	Apartado 341, 1000 San Jose
Costa Rica	Radio Universidad	San Pedro de Montes de Oca, 1000 San Jose
Costa Rica	University Network	P.O. Box 1, Los Angeles, CA 90053
Cuba	Radio Havana Cuba	P.O. Box 6240, Havana
Cuba	Radio Reloj	Apartado 6277, Havana
Dominican Rep.	Onda Musical	Apartado Postal 860, Santo Domingo
Dominican Rep.	Radio Amanecer	Apartado Postal 4860, Santo Domingo
Dominican Rep.	Radio Barahona	Apartado 201, Barahona
Dominican Rep.	Radio Cristal Int'l	Apartado Postal 894, Santo Domingo
Dominican Rep.	Radio Villa	Apartado 804, Santo Domingo
Guatemala	La Voz de Nahuala	Nahuala, Solola
Guatemala	La Voz de Atitlan	Santiago, Atitlan
Guatemala	La Voz de Guatemala	18 Calle 6-70, 2* piso, Zona 1, Guatemala City
Guatemala	Radio Buenas Nuevas	13020 San Sebastian, Huehuetenango
Guatemala	Radio Chortis	Central Social, 20004 Jocotan, Chiquimula
Guatemala	Radio Cultural	Apartado de Correo 601, Guatemala City
Guatemala	Radio Cultural Coatan	San Sebastian, Coatan, Huehuetenango
Guatemala	Radio K'ekchi	3ra Calle 7-15, zona 1, 16015 Fray Bartolome de las Casas
Guatemala	Radio Mam	Acu/Mam, Cabrican, Quezaltenango
Guatemala	Radio Maya	13026 Villa de Barillas, Huehuetenango
Guatemala	Radio Tezulutlan	Apartado de Correo 19, 16901, Coban
Guatemala	Radio Verdad	Apartado 5, Chiquimula
Guatemala	Union Radio	Apartado de Correo 51-C, Guatemala City
Honduras	La Voz Evangelica	Apartado Postal 3252, Tegucigalpa
Honduras	LV de la Mosquitia	Puerto Lempira, Dpt. Gracias a Dias
Honduras	Radio Costena	Apartado 3466, San Pedro Sula
Honduras	Radio HERT	Domicilio Conocido, Puerto Lempira, Gracias a Dias
Honduras	Radio Litoral	Apartado Postal 878, La Ceiba, Atlantida
Honduras	Radio Luz y Vida	Apartado 303, San Pedro Sula
Honduras	Radio MI	Apartado Postal 20583, Comayaguela
Mexico	Radio Educacion	Apartado Postal 21-940, 04021 Mexico 21, D.F.
Mexico	Radio Huayacocotla	Apartado Postal 13, 92600 Huayacocotla
Mexico	Radio Mexico Int'l	Apartado Postal 21-300, 04021 Mexico 21, D.F.
Mexico	Radio Mil	Av. Insurgenrtes Sur 1870, Col. Florida, 01030, Mexico 20
Mexico	Radio UNAM	Adolfo Prieto 133, Colonia de Valle, 03100 Mexico 12
Mexico	Radio Universidad	Apartado 456, 78001 San Luis de Potosi
Mexico	Radio XERTA	Apartado Postal 653, 06002, Mexico D.F.
Netherlands Ant.	R. Netherlands relay	Box45, Kralendijk, Netherlands Antilles
Nicaragua	Radio Miskut	Barrio Pancasan, Puerto Cabezas
Puerto Rico	Armed Forces Radio	Naval Media Center, 2701 S. Capitol St. NW, Wash. D.C., 20373

The accompanying station list includes only one of the many time/frequency combinations used by the Antigua and Bonaire relay stations. Those are so easily logged that one example is all that's really needed. The same applies to the two frequencies of the University Network from Anguilla (only one listed) and the four University Network frequencies of the former AWR Costa Rica again, the list shows only one).

Some of the stations are not active on a regular basis, so you'll have to come back to those frequencies every now and then and hope to get lucky eventually. Frequencies may vary slightly, especially with stations in Honduras, Guatemala, and the Dominican Republic. The same holds true with sign-on and sign-off times. Incidentally, in some cases, we haven't included the complete schedule. The mid-day broadcast segment aired by some stations is unlikely to make it to North America, especially on the lower bands. Morning and evening broadcasts are the times to focus on. Some years ago, Guatemala passed a regulation keeping commercial broadcasters off shortwave, so you'll find that all of the shortwave stations in Guatemala are cultural/religious outlets, many of them serving the interests of a particular indigenous Indian population.

Station addresses are included in the event you want to send reception reports. Except for the three relays and Radio Havana, it's best to send your report in Spanish and to include some form of return postage. Like everywhere else, a few of the stations are friendly and will respond with nice letters or cards (or both) and perhaps even an "extras" or two. A few will be maddeningly indifferent to your wants and the rest will fall somewhere in between, requiring two, three, or four attempts before replying.

With an average equipment set-up and a little work, you should be able to bag most of these stations in a matter of weeks. Then, with patience and persistence, you can snag the rest as propagation conditions and station activity permit. Good luck! ■

How I Got Started

Congratulations To Dave Lund Of Cherokee, Iowa!

Popular Communications invites you to submit, in about 150 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo (no Polaroids, please) should be included.

Each month, we'll select one entry and publish it here. Submit your entry only once; we'll keep it on file. All submissions become the property of *Popular Communications*, and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is especially interesting, unusual, or even humorous. We reserve the right to edit all submitted material for length, grammar, and style.

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*. Address all entries to: "How I Got Started," *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801 or E-mail your entry to popularcom @aol.com, letting us know if you're sending photos. If you're E-mailing photos, please send them in a separate E-mail with your name in the "subject" line.

Dave Lund of Iowa with a multitude of gear and QSLs.

Our October Winner

Pop'Comm reader Dave Lund of Iowa says, "I got started in this wonder world of radio back in 1950 when I was still a freshman in high school. My brother-in-law gave me a small Zenith tabletop radio that had the shortwave dial covering 3–12 MHz. I used to sit up all hours of the night listening and would then get up early before school to listen to the JA stations on 20 meters AM. Then I expanded my listening when my parents gave me a Hallicrafters S-40B which I thought was really something! In 1954, I enlisted in the Navy at 18, and spent most of my time as a radioman aboard three different ships, and really had some fine DX in the Pacific. I spent a year on Adak in the Aleutians at the Naval radio Station, where I patched into my parents home back in Iowa once a week via KL7AIZ, and operator Denny, W1VCU, whom I still correspond with in Bowie, Maryland via 20 meters and E-mail."

He continued, "I got my first novice ticket in 1954, my second novice license in 1972 and have had my general ticket for some 25 years or so. I spent 35 years in the radio broadcasting business, both as a disc jockey and news director for three different Iowa stations. I retired six years ago, and spend much of my time DXing on the ham bands and listening on the foreign broadcast bands. I have every copy of *Popular Communications* from the very first issue, and find it's the best monitoring magazine. My station consists of a Kenwood TS-520, Yaesu FT-990, about six shortwave receivers, all of them from RadioShack, and numerous UHF/VHF monitors. Keep up the good work with *Pop'Comm* — I don't know what I'd do without each and every copy!" 73, Dave.

CLANDESTINE COMMUNIQUÉ

Tuning In To Anti-Government Radio

Korean Clandestines: Get 'Em While They're Hot!

The friendly meeting between the leaders of North and South Korea late this past spring may very well have an effect on radio in the area. For decades, the two sides have been beaming clandestine broadcasts at each other. So far, we've seen no reports that these broadcasts have been toned down or turned off, but considering the atmosphere in which the talks were held, it doesn't seem out of the question that these stations may be nearing the end. Given that, you might want to bag these, if they're not already in your log. There are three Korean clandestines active as of this writing:

Echo of Hope broadcasts from the South to the North, operated by the Agency for National Security Planning through a "front" called Koreans Living Abroad. The most recent schedule we have is from 0300–0700 on **6348**; 1100–1600 on **3985 and 6003** and 1600–2300 on **3985**. For most of us, the 1100/3985 pairing provides the best opportunity. Programming is in Korean.

The Voice of the People is ostensibly run by the Korean Workers Union but is actually the work of the Korean Armed Forces. Scheduled from 0300–0600 on **6518 and 6600** and 0900–2100 on **3880 (variable) and 3912**. Both of these stations operate from transmitters at Kyonggi-do in South Korea. Broadcasts are in Korean. (Try the 0900 transmission.)

North Korea beams **The Voice of National Salvation** to the South. It is operated by the Front for National Salvation, which is certainly a cover name for some Pyongyang government agency. Its most recently available schedule shows 0030–0100 (in English) on **3480, 4450 and 4557**. Korean airs from 0300–0700, 1000–1700 and 2000–0030 on those same frequencies. Best bet is the 1000 broadcast. Over the years, **4120** (sometime a kiloHertz or two lower), 4450 and 4557 have been the best heard. This one actually has a mailing address — Kankoku Minzoku Minshu Tenzen, Amatsu Bld., 2-1 Hirakawa 1-chome, Chiyoda-ku, Tokyo, Japan — but to our knowledge it has never replied to any letters.

The Voice of Palestine/Voice of the Palestine Islamic Revolution operates from Iran, with program content attacking the Palestinian Authority in the West Bank and Gaza. It's on the air in Arabic from 0300 to 0430 using **7250 and 9610**.

The National Radio of the Democratic Saharan Arab Republic has been using several different 7 MHz frequencies lately, including **7100, 7460, 7475, and 7500**. It broadcasts in Arabic from as early as 1800 to a few minutes past 0000; also from 0600–0800.

Some months back the ongoing mess in the Congo (Kinshasha) produced a new clandestine station, Radio Liberte, sometimes also known as **Radio Tele-Liberte**. It's backed by Uganda, on behalf of the Movement for the Liberation of the Congo (MLC) rebel group. The station says it is located in rebel-held Gbadolite in the far northeast tip of the country. (About half of the Congo is rebel-controlled.) It's schedule is 0800 to past 1000 on **9800**; 1200 to past 1600 on **12295, and** 1800 to past 2300 on **15725**.

This control room belongs to Radio 100.5, an FM station in San Salvador, El Salvador. Originally, it was the infamous Radio Venceremos rebel radio during El Salvador's civil war. (Courtesy of Fabian Serve, France)

The Voice of the Democratic Path of Ethiopian Unity broadcasts in Amharic Sundays from 0700–0900 (the second hour is a repeat of the first) on **21550** and Wednesdays from 1600–1700, repeating from 1830 to 1930 both on **15105**, both frequencies via Juelich, Germany. Their address is Finote Democracy, P.O. Box 88675, Los Angeles, CA 90009, or try Postbus 10573, 1001-EN Amsterdam, the Netherlands.

The Voice of Iraqi Kurdistan is on the air in Kurdish from 0245 to 0300, 0400- 0500 and 1445 to 1630 and in Arabic from 0300–0400 and 1637 to 1730. All broadcasts are on **4085 and 9495**.

The Voice of the People of Kurdistan is heard in various languages from 0215–0600, 1400–1900, and 1945–2056 on **4060 and 6995**.

Voice of the Tigray Revolution is active Monday to Friday from 0400–0500, 0930 to 1030 and 1500–1900. Saturdays and Sundays it's 0400–0900 and 1100–1630, all on **5500 and 7515**.

The Voice of the Oromo Liberation is on the air from 1700–1800 Thursdays, Fridays, and Sundays on **15715** using the German transmitter site at Juelich.

Stewart MacKenzie in California notes the U.S. government's **Radio Marti** on **6030** at 0410 with Spanish broadcasts to Cuba. He also hears them on **21500** at 2136. Marty Foss in Alaska noticed them suffering from jamming on **7405** at 0842.

That will wrap things up for this time. Please make it a point to pass along to us any clandestine broadcasting or related information you may run across in your media travels.

That includes station loggings, addresses, locations of transmitters and studios, info on the groups which back these stations, broadcast schedules, copies of any clandestine station QSLs you may receive, and so on. Thanks for your continued interest and support!

Until next time, good hunting! ■

BY GERRY L. DEXTER

Tap into *secret* Shortwave Signals

Turn mysterious signals into exciting text messages with the MFJ MultiReader™!

Plug this self-contained MFJ *MultiReader*™ into your shortwave receiver's earphone jack.

Then *watch* mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR (FEC) turn into exciting text messages as they scroll across an easy-to-read LCD display.

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Eavesdrop on the world's press agencies transmitting *unedited* late breaking news in English -- China News in Taiwan, Tanjug Press in Serbia, Iraqui News in Iraq -- all on RTTY.

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Listen to maritime users, diplomats and amateurs send and receive *error-free* messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime

-- all over the world --
Australia, Russia, Japan, etc.

MFJ-462B **$179.95**

Printer Monitors 24 Hours a Day

MFJ's exclusive *TelePrinterPort*™ lets you monitor any station 24 hours a day by printing transmissions on an Epson compatible printer.

Printer cable, **MFJ-5412**, $9.95.

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You can save several pages of text in an 8K of memory for re-reading or later review.

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MFJ's high performance *PhaseLockLoop*™ modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly improves copy on CW and other modes.

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

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Copies most standard shifts and speeds. Has MFJ *AutoTrak*™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, $14.95. 5¼Wx2½Hx5¼D inches.

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If you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping). Customer must retain dated proof-of-purchase direct from MFJ.

Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a *"first-rate easy-to-operate active antenna ...quiet... excellent dynamic range... good gain... low noise... broad frequency coverage."*

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz.

MFJ-1024 **$139.95**

Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and auxilary or active antenna. 6x3x5 inches. Remote has 54 inch whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, $14.95.

Indoor Active Antenna

MFJ-1020B **$79.95**

Rival outside long wires with this *tuned* indoor active antenna. *"World Radio TV Handbook"* says MFJ-1020B is a *"fine value... fair price... best offering to date... performs very well indeed."*

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip, 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, $14.95.

Compact Active Antenna

MFJ-1022 **$49.95**

Plug this *compact* MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz-200 MHz including low, medium, shortwave and VHF bands.

Detachable 20 inch telescoping antenna. 9 volt battery or 110 VAC MFJ-1312B, $14.95. 3⅛x1¼x4 in.

Eliminate power line noise!

MFJ-1026 **$179.95**

New! ***Completely*** eliminate power line noise, lightning crashes and interference *before they get into your receiver!* Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

MFJ Antenna Matcher

MFJ-959B **$99.95**

Matches your antenna to your receiver so you get maximum signal and minimum loss.

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, $14.95.

Dual Tunable Audio Filter

MFJ-752C **$99.95**

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

High-Gain Preselector

MFJ-1045C **$99.95**

High-gain, high-Q receiver preseletor covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, $14.95.

CW, RTTY, ASCII Interface

MFJ-1214PC **$149.95**

Use your computer and radio to receive and display brilliant full color FAX news photos and incredible WeFAX weather maps. Also RTTY, ASCII and Morse code. Frequency manager lists over 900 FAX stations. Auto picture saver.

Includes interface, easy-to-use menu driven software, cables, power supply, manual and *JumpStart*™ guide. Requires 286 or better computer with VGA monitor.

High-Q Passive Preselector

MFJ-956 **$49.95**

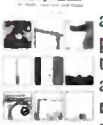
High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 inches.

Super Passive Preselector

MFJ-1046 **$99.95**

New! **Improves** any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique Hi-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.

Easy-Up Antennas



MFJ-38 **$16.95**

How to build and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before. Antennas from 100 KHz to 1000 MHz.

MFJ Antenna Switches

MFJ-1704 **$64.95**

MFJ-1702C **$24.95**

MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection. Good to 500 MHz. 60 dB isolation at 30 MHz. **MFJ-1702C** for 2 antennas.

World Band Radio Kit

MFJ-8100K **$69.95** *kit*
MFJ-8100W **$89.95** *wired*

Build this regenerative shortwave receiver kit and listen to signals from all over the world with just a 10 foot wire antenna. Has RF stage, vernier reduction drive, smooth regeneration, five bands.

21 Band World Receiver

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MFJ's new 21 Band World Receiver lets you travel the world from your armchair! Listen to BBC news from London, live music from Paris, soccer matches from Germany and more! Covers 21 bands including FM, Medium Wave, Long Wave and Shortwave. *Sony*® integrated circuit from Japan, multicolored tuning dial, built-in telescopic antenna, permanent silkscreened world time zone, frequency charts on back panel. Carrying handle. Operates on four "AA"s. Super compact size!

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CIRCLE 120 ON READER SERVICE CARD

Pop'Comm's World Band Tuning Tips

October 2000

This listing is designed to help you hear more shortwave broadcasting stations. The list includes a variety of stations, including international broadcasters beaming programs to North America, others to other parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

AA, FF, SS, GG, etc. are abbreviations for languages (Arabic, French, Spanish, German). Times given are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 4 p.m. PST.

UTC	Freq.	Station/Country	Notes
0000	4985	Radio Brazil Central	PP
0000	6120	Radio Globo, Brazil	PP
0000	7315	Radio Marti, USA	SS
0000	9400	Radio Bulgaria	
0000	9855	Radio Vilnius, Lithuania, via Germany	
0000	11870	Radio Yugoslavia	
0030	4905	Radio Relogio Federal, Brazil	PP
0030	5020	Ecos del Atrato, Colombia	SS
0030	6240	Trans World Radio, via Armenia	unid
0030	9022	Voice of Islamic Republic of Iran	
0030	9445	Voice of Turkey	TT
0030	13755	Voice of Islamic Republic of Iran	
0030	15395	Radio Thailand	
0100	4747	Radio Huanta 2000, Peru	SS
0100	4799	Radio Buenos Nuevas, Guatemala	SS
0100	7345	Radio Prague, Czech Republic	
0100	9560	Radio Budapest, Hungary	
0100	9665	Voice of Russia	
0100	9925	Radio Croatia, via Germany	
0100	11985	YLE/Radio Finland	
0130	4870	La Voz del Upano, Ecuador	SS
0130	4890	Radio Chota, Peru	SS
0130	9835	Radio Budapest, Hungary	Hung.
0130	11600	Adventist World Radio, via Slovakia	
0130	13625	Radio Sweden	
0130	17835	Radio Japan/NHK	
0145	6155	Radio Telefis Eireann, Ireland, via UK	
0200	3280	La Voz del Napo, Ecuador	SS
0200	4825	Radio Cancao Nova, Brazil	PP
0200	4830	Radio Tachira, Venezuela	SS
0200	4915	Radio Anhuanguera, Brazil	PP
0200	4919	Radio Quito, Ecuador	SS
0200	5950	Radio Taipei Int'l, via Florida	
0200	6895	Galei Zahal, Israel	HH (SSB)
0200	7210	Radio Minsk, Belarus	
0200	9795	Wales Radio Int'l, via UK	Sats.
0200	9870	Radio Austria Int'l	GG
0200	11700	Radio Bulgaria	
0200	11785	Radio Baghdad, Iraq	various
0200	13700	Radio Portugal	PP
0215	9165	Voice of Azerbaijan	unid
0230	4965	Radio Christian Voice, Zambia	
0230	4980	Ecos del Torbes, Venezuela	SS
0230	5054	Faro del Caribe, Costa Rica	SS
0230	7160	Radio Tirana, Albania	
0230	9695	Voice of Vietnam, via Canada	
0230	15205	Radio Deutsche Welle, via Sri Lanka	GG
0230	15355	Radio Sultanate of Oman	AA
0245	7305	Vatican Radio	
0245	15555	Far East Broadcasting Assn., Seychelles Is.	unid
0300	4800	Radio Lesotho	
0300	4832	Radio Reloj, Costa Rica	SS
0300	4976	Radio Uganda	
0300	6025	Radio Amanacer, Dominican Republic	SS
0300	7450	Voice of Greece, via USA	Greek
0300	11800	RAI, Italy	SS
0300	13590	Radio Ukraine Int'l	
0300	15075	All India Radio	unid
0300	15310	BBC, via Oman	
0300	15400	UAE Radio, Dubai, UAE	
0300	15425	Sri Lanka Broadcasting Corp.	
0300	17690	Voice of Russia	
0300	17770	Radio Cairo, Egypt	AA
0330	4765	Radio Rural, Brazil	PP
0330	4835	Radio Tezulutlan, Guatemala	SS
0330	7125	Voice of Russia, via Moldova	
0330	7285	Sudwestfunk, Germany	GG
0330	11600	Radio Prague, Czech Republic	
0330	11690	Voz Cristiana, Chile	SS
0330	11985	Radio Budapest, Hungary	
0330	15170	Broadcasting Service of Kingdom of Saudi Arabia	AA
0330	15285	Radio Cairo, Egypt	AA
0400	4865	La Voz del Cinaruco, Colombia	SS
0400	4955	Radio Nacional, Colombia	SS
0400	5965	Radio Havana Cuba	SS
0400	9495	Croatian Radio, via Germany	Croatian
0400	9885	Swiss Radio Int'l	
0400	11920	RTV Marocaine, Morocco	AA

