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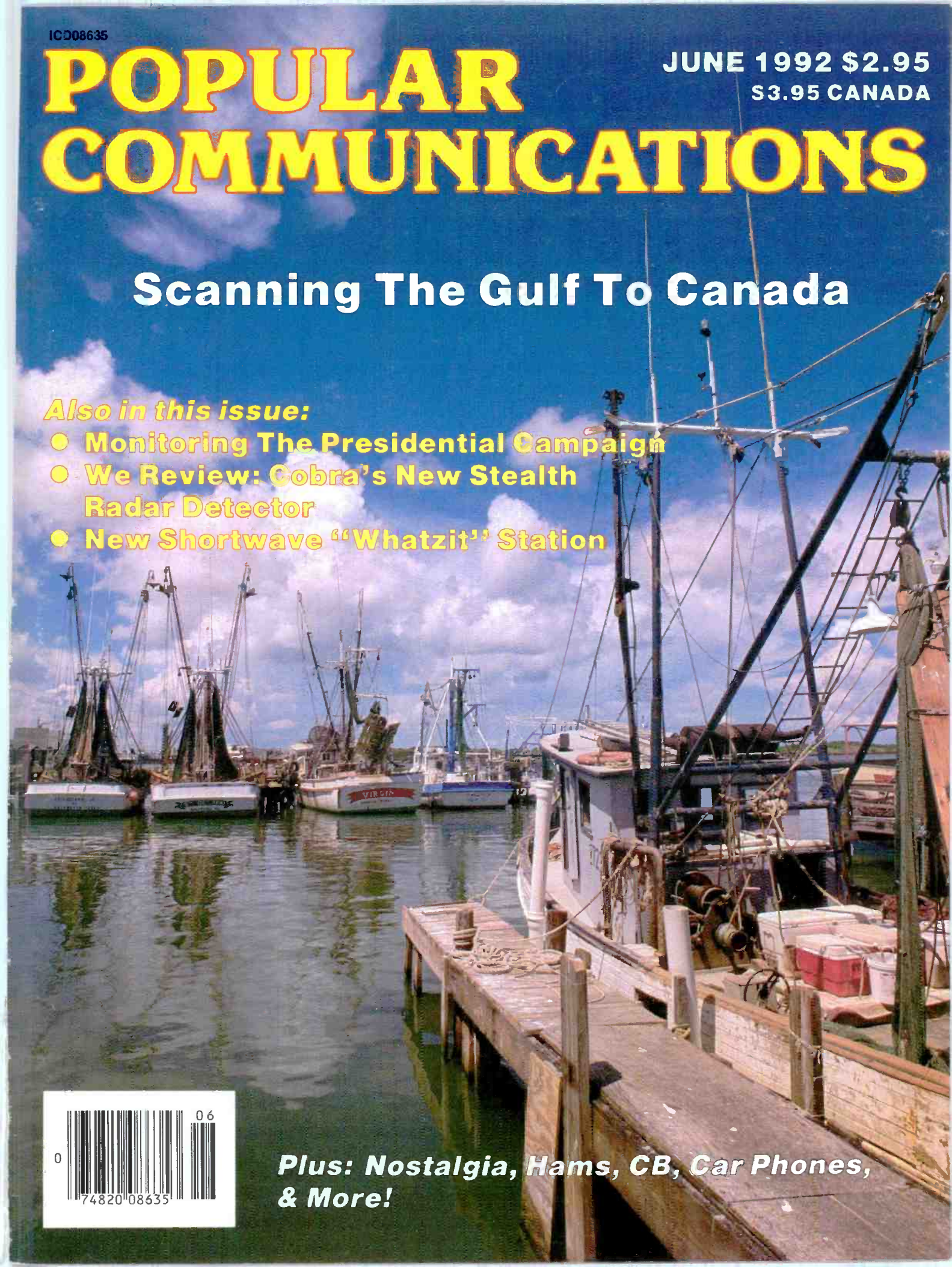

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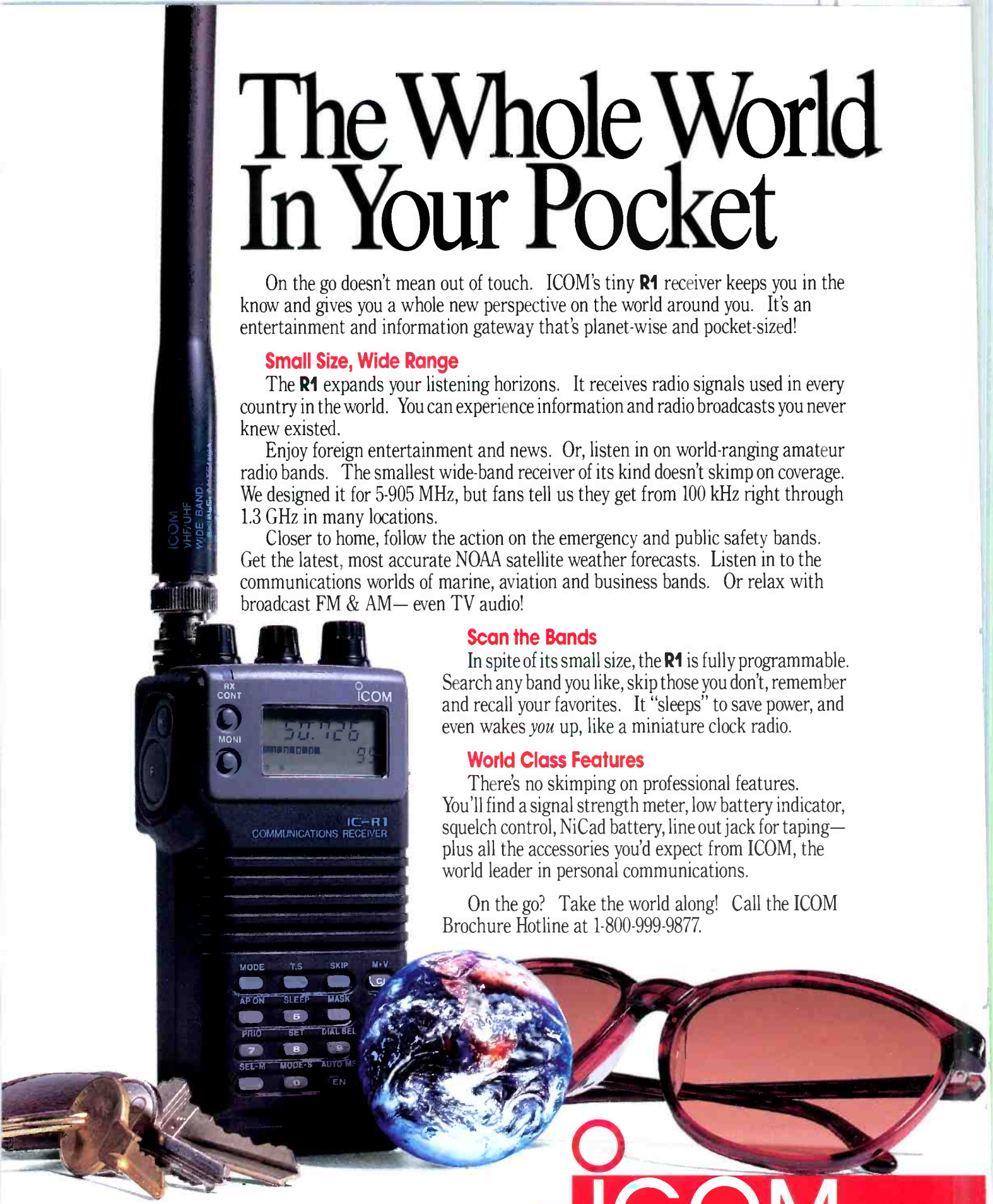

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JUNE 1992 **VOLUME 10, NUMBER 10**

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FEATURES

COLUMNS

DEPARTMENTS

This month's cover: *Galveston, TX-USA: VHF radio is the main type of radio used to communicate while fishing. Photo by Larry Mulvehill.*

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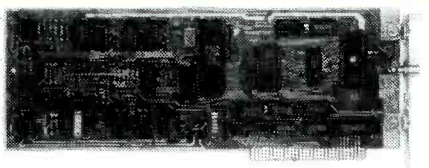

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BEAMING IN

AN EDITORIAL

BY TOM KNEITEL, K2AES

A Risky Business

When Tony Bizjak called me not long ago, I knew something was cooking. Tony is a reporter with the *Sacramento Bee* and is often assigned to cover stories involving wiretaps, cellular and cordless intercepts, etc.

Tony wanted to ask my opinions on the tape recording of cellular and cordless phone calls. He said that a member of the California legislature had just held a press conference to announce he was trying to get a state law passed that would make such recording efforts illegal. Tony also mentioned that at the press conference, the legislator had displayed an unidentified publication he claimed encouraged such recording. The publication looked to have been deliberately folded open in a way so as to conceal its cover, but Tony thought it looked like *POP'COMM*. He made it a point to go over and get a quiet look at it to confirm that he was correct.

I got a kick out of that story since *POP'COMM* has never recommended nor remotely suggested that anybody record cellular or cordless phone calls. Such recordings have been made for years now. I suppose that taking the rap for them is a dirty job, but someone has to do it and it comes with the territory here.