UTC	Freq.	Station/Country	Notes
0400	13730	Radio Austria Int'l	
0400	13765	Radio Canada Int'l	
0400	15115	HCJB, Ecuador	
0400	15565	Radio Vlaanderen Int'l, Belgium, via Bonaire	
0430	4819	La Voz Evangelica, Honduras	SS
0430	5925	Radio France Int'l	FF
0430	6075	Radio Deutsche Welle, via Antigua	GG
0430	6115	La aVoz del Llano, Colombia	SS
0430	6125	Radio Exterior de Espana, via Costa Rica	SS
0430	7205	BBC via South Africa	unid
0430	9730	China Radio Int'l, via French Guiana	
0445	6195	Radio Yugoslavia	
0445	11625	Vatican Radio	FF
0445	11635	Radio Denmark, via Norway	DD
0500	4770	Radio Nigeria	
0500	4850	RTV Cameroon	FF
0500	4915	Ghana Broadcasting Corp.	
0500	5025	Radio Parakou, Benin	FF
0500	6185	Radio Educacion, Mexico	SS
0500	7255	Voice of Nigeria	
0500	11675	Radio New Zealand	
0500	15240	Radio Australia	
0530	6105	Radio Universidad, Costa Rica	SS
0600	3316	Sierra Leone Broadcasting Corp.	
0600	4760	ELWA, Liberia	
0600	5047	Radio Lome, Togo	FF
0600	5100	Radio Liberia Int'l	
0600	9530	Radio Rossi, Russia	RR
0600	13710	Voice of America, via Botswana	FF
0600	15215	Channel Africa, South Africa	
0630	5995	RTV Malienne, Mali	FF/AA
0700	9565	Radio Universo, Brazil	PP
0700	9595	Radio Tampa, Japan	JJ
0700	11720	Radio New Zealand	
0700	15375	Voz Cristiana, Chile	SS
0730	7149	Radio Pyongyang, North Korea	KK
0745	9870	Trans World Radio, Monaco	
0800	4895	Colombia Estereo, Colombia	SS
0830	7120	Italian Radio Relay Service, Italy	various
0830	7260	Radio Vanuatu. Vanuatu	FF
0830	13670	Radio Korea Int'l, South Korea	
0845	5975	Voice of Hope, via Germany	
0900	9865	Trans World Radio, Guam	
0930	3300	Radio Cultural, Guatemala	SS
0930	3315	Radio Manaus, Papua New Guinea	pidgin
0930	6135	Radio Santa Cruz, Bolivia	SS/QQ
1000	6010	Radio Mil, Mexico	SS
1030	9737	Radio Nacional, Paraguay	SS
1040	4915	Radio Cora, Peru	SS
1100	3325	Radio Maya, Guatemala	SS
1100	4053	Radio Verdad, Guatemala	SS
1100	4775	Radio Tarma, Peru	SS
1100	5020	Solomon Islands Broadcasting Corp.	
1200	4890	NBC/Karai Natl. Radio, Papua New Guinea	
1200	6150	Radio Singapore Int'l	
1200	11945	BBC via Singapore	CC
1200	11980	China Radio Int'l	
1200	15095	Far East Broadcasting Corp., Philippines	unid
1230	9600	Radio Rebelde, Cuba	SS
1230	9610	Adventist World Radio, Italy	
1230	15185	Radio Free Asia, Tinian, No. Marianas	unid
1300	6020	Radio Australia	
1300	9525	Radio Polonia, Poland	
1300	9610	Central Broadcasting System, Taiwan	CC
1300	9615	KNLS, Alaska	
1330	9930	Radio Free Asia, via KWHR, Hawaii	unid
1330	11690	Radio Jordan	
1400	9530	Radio Veritas Asia, Philippines	Bengali
1400	9705	Radio Mexico Int'l	SS
1400	15455	Voice of Greece	Greek
1430	15315	UAE Radio, Abu Dhabi, UAE	AA
1430	15400	YLE/Radio Finland	Finnish
1430	17505	Radio Norway Int'l	NN
1500	9390	Radio Pakistan	unid
1500	11590	Huayi Broadcasting Corp., China	CC
1500	13760	Radio Pyongyang, North Korea	
1530	11570	Radio Pakistan	
1530	17545	Kol Israel	HH
1545	15435	Radio Jamahiriya, Libya	AA
1600	11615	Radio France Int'l	
1600	15100	Radio Pakistan	
1600	21745	Radio Prague, Czech Republic	
1630	15235	Virgin Radio, via UK	
1630	15475	Africa Number One, Gabon	FF
1630	17575	Qatar Broadcasting Service	AA
1700	9625	CBC, Canada	unid
1700	17860	Channel Africa, South Africa	
1730	13800	Radio Sweden	
1800	11655	Radio Netherlands	
1800	15210	Radio Cairo, Egypt	AA
1800	17870	Channel Africa, South Africa	
1830	11990	Radio Kuwait	AA
1900	12080	Voice of the Mediterranean, via Russia	
1930	15190	Radio Pilipinas, Philippines	Tagalog
2000	15150	Voice of Indonesia	
2000	15160	Radio Algiers Int'l, Algeria	
2030	9745	Adventist World Radio, via South Africa	
2100	11620	All India Radio	
2100	15135	Radio Deutsche Welle, via Rwanda	
2100	15180	Radio Romania Int'l	
2100	21670	Radio Japan/NHK	
2115	12085	Radio Damascus, Syria	
2130	9675	African Beacon, USA, via UK	
2130	15345	Radiodifusora Argentina al Exterior	SS
2200	9505	Radio Record, Brazil	PP
2200	9780	Republic of Yemen Radio	AA
2200	11725	Radio Novas de Paz, Brazil	PP
2200	15345	RTV Marocaine, Morocco	AA
2200	15650	Kol Israel	HH
2200	17510	KWHR, Hawaii	CC
2230	9580	Africa Number One, Gabon	FF
2300	9900	Radio Cairo, Egypt	
2300	11775	Radio Romania Int'l	
2230	9690	Radiodifusora Argentina al Exterior	SS
2230	11855	Radio Aparecida, Brazil	PP
2230	13640	Voice of Turkey	
2230	15185	Radio Africa, Equatorial Guinea	
2230	15495	Radio Kuwait	AA
2330	7125	Radiodifusion Nationale, Guinea	FF
2330	9345	Reshet Bet home service, Israel	HH
2345	11955	Radio Nacional, Angola	PP

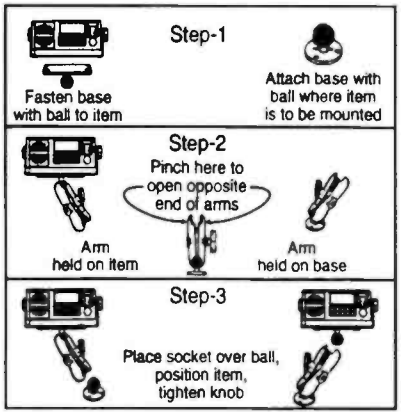
PRODUCT PARADE

Review Of New, Interesting And Useful Products

R-A-M™ Mounting Systems

Round-A-Mount is the revolutionary universal ball and socket mounting system that allows you to mount practically anything anywhere. Unlike other mounts, R-A-M allows you to mount items where you need them most. Whether it's in an aircraft, car, boat, ATV, truck, snowmobile, farming vehicle, motorcycle, forklift, or any other situation, R-A-M's family of over 140 interchangeable accessories will offer you solutions to your most challenging mounting problems.

If you need to mount a scanner, monitor, GPS, camera, light, computer, cell phone, speaker, or just about anything else, look no further. R-A-M mounts will help you make a professional job easy and affordable. Its unique design provides easy installation, mobility, strength, versatility, vibration protection, and durability, all at a low cost. R-A-M is backed by NPI's renowned Lifetime Warranty, which makes it the mounting system of choice. To provide lightweight strength and corrosion resistance, R-A-M is made of marine grade aluminum with a powder-coated finish, stainless steel hardware, and rubber balls. Accepted by the U.S. Patent Office, R-A-M is the only patented universal ball-and-socket system that holds tremendous amounts of weight in high vibration applications for military, commercial, and private use. Visit the R-A-M Website at http://www.ram-mount.com to see the newest products and to learn more about this revolutionary mounting system that's quickly becoming the industry standard.



R-A-M's ™ mounting systems are easy-to-use and perfect for holding your radio or scanner.

For more information, contact National Products, Inc., 1017 South Elmgrove Street, Seattle, WA 98108 or phone 206-763-8361 or you can E-mail your questions to staff@ram-mount.com. Tell them you read about it in *Popular Communications* magazine.

CIRCLE 100 ON READER SERVICE CARD

Cobra Electronics Announces First FRS Radio With Weather Alert™ System

Targeted toward outdoor enthusiasts who want a reliable two-way communications system and up-to-the-minute weather reports, Cobra Electronics Corporation has just released its new microTALK™ FRS-315WX, the industry's first Family Radio Service device that provides access to NOAA weather channels and features Cobra's exclusive Weather Alert™ system. This technology enables users to be forewarned of potential weather-related emergencies before they happen. The FRS-315WX is part of Cobra's new line of microTALK radios showcased at the Consumer Electronics Show in Las Vegas.

The FRS-315WX uses emergency signals from NOAA to notify users of local weather emergency information for their area. Cobra's Weather Alert feature is active when the radio is in standby or power save mode and will sound the NOAA emergency alarm when there is a weather-related emergency so users can take appropriate safety measures.

Tony Mirabelli, senior vice president of sales and marketing at Cobra said, "With the introduction of the microTALK FRS-315WX, Cobra is expanding the potential of two-way radios, making them not only state-of-the-art communications devices, but essential safety tools that provide valuable information to those who enjoy outdoor activities like hiking, camping, and skiing."

The new FRS-315WX is water-resistant and comes in a cool Platinum Mist

Cobra's new microTALK FRS-315WX is loaded with user-friendly features.

color and sports a compact, ergonomic design that includes a SoftGrip™ cabinet for easy handling and a retractable antenna for convenient storage. The radio features a backlit LCD display that allows for easy viewing at night or in dark conditions. In addition, it comes with a belt-clip holster that provides a convenient way to wear the radio and can also function as a desk stand.

The micro-TALK FRS-315WX offers clear, two-way communications for up to two miles, depending on terrain, provides 14 channels and 38 sub-channels, allowing 532 possible addresses for communications. Additional features include an incoming "call alert" to enable one unit to ring another simply by pushing a "call" button. To receive a call, users have the option of using Cobra's exclusive VibrAlert™ feature, which acts like a vibrating pager to alert the user of an incoming call. Also included is a "roger beep" feature that indicates the completion of one user's transmission, signaling the other user to talk. The microTALK FRS-315WX includes Private Call® voice scrambling for secure conversations and an Auto Squelch feature that silences

BY HAROLD ORT AND R.L. SLATTERY

the radio at all times except when another signal is received.

Cobra says the 315WX will be in stores in August with a suggested retail price of $129.95. For more information, contact Cobra Electronics Corporation at 6500 West Cortland Street, Chicago, IL 60707 or phone 773-889-8870.

CIRCLE 101 ON READER SERVICE CARD

New BP-1600 Battery For Uniden Bearcat Scanners

The BP-1600 (NiMH 1600 mAH) is custom made for Lee Electronics in the USA and is a direct replacement for the BP-180 (NiCd) stock battery for Uniden Bearcat scanners. The battery has been very popular with Lee's customers who report up to six days of continuous use (compared to 1–2 days use with the NiCd). Of course, the use-time depends on audio volume, use, etc. The cells in the battery are the highest quality AA's such as Sanyo — the most powerful cells currently on the market. A great advantage of the NiMH (Nickel Metal Hydride) is that it has no memory — you can top the battery off anytime.

The battery charges in the radio just like the stock battery and works in the BC-245XLT TrunkTracker II, BC-235 (both radio and cradle), SC200, and SC180 scanners. The company tells us they have customers report that it also works in the RadioShack PRO-90 scanner.

Since these are custom made for Lee Electronics, they can offer them at a great price; just $24.50 each and $5 shipping via Priority Mail to U.S. Call them at 800-578-6006 or order directly from the Lee Electronic's Website at http://www.LeesElect.com.

CIRCLE 102 ON READER SERVICE CARD

ICOM IC-718 Transceiver

ICOM America announces an all-new compact HF amateur radio, the IC-718. Designed as an entry-level radio, it has advanced features that have never been offered under $900. New features to this classification of HF radio include a simplified band stack register, direct frequency input, Voice Activated Transmission (VOX), Frequency Shift Keying (FSK), Digital Signal Processing (DSP), and 1 kHz tuning.

The front panel was designed with the user's needs and operating practice in mind; with minimal knobs and buttons. Although the IC-718 boasts a compact size, the front panel exhibits the feel of control and operating flow for the ham that is new or has years of HF operating experience. The front-facing speaker and large LCD readout, make this a ham's dream rig. You get the best of both worlds —whether used for communications or just shortwave listening, the 718 covers the AM broadcast band, maritime and much more from .03 to 30 MHz, along with the 101 memory channels. The Band Stack Registers makes hopping around the bands a simple one-button control - or you can go directly to a desired frequency with the numeric keypad.

Finally, for those of you who have problems with RF noisy environments, the optional DSP helps pick out the signal from the noise. The UT-106 offers Auto Notch, Noise Reduction, and Noise Reduction Level controls. To learn more about the IC-718 and the amateur radio hobby in general, visit the ICOM America Website at http://www.icomamerica.com/amateur/hf. You can also phone ICOM America, Inc. at 425-454-8155 for more information on the IC-718. Be sure to tell them you read about it in *Popular Communications*.

CIRCLE 103 ON READER SERVICE CARD

PRODUCT SPOTLIGHT

Pop'Comm Reviews Products Of Interest

Globalstar GSP-1600 Satellite Phone — Stay In Touch — Virtually Anywhere

If staying in constant touch with your family or business associates is important to you or if you're frequently beyond cellular coverage, this could be the tool for you. Right up front, to enable you to better understand the "system," let's clear the air about what Globalstar USA is and does. They have exclusive rights to sell Globalstar satellite service in the U.S. They're responsible for building the gateways, developing and managing billing and customer care systems, sales, product distribution and marketing. Globalstar USA is an indirect subsidiary of Vodafone AirTouch Plc. and partner of Globalstar Limited Partnership. Globalstar Limited Partnership built the 48 low-earth-orbiting satellite network that provides Global Mobile personal Communications Services to virtually every populated area of the world. Satellite services were rolled out about a year ago and they received the FCC license in December 1999.

Currently Globalstar USA is in the third and final phase of providing full commercial availability of its satellite services across the continental U.S. The company is a partnership of the world's leading telecommunications service providers and manufacturers including Qualcomm Incorporated, Alcatel, and others.

The Nitty Gritty

The Qualcomm satellite phone is a portable unit that operates in satellite mode, but can also operate analog or digital cellular modes where cell service is available, provided, of course you've got a cellular subscription. The phone weighs in at about 11 ounces and carried a suggested retail price of $1,500 as we began this review. In mid-July, they announced a promotional for $699 (with a service commitment). Service isn't inexpensive either, although when you consider the benefits — well, you be the judge. Globalstar USA offers several pricing plans based on a monthly service charge and fees for satellite connection and use.

• The Beyond Basic plan is $24.95 a month with $1.69 per minute for satellite airtime. (There's even a plan with a price as low as $24.95 and 99 cents per minute for folks who commit to a 24-month plan — and the phone is $699).

Globalstar USA's GSP-1600 cellular/satellite phone by Qualcomm.

• The Beyond 50 plan includes 50 minutes satellite airtime for $89.95 per month and $1.49 for each additional minute.

• The Beyond 100 plan is $149.95 per month and includes 100 minutes of satellite airtime; additional minutes are $1.39.

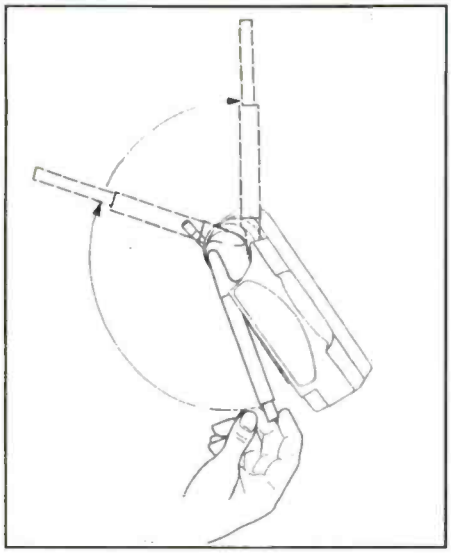
• The Beyond 250 plan is $299.95 and includes 250 minutes of satellite airtime; additional minutes are $1.19. (Includes free voicemail).

Like anything else — computers, FAX machines, calculators, radios, CD players — the cost will certainly be coming down as the service becomes more popular. But let's face it, a $1,500 satellite phone and a basic plan connects you wherever you are. Case in point: Globalstar USA just announced extended service coverage in both Alaska and the North Atlantic. As a result of agreements among Globalstar service providers in North America and Europe, calls can be made along the main shipping route between the two continents. Their expanded coverage also includes virtually the entire state of Alaska, regions of the north Pacific to the International Date Line, portions of Greenland, and all of Iceland. More satellites weren't added, but gateway earth stations were upgraded. What this boils down to is the ability to make and receive satellite phone calls in 39 countries outside North America, including Europe, Canada, and most of South America. You can also make *outbound* calls from Mexico and Brazil. (Check out www.globalstarusa.com for a complete list of areas where Globalstar USA customers can roam).

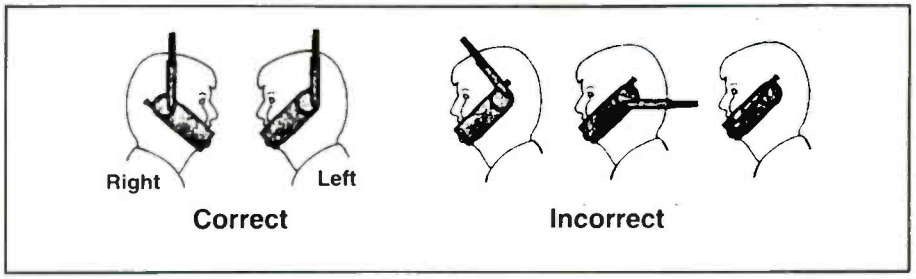
I used the Qualcomm satellite phone for almost a month, making both cellular — analog and digital — and satellite calls from all over the Northeast. (Now that I think about it, wouldn't it have been a special summer if Globalstar had sent me on a mini-vacation to Europe and Alaska to test this phone?) Dream on.

I couldn't run down the battery. I'd run out of things to talk about before that happened. There were several 10+ minute conversations in the satellite mode, and dozens of calls in the analog cell mode over a two-day period. Each night I recharged the battery with the provided

BY HAROLD ORT, N2RLL, EDITOR



The phone's satellite antenna rotates out and up from the side of the phone, automatically extending to operating length.



The right, and wrong way, of using the satellite mode.

120 Vac wall adapter. (The metal plug neatly flips back into the adapter for easy storage, and the phone end of the charging cord is "polarized" snapping firmly into place at the base of the phone). The company says the tri-mode phone can support about 3.5 hours of talk time and about nine hours of standby time in satellite mode, about 4.5 hours of talk time and 72 hours of standby time in digital cellular mode, and at least 2.5 hours of talk time and 14 hours standby time in traditional analog mode. Again, I never achieved several hours of talk time, but the provided battery was more than adequate. (Besides, I doubt you're really going to talk for a half-hour in satellite mode at $1.39 a minute!)

Easy Operation

For purposes of this review, I'm focusing on the satellite operation, although the cellular modes — both analog and digital — worked well throughout my calling area. There were the usual dead spots and cutouts, but that's to be expected. That's when I switched to the satellite mode. Simply collapse the thin cellular antenna, and carefully pull the satellite antenna out from the phone's right side and rotate it upward. It automatically "extends" and you then properly hold it to your ear with the large round antenna pointing vertical toward the sky. Press and hold "Pwr" to turn on the phone, select Globalstar satellite mode by pressing and holding the menu mode button, then press "abc2" for Globalstar. This process takes all of 10 seconds. You'll see an "I" icon in the upper right of the display. Once you see this, you can place a satellite call. You then simply enter the phone number you want to call. You can also use the phone's

keypad for other functions or check the viewing screen, but it's important to keep the antenna pointing up to maintain satellite service. Then press "send" and wait for the connection.

A word of warning when using the satellite mode. I'd like the phone a lot more if the satellite antenna weren't as "visible." You're going to attract attention using this phone because the satellite antenna looks like the barrel of a Magnum (the cellular antenna looks like any other cell phone antenna). Rotating the antenna out and holding the larger-than-normal phone up was met with some strange looks and even a few questions. Seeing that gun-like barrel, one fellow actually came over to me —cautiously, mind you — in a suburban New Jersey mall parking lot asking what kind of phone I was using. We talked briefly and both agreed that in this day and age it pays to be aware of how you look to others — including the cops — when using this high-tech phone. In fairness to Qualcomm and Globalstar, the antenna does have an orange paper dot on the tip, but that's not what you see when this thing is fully extended. They should immediately begin making the satellite phone antennas to appear less like a "piece" and more like a long reflective candy stick or antenna that's colored safety orange. Just food for thought.

Calls placed in the satellite mode exhibited the to-be-expected second or two delay; you've got to let the person finish talking before adding your two cents to the conversation, otherwise you're going to step on each other's words. I thought the satellite function worked nearly flawlessly. I tried it in several suburban situations, walking in a wooded area and even inside the house. Inside it only worked standing right next to a second floor window. You really need a clear view of the sky for the satellite function to work properly. The phone's large easily readable display shows you relative signal strength and whether or not you've acquired sufficient satellite signals to begin a call. As the instructions say, "if you have a clear view of the sky, the satellites will have a clear view of you and the phone." (There's an optional car kit that allows vehicle operation. But remember, the satellite function won't work in your vehicle without this option).

Most folks I talked to were business associates, family and friends who, with only one or two exceptions, realized we were talking through an orbiting satellite. Trust me, it's really a great tool when you're in a cellular dead spot or out in the backcountry where there isn't even a pay phone! If you've got the bucks and do a lot of traveling where cell phone service isn't always reliable, it's for you.

Other Nifty Features

This phone also does what many other cell phones can do; from a simple scratchpad and key guard lock to sending and receiving text messages. Someone can even leave you a voice mail message and the phone alerts you. You then simply access the voice mail notification. To hear the messages, call your voice mail system. You can even have numerous voice mail systems and you'll see the total number of messages received by all systems on the screen. Very slick, indeed!

If you don't want a number that you've dialed to show on the display you can make it "secret." With a series of simple keypresses it's done. You can even view a call history, auto redial, one-touch dial a number, set the phone to answer automatically after a set number of rings, set tones to alert when a network drops a call, and set an alert for a tone to sound 10 seconds before the end of every minute or when the phone enters or leaves service.

Remember you don't have to be a millionaire on a safari to reap the benefits of satellite phone service. Many businesses with operations in remote areas may not have access to cellular service (let alone regular phone service!). If you're in a real pinch and need to reach someone, you can. Hikers, campers, and skiers who often travel well beyond cellular range need a reliable link to emergency services and the rest of the outside world. If you don't have a CB or ham rig, a satellite phone could be a lifesaver.

Services just around the corner on Globalstar service providers include FAX and data, position location service, and short messaging service. For more information on the Globalstar GSP-1600 phone, contact Globalstar USA's distributors located throughout the U.S. You can call Globalstar USA at 877-SATPHONE (877-728-7466) or visit their Website at http://www.globalstarusa.com. Tell them you read about their phone in *Popular Communications* magazine. ■

THE HAM COLUMN

Getting Started As A Radio Amateur

Fixing Frustration — And Murphy!

As I write this month's column, I'm gnashing my teeth, clenching my fists, and pacing around the room. I've been trying to connect a RTTY terminal between my radio and my PC. So far, it's terminal "one," me, "zero." The problem was made worse by the fact that my eyes no longer easily focus on sub-millimeter-size type found on modern electronic parts. It's a sure sign of encroaching age when you need a magnifying glass to read the "2N" number on a transistor. And I'm not even 40!

The experience reminded me that most modern ham gear is sometimes too high-tech for our own good — especially when it comes to fixing it. Most hams don't service their own gear, and even some technicians are reluctant to play around with the subminiature surface-mount components found in our modern rigs. Who can blame them?

Sooner or later, though, every piece of gear will need attention. So, if the thought of grabbing a toolbox and a digital multimeter is frightening, rest assured that there's a lot of troubleshooting power in the "tool" between your ears. Nobody's found anything better than common sense, especially when it comes to beating ol' Murphy. When something goes wrong, try to eliminate the simplest possibility right away: Is the radio plugged in? Don't laugh! As any professional technician can tell you, a lot of service calls could be avoided by covering the basics.

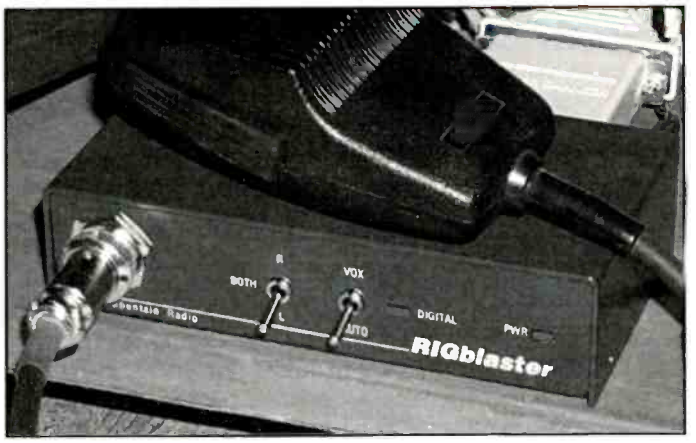
Beyond checking out the power cord, simply asking someone for advice is often a good way to solve a frustrating problem. Chances are good that one of your ham friends has had a similar encounter with Murphy and can probably suggest a reasonable cure. And don't be afraid to ask for help. Two brains are almost always better than one!