Authorized tape recordings of these calls are made by police and federal agencies having court orders. At times private investigators will tape calls, too. More frequently, they are made by people who collect tapes of calls containing the voices of political, sports, business, or entertainment personalities. The audio paparazzi enjoy playing their tapes for friends, and they swap the tapes with others who share their taping hobby. Tapes of embarrassing or compromising conversations have ended up being used for political purposes, or in the news media, even for blackmail.

Let me remind you that there have already been several instances where allegedly illegal recorded cellular or cordless phone conversations have made news headlines. You might remember the flap a year ago when a man in Virginia Beach admitted to a federal grand jury that he had recorded many cellular calls, including some that contained conversations of then Virginia Lt. Gov. Douglas Wilder.

A year earlier, someone taped several cellular conversations of Stuart (Bud) Smith, the Attorney General of British Columbia. When the contents of the tapes were released in the media, there were questions relating to certain statements on the tapes and whether they represented an obstruction of justice in respect to a court case concerning improprieties of a provincial cabinet minister. Smith was forced to resign within days of those allegations.

In the Boston area, the news media had a whole string of taped conversations to chew over, including those of Sen. Jon Kerry; plus a tape of the chairman of the Democratic committee talking over payments. There was also a tape of two tough talking mugs that a reader mailed to *Boston Herald* columnist Howie Carr. Carr reported that the two guys were concerned about whether one of their underlings would be able to avoid falling apart during his appearance before a grand jury.

A married couple and their daughter, who live near Fayetteville, Georgia, were written about in *The Atlanta Journal* as being investigated by the FBI. The newspaper reported that some 300 tape recordings of cellular conversations were seized at their home by the sheriff, who turned the tapes over to the FBI. The tapes were described in the newspaper as having consisted of "spliced and edited versions of people's conversations, including political figures, containing profane remarks and intimate details of people's lives . . . ." The people named were noted as having previously been active workers in local election campaigns.

According to a report in a cellular phone industry trade publication, a scanner owner in Amarillo, Texas, supposedly made a tape of a congressman's cellular call. He is claimed to have turned the tape over to a student journalist, who released the contents to the public. There was an FBI investigation resulting in the student journalist being later convicted on two counts of disclosing the contents of an intercepted phone conversation. The scanner owner was said to have filed a guilty plea for intentionally intercepting the call, in violation of the ECPA. I wasn't able to independently verify the existence of the events in Amarillo.

Inasmuch as there is already an ECPA law on the books that forbids even listening to cellular calls, my immediate reaction to Tony's inquiry was that creating a law to prevent recording cellular and cordless phone calls was as meaningless and unenforceable as the ECPA itself. In California there's even a useless state law that forbids monitoring cordless phones. How could a person record a call unless they listened to it in the first place, thereby violating existing meaningless laws? This proposed anti-recording law struck me as being redundant.

The longer I thought about it, though, the more I realized that an anti-recording law may well not be quite as toothless a tiger as I had at first thought. Realize that it's not at all easy to get snagged by a virtually unenforceable law like the ECPA. A person really has to go out of their way to get stung.

Once in the hands of law enforcement au-

(continued on page 72)

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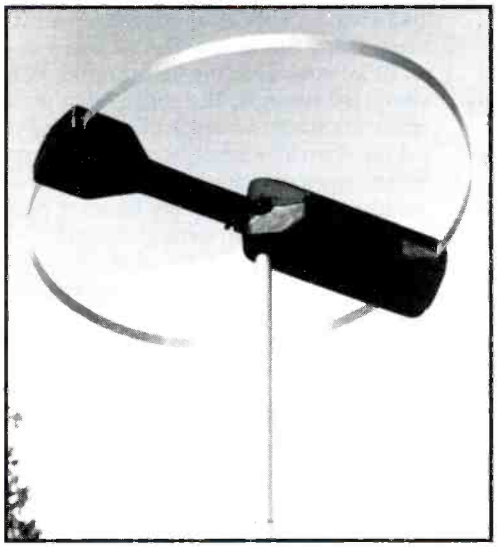

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MAILBAG

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted for consideration must be signed and show a return address. Upon request, we will withhold sender's name should the letter be used in Mailbag. Address letters to Tom Kneitel, Editor, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801.

Here's A Good One!

On page 129 of the March, 1991 issue of *Popular Mechanics*, I came across an ad headlined "Eavesdrop On Any Cordless Phone!!" The ad depicted what it described as a "Cordless Phone Listening Device," without much more description than that. From the photo, it would appear to have been nothing more exotic or formidable than a Bearcat 55-XLT handheld scanner. The ad was offering the "device" at a slight markup over the Bearcat 55-XLT price. It stated that the "regular" price was $235, but that it was being sold by that supplier for $175. I realize this ad was aimed at the general public and not to hobbyists, but Bearcat 55-XLT scanners are normally sold within the hobby for only about $120. "Regular" price $235? What's the deal?

Mike Hadfield, Roswell, NM

It's obvious, Barnum was right. —Editor.

Some Ideas

I would like to see a *POP'COMM* column started dealing with older receivers, looking at a different set each month. This column could discuss the strengths and weaknesses, problems of buying used ones. And let's have some more articles like Tony Bernhoffer's "Broadcast Band DX On A $50 Walkman Radio" (February issue). These types of features show low-cost alternatives for the hobbyist, and are very appealing to those of us with limited finances.

Tim Gueguen,
Saskatoon, Sask., Canada

Call Again

Almost every evening I used to receive a couple of strange annoyance phone calls. The phone rang and when I picked it up, there was an open line with someone obviously there. Sometimes I could hear voices or other sounds in the background. After about 30 seconds, the caller hung up. A friend told me that every time a phone is picked up, the caller stops hearing the ringing signal, and also hears the actual sound of the handset being lifted. This handset lifting sound is transmitted through the mike button in the mouthpiece of the handset of the phone being answered. He suggested that I unscrew the cover of the mouthpiece and temporarily remove the mike button in my phone's handset. It isn't wired in, so it just drops out. Then, when the phone starts ringing, pick it up after the first ring. The caller will notice that the ringing signal has stopped, but will not realize that the phone was answered and that somebody is listening at the other end. The idea is that if someone else was in the room with the caller, this trick might cause the caller to say something to that person about the phone having stopping ringing but nothing else happening. Then, you can hear the caller's voice, and will most likely recognize who it is. I tried this, and the third call of the first night, the caller told somebody at his end that my phone was out of order. I recognized the voice as belonging to a neighbor, although I don't know why he was making the calls. When I confronted him, he denied everything, but the calls stopped. This worked so well that I wanted to share it with *POP'COMM* readers.

P.W.J.,
Anderson, CA

Improvised Car Shortwave

I have found a practical and inexpensive way to add SW reception capabilities to my car radio. Using a portable SW receiver (I have a Realistic DX-380), a CB antenna, and a Realistic CD/tape adapter, I got this in operation. I connected the CB antenna's coaxial lead-in to the receiver's whip antenna (the ext. antenna jack should also work). Plug the cassette adapter into the receiver's headphone jack and the other end into the car's tape deck. That offers instant SW reception on the car radio, with a SWBC station every 5 kHz.

Michael Oreskovic,
Burlington, Ont., Canada

We'll take your word for this, Mike. But we still think the Philips car SW receiver sounds like a better approach. —Editor. ■

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CIRCLE 46 ON READER SERVICE CARD

Scanner Signals From The Gulf To Canada!

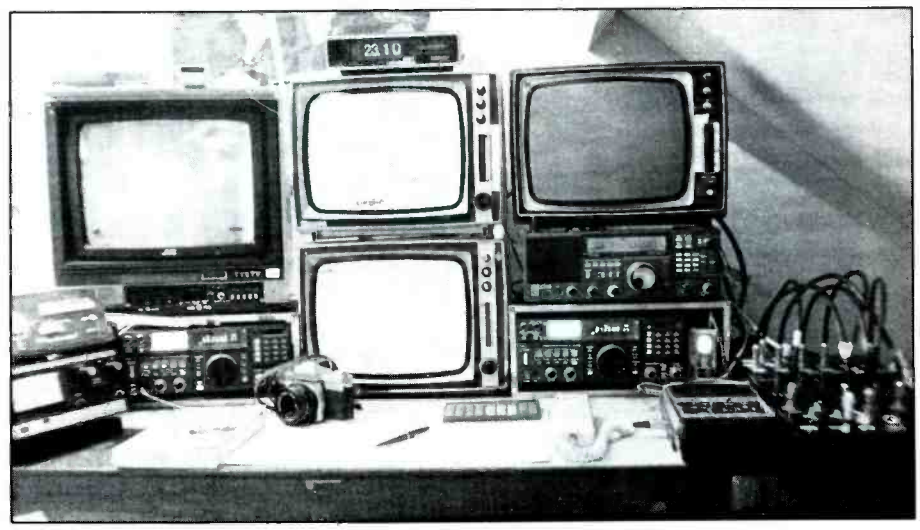
It's "That" Time of The Year! Those DX Signals Are Rolling in on The Clouds

BY CHUCK ROBERTSON

It was bound to happen. It happened last year, too. It was written in the stars, and on ionospheric clouds. Scanner owners around North America began reporting low band VHF (25 to 76 MHz) signals from stations hundreds, or more than a thousand miles away. 'Tis the season for Sporadic-E skip.