When you have a problem with your rig, don't be in a hurry to "open the hood" and look inside. There probably won't be a big arrow pointing to the problem. You might spot a burned resistor or a loose wire, but you're just as likely to break a wire in the process of getting the thing opened up. So, sit back and analyze the problem before you dig in. What are the possible causes?

Your thoughts should go from general to specific. For example, if your rig is completely dead, don't open it up and start testing the transistors in the speech processing circuit! Here are a few things to consider:

• Did the rig fail when you were using it, or was it dead when you tried to turn it on? If it's dead today and it wasn't yesterday, what's different? Could someone have tweaked a control? Was there an overnight electrical storm? Extreme cold? Think and analyze!

• If the failure occurred right in front of you, were there any obvious symptoms? Did you hear any crackling noises or see any sparks? Any strange smells? What exactly were you doing when the failure occurred?



Every now and then an amateur radio product comes along that really gets me fired up. And that's not an easy task. In my 12 years as a "professional ham," I've played around with an awful lot of the "latest and greatest" stuff — new transceivers, antennas, amplifiers, gadgets, gizmos, and more.

My most casual moment was when I nonchalantly tossed a $40,000 CIA-grade shortwave receiver into the back seat of my car (I was taking it home for the weekend). So, what amazing contraption managed to cause such a stir? West Mountain Radio's RIGblaster, that's what. RIGblaster is an amazing, intuitive device that interfaces your computer sound card to your ham radio gear. RIGblaster is built like a tank, handles itself with aplomb and comes with a CD-ROM that's packed full of software that lets you operate digital modes such as PSK31, RTTY, SSTV, and more. Check out the RIGblaster at www.westmountainradio.com/.

• If it's not a complete failure, can you localize the problem? Is it confined to one band? Do you use a different antenna on that band?

• If the rig's completely dead, make sure there's 120 Vac at the wall socket. A popped circuit breaker may be the culprit.

• Have you read the equipment manuals yet? You know — the ones nobody likes to read from cover to cover.

• Is your coax or feed line intact? There's no chance of water contamination, is there? Are the connectors on right? (One subset of Murphy's Law deals exclusively with connectors!)

• If you have two VFOs, are you switched to the right one? Many older rigs with outboard VFOs require a shorting plug if the secondary VFO is not connected. Read the fine print!

(Continued on page 78)

BY KIRK KLEINSCHMIDT, NTØZ

BROADCAST DXING

DX, News And Views Of AM And FM Broadcasting

CHWO To Take Over Former CBC Clear Channel

CHWO Oakville, Ontario at 1250 will be bringing its nostalgia to 740 kilohertz in Toronto, the former home of CBL which moved to FM. CHWO has the option to simulcast on 1250 for up to three months once broadcasting begins on 740. CHWO used to broadcast nostalgia or adult standards with sister station CJMR Mississauga, Ontario on 1320 in what was called "The Golden Horseshoe Network." CHWO and CHMR share the same facilities. CJMR recently changed to a Christian format. The same format featuring contemporary Christian music will be broadcast as "Joy 1250" once the switch to 740 is complete. The previously reported application for 740 by ethnic broadcaster Aboriginal Voices Radio (AVR) was denied by the CRTC. AVR instead has been assigned 106.5 FM in Toronto.

Oakville and Mississauga are suburbs of Toronto. The WO in the CHWO call letters stands for White Oaks, part of what is now Oakville. CHWO has been on the air at 1250 since 1956.

Since moving several CBC AM radio stations to FM, the Canadian national network has continued to receive complaints of poor reception. CBF-FM 100.7 has been given approval for a significant increase in power from 17,030 watts to 100 kilowatts. This should improve reception of the CBC French service for Montreal listeners. DXers can still hear CBC Radio One programs in English on **CBA** Moncton, New Brunswick at **1070**, **CBN** St. John's, Newfoundland at **640**, and **CBU** Vancouver, British Columbia at **690** among others. These stations will remain on AM to serve ships at sea. CBN is also relayed on CKZN 6160 kHz shortwave. CBC Radio One relays World Radio Network rebroadcasts of international shortwave programs after midnight. The CBC French service can still be heard on CJBC Toronto at 860, CBEF Windsor, Ontario at 540, and CBGA1 New Carlisle, Quebec also at 540 parallel CBGA Matane at 1250.

WJIB 740 kHz Supports Community Radio

Part 15 broadcaster Allston-Brighton Free Radio can now be heard Saturday nights on WJIB Cambridge-Boston, Massachusetts at 740. Station owner Bob Bittner is donating the time to the community service otherwise heard broadcasting with 100 milliwatts of power on 1580 kHz. Known as "Free Spirit Radio," WJIB is unique among AM radio stations in that easy listening music is presented commercial-free with the exception of network news at the top of the hour. Despite the low power of only 5 watts at night, WJIB is enjoyed by DXers up and down the East Coast, transmitting from a single self-standing tower near the Fresh Pond Rotary in Cambridge. This would be a worthy target for inland DXers as well, before CHWO takes to the airwaves at 740. Send reception reports to WJIB at 443 Concord Avenue, Cambridge, MA 02138.

New MW DX Resources

The list of European, North African, and Middle Eastern stations compiled by Herman Boel has been updated and published under a new name, the Euro MW Guide (EMWG). The publication is still the best single source of information available for transatlantic DXers, and still free exclusively via the Internet at <http://gallery.uunet.be/hb/> or <www.dx-hobby.com>.

Patrick Martin sends news of a new down-under station list; "I just received the *Australian and New Zealand MW Guide* from John Wright. What a great guide! It covers all the MW stations in both countries, including the x-banders and all the QSL addresses. It was only $10 U.S., and well worth it if you DX "DUs" (down-unders). The list is put out by the Australian Radio DX Club (ARDXC). There are also articles on antennas, loops, Beverages, etc. You can

WJIB, Cambridge-Boston, Massachusetts supports community radio.

BY BRUCE CONTI <BAConti@aol.com>

contact John Wright at <dxer@fl.net.au> for more info." To learn more about ARDXC visit their web site at <www.aaa.com.au/dx/>.

QSL Information

740 KVFC Cortez, Colorado, received partial data QSL letter with window and bumper stickers, balloons, and ink pen in 55 days, signed Kelly Turner, Operations/Program Director. Address: P.O. Box 1299, 2402 Hawkins, Cortez, CO 81321. (Griffith, CO)

860 WTZX Sparta, Tennessee, received letter in seven days from Don Howard, Station Manager. Address: P.O. Box 210, Sparta, TN 38583-0210. (Procop, OH)

910 WEPG South Pittsburg, Tennessee, received hand-written verification letter, bumper sticker, and pen in 9 days, signed by Jerry W. Rice, Pres. CEO. Address: 105 Ash Avenue, South Pittsburg, TN 37380-0008. (Procop, OH)

1010 CFRB Toronto, Ontario, received QSL card, full data letter, and Ontario DX Association pamphlet in 13 days from Steve Canney, QSL Manager/ODXA. E-mail address: <scanney@home.com>. (Procop, OH)

1460 KTXX Salinas, California, received full-data letter with coverage maps in 40 days, signed Jim Hilliker-PSA Director. Address: 903 N. Main St., Salinas, CA 93906. (Martin, OR)

1550 CBE Windsor, Ontario, received QSL card and bumper sticker in 15 days, signed by Manny Pardecu, Supervising Technician, and Dan Kennedy, Transmitter Technician. Address is CBC Radio, CBC Place, 825 Riverside Dr. W., Windsor ON N9A 5K9. (Procop, OH) QSL and sticker in 7 days for report of CBC-One, Radio France "Weekend" program with John Lorenson, about teen alcohol use in Netherlands. Signed Manny Pachero, tech. and Dan Kennedy, tech. Address: P.O. Box 1609, Windsor, ON N9A 1K7. (Clang, MA)

1640 TIS Pomona, New York, received verification letter in 8 days, signed by Pablo A. Ramos, Enhanced 911 Director. Address: County of Rockland, Dr. Robert L. Yeager Health Center, Building A, Pomona, NY 10970. (Procop, OH) Nice!

1650 KBJD Denver, Colorado, received a beautiful photo QSL certificate in six days! Signed Patrick M. Griffith – QSL coordinator. Address: 3131 S. Vaughn Way, Suite 601, Aurora, CO 80014. I now have all the U.S. x-banders QSL'd! (Martin, OR)

99.3 WFRA Franklin, Pennsylvania received verification letter and trifold with information for advertisers in 5 days from Todd Adkins, Operations Manager. Address is P.O. Box 908, Franklin, PA 16323. (Procop, OH)

Broadcast Loggings

Welcome to new reporter Steve Clang of Plymouth, Massachusetts, who recently purchased a Drake R8. Steve is using a small loop and 50-ft. wire for antennas. Another first-time reporter David Jenkins advises us of dueling highway advisory radio stations in Columbus, Ohio. Ron Gitschier reports his first Ecuadorian logs

while somewhere at sea in the Caribbean, listening on an Aiwa personal stereo radio-cassette recorder HS-J470. Michael Procop shares some decent FM DX logs, and Argentina is being heard on both coasts in this month's selected logs. All times are UTC.

530 Radio Vision Cristiana, Turks & Caicos, sermon in Spanish followed by WWRV relay info and ID in English at 0503, "Broadcasting from South Caicos Island, Turks & Caicos, British West Indies." (Clang, MA)

612 Sebaa-Aioun, Morocco at 0152, female Arabic vocal at light audio level on a massive carrier, way over Ireland. (Connelly, MA)

640 CBN St. John's, Newfoundland, fair with CBC National Radio news at 0300, ad for International festival of new music in St. John's, and classical music with Francesca Swan. (Clang, MA)

640 HCMF2 R. Morena, Guayaquil, Ecuador, strong and very readable, occasional fading, Spanish vocal easy listening folk music. (Gitschier)

640 Union Radio, Puerto la Cruz, Venezuela at 0245 good; "Union Radio Noticias" news in Spanish. (Conti, ME)

690 WOKV Jacksonville, Florida, at 0500 poor to fair over CINF Montreal, CNN news and Coast to Coast AM. (Procop, OH)

740 WJIB Cambridge, Massachusetts, "Free Spirit Radio" plays a good assortment of music. I listen when I commute to work in Massachusetts. (Lapinskas, NH)

750 Radio CBN, Brasilia, Brazil, at 0720 good; promos and ads in Portuguese, Radio CBN mention, romantic vocal, over an unidentified Brazilian station. (Conti, ME)

750 RCR Caracas, Venezuela, at 0355 fair; sign-off with national anthem. (Conti, ME)

765 RSR Sottens, Switzerland, at 0145 good; ID in English ". . . on cable in Switzerland . . . on 103.85, and here in Europe via satellite," adult contemporary music. (Conti, ME)

770 CHQR Calgary, Alberta at 0702 good, way on top of others with local news, many mentions of "QR News." Reception is common in the winter during good conditions. (Martin, OR)

770 R. El Telegraphico, Guayaquil, Ecuador, Spanish easy listening vocals, folk romantic style music. Shared the channel (quite well) with HJJX 770 Bogota, Colombia. Usually could null out Colombia to cleanly get R. El Tele-

Pending

New Call	Location	Freq.	Old Call
KTTP	Pineville, LA	1110	KTLD
WTRU	Kernersville, NC	830	WXII
WBZU	Pawtucket, RI	550	WLKW
WWON	Waynesboro, TN	930	WTNR
KVFG	Victorville, CA	103.1	KHDR-FM

Changes

New Call	Location	Freq.	Old Call
KRAN	Merced, CA	1580	KTFN
WNNY	Rockville, MD	1600	WINX
WUKQ	Ponce, PR	1420	WEUC
KPYN	Atlanta, TX	900	KNRB
CKMO	Victoria, BC	900	CJVI
KRTE	Drake, AZ	89.5	New
KZZZ-FM	Kingman, AZ	94.7	KZZZ
KRQZ	Lompoc, CA	91.5	New
KWSZ	Lompoc, CA	105.1	KAOH
KTKB	Agana, GU	101.9	New
WDLJ	Breese, IL	97.5	New
WKMQ-FM	Loves Park, IL	96.7	WLUV-FM
WJCF	Morristown, IN	88.1	New
KWSJ-FM	Clearwater, KS	98.7	KAYY
WJSH	Folsom, LA	104.7	WSJZ
WSJZ	Reserve, LA	94.9	WADU-FM
WYTC	Hartford, MI	103.7	WZTY
WMSD	Rose Township, MI	90.9	New
KNWF	Fergus Falls, MN	89.7	New
KARP-FM	Dassel, MN	106.9	KKJR
KTTB	Glencoe, MN	96.3	KARP
KWRT-FM	Boonville, MO	93.1	KBHO
KLIQ	Hastings, NE	94.5	KBGT
KNVR	Beatty, NV	100.1	New
KGVN	Sun Valley, NV	93.7	KATG
WLNG	Sag Harbor, NY	92.1	WLNG-FM
KCHY	Hope, ND	104.7	New
KVMX	Banks, OR	107.5	KBBT-FM
KRRA	Newport, OR	91.3	New
KULU	Seaside, OR	102.3	New
WUKQ-FM	Mayaguez, PR	99.1	WUKQ
WARA	Laurens, SC	91.5	New
WTML	Tullahoma, TN	91.5	New
KNRB	Atlanta, TX	100.1	KPYN
KXRI	Amarillo, TX	91.9	KYFA
KQRI	Lubbock, TX	90.9	KYFT
WSLC-FM	Roanoke, VA	94.9	WPVR
KMNA	Prosser, WA	101.7	KZXR-FM
KJAX	Jackson, WY	93.3	KBHJ
KVAM	Newcastle, WY	99.3	New
CJVI	Victoria, BC	103.1	CKMO

graphico and vice versa. If only all other stations would cooperate like this. (Gitschier)

800 KINY Juneau, Alaska at 0815 fair and alone on the channel with "Best of My Love" by the Eagles, female DJ ". . . on Hometwn Radio KINY." (Martin, OR)

800 TransWorld Radio, PJB, Bonaire, Netherlands Antilles, at 0118 Transmundial mention, religious talk in Spanish, mixed with WCCM groundwave. (Connelly, MA)

880 R. Musical 880, Puerto Ordaz, Venezuela, at 0420 good; ranchera music "con las estrellas Mexicana" and ID "Ocho-ochenta, senal musical de Venezuela," over WCBS. (Conti, ME)

930 WNZS Jacksonville, Florida, at 0300 poor under WRVC, legal ID and ESPN Sportscenter. (Procop, OH)

1089 Talk Sport synchros, England, at 0136 good; promo for "Talk Sport 1089 and 1053 AM." (Connelly, MA) At 0230 good; talk about violence at football games, "Hello, welcome to Talk Sport." (Conti, ME)

1160 VSB3 Hamilton, Bermuda, at 0118 parallel BBC 5975 shortwave with talk about the history of Wembley Stadium; eventually losing to WVNJ/ WSKW/WOBM jumble. (Connelly, MA)

1200 TIS Columbus, Ohio, two Road Traffic Advisory stations run by the Ohio Dept. of Transportation, mounted behind their traffic signs on I-270 west bound at I-70 & I-270 east bound at I-70 approximately 20 miles apart. When you're in the downtown area of Columbus both can be heard at once. At night their signal propagates very well and might be a good DX catch. (Jenkins, OH)

1450 WRKD Rockland, Maine, fair with Dr. Laura call-in program, ID at 2100, and CNN News. (Clang, MA)

1530 KFBK Sacramento, California, 0045–0200 talk about how young people have little knowledge or concern about World War II, heard on a Drake SW8, good except when a wave of static seems to hit every 10–12 minutes. (Marcher, CA)

1548 VOA Kuwait City, Kuwait, at 0154 VOA news items from field correspondents; to fair peak through WPTR-1540 slop with CBE-1550 phased. (Connelly, MA)

1630 La Red 92, Buenos Aires, Argentina, 0750–0815 finally got a decent copy on this, playing rock music mostly Spanish, "Beat It" by Michael Jackson, and "La Red 92" ID, man and woman announcers, KCJJ interference. (Martin, OR) At 0800 good; woman in Spanish and Bee Gees' "Night Fever," over KCJJ. (Conti, ME)

96.1 WQLK Richmond, Indiana, at 0333 country music, "Kicks 96" IDs, advertisement with local mention, 207 miles. (Procop, OH)

101.7 CKNX-FM Wingham, Ontario, at 0228 variety with "FM 102" IDs, advertisements with local mentions. (Procop, OH)

101.7 WHZZ Lansing, Michigan, at 0242 contemporary hit music, "Z-101.7" IDs, advertisements with local mentions. (Procop, OH)

Thanks to Steve Clang, Mark Connelly, Ron Gitschier, Patrick Griffith, David Jenkins, Stanley Lapinskas, Sterling Marcher, Patrick Martin, and Michael Procop. 73 and good DX! ■

UTILITY RADIO REVIEW

News, Information, And Events In The Utility Radio Service Between 30 kHz And 30 MHz

All About Digital Modes

In this month's URR column we will be looking at one of the more interesting aspects of utility services, which is monitoring those transmissions sent in digital modes. This can be anything from CW code to Baudot Radioteletype (RTTY) though a whole range of recently introduced modes, such as SITOR and ARQ.

I am going to be looking at the basics of setting up a digital monitoring station. There are a lot of you out there who have probably read the loggings of digital stations and have certainly heard them on the air. Still, many people have held back on monitoring digital signals because they feel that the technology is too difficult or expensive to undertake.

Today anyone with an IBM compatible computer and some basic accessories and software can monitor basic digital modes. Even those without a computer can still take advantage of many of the good quality stand-alone demodulators that are on the market today. I will introduce you to some good equipment that you may wish to consider purchasing for your monitoring station.

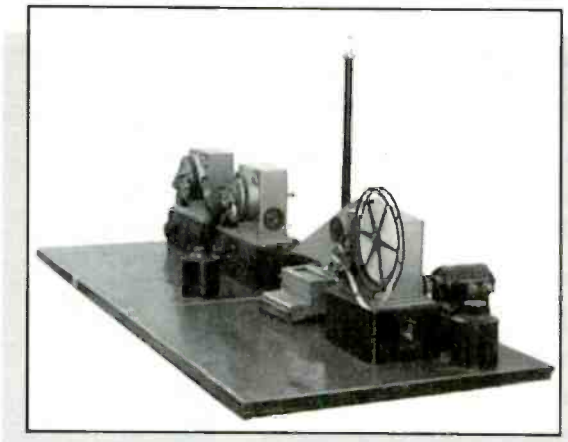
In addition to talking about digital modes, I will also provide some interesting target frequencies for monitoring digital stations. Due to the rise in use of satellites and the Internet, many digital stations are no longer on the air, particularly in the news wire services. Despite this there is still a lot of digital traffic worth monitoring today.

I will also be sharing some divergent opinions on the direction that this column that has been going over the past few months from the reader's mail. And last but not least, we have reader's logs.

So now that the introduction is over, let's get on with the main info.

Monitoring Digital Stations

How often have you tuned across the HF (and even LF) spectrum, and came across the intriguing chirps and warbles of a digital signal? Likewise you may have also heard the drone of a FAX transmission. Certainly we have all heard the musical notes of a CW signal, whether it be a commercial signal or someone in the ham bands.



The original Baudot teleprinter, 1874.

Like many people, you may have simply listened for a while, enjoying the musical tone and mystery of the signal, then moved on. Many others, though, actively monitor these signals, and find the challenge of demodulating these signals to be worthwhile. Certainly today we are in a better position to monitor these signals than ever before.

CW (Continuous Wave) has only recently ceased to be used by commercial, military, and coast guard services. You will still hear this mode being used in more limited way as an identifier or frequency marker by certain utility stations. However, today you will rarely hear stations passing traffic using this mode. For this reason I will only touch upon this mode when I introduce methods of demodulation.

The majority of digital signals that are heard today are generally text or data based, with large amounts of information being processed by computers for either transmission or reception.

If you were attempting to demodulate a non-CW digital signal such as Radio Teletype during the 1950s and '60s you would have to own some very expensive and specialized equipment. The most outstanding item would be the mechanical line printer. Most have only seen these devices in old movies, where they would smash and bang text into existence at a very slow rate. They certainly were slow, having a baud rate of about 45, or about 60 characters per minute.

Today, thanks to the availability of high-speed computer circuits for both receiving and transmitting data, the limits of mechanical printing systems have been left far behind. Still, the legacy of the days when the "Green Keys" were king is still felt in even the most modern methods of digital transmission.

For that reason I will outline how RTTY works in order to lay a good foundation for understanding the differences and similarities that this historic digital mode shares with modern means of transmitting and receiving text and data.

The Baudot Code

RTTY is a form of telegraphic communications like CW. Rather than using dots and dashes, it uses a five-bit code. RTTY code is actually older than radio itself, having been patented in 1874 by Jean Maurice Emile Baudot (1845–1903). It was originally used in mechanical printing devices that were connected together by wire, and were designed to compete with standard telegraphic systems.

Rather than using a system where the length and sequence of sounds provides the information as it does in CW, Baudot is made up of 5 equal-length units (see **Table 1**). Since it is digital, there are only two numbers available for use, which are "0" and "1." If you put those into all of the possible 5 unit combinations available (00000 to 11111) you will find that

BY JOE COOPER <ur-review@provcomm.net>

the maximum number of symbols that can be supported is 32.

Since it was necessary to transmit the 26 letters of the alphabet (A-Z), the 10 numeric (0-9) and some control characters; two special characters, "FIGS" (Figures or Numbers) and "LTRS" (Letters), were used to select alternate character sets. (These special characters acted like the shift key you find today on computer keyboards).

While Baudot did have certain limitations, it was faster and easier than CW. As a result, it was in regular use in the U.S. by the 1920s. The most common form was a 5-bit alphabet used by Teletype machines made by the Teletype Corporation. (This company was a subsidiary company of Western Electric, which was part of the Bell System). The code came to gain acceptance in the telecommunications industry of that time and was finally standardized under the designation International Telegraph Alphabet #2 (or ITA-2).

Each character is transmitted in seven and a half distinct steps. It begins with a start step (always a 0), which is then followed by the five code bits, whose combination determines the actual character or number being transmitted. One-and-a-half stop steps completes the character's transmission (see illustration below).

In order to designate each of the five code bits (as well as the Stop and Start bits) they are given a numeric code as mentioned before. Since this is a digital mode, only two numbers are possible — the "0" and the "1." So while in CW code, the letter T is represented by "-" or the sound "dhaw," in RTTY this same letter is represented by "00001".

In RTTY parlance, the "0" is called "Space," and "1"- "Mark." To generate the Space and the Mark with a radio transmitter, two tones are used; one that

A typical marine SITOR station.

is high, and one that is low. The tone difference is called "Shift." Usual shifts are 170, 425, or 850 Hz. To understand this, when the Space tone is 1275 Hz this means "Mark" is 1445 Hz, 1700 Hz, or 2125 Hz respectively.