When the Sporadic-E clouds are on the move in the ionosphere, there's no telling exactly what they'll let you monitor. Could be private investigators doing surveillance, military aircraft, federal board-and-search ships looking for narcotics smugglers in offshore waters, high speed police pursuits in nearby states, federal game wardens. They're all out there, along with more, for the intrepid scanner owner.

This is the prime time of the year for unique DX in the 25 to 76 MHz band, as signals rain down on you from throughout the USA, Canada, Mexico, Cuba, and the Caribbean.



Low band monitoring means scanner frequencies and TV signals to DX'er Joop Prosee, of Spanbroek, Netherlands.

A Few Words of Explanation

There are several types of phenomena that cause signals to propagate over varying distances. Some are seasonal. The mechanisms that cause Sporadic-E skip are somewhat of a mystery, but windshear, ultraviolet (UV) radiation, and aurora all play a role. Windshear is associated with thunderstorms and high altitude winds. UV comes from sunlight, which is strongest this time of the year. Aurora may account for some of the Sporadic-E produced at night and during the winter months.

The ionization provided by these sources is collected by the planet's geomagnetic field into "clouds" at an altitude just below the E-layer of the ionosphere (about 60 miles up). These Sporadic-E clouds are capable of reflecting radio signals in the 20 to 100 MHz range.

In the Northern Hemisphere, the clouds move towards the west at about 150 to 250 m.p.h. Sometimes this results in a strong skip signal suddenly fading out, only to be replaced by a signal from a different location. Because the clouds reflect signals with very little loss, you can hear distant mobiles and handhelds as if they were local to you. Skip reception is typically 450 to 1,300 miles, and can extend to more than 2,500 miles on multi-hop.

The spring/summer Sporadic-E season runs from May to August, with the peak usually occurring in June and early July. Look for DX openings any time day or night, although best hours are 10 a.m. to noon, and the early evening. This produces scanner DX, as well as TV and FM broadcast DX.

Clouds Over The Gulf

At my monitoring post in southern Illinois, skip rolls in from all directions, but especially well from the south. The Gulf of Mexico is one of my favorites. It always produces a wild and copious mix of shrimp boats, fishing trawlers, offshore oil rigs, tankers, law enforcement patrols, and drug runners.

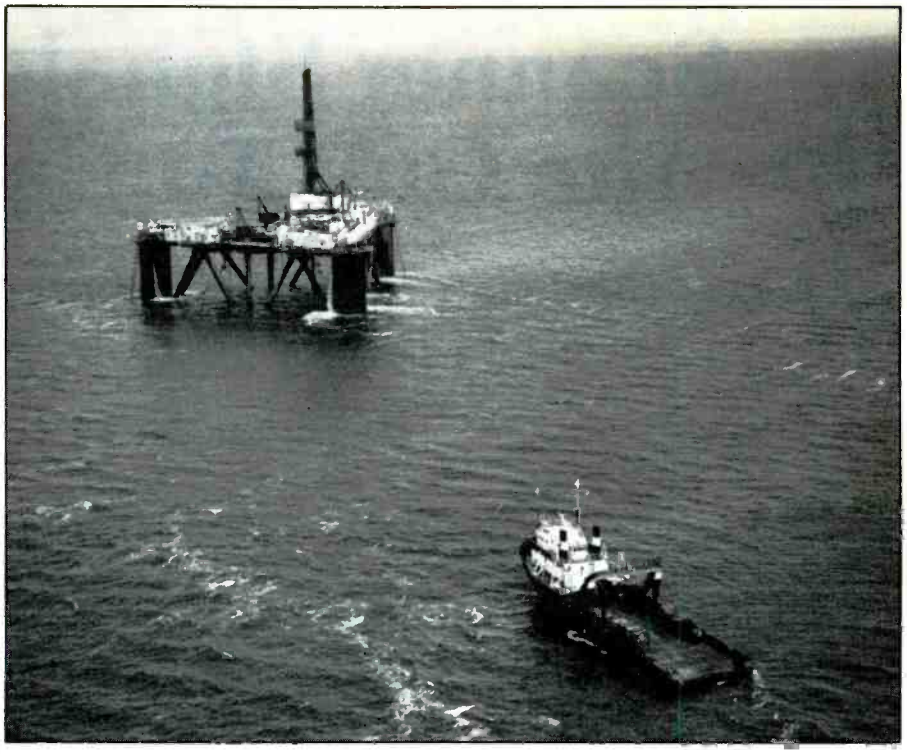
Listen for State of Louisiana marine and land patrols on 31.02 and 31.06 MHz. US Coast Guard cutters searching for drug smugglers have been monitored on 34.30, 34.45, 34.85, 37.00, 51.15, and 65.50 MHz. The DEA doing the same off the Florida coast has been noted on 41.80 MHz. Meanwhile, drug runners pop up on odd frequencies like 29.825, 31.70, 33.27, 33.35, 35.465, and 35.825 MHz.

The oil rigs are exciting to monitor, especially during rough weather and high seas. I heard a Conoco offshore rig on 33.20 MHz tell a support vessel that the legs of the rig were twisting in the gale force winds.

Vessels on 31.48 MHz were heard discussing Gulf Fleet Marine 56, which had capsized in the Gulf. Later, they reported getting it righted.

In the 25 to 76 MHz frequency range, the Petroleum Radio Service makes use of the bands: 25.02 to 25.32 MHz, 33.18 to 33.38 MHz, 48.56 to 49.50 MHz, 72.02 to 72.98 MHz, and 75.42 to 75.98 MHz; all in 20 kHz steps. Also, the Special Industrial channels at 31.32 to 32.76 MHz, in 40 kHz steps, may also be used for petro operations in the Gulf of Mexico and along coastal areas of Texas and Louisiana.

The best Gulf petro action is in the 33.18 to 33.38 MHz and the 48.56 to 49.56 MHz bands. Comms from offshore rigs dot these channels, which (by the way) may also be used by trucks in your hometown making home delivery of heating oil, as well as gaso-



Gulf of Mexico drilling rigs use low band FM petro frequencies to communicate with their supply vessels.

line deliveries to service stations.

The 72 to 76 MHz channels are most often used for fixed relays and links, also for radio control of heavy machinery.

The 25.02 to 25.32 MHz band has a lot of telemetry signals from flow-rate monitors and also radio-buoys that track oil slicks and ocean currents. These are 50-watt (max.) AM-mode non-voice signals.

Frequencies 36.25 and 41.71 MHz are voice frequencies used for comms relating to oil spill containment.

The melodic Cajun language is spoken in many parts of Louisiana. It's great to listen to, and is quite similar to French. Listen for it on 30.58, 30.62, 30.74, 31.00, 31.70, 31.74, 31.96, 33.18, and 35.36 MHz. Note that 31.70 and 31.74 MHz are bootleg comms. Most of these comms are apparently related to commercial fishing activities in the Gulf of Mexico.

Newly allocated maritime high seas telephone (duplex) channels should also be checked. All stations use USB mode. Shore channels are every 3 kHz from 25.070 to 25.097 MHz; paired ship channels are spaced at 3 kHz intervals from 25.145 to 25.172 MHz.

Tropical Waves

Gulf signals are strong this time of year because stations closer to the Equator do well when Sporadic-E gets rolling. So, also look for other DX from these latitudes.

Cuban farms can be found on the repeater outputs at 33.35, 33.375, 35.15, 41.84, 43.20, and 49.00 MHz. A repeater in Havana on 33.60 MHz has its input on 37.125, where it sometimes picks up American police skip from 37.12 MHz. The Cuban Tourism Council, with bases ID'ing as "Iguana," "Control," and "Hotel," is monitored on 39.45 MHz.

Horse race bookies in Jamaica are on 31.95, 32.10, 32.30, 32.55, 36.875/33.875 (repeater out/in), 41.725, 45.525, and 45.80 MHz. Brandon Hill Security, Montego Bay, is logged on 31.775 MHz. The shopping center at Ocho Rios operates on 37.20/34.20 MHz. A bootleg radiophone in Jamaica is heard on 30.335 MHz.

Lots of radiophones link the many isolated islands in the Bahamas. They operate semi-duplex and can be heard on 48.00, 48.08, 48.20, 48.28, 48.42, 48.82, 49.40, 49.42, and 49.62 MHz, among other frequencies between 48 and 50 MHz.

The small island nation of Dominica has a security patrol on 37.18 MHz. A radiophone in Barbados uses 30.055 MHz.

Listen for business stations in Mexico on 30.76, 33.55, and 33.76 MHz. Many Mexican police comms are on 31.85/32.20 MHz.

There's a security taxi service operating around the clock in San Salvador, El Salvador. It uses 30.475 MHz.

Don't overlook the South American radiopagers on 31.35, 32.68, 32.82, and 32.96 MHz. Amazing how these guys are heard all year, even after sundown. It's the F-2 skip season in the Southern Hemisphere, so maybe that plays a role in this 5,000 mile DX.

Dominion Doings

If you hear radiopagers on 30.02, 30.22, 30.42, 31.42, 31.92, and/or 32.42 MHz,

then the skip is working towards Canada. These channels are used throughout Canada for pagers. A pager in Thunder Bay, Ontario, operates on 42.50 MHz.