The reason these points are important is that with out the proper placement of the Space and the Mark, the receiving system is unable to sort out the letters that are being sent by the transmitter. The Space and the Mark allows the transmitter to "talk" to the signal demodulator in a simple way.

This "talking" is done with the start and stop step mentioned earlier. Each time the demodulator "hears" the start bit; it knows that the next five tones will be the space and mark combination that makes up a character. When the one and a half stop steps are heard, then the demodulator knows that the character has been received, and it should get ready for the next start step.

The use of start and stop steps is characteristic of a type of transmission method called "asynchronous," as it is self-synchronizing. You will see this happen when you tune the RTTY signal with your receiver so that it is within the demodulator's proper shift bandwidth. What were previously random characters becomes a stream of understandable information as the demodulator automatically synchronizes on the data.

The only problem with an asynchronous system like this is that proper demodulation of the characters is only as good as the signal received. If the demodulator fails to see the Start step or the Stop step due to signal fading or noise, the character is lost. At that point all you will see displayed at the receiving end is a random character that the demodulator interprets as being the best choice.

Better systems of digital signal transmission have been developed that include methods of correcting errors due to noise and loss of signal. With those newer methods, the transmitter and the receiver engage in a little dialog each time a character is transmitted. They both check to see if a character that was received is the same as the one transmitted. If it is not, then the same character is again transmitted until it is received correctly.

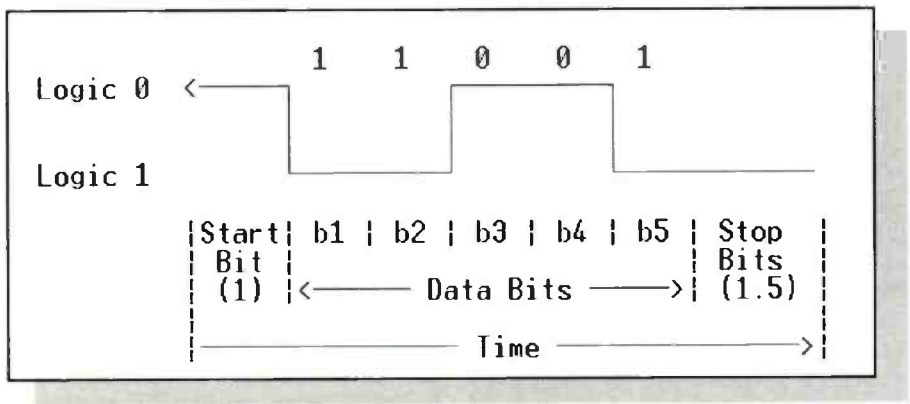
While these new methods of digital transmission may be more complicated, they more than make up for their operational overhead with greatly increased rates of transmission (over 100 baud in some cases). Along with the higher baud rates, the quality of the data in the received message is higher due to the steps taken to ensure its accuracy in reception. This will be discussed in more detail later.

How RTTY Is Transmitted And Received

Since RTTY is such an old technology, the requirements for either transmitting or receiving the signals are not that sophisticated. In the past, the direct current pulses created in by the mechanical teletypewriter when a key was pressed would be sent to a special keying circuit. Today some type of computer interface has replaced the teletypewriter.

While it could be possible to actually transmit RTTY signals using a mechanical device such as a CW hand key, it would be inefficient and impractical. What is used instead to create the mark and space pulses is frequency shift keying (or FSK).

By rapidly shifting the frequency of the signal 170, 425, or 850 Hz higher than standard tone (generally about 2125 Hz) the transmitter is able to generate the needed mark and space tones. So rather than turning the signal on and off, as you do in CW, RTTY distinguishes the mark (there is information) from the space



The Letter B Sent As Baudot Code.

MFJ's 1224 is $109.95.

(there is no information) by making the tone either a high note or a low note.

The importance of all this lays in how easy it is to receive and demodulate the RTTY signal into a text message. All you need are three things, which are a good receiver, a method of demodulation, and a way of viewing the text message. Fortunately, the only real requirement is that the receiver be selective and stable enough to tune in the RTTY signal.

Once you have tuned in the signal properly pass the audio signal that would normally come out of your speaker or headphone through the RTTY demodulator. Most often this is accomplished by using the auxiliary audio output found on the receiver, or if necessary, a "Y" splitter attached to the speaker or headphones.

With the audio signal being properly processed, your demodulator will display the text message found in the warbling RTTY tones. The method of display can be provided through a computer monitor, a LCD display on the unit, or a printer. If the signal is strong enough, the complete text of the message may be printed out.

However, if signal strength is poor, or there is interference and noise, then you will see dropped or random characters displayed. As mentioned before, while reflecting the contributions made by the development of the Baudot code, most digital transmissions made today incorporate some method of correcting errors in the transmission and reception of data. Still, there are a significant number of stations transmitting in Baudot code to make its background history and theory worth while knowing. A list of Baudot target stations is provided on page 58 as monitoring targets.

Since the majority of transmissions are in these newer modes, I will outline them here for reference. However, with the advent of inexpensive demodulators, the novice and intermediate utility monitor can monitor many of these error-correcting modes with little difficulty. I will outline one of the most popular of these error-correcting strategies — SITOR — in detail, and provide target frequencies for monitoring this mode.

Commonly Used HF Digital Modes

There are a wide variety of digital modes employed on the HF bands (as well as some that are unique to the VHF/UHF spectrum as well). Here is a summary of what is commonly used.

ARQ-E ARQ-E3 ARQ-M214 ARQ-N ARQ-S ARQ6-90/98

ARQ stands for Automatic Repeat Request. These variants are used mostly by European military.

DUP-ARQ HC-ARQ
A variant of ARQ, with the second used only by Hungarian Embassies.

POL-ARQ
Used exclusively by Polish Embassies.

SI-ARQ
Primarily used by Austrian and Indonesian Embassies.

SWED-ARQ (Swedish ARQ)
Used exclusively by Swedish Embassies.

CIS
A Synchronous teleprinter system that provides an 11/14/27 bits format, and was used in the former Soviet Union due to its support of Cyrillic character set.

COQUELET/Piccolo
Both are similar to each other, except that the Belgian and French Military/Police use the former, while the British use the latter.

FEC-A FEC-S
Forward Error Correcting

HNG-FEC (Hungarian FEC)
Used exclusively by Hungarian Embassies for their transmissions.

RUM-FEC (Romanian FEC)
Used exclusively by Romanian Embassies for their transmissions.

SITOR
Simplex Teleprinting Over Radio, a popular method of error correction.

SITOR-A
Primary mode of Maritime digital transmission and used for ship and coastal station communications. Also widely used for diplomatic and Embassy traffic.

SITOR-B
This is used primarily by Maritime Coastal Stations as a Broadcast mode for weather advisories and ship traffic lists.

SPREAD
Used exclusively by Romanian Embassies for their transmissions.

There are other exotic modes of digital communications available on the HF bands today. The military and embassies are the primary users of these special modes. There is a still a fair number of stations that sends out information in

Table 1
Baudot Code Set (ITA#2)

*Note that the leftmost bit is the Most Significant Bit (MSB), transmitted last. The rightmost bit is the Least Significant Bit (LSB), transmitted first.

BITS	LTRS	FIGS	HEX
00011	A	-	03
11001	B	?	19
01110	C	:	0E
01001	D	$	09
00001	E	3	01
01101	F	!	0D
11010	G	&	1A
10100	H	STOP	14
00110	I	8	06
01011	J	'	0B
01111	K	(	0F
10010	L	)	12
11100	M	.	1C
01100	N	,	0C
11000	O	9	18
10110	P	0	16
10111	Q	1	17
01010	R	4	0A
00101	S	BELL	05
10000	T	5	10
00111	U	7	07
11110	V	;	1E
10011	W	2	13
11101	X	/	1D
10101	Y	6	15
10001	Z	"	11
00000	n/a	n/a	00
01000	CR	CR	08
00010	LF	LF	02
00100	SP	SP	04
11111	LTRS	LTRS	1F
11011	FIGS	FIGS	1B

plain text. The most popular mode for sending out general information in this way is SITOR, or Simplex Teleprinting Over Radio. We will cover this mode, and stations you can monitor, next.

Monitoring SITOR

SITOR is also known as Narrow Band Direct Printing (NBDP). SITOR/NBDP is an automated direct printing service similar to NAVTEX, but does not offer all of the same functionality such as avoiding repeated messages. It uses the FEC (Forward Error Correcting) method of error correction, which only supports character correction.

SITOR is always sent at 100 baud and usually a 170 Hz shift. There are two variants on this mode: A and B. The mode uses seven bits of information (as opposed to Baudot's 5 bits), so a larger character set is possible.

SITOR-A is used for communications between two transmitting stations. Here, the receiving station checks the received information and sends a request for retransmission if errors are detected.

SITOR-B is used as a broadcast mode, with all error correction-taking place at the transmitter. Here, all characters are sent twice, along with special control characters. If properly received, only one character is shown; there is a second one available if the first is lost.

SITOR-B transmissions are about 95% error free. They are favored for sending out important (but non-critical) information on news, weather, and advisory information.

Despite the fact that a great deal of marine communications now takes place through satellites, there are still thousands of ships using SITOR-A to communicate. Likewise there are still many broadcasts taking place in SITOR-B that can be monitored. A list of target frequencies will be provided.

Outboard Digital Demodulators

The following are a small representation of the types of digital demodulators that are available today. Please contact the individual suppliers or manufacturers for more details. Many more models and manufactures exist, so please check the advertisers listed in *Popular Communications* for more sources of equipment.

MFJ-1225:

MFJ Enterprises, Inc.,
P.O.Box 494
Mississippi State, MS 39762
http://www.mfjenterprises.com

Primarily aimed at the ham or budget monitoring market, this is a basic featured receive-only demodulator. This unit will decode Baudot at all shifts and speeds. Has a built in tuning indicator. Will work with HF and VHF receivers, and IBM PC compatible computers, as well as Commodore 64/128. Also decodes ASCII RTTY and CW. While it will not be suitable for error correcting modes, it is a good starting point for the beginner digital monitor.

M-450v1:

Universal Radio, Inc.
6830 Americana Pkwy.
Reynoldsburg, OH 43068-4113 .
http://universal-radio.com

This is a dedicated reader suitable for the serious monitoring of utility stations. You view the text of the message on the LCD screen provided, or through the use of an attached printer. The unit will demodulate CW and Baudot, as well as a number of commonly heard error correcting modes. These include SITOR, FEC-A, ASCII, SWED-ARQ, and FAX. The beauty of the demodulator is that it is self-contained and has been optimised to receive in the modes at high performance.

Their **Universal M-8000v7.5** is a top-of-the-line demodulator that contains many desirable features for serious digital monitoring. The unit will demodulate all of the aforementioned modes, along with many from the ARQ, FEC, and SITOR families. In addition, it will also demodulate more exotic modes, such as Piccolo, Packet, and third shift Cyrillic. To make demodulation easier, the unit detects many thing automatically, such as baud rate and shift. Output is to a VGA monitor, as well as an HPII compatible laser printer.

DXP38:

HAL Communications Corp.
P.O. Box 365
Urbana, IL 61801-0365
http://www.halcomm.com/index.html

Primarily made for the ham market, this is an excellent demodulator for Baudot. It will also demodulate many popular ham digital modes, such as AMTOR and Clover. This unit is also designed to transmit in these modes, so for it may not be suitable for a receive-only station. However, the unit has a very good reputation for DX work, and receiving weak stations.

And HAL's **P38** is the same as the above unit, except that it is a card that you can plug directly into your computer. It works with a variety of software packages. Again, it is designed to transmit as well as receive.

Choosing A Demodulator

After having looked over the different digital modes available for monitoring, the question then is how do you demodulate them so that you can view the information contained in those signals?

As mentioned before, all that is needed on the receiving side is a good stable radio that is capable of tuning the desired frequencies, and then providing the audio output of a properly tuned digital signal. After that, your success in viewing usable data will depend upon two things; the demodulator you are using and your skill in operating it.

It should be mentioned right now that demodulation are not automatic devices. While simple to hook up and use, they will require practice and patience on your part in order to make them work. That said, let's look at what types of demodulators are available today.

There are two ways to demodulate a digital signal: dedicated outboard demodulators, or demodulation done through a personal computer. If you are using a computer you have several methods of demodulation available to you. Some depend upon the use of a soundcard, while others employ a demodulator attached to a serial port, or a dedicated card that you plug into an available accessory slot in your computer.

Each of these computer-based demodulation techniques requires the use of a software package in order for you to view the results. Over the past year a number of new or revised packages have become available. (In order to do a proper review

HAL's DXP38 demodulator.

of that subject I am going present that topic in next month's column.)

Due to the relative simplicity of their setup and operation, dedicated outboard demodulators are still a popular item for many that are interested in monitoring digital signals. Check the sidebar provided that displays some of the units that are available from different manufacturers and distributors.

Monitoring Digital Transmissions

If there is a sure route to failure in the monitoring of digital signals, it is to plug your demodulator to your receiver, fire your system up, and then start tuning randomly around the dial. In most cases, your results will be a lot of random characters showing up on your demodulator's LCD or video monitor.

What you will need in order to be successful is a list of target frequencies, transmission times, and information on the digital mode that you encounter when you hear the signal. In addition, the shift frequency and baud rate are also important to know as well.

In general, to properly capture and demodulate a digital signal, you should setup a digital monitoring schedule ahead of time. You should also be aware of the general propagation predictions for the day that you are monitoring. In many cases, a digital station will have multiple frequencies available for its use, and it will use the maximum usable frequency (MUF) for that day.

The key to success is to have the receiver and all equipment turned on, and tuned to the desired station before it transmits. Have the demodulator set to the proper mode, along with the correct shift frequency. If known, the proper polarity of the signal should also be set as well.

Once the target station begins transmission, your main task will be to tune the signal in properly. This is generally done with cross hair tuning aides, or some other means of assistance. It is next to impossible to tune a digital signal by ear or through any other means, such as your s-meter. You may get lucky doing the tuning by hand, so to speak, but you will generally lose valuable monitoring time as a result.

With your signal properly tuned you will begin to see characters and sentences move across your monitor, printer, or LCD display. At this point you can begin to make notes for your logging, or save the data in some form (paper or a computer file) for future use.

When undertaking your first digital monitoring sessions your best bet for success will be to begin with a set of dependable signal sources. Certainly for testing purposes, most demodulators will decode CW signals, and this is a good test of whether your system is properly hooked up and working.

The amateur bands offer more than enough targets to practice monitoring on. Likewise the first Baudot RTTY signal you may want to practice demodulating would be the regular transmissions made by the American Radio Relay League (ARRL) (see **Table 2**). Another reliable signal comes from CFH, located in Halifax Nova Scotia at 10536.0 kHz. This station provides 24-hour-a-day weather and information broadcast in a number of different digital modes, including Baudot RTTY.

Again, random tuning will more often bring you frustration than success with digital modes. Over time you will come to acquire the skill of being able to identify certain modes by their sounds, or through other clues. The best way to log a digital station if you are still a beginner is to get a good source of stations and frequencies.

One of the best sources of information on where to find digital (not to mention other) utility stations is the *2000 Guide to Utility Radio Stations* from Klingenfuss Publications. They also publish a two CD set of recorded digital transmissions in all available modes. By hooking up a CD player to your demodulator you can practice tuning in and reading different modes that are within the capability of your equipment. (I will give information on where to get these products at the end of this section).

Once you have mastered the basics of demodulating Baudot, you can then try monitoring the error correcting modes. The easiest and most commonly used mode is SITOR. There is still some skill required, as well as access to a good signal.

The best starting point for you first logs would be the regular U.S. Coast Guard broadcasts of weather and information that can be heard daily. As their transmitters are located in Virginia, California, Guam, and Honolulu, it is generally not difficult to hear a signal anywhere North America and parts of the Pacific. **Table 3** provides a listing of the times and frequencies to listen to.

Digital Monitoring Resources

The following are some Internet links to groups, organizations and individuals that support the monitoring of digital signals in some way. Please also check the sidebars on sources of demodulators as well as a special note about the North American Data Communications (NADCOMM) museum of data communications technology. This unique institution is dedicated to preserving old teleprinters and their associated technology.

A summary of all of the common RTTY systems can be found at http://www.sigmasrl.it/lbarbi/systems/.

A very good RTTY link page is at http://www.csun.edu/~vfeen0br/johnpage/rtty.html.

Information on SITOR is available from http://www.grove-ent.com/mthfsitor.html.

RTTY Loop Homepage is at http://www2.ari.net/ajr/rtty/wwwhome.html.

Books on RTTY frequencies and techniques: *The Confidential Frequency List* by Geoff Halligey. It covers more than

Table 2: ARRL Teleprinter Frequencies and Schedule (MHz)

3.625, 7.095, 14.095, 18.1025, 21.095, 28.095 and 147.555

6 p.m.	7 p.m.	8 p.m.	9 p.m.
Pacific	**Mtn**	**Cent**	**East**

*Note that transmissions are Baudot at 45 baud and 100-baud AMTOR, FEC Mode B.

The North American Data Communications Museum (NADCOMM)

From the Website of NADCOMM at http://www.nadcomm.com/.

The North American Data Communications Museum (NADCOMM) is committed to the project of collecting, displaying, and operating the equipment which has powered the communications revolutions of the twentieth century, from telegraphy to digital telephony. The collection, largely donated by committed telecommunications workers and businesses, already encompasses a wide array of machines spanning the entire history of teletype and the transition to contemporary digital modem technology.

NADCOMM's goal is to counter the present state of communications history, marked by the quick and successive obsolescence of "last year's models," by maintaining a working collection of functional equipment tracing the stages through which teletechnology has passed.

Curator Don Robert House and the NADCOMM staff believe that this project involves more than the nostalgia of the technophile. The advances in technology preserved in the NADCOMM collection have shaped not only the present state of technology but economic, social, and cultural history through their use in industry and mass media.

Whether or not we accept the premise that these advances mark the transition of world history into a wholly new postmodern "Information Age," their impact on contemporary culture makes the unique project of NADCOMM a vital one. Moreover, the fact that equipment is displayed in a functioning state means that the NADCOMM collection remains a valuable resource for hands-on technological training for the communications professional and the interested layperson alike.

Richard House <drhouse@nadcomm.com>
NADCOMMPublic Relations

The museum, located in California at 3841 Reche Rd., Fallbrook, CA 92028-3810, Phone: 760-723-9943, is looking for donations of historical digital equipment, as well as volunteer staff. Please help support this worthy project.

RTTY. A good Ute source. *Guide to Utility Stations 2000* by J. Klingenfuss — is the list that others are judged by. *The RTTY Listener* by Fred Osterman — is a compilation of hard-to-find information *RTTY Today* by David Ingram — a little out of date (1980s technology) but great background info.

The Soviet Maritime Radiotelegraph Dictionary by Gorka Gorka and Fred Osterman — The largest number of HF RTTY users is the Russian marine fleet. Shows you how to read their transmissions.

All books are available from Universal Radio, Inc. 6830 Americana Pkwy. Reynoldsburg, OH 43068-4113 U.S.A. or visit them online at http://www.universal-radio.com/index.html.

The Klingenfuss publications and CDs can be ordered directly from him through his webpage at http://ourworld.compuserve.com/homepages/Klingenfuss/.

Reader's Letters

Since beginning this column I've received a good number of letters and E-mails that have been very positive about the information that has been presented here to the reader of *Pop'Comm*.

There have been a small number of letters and E-mails that have not been as happy about the new column. Here is a sample letter.

Dear Joe,

You asked for feedback so here it is. When I opened the June issue I expected about the usual Utility Reports except for perhaps your brief introduction to the readers. Instead, I received about three pages of philosophy and no Log Reports. I think the readers would have been happy with about three paragraphs of philosophy and 2 and 1/2 pages of Log Reports.

To be specific and candid, I thought RD Baker edited a perfect utility station section. I disagree with your proposal to feature "the emphasis in a log will not be what you caught etc." In this day of high tech, I really do not care what the equipment, or antennas were, what I care about is what is the frequency, time, and station ID if known. The more wide ranging the frequency list the better.

In Real Estate sales it is — Location, Location. In Utility monitoring it is — Frequency, Frequency. Good Luck.

Ted Powers, Columbus, GA

I think the best way to answer Ted and the others who have similar concerns is to share the following E-mails.

Hi, Joe,

Just a note to say I am pleased to see that I am not the only person around who has been radio monitoring for years. I started 45 years ago, and I still enjoy it. But I am E-mailing you to say couple of things. One is I am really looking forward to your new articles on utilities as I'm quite keen on listening to them, also I hope at times there will be listings that can be heard from here. Two, I have just been into your web and found it very interesting. While there I joined your "Utility Radio Review," so I'm hoping that was the right thing to do. Like meeting "for new chums." Anyway that's all, hope your articles take off as well as they sound.73s.

Tony Lowe
tony-robin@paradise.net.nz

Great column this month as one would expect. I have been searching for a source for RTTY frequencies for coast, aero, and other like agencies. Can you lead me to these, or share some of your frequencies with me? I'm getting tired of copying CFH on 10 MHz. Also now using radio raft and fighting with ARQ and FEC stuff, can never seem to get any legible text, but will keep playing. Thanks and keep up the great work.

Fred VE3FAL VE3DX1FAL Thunder Bay, Ontario flesnick@tbaytel.net

When I started the column I wanted to

Universal's M-450 and M-8000 units.

make certain that *Pop'Comm* readers understood that it was not to be a continuation of R.D. Baker's excellent "Communications Confidential." Rather than create a pale imitation of his good work, a decision was made to start with a clean slate and to create a brand new column.

A review was made of shortwave monitoring magazines around the world to see how they presented utility radio information. The same thing was done with utility radio newsletters and club publications. The readers of *Popular Communications*, through their correspondence with the magazine over the years, were also a source of information.

What was found, after all that, was that while newsletters and club publications were an excellent place for *large listings of loggings*, magazines were best used when they provided background or information based articles. All of this was outlined in the plan that was published as my first column. This was done in order to make the changes in editorial directions clear to everyone.

I know that there are a number people out there who are highly experienced utility station monitors. I also know that many will be disappointed at the lack of volume of loggings than was previously provided in *Pop'Comm*.

It is doubtful that the levels of logging will be brought back to what it was before I started. Again, research and experience has shown that there is a real demand by the readers of *Pop'Comm* for background and technical information on utility monitoring, rather than an emphasis on logs. Still, this does not mean that the experienced utility monitor is to be left out of the picture.

As I have said before, and I will say again, **send in your logs** — they will continue to be published. Share your success and experiences in utility monitoring through your logs, and make a positive contribution to the development of other peoples interest and ability in making their own loggings.

Likewise, please continue to write in with your opinions. This column is not above criticism or being improved, and I welcome comments and suggestions — favorable or otherwise.

Readers Logs

Exciting things certainly happen when listening in on the utility communications. It's not all routine and business as are shown in the following contributions. (All times are UTC).

Ian Julian ZL1TBM Hamilton, New Zealand

5660: UNID Commercial stations Honiara & Logic Bay Solomon Islands 0750 UTC USB 2 OMs with a chit-chat about the coup. One of them mentioned he had lost $130,000 worth of business, hearing gunfire at one o'clock in the morning, a whole lot of criminal activity going on, and cars being stolen a shipped to the outer Islands.

5759: KILO FOXTROT USN Link-11 net 0855 UTC USB with "My unit X-RAY ALPHA ECHO your unit X-RAY ALPHA FOXTROT over."

5804: VJQ727 Capricornian SDE Rockhampton, QLD Australia 0700 UTC USB 2 YLs with parent/teacher meeting.

6751: 4 TANGO WHISKEY and JJG8 JMSDF Atsugi NAS Japan 0908 UTC USB passing WX forecast.

6790: UNID Commercial stations Australia 0740 UTC USB OM and YL with a chit-chat. Mentioned about picking up a drum of fuel.

6848: U.S. tuna fishing boats Pacific 0735 UTC USB 2 OMs with a long chat.

6915: Telecom Solomon Islands 0650 UTC USB OM with conversation in Pidgin EE. "I don't care what happens to me man just give me a gun." (Probably Malaita Eagles about the Coup). Followed by OM calling Kina, Ulawa and Manawasi.

6926: UNID Station Indonesia 0735 UTC USB OM with WX forecast. "Kilomet ALPHA . . . Charlie charlie . . . Copy . . . Forecast . . . OK . . . Jayapura."

11225: UNID Station Indonesia 0732 UTC USB YL with WX forecasts. "Jayapura . . . Kilometre . . . Biak . . . Kilometre . . . Copy . . . Indonesia . . . Kilomet ALPHA . . . Repeat Kilomet ALPHA . . . Sorong . . . Comma . . . Fak Fak . . . Kilomet ALPHA forecast . . . Non flyer . . . DELTA ALPHA NOVEMBER . . . I spell . . . Repeat . . . Comma . . . Kilomet ALPHA ECHO . . . Charlie Charlie . . . Biak . . . Repeat."

11235: AUSSIE 705 and RAAF Sydney, NSW Australia 0217 UTC USB with TAF for YSRI (Richmond).

25950: RPU KGON 92.3 FM Portland, OR USA 2348 UTC AM with reggae music.

27680: VMR203 Royal Volunteer Coastal Patrol Narooma, NSW Australia 0210 UTC AM OM with WX forecasts.

27860: VMT232 Tasmanian Smallcraft Marine Radio Hobart, TAS Australia 0055 UTC AM OM with WX forecast.

27900: VMR455 Volunteer Marine Rescue Raby Bay, QLD Australia 0250 UTC AM with the boat Pathfinder for a time check.

27900: VMR488 Volunteer Marine Rescue Bundaberg, QLD Australia 2043 UTC AM OM with announcements.

27900: VMR445 Volunteer Marine Rescue Bribie Island, QLD Australia 2325 UTC AM OM with the Boat Bribie 363.

27900: VMR460 Volunteer Marine Rescue Point Danger, QLD Australia 2233 UTC AM OM with the boat Holy Mackeral for position reports.

29730: Presumed U.S. Forest Products comms 2240 UTC NFM OM with "Hook it up to the truck."

30450: U.S. Army Ft. Hood, TX Range

Table 3: USCG HF Radiotelex (SITOR-B) Broadcast Schedule

*Note: Master Station is where info is being created; other locations below are transmitter locations.

USCG Communications Area Master Station Portsmouth, VA — Transmitting From Boston, MA/NMF

Time (UTC)	Frequency (kHz)
0030*	6314, 8416.5, 12579
0140	6314, 8416.5, 12579
1218*	8416.5, 12579, 16806.5
1630	8416.5, 12579, 16806.5

*Ice Broadcast (seasonal)

USCG Communications Area Master Station Pacific San Francisco CA/NMC

Time (UTC)	Frequency (kHz)
NMC — Transmitting From Pt. Reyes, CA	
0000	8416.5 16806.5
1800	8416.5 16806.5
NRV — Transmitting From Guam	
0230	12579 16806.5 22376
0500	12579 16806.5 22376
0900	12579 16806.5 22376
1500	12579 16806.5 22376
1900	12579 16806.5 22376
2315	12579 16806.5 22376
NMC — Transmitting From Honolulu, HI/NMO	
0130	8416.5 12579 22376
0330	8416.5 12579
0430	8416.5 12579
0630	8416.5 12579
0730	8416.5 12579
1330	8416.5 12579
1730	8416.5 12579 22376
2030	8416.5 12579 22376
2230	8416.5 12579 22376

Note: Frequencies listed are assigned. Carrier frequency is located 1700 Hz below the assigned frequency.
Source: USCG *29 July 1998*

Control 2148 UTC NFM with brief voice bursts. "Target status for maintenance over...Grid...Roger."

Rich Klingman, Mt.Upton, NY

2182: F/V *Fulmar* wkg USCGS Mayport (FLA) re: vsl having been attacked by pirates off the coast of Andros Island (Bahamas), no one hurt, but vsl shot up pretty bad — holes in pilot house and gunwales. 0130–0345 in USB.

4505: Spy #s stn-'Boris Badanov' voice from 0300–0330 in AM mode

6755: Weird warbling noise here, sounded like blowing across a Coke bottle top ('Ooo-loo-woo-loo' etc), went on for several hrs w/no letup- hrd at 2330 and still going on at 0300 when I went to bed. AM mode.

8971: EAM for THOR consisting of hundreds of characters — I lost count after 250! 1840 in USB.

11175: NORTHSTAR 34 (C-5A) wkg Offutt re pp to Davis-Monthan, have several 'sensitive' on board, requesting armed guard escort to Sandia Nat'l Labs in New Mexico 1845 in USB.

11545: Lincolnshire Poacher at 1304 in USB (RK) Isn't it about time these organizations opened up a little bit and acknowledged they exist?

15016: GLACIER 09 (C-130) wkg Thule re cargo to offload. 2030 in USB

25950: Transmission from KNRK in Portland, OR, with music, very weak-what were they doing up here? 1850 to 1910 in AM.

Wrap Up

Hopefully this month's background information on digital modes will encourage you to try monitoring this fascinating means of communications. I also hope that we will begin to see more digital loggings being sent in as well.

I would also like to thank Fred Osterman of Universal Radio for providing me with many valuable insights and information on decoding and monitoring RTTY stations. His assistance is very much appreciated, and the readers should note his contributions to the monitoring hobby.

Next month I am going to be covering the monitoring of emergency services. Throughout the day, trouble happens, and people depend upon communication for assistance. There can be some real drama-taking place in many parts of the world that you can follow.

I will be providing hot frequencies and descriptions of some of the services that you may wish to follow. I also have a guest story about the Australian Royal Flying Doctor service, and how you can monitor their activities in the outback.

The second part of digital mode monitoring will also be presented, giving background information on using your personal computer as a demodulator. It's certainly cheap and easy to use your existing sound card and some shareware downloaded from the Internet to monitor digital signals. Yet are the results as good as a dedicated outboard demodulator?

And of course we will have logs. Don't forget to send yours in. E-mail or snail mail, it does not matter. As long as it is legible and has a name and an address I do not care if it is one or one hundred. If you wish to be anonymous in the publication, that's fine too, but I still need your name for my records.

'Til then, take care, and may you have many successful monitoring sessions over the coming weeks and months. ■

WASHINGTON BEAT

FCC Actions Affecting Communications

Supreme Court Goes To The Mat With The ECPA

The not-so-venerable Electronic Communications Privacy Act will essentially find itself on trial in the nation's highest court in the near future. So too, will at least one of the precepts underlying such proposed ill-conceived anti-scanner legislation as **H.R. 2369, H.R. 3489, and H.R. 514**. In a surprise move, the United States Supreme Court has agreed to hear an appeal escalated from the Third U.S. Circuit Court of Appeals, involving the constitutional First Amendment right to free speech. The Supreme Court will examine a case as convoluted as its name: *Gloria Bartnicki and Anthony F. Kane versus Frederick W. Vopper, a/k/a Fred Williams; Keymarket of NEPA, Inc., d/b/a WILK Radio; Lackazerne Inc., d/b/a WGBI Radio; Jane Doe; John Doe; Jack Yocum* (3rd US Circuit Court of Appeals, Docket No. 98-7156).

The case allegedly involves the interception of a cellular telephone call between Bartnicki and Kane, said to be involved in teachers' union negotiations in a Pennsylvania community. According to court records, an unknown person actually made the interception, recorded the conversation, and left the tape in the mailbox of one of the defendants. This defendant was reportedly in opposition to the teachers' union proposals. Court records say that he recognized the voices on the tape and subsequently gave a copy of the tape to an individual at local radio station WILK. That station allegedly aired the tape repeatedly, simulcast on WGBI-AM. Bartnicki and Kane brought suit against Yocum, Williams, WILK and WGBI. The plaintiffs found basis in both the ECPA (18 USC §§2510, et seq.), and the Pennsylvania Wiretapping and Electronic Surveillance Control Act (18 Pa. Cons. Stat. §5701, et seq.). These plaintiffs may be entitled to recover damages from the defendants if the ECPA is ultimately held to be constitutional.

It is important to note that what is at issue here is *not* whether anyone has the right to intercept a cellular radio transmissions. Rather, the Third Circuit Court found two pertinent questions of legal principle in this case. One has to do with whether the radio stations could be held liable under the wiretap statutes for merely airing a "newsworthy" tape, when the radio stations had no part in intercepting or recording the cellular conversation. The second principle has to do with whether the defendant who allegedly forwarded the tape to the radio stations, if similarly held liable under the wiretap laws, has had his First Amendment free speech right violated. In simple terms, the issue in this case is not about monitoring cellular calls. Rather, it is about the constitutionality of divulging or publishing the existence or content of intercepted calls, particularly in instances where the party publishing such content may not be aware that it was illegally obtained.

This case may bring to mind another recent high profile case of cellular call interception. *Boehner versus McDermott* (191 F.3d 463, D.C. Circuit 1999) concerned itself with the circumstances surrounding the famous Florida incident where a cellular conference call involving former Congressman Newt Gingrich, was intercepted. A divided U.S. district court in that case held the contested section of the ECPA to be constitutional. The *Bartnicki* court, however, noted at least one subtle, but likely substantial, difference in its case. Court records allege that in the *Boehner* case, Congressman James McDermott knew who intercepted the conversation in question and knew that the transaction was illegal at the time he entered into it. Yet in the *Bartnicki* case at issue here, the judges of the Third Circuit Court of Appeals hold that the ECPA *fails* an important constitutional test. The ECPA therefore may not be applied to penalize the use or disclosure of illegally intercepted information in cases where there is no allegation that defendants participated in or encouraged such interception. Ultimately, the U.S. Supreme Court will have the final say on this legal principle.

This brings us to the various incarnations of pending anti-scanner legislation a lá **H.R. 2369**. You may recall from previous discussions in this column, that a key provision in this most recent slew of bills is a single fundamental change to the most basic radio communication privacy law, **Section 705 of the Communications Act of 1934 (47 USC §605)**. This section prohibits the unauthorized interception *and* divulgence of radio communications. H.R. 2369 would **change** that wording to mean prohibiting interception *or* divulgence. However, if the Supreme Court upholds the *Bartnicki* decision, the liability and criminality of divulging the contents of intercepted cellular transmissions may simply no longer be an issue.

Big Trouble In Michigan

How about the majority of scanner listeners who are unquestionably legitimate? Tired of being over regulated by the federal government? The folks in Washington may seem delightfully tame after dealing with some of the various states! There's trouble in Michigan for those using mobile scanners. I want to extend a big *Pop'Comm* thanks to reader Roy Scott who brought Michigan's mobile anti-scanner law, **Michigan Complied Law 750.508 (M.S.A. 28.776)**, to my attention. Here at the *Pop'Comm* editorial offices, I have my hands just about full keeping an eye on Congress, the FCC, and various other agencies in Washington. It is incredibly cumbersome, to say the least, to keep track of 50-plus state, district, and territorial legislatures and regulatory agencies on top of all that. So, when readers like Roy speak up to alert us to an unfolding situation in their locality, I eagerly follow up.

BY ALAN DIXON, N3HOE/KST8678 <n3hoe@juno.com>

MCL 750.508 is full of contradictions. Primarily, it outlaws vehicles "equip(ped) with . . . a radio receiving set that will receive signals sent on frequencies assigned . . . for police purposes, or the use of same" within the state. The statute provides exemptions for peace officers as well as for FCC licensed amateurs holding Technician, General, Advanced, or Extra class tickets. Sorry though, as far as the state is concerned, there is no exemption for Novice and Technician Plus licensees, for some arcane reason. Nor is there any exemption for fire service and emergency medical service officials. There is, however, a provision for scanner users to secure a permit from the state police for such operation. What message are the Michigan Legislature and the Michigan State Police trying to send? The penalty for violation of MCL 750.508 is up to one year in jail and a fine of up to $500. Understand that prison time is the penalty to be paid for simply using an officially FCC authorized radio receiver in a vehicle. The statute does not require the alleged perpetrator to be involved in the commission of any other crime in connection with using such a federally approved device in an automobile.

Roy also made me aware of a situation involving Mark Bajek of Michigan. Mark, like many, is a scanner user. Not wanting to be harassed by police for possessing alleged "contraband" and tools of the criminal trade, he decided to get a scanner permit issued by the Michigan State Police. Nonetheless, Mark is working to change Michigan's lopsided anti-scanner law.

Bajek has really done his homework on this matter. He tells *Pop'Comm* that he has corresponded to all 83 county prosecutors in Michigan, asking them for an interpretation of MCL 750.508. At press time, Mark notes that 62 counties have replied. He reports these results thus far: Twenty counties flatly stated that they enforce all laws. Thirty-five stated that subjects will be prosecuted if a scanner is found anywhere in a vehicle, regardless of what frequencies are programmed, even if the receiver is found in the trunk. (Does this group of prosecutors understand the meaning of the word "equipped?" How can items carried in the trunk of a vehicle be considered as functional equipment of the vehicle?) Five claimed that they would prosecute only if a scanner was found in the passenger compartment. A scanning receiver found in the trunk, disassembled (i.e. without batteries), would not trigger a prosecution. As for the remaining respondents, one prosecutor said he would confiscate scanners found in vehicles, and another advised to play it safe and not to even go near a car with a scanner. The last prosecutor mentioned actually exercised a modicum of thoughtful discretion in noting that a decision to prosecute would depend on the situation.

In order to spread the word, Bajek had commissioned a highway billboard near the Ohio border to warn NASCAR racing fans, railfans, and others who may be carrying scanners, of the danger ahead in Michigan. Mark did this at considerable personal expense. The sign is gone now, but Darryl Wattenberg's Train Watchers Web site <www.trainwatchers.com> has details and links concerning Mark Bajek's campaign to have anti-scanner MCL 750.508 modified.

Michigan is not alone in restricting the use of scanning receivers in vehicles. A handful of other states have similar restrictions. However, an FCC order issued in recent years, **PR Docket 91-36**, offers substantial protection for licensed radio amateurs of all classes. This ruling stands regardless of differing state

statutes. Nonetheless, the burden of responsibility will most often rest on the licensee to establish and assert his or her authority to operate a scanning receiver, mobile or otherwise. This is because regrettably, too many prosecutors and some law enforcement officials feel that they are somehow above federal law. Of course, this FCC ruling does nothing to protect unlicensed personnel, average consumers, and hobbyists.

However, Michigan has a history of abusing radio hobbyists and scanner users. The state's mobile anti-scanner law is not new. It has existed in one codification or another since 1929. The constitutionality of MCL 750.508 was challenged in 1982 in *People versus Gilbert* (414 Mich. 191, 324 N.W.2d 834). The court upheld the statute on the grounds that its classifications are "rationally related" to the statute's objective and consistent with the principles of equal protection and due process. Presumably, MCL 750.508 does not unduly discriminate against particular individuals. There's more. During the FCC's 1991 *Inquiry* that resulted in the PR 91-36 preemption ruling, the Director of the Communications Section of the Michigan Department of State Police had filed comments. The Michigan State Police expressed their concern about the possibility of isolated incidents of apparently unlawful actions taken by amateur licensees receiving public safety communications. Therefore, the State Police concluded, "there can be no beneficial need for amateur radio equipment to tune in public safety channels." Persons well experienced in emergency communications may find themselves seriously wondering where the official who filed these comments acquired his radio communications training! In spite of Michigan's protests, the FCC's final preemptive ruling prevailed.

REACT Suggests A "Call Channel" For FRS Radios

REACT is the organization that had pressed to have CB channel 9 recognized as the national emergency and travelers' assistance channel, in the '60s. Since the inception of the Family Radio Service just a few years ago, a need for a single call channel has become evident. Toward this end, the Radio Emergency Associated Communications Teams now advocates the use of FRS channel 1 at 462.5625 MHz as the universal calling channel. CTCSS tone squelch needs to be disabled, with receivers running normal carrier operated squelch. FRS channel 1 is one of seven FRS frequencies in common with licensed GMRS channels, so that GMRS operators can easily monitor the frequency. It should not be confused with the GMRS shared use emergency frequency of 462.675+ MHz. REACT is careful to point out that channel 1 is to be considered a call channel, not an exclusive emergency channel.

The use of FRS channel 1 as a call channel requires no action on the part of the FCC. Just do it! CB channel 9 was in regular use as an emergency and travelers' assistance channel long before the FCC designated that channel for such use on an exclusive basis. Using a common call channel without coded tone squelch receive limitations eliminates the need for FRS users to try all 532 possible channel and CTCSS combinations in order to establish contact with another station. REACT has a winning concept.

FCC Announces New Electronic Document Management System

The FCC has announced its new Electronic Document Management System (EDOCS), now available to the public at the FCC Web site at **www.fcc.gov.** EDOCS was designed to provide interactive online research, replacing the Web site's user *un*-friendly "Digital Index." Users may obtain documents from the EDOCS Web site. EDOCS will also create indexes to be placed on the Web to provide access to documents for users not wishing to use its interactive query function. There are several index formats: a cross-bureau and office index for each year, and a separate annual index for each bureau and office.

As you read this, general election day and the end of the present congressional session draws near. At press time, the U.S. House of Representatives had just passed **H.R. 4391**, The Mobile Telecommunica-tions Sourcing Act. This bill would serve to simplify taxation on mobile telephone bills, a concept popular with everyone. What's so significant about this action? This is the version *without* the anti-scanner language H.R. 514 written in. Its political nemesis, **H.R. 3489**, is the Wireless Telecommunications Sourcing and Privacy Act. Yes, it's that "Privacy Act" part that would have an impact on scanning receiver users. Other than that, H.R. 3489 would also serve to simplify wireless telephone taxation. Although H.R. 3489 is still on the table, the passage of consumer-friendly H.R. 4391 practically assures that H.R. 3489 is dead in the water. The House bill will have to be voted on by the Senate, but the companion Senate version of the Sourcing Act had never contained any "privacy" language.

Time is running out in the present congressional session, so this popular tax reform bill will probably be pushed through quickly. As for H.R. 514, it was previously passed by the House, and has sat idle in the Senate, largely devoid of support. Although there is a companion Senate version in Committee, it too lies idle, devoid of Senate support. And as just noted, time is running out. Any bills not passed by both houses of Congress by the end of the session are dead. With this in mind, your *Pop'Comm* editorial staff will be watching for the inevitable resurrection of these burdensome anti-consumer bills that would restrict citizens' lawful use of FCC approved radio receivers. That is, if the Supreme Court doesn't slap Congress' hand! Please let me know what's on your mind and how telecommunications regulatory issues affect your activities. You can reach me at <n3hoe@juno.com>. ■

THE PIRATE'S DEN

Focus On Free Radio Broadcasting

Who Wants To Be A Pirate Operator?

Things are looking better this month! Let's get right to your pirate loggings. Have you sent in yours?

Psycho Radio, 6955 USB at 2002 with many IDs and songs. Announced **6955** shortwave and 89.3 FM. (Lee Silvi, OH)

WACK Radio, 6955 at 0340 with weak audio. (Silvi, OH) Sometime near 0300 with Slim Shady Clinton and Montana parodies. Gave an 888 number for calls and mentioned the FRN. (Bill Finn, PA) 0345. Possibly mentioned they were in Ohio. Call-in number given as 888-0959-8177. (Robert Smith, NY)

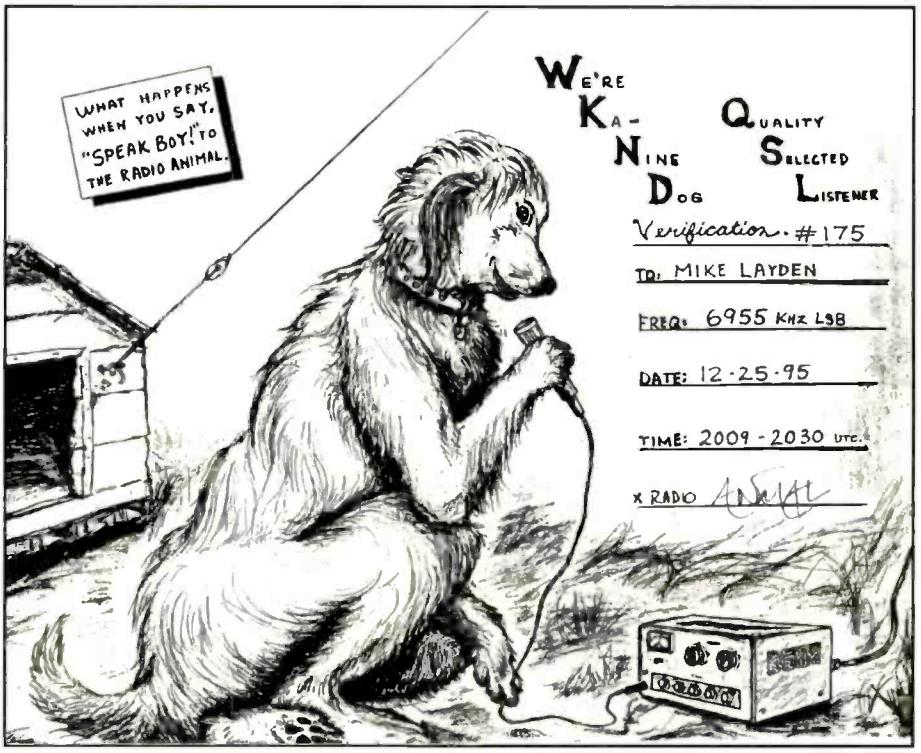
WBCQ Spoof, 7415 at 0300 with a combination of Los Lobos, Brother Stair, Amos 'n Andy skits, numbers, barking dogs, running water. The signal was just above the legit WBCQ. (Finn, PA)

WHYP, 6955 at 1120 — James playing music, IDs, Tom Jones and some Jimmy Buffet. (Finn, PA) 0042 with "Who Wants to be a Pirate Radio Operator?" (Silvi, OH) 0126 with this take-off on the "Who Wants to Be a Millionaire?" TV show. Called himself Regis Barnyard. $32,000 question was asked and "Louis Farrakhan" was the wrong answer. Later someone, "Radio Bob" "won" $15,000 and said he'd purchase an amp for his rig. Later a parody about smoking cigarettes and the results from using them. (Tim Taylor, PA)

Alfa Lima International, 15070 at 0026. Weak, but I did manage an ID, which I taped and E-mailed them and they sent an E-mail QSL. (Finn, PA)

Indira Calling, 6950 at 0204 with Beach Boys and heavy sitar influence. (Finn, PA) **6955** at 0100. (Silvi, OH) 0115. Mentioned 02908, Calcutta, and Providence, Rhode Island, 02908. Beach Boys number dedication, mailing address again and sign-off.