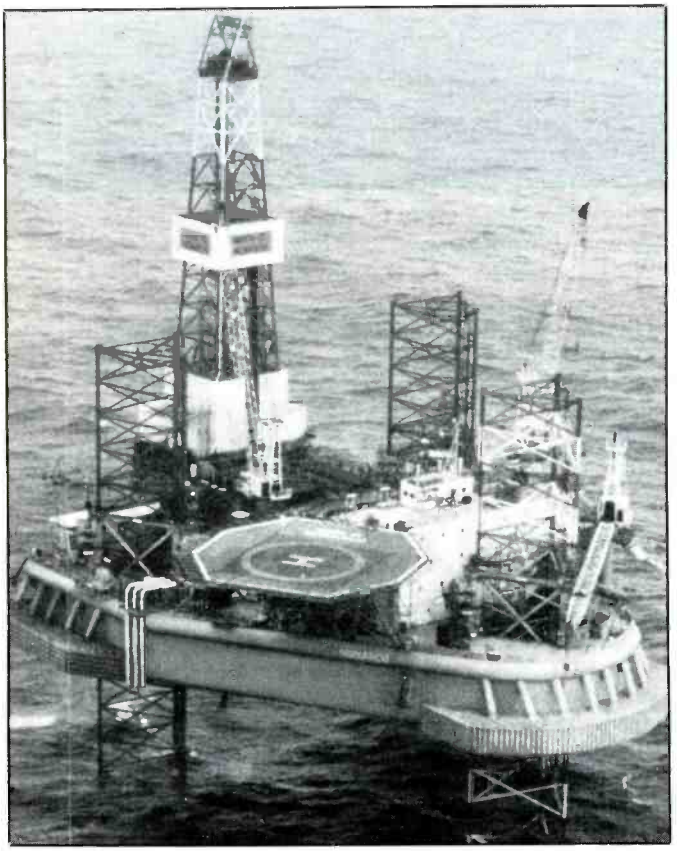
Minisaga Probation Camp, on Manitouline Island, Ontario, has been logged on 30.48 MHz. The Canadian Automobile Association, London, Ontario, comes through on 40.10 MHz. Canadian petro stations are found between 48 and 50 MHz, in 10 kHz steps.

Two *POP'COMM* readers, Russell Wright (League City, Texas), and Mark Cobbledick (Fort Payne, Alabama), both report numerous Canadian fishing trawlers contacting one another NFM mode (at times, scrambled) on the following frequencies: 29.94, 30.04, 30.14, 30.18, 30.26, 30.32, 30.36, 30.48, 30.56, 30.64, 30.89, 31.08, 31.20, 31.26, 31.28, 31.32, 31.38, 31.44, 31.48, 31.50, 31.64, 31.66, 31.74, 31.76, 31.94, 31.95, 31.98, 32.14, 34.12, and 34.18 MHz.

Hip, Hip, for Skip!

In addition to Sporadic-E skip, this is also a good time for Tropospheric skip. Several types of tropo can be encountered. Inversion layers occur almost daily from sundown to midmorning. I often hear VHF high band and UHF stations from 100 to 500 miles away. Massive inversions produced by slow moving weather systems may last for days and ferry radio signals over a thousand miles.

Don't skip the skip season—it's here, now!



During rough seas and severe weather, oil rigs keep in close touch with shore bases via low band radio.

Gulf of Mexico Best Bets

25.12, 25.16, 25.20, 25.24, 25.28, 25.32: Petro base/mobile ops, AM mode.
25.22, 25.26, 25.30, 30.66, 30.70, 30.74, 30.78, 30.82: Petro base/mobiles, also telemetry.
30.70: Ocean Drilling & Exploring Co.
30.74: Transworld Drilling (KNCB763).
30.78, 33.18, 48.88: Chevron; also low power ops on 30.84 & 31.16 kHz.
31.00: Gulf International Marine Corp., La Fourche (WYZ632), & Vermillion (WYZ828), LA.
31.02, 31.06: Louisiaa State Conservation PD.
31.48: Gulf Fleet Marine Corp., Harvey (KXF841), & Leeville (KQZ242), LA; also Sabine Pass (WZU846), TX. Uses AM, FM, USB modes.
31.52: D&A Construction Co. (KJT851).
31.76: JFP Well Service (WRS405).
31.80: Superior Contractors, Inc. "Sea Land Base" is at Arnaldville, LA; "Lafayette Base" at Lafayette, LA.
33.20, 33.38: Conoco. Many offshore rigs & vessels.
33.24: Signal Petroleum Corp.
33.26: Tenneco.
33.28: Kerr McGee; also Oxy USA, Inc.
33.34, 35.48: Union Oil.
33.36: Exxon.
35.04: Chance & Assoc.
35.78: Franks Casing Crew.
35.94: Atlantic Pacific Marine.
42.96: Surveys, Inc.
43.18: McDermott, Inc. (WNBG792).
45.24: Mississippi CD.
48.68: Coastal States Gas, Platform 51.
48.70, 49.12: Shell Oil Co.
48.74, 49.48: Transcontinental Gas Co.
48.80, 49.02: Trunkline Gas Co.
48.82: Texas Eastern.
48.92: Texas Gas Exploration.
48.98: Getty Oil.
49.04: Pennzoil.
49.08: Texoma.
49.18, 49.26: Mobil Oil.
49.44: Chevron Oil.