Eat It Radio, 6954.8 USB at 2146 with many IDs. Announcer was Captain Wiener said he used to be Radio Biscuit. Said to send logs to Free Radio Network, the ACE or Andrew Yoder and noted he may have E-mail — maybe even QSLs soon. He also asked for donations to improve his audio equipment. (Silvi, OH)



WKND's QSL from '95.

WKND, 6955 at 2311 with mention of WRECC and NAPRS. Possibly repeat of an old program. (Silvi, OH) 2303 with song "Dream Weaver," Paul McCartney (said to be about his sheep dog), discussion about a police dog being kicked off the force because it was too nice to the criminals, mail drop as P.O. Box 109, Blue Ridge Summit, PA 17214. They also mentioned a Pittsburgh address. Station op said the transmission was heard in Germany and mentioned some listener reports, then a plug for the ACE and off at 2326. (Taylor, PA)

Radio Free Speech, 6955 to 0200. Also at 2130. He said he's not QSLing at this time. (Silvi, OH)

KRMI, 6955 at 0110. (Silvi, OH)

KIPM, 6955 USB monitored at 0603 with a story about a girl and a motorcycle. Mailing address given as P.O. Box 24, Lula, Georgia 30554. "Space" music, story about a man and woman who were infatuated with each other, Argentine Tango, story about a couple, one of whom was deaf, the other blind. Off at 0641. (Taylor, PA)

Radio Garbonzo, 6955 at 2250 with ID, then several other IDs, including WHOP, played a song called "When the Bullet Hits the Bone." ID, 73s and off at 2259. (Taylor, PA)

Radio Spider Man, 6955 USB at 0613, test transmission with a mention that he was broadcasting from Chicago. (Taylor, PA)

(Continued on page 78)

BY EDWARD TEACH

CB SCENE

27 MHz Communications Activities

"CB Scene" Expands To Include Family Radio Service

Some Chinese sage put it well: the only constant is change, but singer Bob Dylan put it better: the times, they are a changin.' Truer words were never spoken.

Back in 1994, the phone rang one day. It was Tom Kneitel, Editor of *Popular Communications*, wondering if I'd like to write the "CB Scene" column. It didn't take me long to say yes! It was a good time to take over the helm. CB sales were up 40%, according to some manufacturers, and lots of people were buying CBs and using them for various communications chores. Then in 1996, the Federal Communications Commission did something that not many people took seriously. It redefined the Citizens Band Radio Service. Suddenly, we had a new definition that reads as follows:

95.401 (CB Rule 1) What are the Citizens Band Radio Services? The Citizens Band Radio Services are: (a) The Citizens Band (CB) Radio Service-a private, two-way, short-distance voice communications service for personal or business activities of the general public. The CB Radio Service may also be used for voice paging.

(b) The Family Radio Service (FRS)-a private, two-way, very short-distance voice communications service for facilitating family and group activities. The rules for this service are contained in Subpart B of this part.

The new kid in town was the Family Radio Service, which operates on 14 UHF frequencies:

Channel	MHz
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6875
14	467.7125

The Cherokee FR-465VW is a waterproof full-featured FRS transceiver with a special vibration or ringer alert that operates on five "AAA" alkaline or NiMh batteries. Contact Wireless Marketing at www.wirelessmarketing.com for more information.

FRS radios are limited by FCC rules to a half-watt maximum power in FM mode, with no external antennas and no license required. These small (often pocket-sized) handheld transceivers offer crystal-clear communications over ranges up to about two miles, but many times the range is no more than half-mile to a mile. Because of the frequencies at which FRS radios operate, they perform well in buildings, outdoors, and inside vehicles. In addition, they are easy to use — just select a channel and push the button to talk.

Since the range of the half-watt FRS radios is so limited, particularly when compared to 27-MHz CB under ideal conditions, I must admit I viewed Family Radio Service as a kind of weaker kid brother to "real" CB. In fact, I argued in this column for the creation of a "Class A FRS," that would have, among other things, more power for more range.

A Booming Marketplace

But the marketplace is voting otherwise. In an article published this year, the venerable *New York Times* reported that radio manufacturers were granted approval to produce 14 FRS models in 1997, 41 in 1998, 72 in 1999, and 23 as of April this year. There was a transformation, as well, in the way manufacturers approached the marketplace. At first, virtually all FRS radios carried a price tag of about $120. Then manufacturers began adding more and more features, and the prices went even higher — some models carried list prices that were just pennies shy of $200.

I remember showing FRS radios to friends and relatives, and the response usually went something like this: "Boy, that's pretty cute, and it sounds great, too. What does it cost?" When I told them over $100, they would respond in shocked disbelief: "A piece?" After I revived them with smelling salts, I could see they had a point, especially when cell phone companies were offering great deals with giveaway phones.

So in the past couple of years, manufacturers have turned toward making less expensive models, and now it is possible to walk into a local discount department store and purchase a pair of 14-channel FRS radios, all packaged neatly in a blister pack, for less than $80. People are buying them in droves.

Incredible Versatility

One of the reasons FRS radios are becoming incredibly popular — besides the dropping price — is their versatility. They can be used between vehicles on a trip; at an amusement park or shopping mall to coordinate family activities; between hikers, bikers, and skiers, and even as a mobile intercom in an office building. And because the range is short, it is less likely that they will interfere with each other.

BY JOCK ELLIOTT SSB-734

Here are some other examples. My brother-in-law runs a landscaping company. He bought a fleet of Nextel phones, because of their two-way radio feature, to use for communications when doing maintenance on large sprinkler systems. The distance between the crews on the sprinklers and the guy at the control box can sometimes be 1,000 feet or more. But the Nextel phones often didn't have the solid coverage he needed. So now he uses FRS radios, and they work just fine, thank you. Another friend has a shop in his garage, which is about 75 feet from the house. He and his wife stay in touch using FRS radios. And when my wife sprained her back a couple of years ago just after Christmas, a pair of tiny FRS radios became our instant radio link while I took care of our son.

The point is that people are adopting FRS with enthusiasm. They don't care that the range is limited, they'll work around that. They don't even know that the little radios are immune to skip. All they know is that the things work well; you don't have to put an antenna on your car; and they're small enough to stick into a pocket or clip on your belt.

So, the bottom line: coverage of FRS radios, stories, developments, and what-have-you are going to become a regular part of "CB Scene." Don't worry — we will continue to cover traditional CB as well, but if you have a story, an incident, a comment, or an experience to report regarding your use of FRS, but sure to write to us at "CB Scene" and let us know!

FRS To The Rescue

FRS radios aren't just cute and fun and handy, they are proving useful as well. Consider the following two items.

From the Associated Press, June 12 (Sandy, Oregon) — "Five hours after being hit be a rockfall, two injured climbers using two-way (FRS) radios finally reached someone with their pleas for help. Seven-year-old Fletcher Wold heard the call even though he was 70 miles away — far beyond the advertised two-mile maximum range of the _-watt FRS unit. Fletcher's father contacted authorities, who dispatched an Air Force Reserve helicopter that rescued the climbers."

From the *Orange County Register*, June 16 — "A group of 8 hikers, lost for hours on Palomar Mountain, survived thanks to an 11-year-old boy's presence of mind and his Family Radio Service (FRS) walkie-talkie. After 40 minutes of calling, the group got an answer from Christopher Moore who was camping nearby with his family. With the assistance of a park ranger, they were talked down to safety."

A few years ago, when FRS was just beginning to become available, I asked a senior member of REACT if the organization had any plans to monitor FRS. "Nah," he said, "the range is too short to make it worthwhile." Now, to be fair, this was just one guy's opinion, and he did not represent the official view of the organization. At the time, I thought: "Maybe he's right."

The Need To Monitor FRS

But these two incidents show clearly that there *is* a need to monitor FRS channels, There are, at times, people out there who need help, and for some of them FRS is their only means of communication.

REACT (Radio Emergency Associated Communications Teams) is asking its members to monitor FRS Ch. 1. They have issued a statement saying: "In view of recent news stories, REACT has recommended that all members should monitor FRS channel 1 whenever possible to provide assistance. We suggest that this is another public service that members can be involved in."

I second the motion. If you use FRS or you know someone who does, I suggest you try Ch. 1 first if you need assistance. Somebody just might be listening. Be sure to turn off the so-called privacy tones before you issue a call for assistance. Anyone who is monitoring without a tone activated will be able to hear you, but if you have a tone turned on, you won't be able to hear them respond to you. The CTCSS (continuous tone coded squelch system) tones block reception of any transmission that are not on the same channel with the same tone. So, again, if you need to call for help, turn off the tone.

In addition, if you have a scanner or an FRS unit that scans, I'd like to humbly suggest entering all the FRS frequencies and continuously scanning them *without* a CTCSS tone. I've done this for a while, and I've heard FRS users only rarely, and I haven't yet responded to a call for help. But one thing is for certain — if you are not listening, there is absolutely no way that you are going to hear a call for assistance. While you're monitoring, I'd like to humbly suggest that you also listen to the other assistance frequencies that are

available to the general public: CB Ch. 9 (27.065), the Marine Distress Frequency (156.8), the Aircraft Emergency Frequency (121.5), and GMRS Traveler's Assistance frequency (462.675).

If you are going to monitor CB Ch. 9, it's a good idea to do it using a regular CB station. Here's why: with the long-range skip running as it has been lately, sometimes it is necessary to set the squelch level very high to block out the noise. If you do this on a scanner, you greatly decrease your chances of hearing much fainter FRS signals.

A Driver's Call Channel

The Family Radio Service is new enough that there are no established conventions for its use. For example, there is no designated traveler's assistance/emergency channel as there is in 27-MHz CB. And there is no equivalent to CB Ch. 19, which is the semi-official "trucker's channel" in many parts of the country. So I'd like to suggest that, by custom, we use FRS Ch. 14 as the Traveler's Channel. Tell your friends about it and use Ch. 14 to share information with other drivers on the road. Maybe we can even get the manufacturers to promote and publicize Ch. 14 as the driver's channel and Ch. 1 as the help channel.

Even though cell phones are proliferating wildly in many parts of the country, and many people are kind enough to dial 911 when they see an incident on the road, there is one thing that cell phones don't do very well, and that is share information with other people who you are not purposefully dialing.

Here's an example. Let's say you're tooling down the road and a pallet of rocky road ice cream falls off a truck (this actually happened in my area recently). You call 911 and inform the authorities. They dispatch help and share the information with local traffic reporters who broadcast the information over commercial radio stations. Unfortunately, by the time the guy behind you (who may also have a cell phone but who has no idea that you have reported a roadway incident) hears the information on commercial radio, he has already hit the pallet of ice cream. (Or maybe he's stopped with a spoon!)

Well, you get the picture. We all need to think about how we can creatively use FRS to help ourselves and other people. So, until next time, write to me here at *Pop'Comm* and let me how you are using CB or FRS radio. I look forward to hearing from you. ■

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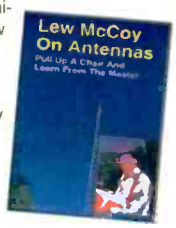

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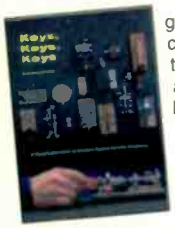

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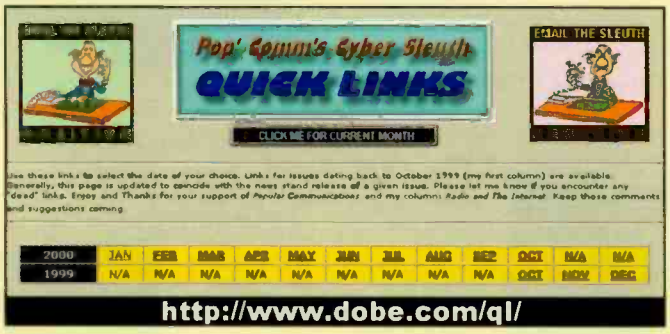
RADIO & THE INTERNET

Pop'Comm's Cyber Sleuth Checks Out Online Resources

Announcing The "Sleuth's" Quick Links Page

You spoke, we listened! Beginning this month, you'll no longer have to type any of the URLs appearing here. Just visit and bookmark the Sleuth's new "Quick Links" page and you'll be ready to go, every month, with just a couple of mouse clicks. There you'll find all the URLs appearing here (both present and past) ready and waiting for your mouse clicks. Give it a whirl and let me know what you think. Type your last URL and visit **http://www.dobe.com/ql/.**



You spoke, we listened. No more typing URLs. Just visit the Sleuth's New "Quick Links" Page.

Note: Since we now have the Quick Links page, beginning next month, resource URLs will no longer be placed in the images (usually screen shots, logos, etc) appearing here. The URLs will, however, continue to be included in the text part of the column. The ONLY reason for putting URLs in the images was to try to make it easier for you to get to the resources. I think you'll find the Quick Links page a much better solution. Regardless, nothing is cast in stone. Let me know if you want 'em back.

Family Radio Service (FRS)

Being at least two years behind the "Upgrade to Windows®" crowd, it's probably not surprising that I've just recently jumped into the Family Radio Service (FRS) arena. Actually, I have been interested in FRS since it was authorized by the FCC in 1996, but held back due to cost. However, now seemed a good time since the prices have declined significantly since 1996. We also needed short-range communication between a "convoy" of four vehicles during our move to a new house. But, there was a new problem. Which brand and model to buy from the myriad of contenders? What I needed was a resource that provided REAL user reviews instead of the standard marketing hype. After a little web surfing, I found one. And, a REALLY GOOD one at that!

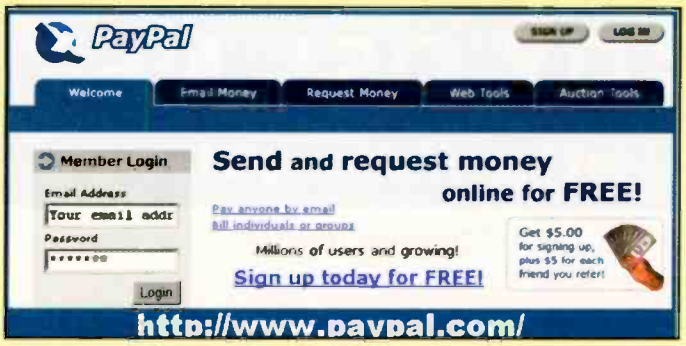
Visit John L. Wilkerson Jr.'s "Family Radio Service (FRS) Information" page. It proves once again that content, not glitz, is what really counts. If you're new to or interested in FRS then John's site is a MUST visit! There you will find all the information you need related to FRS including brand and model comparisons and actual user reviews. Complete with a Chat Room, Informational Pages, Discussion Forums, and Interesting links, the "Family Radio Service Information" page should be in every FRS enthusiast's "bookmark" file. If you already have FRS radios, please consider submitting YOUR equipment review(s) for posting at the site to help others. Using information gleaned from the USER contributed reviews, saved me well over $100 based on what I WAS going to buy. Now THAT'S my kind of site! Thanks John! And thanks also to those who contributed the reviews.

This is where Eric found the best FRS radio brand and model for his communicating needs.

It's an outstanding resource. Don't miss it! Visit **http://members.tripod. com/~jwilkers/frspage.html.**

TIP: While we're thinking about FRS, you might as I did, save some money by checking out the ebay™ online auction site using the URL below. After reading the reviews at the "FRS Information" page above, go to ebay™ and use their search function to find the radio of your choice. To find a specific brand, just type the brand in the search window (for example) "Uniden +FRS" (without the quotes) to find only Uniden models. Or, if interested in all listings, simply use the letters "FRS" without the quotes. Once you've found the unit/auction you like, use the "Search Completed Items" function to see what similar radios have sold for in the previous 30 days. To review probably every FRS listing at ebay™ you could also go to their section (URL also below): "Photo & Electronics: Consumer Electronics: Radio Equipment: Talk-About, FRS" which is used for FRS radios. Remember to NOT let emotions control your

BY ERIC FORCE <eforce@cybernet.net>



If you need to send money, check out this FREE service.

bidding and to review the seller's "feedback" rating BEFORE placing a bid. You can reach ebay™ at **http://www.ebay.com/.**

You can also to go directly to the ebay™ "TalkAbout FRS" section where you'll probably find well over 400 FRS radio listings from which to select. Visit **http:// listings.ebay.com/aw/listings/list/category3308/index.html.**

Online Payment Service

I couldn't leave the auction topic without mentioning PayPal. Folks this is one TOP NOTCH, SECURE and FREE payment service that makes paying for an auction item or sending money to anyone a breeze! If you've been thinking about selling off that surplus gear you have lying around the shack, accepting money via PayPal is the perfect way to collect payment. As a seller, it's like having a Credit Card Merchant Account without the cost or headaches. As a buyer, using PayPal to pay someone couldn't be easier. Once you've registered (free) with your credit card (that's where the money you send comes from), the amount of payment and E-mail address of the payee is all that's required. It can also speed up delivery of that item significantly since the seller doesn't have to wait for normal mail delivery or your personal check to clear. While PayPal has only been in existence for about a year, it already has over *two million* subscribers. Hands down, it is the most successful payment system on the most successful auction site (ebay™) on the 'net with thousands of new registrants DAILY! You owe it to yourself to check 'em out and get $5.00 for just registering. Plus, if you're a member, you will receive $5.00 for every person you refer who signs up. (Big smile — wish I could post my referral number here) Anyway, PayPal is FREE, SECURE, and, in my opinion, an extremely valuable service and all around win-win situation for those who use it. Visit **http://www.paypal.com/.**

Radio — Just What It's Supposed To Be — Fun

I can't think of better-suited name for William Prather, Jr's "RadioFun" pages. As Bill puts it: "This page and its contents are dedicated to people like myself, who enjoy all forms of radio, as both hobby, and a profession — whether it's Commercial Broadcast, Shortwave, Amateur, CB, Internet, or whatever." Regardless of your specific radio interests, I think you'll agree "RadioFun" has something for everyone. Folks in the Asheville, North Carolina area probably know William better as "Brother Bill" of KISS-FM. Take a peek at **http://www.radiofun.homestead.com/radiofun.html.**

This is a super "don't miss" homebrew resource — including the drinking kind!

Hombrewing!

From Sweden, comes "Harry's Homebrew Homepage" by Harry Lythall, (SM0VPO/G4VVJ). Harry introduces his resources with the phrase "The Fun Starts Here." And he isn't kidding. If you're into homebrew, this is the site for you. From projects to reference material to informational pages, it's ALL there — and MORE — including a "homebrew" section on how to brew your own beer and wine! Now THAT's covering all bases! Oh, yes, you are correct. This is the same Harry Lythall whose articles have been published in scores of club newsletters and periodical magazines appearing in the U.S., Canada, and Australia. Some have even been translated in French and Swedish. Don't miss this one of a kind site, chock full, of *quality* information you'll find nowhere else! And you can get to it faster than flying the Concorde. Just point your browser to **http://sm0vpo.8m.com/.**

Note: In the above URL, that's a ZERO in "sm0" and a lower case letter O in "vpo."

Check out Brother Bill's "RadioFun" pages — Aptly named with something for everyone!

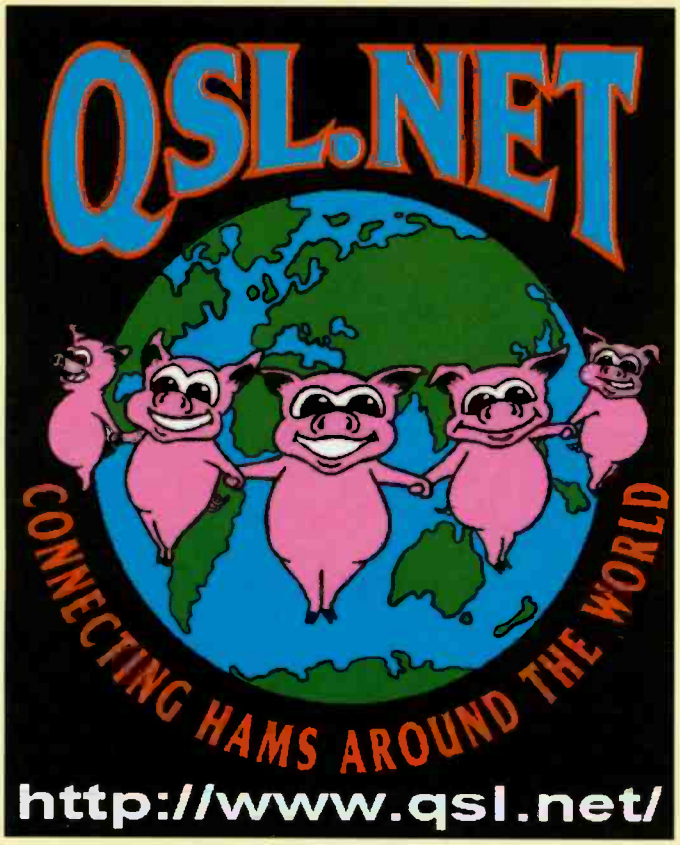
28 MHz DX

As the Winter DX season approaches, here's a 28 MHz SWL contest that should be of interest to many of you. The challenge is to listen to the most DXCC entities in the United States and Canadian Provinces on 10 meters. The contest is open to worldwide SWLs and will be held from 0000 UTC Saturday, December 9, 2000 through 2359 UTC

28 MHz SWL CONTEST 2000
http://www.chez.com/swlcontest/

It begins December 9th. Some nice prizes are offered. Check it out!

Sunday, December 10, 2000 during the ARRL 10 Meter contest. Thanks to Franck Parisot for the advance notice. Take a peek at **http://www.chez.com/swlcontest/.**



Check out this FREE cyber home for licensed radio amateurs. It's a superb overall radio resource.

Free Server Space For Hams

Several months ago, I mentioned **xoom.com** where anyone could obtain FREE server space to build a Web presence. This month take a peek at QSL.net by Al Waller (K3TKJ) — an outstanding resource for everyone interested in radio plus FREE space (for licensed Hams) on a server dedicated to Amateur Radio. While you need to be licensed to obtain the free server space, you certainly do NOT have to be a Ham to enjoy the myriad of radio resources located there. Check it out at **http://www.qsl.net/.**

Propagation

I would be remiss if I didn't mention another outstanding site by Al Waller (K3TKJ) which contains one of the most comprehensive and dynamic (real time) propagation resources I've

DX.QSL.NET
http://dx.qsl.net/

The ONLY Propagation resource you'll ever need.

seen. Other site amenities include the ability to search through many DX logs plus view links to other logs on the Internet as well as chat with other DXers and view real-time spots from DX Summit. Don't miss it. Visit **http://dx.qsl.net/.**

Slow Scan TV

Rob Aarssen's (VE3RDN) "Amateur Radio Slow Scan TV" site is an excellent resource if you have an interest in Slow Scan TV (SSTV). What IS SSTV? Rob explains it this way: "The best way to understand slow scan TV is to imagine it as color FAX pictures but sent over the radio rather than the phone. The pictures are transmitted via tones (1200–2300 HRZ) over the air. There are several simple ways to get setup for slow scan TV, the simplest of which use your computer and software with a hardware interface. There are interface circuits which work excellent and cost less than $20 to build or nil if from your junk box." If SSTV tickles your fancy be sure to visit **http://www.kent.net/ve3rdn/.**

An excellent resource for Slow Scan TV information.

It's hard to believe that a year has passed and this month's issue marks the First Anniversary of the old Sleuth's column. It's been a most rewarding experience for me — I hope the same has been true for you and that I've "come through" with material that you've found interesting and useful. I've thoroughly enjoyed "chatting" with many of you via this incredible resource we call the Internet and look forward to our continued friendship and common interest in radio. Keep those comments and suggestions coming. Remember to visit the new and improved *Pop'Comm* Website at **http://www.popular-communications.com/** for the latest greatest. Thanks again for joining me on this month's journey.

See ya next month. 73 ■

THE LISTENING POST

What's Happening: International Shortwave Broadcasting Bands

Radio Australia's Darwin Site Back On The Air, And Cameroon Resumes Regular Broadcasts

Well, it seems those oft heard rumors are true. Radio Australia's Darwin relay site, which was closed down several years ago in a government move to save money, should be back on the air by the time you read this. The refurbished site is slated to carry the programs of Christian Voice, a station that now broadcasts from Zambia. Times and frequencies aren't yet available, unfortunately. It's a pretty safe bet that other broadcasters, anxious to improve their coverage in Asia, will be lining up to use the Darwin site as well.

If the former Nicaraguan clandestine Radio Miskut has so far escaped becoming an entry in your log, you may want to give them another try. This now legitimate station on 5770 has been off the air for quite a while due to equipment problems, which should be repaired by now. Check them during the early morning or early evening hours.

Watch for the resumption of regular, high-power broadcasts from the main government station at Yaounde, Cameroon. This station is heard now and then, but apparently when broadcasts do occur they are intermittent and at lower than the 100 kW the station has used in the past.

Word is that the transmitter has been renovated and we can expect regular broadcasts with better reception. They use **4850** and sign on at 0400, running to about 0000. Listeners in the Eastern Time zone have a good shot at hearing this in the late afternoons, especially in the fall and winter months.

The BBC (actually **Merlin Communications**) **relay** station at Masirah Island, **Oman** is going to be upgraded and moved to the mainland, to a place called Al-Ashkarah. No word on when Masirah goes silent and the new facility takes over.

The **Voice of Hope,** which closed down in Lebanon when Israel pulled its troops out of the southern part of that country, is now broadcasting via DTK transmitters in Julich, Germany. They are now on the air to the Mideast from 0800–1200 on **21590** and 1200–1600 on **21460**; and to Russia, Europe and Africa from 1700-2100 on **11985.**

Another Russian broadcast service is in big trouble. **Radio Station Tiikhy Okean** is down to a skeleton staff, apparently due to a lack of funds. The station broadcasts to Russian seamen in the Pacific Ocean and has been doing so since 1963. It was last reported active on **12070** (from Irkutsk) **from 0715 to 0800.** Its opposite number is also facing hard times. **Radiostansiya Atlantika's** shortwave broadcasts amount to just an echo of what they once were.

Atlantika's broadcasts run from 0810 to 0900 on Tuesdays and Fridays only, on **4429, 6510 and 17266,** all frequencies using **upper sideband**. Back in the days of the Soviet Union both of these broadcasters, along with the now silent Radio Mayak and Radio Peace and Progress (all government stations) had a more exotic feel to them than Radio Moscow, and it was always a kick to get a QSL from them.


QSL

La Telediffusion Tunisienne a le plaisir de confirmer votre rapport d'écoute du 8.10.97. a 21.33.... MGT ...7475... KHZ et vous en remercie

تشرف إدارة البث الإذاعي والتلفزي بتثبيت تقريركم المؤرخ بيوم الساعة الذبذبة

Adresse :

Mr. ROBERT BROSSEL - [redacted]
PEWAUKEE, WI 53072 - U.S.A

Never quit. It took Robert Brossell 20 years of trying before he could dig a reply out of Tunisia!

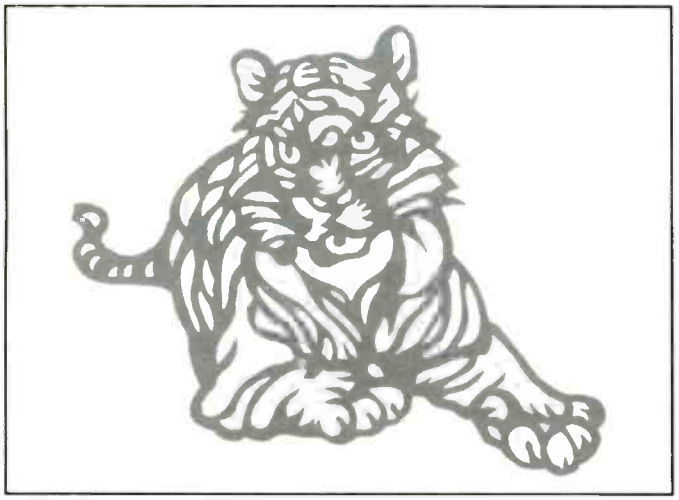
This month's book winner is Pete Becker of Clarkson, Washington. Pete receives a copy of the "*Shortwave Listening Guidebook*," by Harry Helms, courtesy of Universal Radio. If you don't have a copy of Universal's mammoth catalog of goodies do yourself a favor and write or call for a copy. It has over 100 pages of receivers, antennas, books, connectors, and software — anything and everything a shortwave listener could want to improve reception. Phone (614) 866-4267 or write to Universal Radio, 6830 Americana Parkway, Reynoldsburg, OH 43068.

Remember that your reception logs are always welcome. Please be sure to list your items by country, leave at least a double space between each (so we can navigate the scissors more easily), and add your last name and state abbreviation after each log. And also, use only one side of the paper — otherwise some of your logs won't make it into the column. Other things we can put to good use in the column are spare QSL cards you don't need returned (or good quality copies), station photos and other items from stations, including schedules, brochures, etc. We'd love to feature a photograph of you at your listening post, too! As always, thanks so much for your continued interest and cooperation.

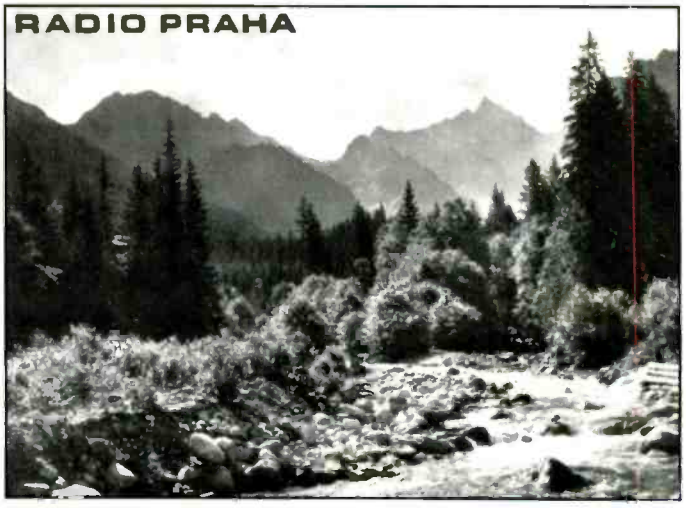
Here are this month's logs. All times are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 5 p.m. MST, and 4 p.m. PST. Double capital letters are language abbreviations (FF = French, AA = Arabic, SS = Spanish, etc.). If no language abbreviation is included the broadcast is assumed to have been in English.

ALASKA — KNLS, **6915** at 1259 sign-on to 1400 to Russia and Asia. (Silvi, OH)

BY GERRY L. DEXTER



Hold that tiger! Jeffery Muska got this QSL from China Radio International recently.



This card from Radio Prague was issued to Jeffery Muska in 1969.

ALBANIA — Radio Tirana, **7160** with IS at 0158. (Miller, WA) 0250 with news about Albania. Muffled audio. (Brossell, WI)

ALGERIA — Radio Algiers Int'l, **15160** at 2000–2100 with EE news, ID, a variety of U.S. and Euro pops, **//11750.48**, both weak. (Alexander, PA)

ANTIGUA — BBC relay, **5975** at 0401. (MacKenzie, CA) Deutsche Welle relay, **6075** at 0431 and **9690** at 0610, both in GG. (Becker, WA) **17810** in GG at 2154. (McKenzie, CA)

ARGENTINA — **8098**, unknown medium-wave or FM outlet being carried on lower sideband at 0130 to past 0230. SS talk and LA music. Weak. Could not catch an ID. (Alexander, PA) Radio Nacional, **6060** at 0159 in SS with music, time pips. (Miller, WA)

ARMENIA — Voice of Armenia, **9665** at 0015 with talk about the economic challenges Armenia faces. (Ziegner, MA)

ASCENSION ISLAND — Radio Japan relay, **15220** at 2243. (Becker, WA) BBC relay, **9610** at 0606 in FF. (Becker, WA) **15400** to West and Central Africa at 2204. (Jeffery, NY)

AUSTRALIA — Radio Australia, **6020** (from Brandon site) heard at 1220. (Northrup, MO) 1309 with news for Pacific area. Also **9660** from Brandon at 0845. (Becker, WA) **9580** at 1217. (Brossell, WI) 1615 with "Radio National" service. (Burrow, WA) **11650** at 1345. (Miller, WA) **12085** at 1030. (Ziegner, MA) **15240** at 0420 and **21740** at 2115. (MacKenzie, CA) 21740 at 2100. (Hughes, MO)

AUSTRIA — Radio Austria Int'l, **9655** at 0209 with news in GG. (Miller, WA) **9870** in GG at 0200. (Wilden, IN) **13730** at 0400 in GG. (Linonis, PA) 0622 in GG. (Foss, AK)

BELARUS – Radio Minsk, **7210**, 0200 sign-on with IS and multi-lingual ID/announcements and into news, comment, local music. Poor in noise. (Alexander, PA)

BELGIUM – Radio Vlaanderen Int'l, **15565** via Bonaire at 2230 with ID, news. (MacKenzie, CA) 0400 with ID, "Radio World." (Burrow, WA) **17690** via Uzbekistan at 1156 sign-on. (Hughes, MO)

BOTSWANA – Voice of America relay, **7265** at 0445 with "Daybreak Africa." (Becker, WA) **13710** at 0623 in FF. (Foss, AK)

BRAZIL – Radio Gaucha, Porto Alegre, **11915** at 0111 with sports in PP. (Miller, WA) Radio Anhanguera, **4915** at 0140 to 0255 close. PP talk, announcements, echo announcements, IDs, commercials, jingles. Irregular. (Alexander, PA)

BULGARIA — Radio Sofia, **9400** at 0000 with "Mailbag," (Ziegner, MA) **9400//11700** at 0223 with music, interview, "Time Out for Music" program. Audio marred by a "rumble" on both frequencies. (Burrow, WA) **11700** at 0200. (Miller, WA)

CANADA — CBC Northern Service, **9625** at 1700 in aboriginal dialects. (Ziegner, MA) Radio Canada Int'l, **6145** in FF at 0437. (Becker, WA) **15305** at 2321 with comedy program. (Miller, WA) **13765** at 0422 with "African Eyes." (Foss, AK)

Abbreviations 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

CHILE — Voz Cristiana, with music and talks in SS at 0445. (Brosell, WI) 0625. (Becker, WA) **11745** at 0516 with Christian pops in SS. (Foss, AK) **17680** in SS at 2200. (MacKenzie, CA)

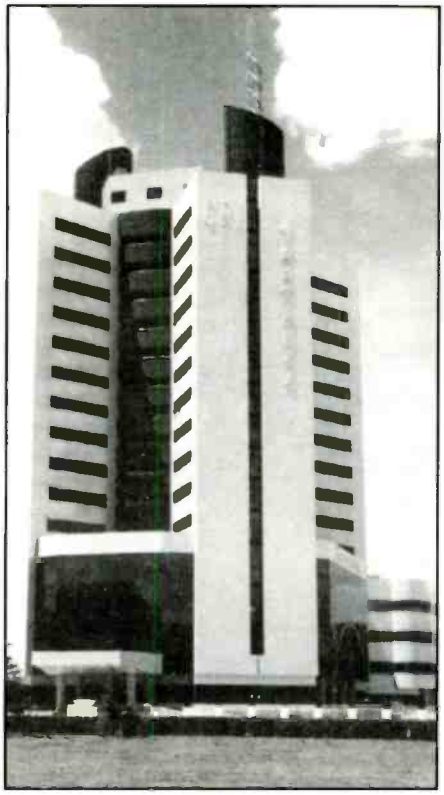
CHINA — Voice of the Strait, **7280** in CC at 0949. (Becker, WA) China Radio Int'l, **9560**, via Canada (?) at 0430. (Linonis, PA) **9570** via Havana at 1300. **Parallel 11675, 11900, 11980 and 15180**. (Hughes, MO) **11900** with news at 1340; **15550** at 1230 in CC. (Northrup, MO) **11980** with news at 1200. (Brossell, WI) **15125** in CC at 1245. (Jeffery, NY) **15400** in CC at 2300. (MacKenzie, CA)

COLOMBIA — Radio Nacional, **4955** in SS at 0410. (Becker, WA) 0420 with announcer, music. (MacKenzie, CA) La Voz del Llano, (presumed) **6115** at 0430 in SS with what sounded like mariachi music. (Linonis, PA) Ecos del Atrato, **5020** with news in SS, into music at 0034, ID by man at 0040. (Montgomery, PA) Colombia Estereo, **4985** at 0805 with heavy metal head banger stuff until 0826 when into Michael Jackson song through bottom of the hour with no announcement. Two-second announcement by man at 0853. Continuous U.S. tunes through top of the hour with no announcement. Jingle at 0916 and again at 0927. (Montgomery, PA)

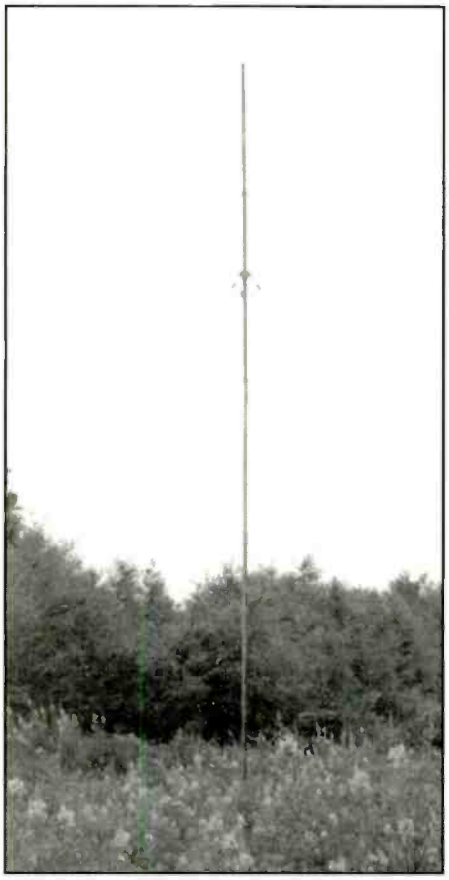
COSTA RICA — Radio Exterior de Espana, via Costa Rica, **6125** at 0435 in SS and **9505** in SS at 0510. (Becker, WA) RFPI, **6970** at 0300. (Burrow, WA) **15050** at 0317. (Brossell, WI) 0355 and 2315. (MacKenzie, CA) World University Network (Gene Scott) on **5030** at 0414. (Becker, WA)

CROATIA — Croatian Radio, **9495**, probably via Julich, Germany, with an interview program in presumed Croatian at 0420. (Linonis, PA) **9925** via Germany at 0102 with "Radio Croatia" ID in EE, "Topic of the Day," back to Croatian at 0125. No EE heard during the 0200–0230 time frame. The same EE program was repeated at 0302–0325. (Alexander, PA) 0215 with news in Croatian. (Miller, WA)

CUBA — China Radio Int'l relay, **5990** at



Snazzy is the word for the headquarters of China Radio International. CRI moved into these new facilities a couple of years ago.



This antenna belongs to Canadian shortwave station CKFX in Vancouver, BC.

2300. Strong but very weak audio and difficult to even understand the announcers. 0100–0200 on **9570** was good but audio could be better at times. (Silvi, OH) Radio Rebelde, **5025** in SS at 0605. (Becker, WA) **9600** at 1220 with all SS. (Brossell, WI) Radio Reloj, **9550** in SS with time clicks and IDs every minute. Gone at 0715. I wonder if Radio Havana is rebroadcasting this national network when their daily transmissions are over. I've heard this on **9820** as well — also a Radio Havana frequency. (Becker, WA) Radio Havana Cuba. **5965** in SS at 0426; 6000 at 0428 and **9550//9582** at 0605. (Becker, WA) **6000** at 0439 with "World of Stamps." (Carlson, MA)

CYPRUS — BBC relay, **15575** at 1440 with tennis matches. //**17840** via Antigua. (Brossell, WI)

CZECH REPUBLIC — Radio Prague, **11600** at 0330 with financial news. (Linonis, PA) **11615** at 0100 with EE news, discussion on romance. (Miller, WA) 0322 with times and frequencies for EE broadcasts. Closed at 0330. (Brossell, WI) **15545** at 2233 with sign-on and news. (MacKenzie, CA) **21745** at 1612. ID at 1627 and into FF. (Burrow, WA)

DENMARK — Radio Denmark, via Norway. **9935** in DD 2330-2359 to Australia and **15835** to Asia, both //**13805** to North America. (Silvi, OH)

ECUADOR — Radio Quito, **4920** in SS with IDs at 0558, 0600. (Becker, WA) HCJB, **9745** at 0445–0500 in EE/SS. (Linonis, PA) 0457 with Latin music. (Foss, AK) 0614. (Becker, WA) **15115** at 0427 with "DX Party Line." (Carlson, MA) **15115** at 0400 in EE; **15140** in SS at 0405 and **21470** in SS at 2159. (MacKenzie, CA)

EGYPT — Radio Cairo, **15285** at 0310 with music and talk in AA. (Brossell, WI) 0326 in AA. (Jeffery, NY)

ENGLAND — BBC, **6175** via Delano, CA, at 0420; **7120** to Africa at 0433; **15400** at 2245. (MacKenzie, CA) **9515** (via Canada) at 1445 and **15575** at 1235. (Northrup, MO) **9590** (listed via WYFR) at 2320. (Wilden, IN) Wales Radio International, **9795** Saturdays 0200-0229, via Merlin transmitters.

EQUATORIAL GUINEA — Radio Africa, **15185** at 2244 with EE religious programming. (Jeffery, NY)

FINLAND — YLE/Radio Finland, **15400**, 1351 in Finnish. (Miller, WA) 1440 in Finnish with a report and music. (Brossell, WI)

FRANCE — Radio France International, **5925** in FF at 0425. (Becker, WA) **17605** at 1600 to 1730 with EE news, women's program other features, beamed to East Africa. (Hughes, MO) 1650. (Barton, AZ)

FRENCH GUIANA — Radio France Int'l relay, **15515** at 1220 in SS. (Northrup, MO) China Radio Int'l relay, **9730** at 0450. (MacKenzie, CA)

GABON — Africa Number One, **15475** at 1644 in FF with ID, music. (Burrow, WA)

GERMANY — Deutsche Welle, **9535** (via Canada) with sports at 0304. (Carlson, MA) **9765** at 0146 with German history. (Wilden, IN) **9900** via Petropavlovsk, Russia, in GG at 1340. (Becker, WA) **13720** (via Portugal) at 0120. (Barton, AZ) **15275** via Rwanda, news in GG at 2319. (Miller, WA)

GREECE — Voice of Greece, **9420** at 0203 with EE news. (Miller, WA) **15205** in EE at 0416. (MacKenzie, CA) **15455** in Greek at 1400. (Ziegner, MA)

GUATEMALA — Radio Cultural-TGNA, **3300** in SS at 0945. (Becker, WA) Radio Tezulutlan, **4835** with talk in SS at 0340. (MacKenzie, CA)

HAWAII — KWHR, **17510** with long talk in CC at 2210. (MacKenzie, CA)

HUNGARY — Radio Budapest, **9835** with news in HH at 0133. (Miller, WA) **11985** at 0350 in HH with folk music. (Linonis, PA)

INDIA — All India Radio, **9700** at 1257 sign-on with IS and into listed Sinhala language at 1300. Weak. (Alexander, PA) **10330** in Hindi at 1336. (Miller, WA) **15075** from Bangalore in unidentified language at 0314. (Jeffery, NY) 0320 in unidentified language. (Brossell, WI)

IRAN — Voice of the Islamic Republic of Iran, **15084** at 2215 to Europe and North America. Very weak. *(in Farsi? — Ed)* (Becker, WA) 2300 in Farsi. (Miller, WA)

ISRAEL — Kol Israel, **9390** with music at 0452. (Becker, WA) **11585** in HH at 0138. (Miller, WA) **15650** in HH at 2220. (MacKenzie, WA) **17545** with sporting event in HH. (Brossell, WI)

ITALY — RAI Int'l, **9670** in RR to East Europe. (Hughes, MO) **11765** via Ascension in H at 0142. (Miller, WA) **11800** at 0305 with ID, music, SS. (Brossell, WI)

JAPAN — NSB/Radio Tampa **9595** at 0635 and **9760** at 0637, both in JJ. (Becker, WA) JJY time station, **8000** with beeps at 1324. (Becker, WA) Radio Japan/NHK, **6145** with EE broadcast from 0000–0158. (Silvi, OH) **9835** in JJ at 1801; **17825** at 2148 with "Crossroads" and "Asia Watch"; **21670** at 2130 "Abbreviated Words" feature. (MacKenzie, CA)

KUWAIT — Radio Kuwait, **15495** in AA at 0320. (Brossell, WI) 2235 in AA. (MacKenzie, CA)

MALAYSIA — Radio Malaysia, **7295** at 1630 with ID by woman, DJ with "Midnight Madness" music dedication/contest program and mentions of "Radio 4." (Burrow, WA)

MEXICO — Radio Educacion, **6185**, 0455 with romantic ballads. (Foss, AK) 0442. (Becker, WA) 1028 with greetings and classical music. (Montgomery, PA) Radio Mil, **6010**, 0435 in SS with local pops, man announcer. (MacKenzie, CA) 1005 with mix of U.S. pop oldies and SS tunes. (Montgomery, PA) Radio Mexico Int'l, **9705** at 1418 with "Latina Radio Summary." (Barton, AZ)

MONGOLIA — Voice of Mongolia, **12085** at 1030 with woman announcer, news and lots of music. (Hughes, MO) EE from 1030–1100 and presumed Mongolian from 1100–1130. (Silvi, OH)

NEW ZEALAND — Radio New Zealand Int'l, **17675** with "Showcase" at 0320.

Behind the mike at Swiss Radio International.

(Brossell, WI) 0400 with news, weather, and "Cadenza" program. (Linonis, PA) 2203 with news. (MacKenzie, CA)

NIGERIA —Voice of Nigeria, **7255** at 0525 with their terrible audio. (Becker, WA)

NETHERLANDS — Radio Netherlands, **11655** at 1810 with "Dutch Horizons." (MacKenzie, CA)

NETHERLANDS ANTILLES — Radio Netherlands Bonaire relay, **6165** at 0440 with European news. (Becker, WA) 0445. (MacKenzie, CA)

NORTH KOREA — Radio Pyongyang, **11710** at 1505 with news, ID at 1511. (Brossell, WI) 1513. Poor audio. (Becker, WA) 1600 in FF. (Burrow, WA) **13650** at 2328 in KK. (McKenzie, CA) **13760** at 1500 with usual party line. Often covered by WHRI. I don't know which one is worse! (Hughes, MO) 1531 with readings from the "great leader." (Barton, AZ) 1848 chorus singing praises of their great leader. Woman in SS at 1852. (Foss, AK)

NORTHERN MARIANAS — KFBS, Saipan, **9465** at 1806 in RR. (Foss, AK)

NORWAY — Radio Norway Int'l, **13805** in NN at 2320. (MacKenzie, CA) 17505 in NN at 1450. (Brossell, WI)

OMAN — BBC relay, **15310** South Asia service at 0315. (Brossell, WI) 0318. (Jeffery, NY) Radio Sultanate of Oman, **15355** in AA at 0238 with talk by man, Mideast music. (Jeffery, NY)

PAKISTAN — Radio Pakistan, **11570** at 1603 with news, ID, end of news, open carrier at 1609. (Burrow, WA)

PARAGUAY — Radio Nacional, **9737.4** at 1029 with SS ID. Strong het from BBC-9740. Into what sounded like news at 1030. (Montgomery, PA)

PAPUA NEW GUINEA — NBC, Port Moresby, **4890** at 0845 with news, weather, commercial for an investment company. Also 1234–1301 with music, call-in show. (Montgomery, PA) 1135 with news, commentary, pledge of allegiance. (Miller, WA) Radio Manus, **3315** in pidgin at 0955. Very weak. (Becker, WA) 0955. Some RTTY QRM on the high side. (Montgomery, PA) Radio East Sepik, **3335** at 0935 with music. (Montgomery, PA) Radio Simbu, Kundala, **3355** at 0–937 with music. (Montgomery, PA) Radio East New Britain, **3385** in pidgin at 0940. (Montgomery, PA) Radio New Ireland, **3905** at 0942 in pidgin. (Montgomery, PA)

PERU — Radio Chota, **4890.22** at 0200 – 0209. SS talk, echo announcements, ID and sign-off without anthem. (Alexander, PA)

PHILIPPINES — FEBC, **15095** at 1220 in unidentified language, IDd at 1230. (Brossell, WI) Radio Pilipinas, **15190** at 1930 in Tagalog and EE with music, possible religious program. (Linonis, PA) **17720** at 1836 with political discussion in Tagalog. (Foss, AK) Voice of America relay, **9770** at 1757 and **15290** at 2308. (MacKenzie, CA) **12040** at 1445 in CC. (Becker, WA) **15160** at 1325. (Jeffery, NY)

PORTUGAL — Deutsche Welle relay, **9785** at 0526. (Becker, WA) **11810** at 0527. (Foss, AK) Radio Portugal **13700** at 0130 with local music, talks, IS, tones and announcement at 0200. (Wilden, IN)

ROMANIA — Radio Romania Int'l, EE to Europe 2300–2359 on **9690//11775//11830//15105**. (Silvi, OH) **15105** at 2305. (Miller, WA) **15180** at 2120 with EE news, ID. (Jeffery, NY) 2100 with EE news, comment, ID, light instrumental music. Much weaker on **11740//11940//15105**. (Alexander, PA)

RUSSIA — Radio Rossii via Magadan on **9530** in RR at 0731. (Becker, WA) **11980** at

0310. (Brossell, WI) Voice of America via Novosibirsk, **11990** at 1445 in CC to Central Asia. (Becker, WA) Voice of Russia via Moldova, **7125** at 0335. (Brossell, WI) **7125 parallel 9665, 12000, 15595, 17565, 17650, 17660, 17690** with EE to North America. (Hughes, MO)

RWANDA — Deutsche Welle relay, **15135** at 2100 in EE. (Hughes, MO) 2105-2145. (Silvi, OH) 2111. (Jeffery, NY) **15275** at 2243 in GG. (Becker, WA) **17860** at 2145 in GG. (MacKenzie, CA)

SEYCHELLES — FEBA Radio, **15445** at 1425 in unidentified language. (Miller, WA) **15555** at 0245 in unidentified language with talk by man, woman, then IS. (Jeffery, NY) BBC relay, 11730 at 0300. (Brossell, WI)

SINGAPORE — BBC relay, **9740** at 1755. (MacKenzie, CA) 1853. (Foss, AK) **11945** with EE/CC lesson at 1205. (Brossell, WI) **11955** at 0953. (Hughes, MO) Radio Singapore Int'l, **6150** with business report at 1235. (Barton, AZ) 1426 with music, QRM from Radio Canada Int'l. (Miller, WA) **9590** at 1125. Audible at 1100 after VOA leaves. (Hughes, MO) 1325 with Latin music and quick fade out. A couple of days later heard until 1400 sign-off. (Becker, WA)

SOLOMON ISLANDS — Solomon Islands Broadcasting Corp., **5020** at 0925 with singers from Fiji. Was airing BBC news for a couple of weeks during the height of the crisis there. Now back with local stuff. (Becker, WA) 0940 with pops, news, "Radio Hapi Isles - The Voice of the Nation" ID. (Hughes, MO) 1239 with pops and commercials. (Miller, WA)

SLOVAKIA – Adventist World Radio/ Voice of Hope, **11600** at 0130–0200 in EE and 0200–0229 Punjabi. (Silvi, OH) 0130 with ID, religious news about religious freedom. (Alexander, PA)

SOUTH AFRICA — BBC relay **7120** at 0455. (MacKenzie, CA) **7205** at 0430. (Brossell, WI) Adventist World Radio-Africa **9745** at 2041 with address, contemporary religious music. (Montgomery, PA) Channel Africa, **17870** at 1822 with news, ID, sports news. (Jeffery, NY)

SPAIN — Radio Exterior de Espana, **6055** at 0430 with ID signal. (Becker, WA) (IS?) **15375** in SS at 1210. (Northurp, MO)

SRI LANKA — VOA relay, **9645** at 1750 with "Talk to America." (MacKenzie, CA) Deutsche Welle relay, **15205** in GG at 0231. (Jeffery, NY)

SWEDEN — Radio Sweden, **9425** at 0206 with Swedish news. (Miller, WA) **9495//15245** at 0300–0330 in Swedish, 0330–0400 in EE. (Silvi, OH)

SWITZERLAND — Swiss Radio Int'l, **9885** in SS at 0215. (Wilden, IN) 0417 in EE. (Burrow, WA) 0430. (Linonis, PA) 0832 via French Guiana. (Barton, AZ) **9905** via French Guiana at 0435. (Brossell, WI) **12010** at 1506 in GG. (Miller, WA)

TAIWAN — Radio Taipei Int'l, **7130** with classical Chinese music at 1225. (Barton, AZ) **9610** with EE to Australia from 1230–1300, then into Central Broadcasting System programming in CC to Asia from 1300–1400. (Silvi, OH) **11745** in CC at 1210. (Brossell, WI)

THAILAND — Radio Thailand, **15395** with EE to U.S. at 0030-0100. (Silvi, OH)

TURKEY — Voice of Turkey, **9445** at 0030 in TT. (Ziegner, MA) 0420 in TT with music and commentary. (Linonis, PA) **11655** with IS at 0258 to full ID "This is the Voice of Turkey" at 0300 sign-on. (Brossell, WI) **13640** at 2240 with ID, URL address, music. (Burrow, WA)

UGANDA — Radio Uganda, **4976** at 0300 sign-on with choral anthem, into local choral music, EE talk. (Alexander, PA)

UKRAINE — Radio Ukraine Int'l, **9600** at 0400 with IS, ID, EE sign on. Low modulation. (Linonis, PA) **13590** at 0300 with IS, into EE to North America. A 60-minute broadcast but the final 30 clash with Iran. (Hughes, MO) 0300 at excellent level. (Alexander, PA)

UNITED ARAB EMIRATES — UAE Radio, Abu Dhabi, **15315** in AA at 1435. (Brossell, WI) **17760** in AA at 2157. (MacKenzie, CA) UAE Radio, Dubai, **15400** in AA at 0320. (Brossell, WI)

UZBEKISTAN — Radio Tashkent, **15295//17775** with EE to South Asia at 1200. (Hughes, MO)

VANUATU — Radio Vanuatu, **7260** at 0836 with pop/rock and others. (Foss, AK)

VATICAN — Vatican Radio, **7305** in EE at 0255 and **11625** in FF at 0445 . (Brossell, WI) **9605** in SS at 0208. (Miller, WA)

VENEZUELA — Ecos del Torbes, **4980**, in SS at 0922 with ID. (Becker, WA)

VIETNAM — Voice of Vietnam, **9695** via Canada at 0230. Better at 0330 on **9795**. (Hughes, MO) **9795** at 0347. Off 0355. (Burrow, WA)

YUGOSLAVIA — Radio Yugoslavia, **6195** monitored at 0445 with talk about Russia. (Linonis, PA)

ZAMBIA — Christian Voice, **4965** at 2345 to 0257 close. Contemporary Christian music, IDs, religious talks (Alexander, PA)

That's the works for this time. Ten barrels full of thanks to the following good people who took the time and trouble to contribute logs this month: Robert Carlson, Walpole, Massachusetts; Lee Silvi, Mentor, Ohio; Robert Brossell, Pewaukee, Wisconsin; Brian Alexander, Mechanicsburg, Pennsylvania; Stewart MacKenzie, Huntington Beach, California; Pete Becker, Clarkson, Washington: Mike Miller, Issaquah, Washington; Tricia Ziegner, Westford, Massachusetts; Dave Jeffery, Niagara falls, New York; Mark Northrup, Gladstone, Missouri; Bruce R. Burrow, Snoqualmie, Washington; Jack Linonis, West Middlesex, Pennsylvania; Marty Foss, Talkeetna, Alaska; David Hughes, Kansas City, Missouri; Robert Montgomery, Levittown, Pennsylvania and Rick Barton, Phoenix, Arizona. Thanks to each one of you. Until next time, good listening! ■

TUNING IN *(from page 4)*

Shortly after FRS became a reality, instead of carping about unfounded repeater interference, wouldn't it have been smart for the GMRS community to embrace these radios back in 1996 instead of trying to beat FRS to death? And now that Americans are staying in touch wherever they go and FRS is in their shirt pockets, wouldn't it make sense for the GMRS community to also adopt 462.5625 as an emergency simplex channel? Makes sense to me. What do you think?

I find it interesting, and even somewhat amusing, that if you talk to the person on the street they have *no clue* about GMRS, but they've definitely heard of those tiny FRS handhelds which have been around only four years. Perhaps the Personal Radio Steering Group likes it that way. Go figure.

Sun And Radio Fun At Virginia Beach

Let's hope so, anyway! Last year the 24th annual Virginia Beach Hamfest and Computer Fair at the Pavilion was, by most accounts, washed out by Hurricane Floyd with its torrential rain that flooded most access routes. The latest long-range predictions from the National Hurricane Center say this season may even be worse. But I'm still packing my bags for Virginia Beach. I'm not a hamfest guru; I usually attend only Rochester, New York's extravaganza in early June, the Dayton Hamvention in May, and Virginia Beach in September, but really enjoy meeting and talking with you at all these great hamfests.

For me, the Virginia Beach show is more than a chance to buy more antennas and radio gear, it's that refreshing pause between seasons before Old Man Winter makes working on our antennas a real chore. If you're on the East Coast after Labor Day, why not make the trip to the Beach from September 23-24 and stop by our *CQ Communications, Inc.* booth and talk radio. I'll be monitoring 2-meter simplex 146.520 MHz and CB Channel 19 the entire weekend. For more information, contact www.vahamfest.com or call 757-HAMFEST. ■

HAM COLUMN *(from page 49)*

• Check the front panel. Is the squelch turned down? RF gain up? Is the preselector tuned correctly? Any problems here can make even the best comm receiver seem dead.

• How about your keyer? Some require different settings for tube and solid-state rigs. Again, read the manual.

• Make sure you're not plugging the radio's headphones into the microphone jack, and vice versa. Headphones make lousy microphones!

• If your transceiver has tube finals, is the filament power on, or did you merely turn on the high voltage? You can't get out that way!

• Trouble with your antenna tuner? Is the correct antenna attached? Is the antenna selector switch set correctly? If you're using an internal balun or are matching open-wire feeders, many antenna tuners require an external jumper to function properly. Does yours? There are also a few things you can do *before* trouble strikes. Think of them as Murphy repellent:

• When your rig is functioning properly, take a few minutes to make a chart of the front-panel control settings. When you have problems later, you can quickly compare settings. This is especially useful if you have children who like to "play" with your radios when you're not around. (Make sure the power to such radios is disabled — for your children's protection and yours.)

• Don't skimp on labels. If you bring more than one feed line in from the outside, label them. If you build your own equipment, label the controls. You may remember what everything does today, but will you remember forever? Murphy loves poorly labeled boxes!

• Try to use standard connectors for RF, audio, and power. Don't use PL-259s for power connectors, and don't use RCA jacks for RF. Sooner or later you'll misconnect something and Murphy will be right there.

These ideas may seem like common sense, but most of us have had to learn them the hard way. Believe me, when it comes to Murphy, a little prevention is worth a lot of troubleshooting! And let's hope *your* RTTY terminal comes with a hook-up diagram! ■

PIRATE'S DEN *(from page 65)*

Hippie Dippie Radio, 13910 USB at 1731 with ID, song by "Boston," aired a segment called "Cannabis 2000" and mentioned *High Times* magazine. Also "Dave's not here" and later mentions of "grow more pop." Mention of a web address: www.cannabis.2000.com. Later there was talk about the anti-drug NORML Conference held in Washington, DC, ID, and a parody song "2 Lane Brain." Later a discussion of methamphetamine laws. Sign-off was around 1825. (Taylor, PA)

That covers what's on hand. I really appreciate your reports and would only ask that you not throw your local times at me. Please convert times to UTC before sending in your report. Thanks, and please keep 'em coming. I like to include some program details when space permits so feel free to include content highlights when you can. Also — I need copies of QSLs from the current crop of stations, so how about manning a photocopier near you and sending in some QSL copies.

Before I close, I've been advised of a new address for the Association of Clandestine Radio Enthusiasts (ACE) The old address in Virginia has been changed to the rather familiar P.O. Box 1, Belfast, NY 14711.

I'll catch you again next month. Don't forget to send your logs to Harold at popularcom@aol.com, or 25 Newbridge Road, Hicksville, NY 11801 and he'll get them to me. ■

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THE LOOSE CONNECTION

Radio Communications Humor

Hey, I Can Fix That!

There are probably several images that come to mind when you loyal readers turn to this column each month. One is the bon-vivant, dashing writer, Harris tweed jacket with leather patches on the elbows, perched on a teak deck overlooking the docile waves breaking on the beach below, breakfast just arrived on a tray, with several international newspapers lying about the glass-top patio table. If any of you hold that image in your mind as you read this column, please skip over the next paragraph.

The other, a more genuine but less romantic image shows an aging curmudgeon, desperately in need of a month on a stair-climber, staring into a $5 surplus SVGA monitor with only two of its three original colors operational. This and other components rest atop a too-small table tenaciously holding the carcasses of former computers, with errant cables connecting the hard-drive of one to the motherboard of another. Sleep-matted hair plastered to one side of his head, having stepped carefully past stacks of magazines, boxes of extremely important electronic components, wires, the writer sits gingerly in his favorite chair, which long ago forgot how to swivel. He is wishing for even a day-old *Egg McBenedict* and some re-heated coffee as the sun ponders rising on yet another day-job morning. He is in his underwear; it's *not* a pretty picture.

An incident yesterday gave me such a clear example of "the technical side of my life" that I thought I might share this experience with you. Though it might tarnish my image of "Mr. Electronics," it will serve to let those of you who share my — uh — skill and dexterity — know you're not alone out there.

The task was to examine some microwave dishes on a tower. They were located about 100-feet above the ground. Gravity has long-prevented me from climbing towers, and the information I needed could be had with binoculars. My employer has several charge accounts which I can use to buy necessary tools and components needed on the job, but none at a store where I could buy binoculars. My own were at home — too far to go now — and I didn't know anyone with a pair to lend. Our old friends at RadioShack came through again with a $19.95 "Golf-Scope," a 5x20 monocular with a reticule for measuring the "pin," or flag, on a golf course and giving the viewer an idea how far away it is. This would do fine. Alas, the one I selected was out-of-focus at infinity. Since it was a "non-focusing device" this meant I'd have to take it apart and repair or "modify" it.

"But you can take it back and get another one in 10 minutes — they always take care of you with no hassle," Dave said. Dave is Tonto. No — He is *Kemosabe*; *I* am Tonto. For seven years, Dave Bradley has worked near my elbow, contributing such lines as, "Are you sure you want to touch that without shutting off the power?" and "I probably wouldn't swing the dish in that direction while standing where you're standing." What a kidder.

"Yeah, I know, but I can just make a few adjustments so long as they haven't glued these lens elements in place."

First the eyepiece comes apart from the body. Piece of cake. Might as well remove the reticule while I'm there — that's only for golfers. Wow! Look at that tiny prism. How was that sitting in there? Oops. No — I'll get it. There. Oops! OK, can you reach it?

Experimentation tells me we've got to shorten the overall length of the monocular. I cut a slice of rubber cushioning material from the joint where the eyepiece screws into the main body of the thing. No change.

Ah! there's a retaining ring holding the eyepiece in place. If I can loosen that, then tighten the one on the other side of the eyepiece lens, I'll move the eyepiece closer to the objective. Perfect. You don't have a spanner-wrench, do you? Never mind — I'll find something. Here — this screwdriver will do it. Ahhh — look at that — it was only finger-tight.

No — I can't reposition this one — let's see about moving the objective. Hmmm — this one is really tight. Screwdriver won't budge it.

I can make a spanner wrench in a few minutes. Here we go — a "C-ring expander" — I knew we'd find a use for this someday. The points on the C-ring expander were perfect — for C-rings. They were way too big for the little slots on these retainer rings, which are made that way to keep "unauthorized personnel" from tampering with optical devices. No problem — I can grind them to fit.

"Do you want the blue-handled cutters to use as a guide?" Dave asked. The famous "blue-handled cutters" were another tool which I had once "needed to modify." I could see light between the blades when I closed them, and that — I'd been taught — was unacceptable. Just a little touch-up on this blade, and equal bit on the other blade, and I'd have them light-tight in a jiffy.

Those cutters are now kept in the top desk drawer as a reminder to leave well enough alone. The blades no longer touch — in fact there's a good eighth-inch clearance between them.

The thing still is out of focus at infinity. If I were to return it to my friendly dealer today, he'd laugh (into his sleeve, of course) and tell me that because it appeared to be damaged, my warranty was probably void, but I could send it for repair or replacement, however I'd probably be billed for a new one. I'd tell him that some jerk at our office really messed it up, and he'd nod his head in tacit understanding of "how some people could be."

You are not alone if you've "fixed" or modified a tool or part. Neither am I. Although Mr. Bradley is often successful, he said, during my golf-scope fiasco, "Watching you assures me that I'm not the only one this happens to."

I was glad to hear that, as you probably are too. A friendly gendarme drove by. I waved and asked if he had binoculars in the trunk. He did. I got the necessary information on the antennas and thanked Officer Donut, one of our finest. The golf-scope rests in a box of "things to fix," where it rests in good company with the gas-gauge from my first car and the combination lock from my high-school locker. ■

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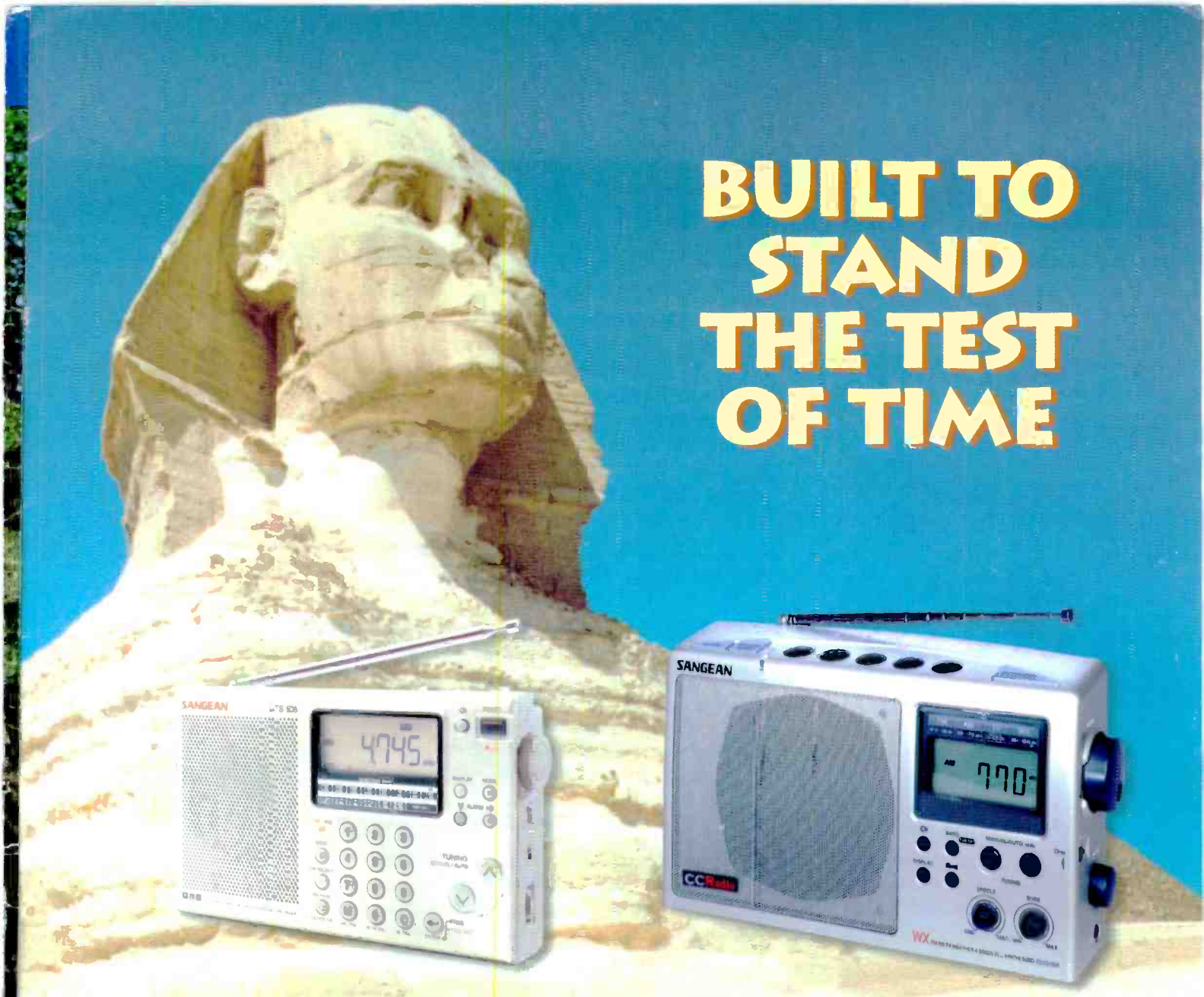

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