Read My Trips

As The Presidential Campaign Heats Up, Scan The Candidates' Behind the Scenes Activities

BY HARRY CAUL, KIL9XL

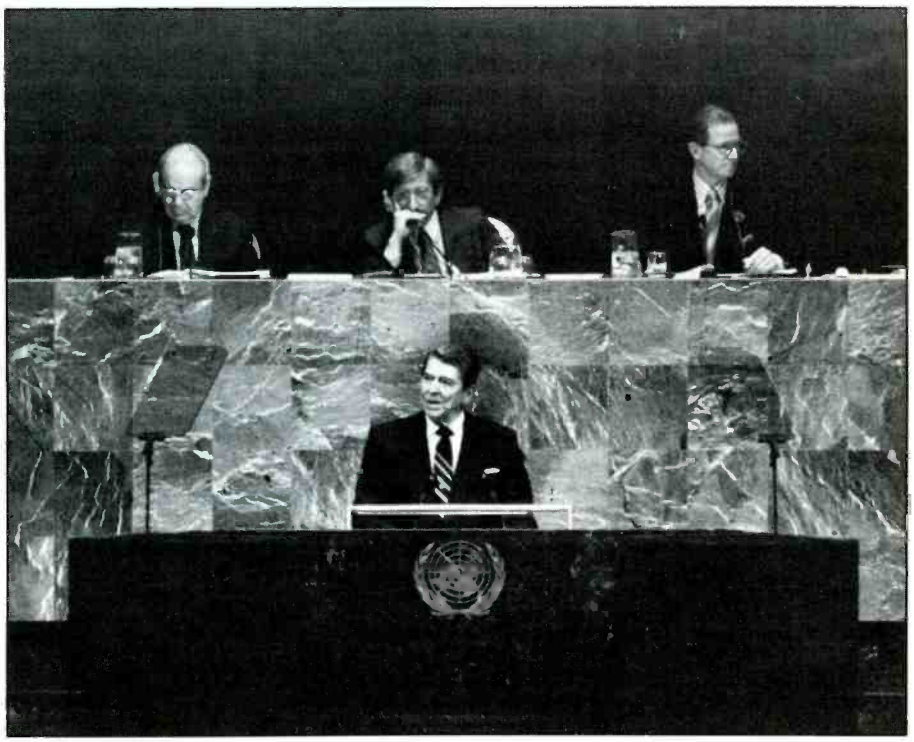
One of the things about owning a scanner is that you can hear at least some of the behind-the-scenes communications traffic that goes on when the candidates come through your town.

I recall that during the last election, I brought my handheld scanner to a political rally. There were Secret Service agents there, and all were wired for two-way communications. Their equipment consisted of earpieces that looked like old-fashioned hearing aids, and their microphones were attached to their wrists. My scanner was put into search/scan mode and was able to spot several frequencies used by these body units. They were in the 406.425 to 407.95 MHz range.

When Air Force 1 and Air Force 2 are in flight, scanner listeners know that they can sometimes hear phone patches from these aircraft on downlinked 415.70 MHz. Many remote ground receivers and (uplink) transmitters for this ("Echo-Foxtrot") circuit are in use at a sufficient number of different locations to ensure nationwide coverage. The remote ground sites are fed directly to (and remotely controlled from) Washington (*Crown Control*). The ground sites operate on 407.85 MHz, but a listener on the ground would have to be rather close to one to hear the ground station. As the aircraft travels, the selection of ground station sites used will be change, so as to keep the aircraft in range. Some of the comms are scrambled, but the majority aren't. Many calls are placed by various assistants and press aides.

Typical campaign communications include coordinating the airport welcoming committees, making up guest lists for fund raisers, last minute speech revisions, setting up VIP photo opportunities and media interviews, making schedule changes, checking on preparations for rallies and motorcades, etc.

During campaigns, VIP aircraft other than Air Force 1 and Air Force 2 can be monitored on this air/ground telephone circuit, too. If you hear *Executive 1 Foxtrot*, it's a commercial airliner with a member of the President's family aboard; *Executive 2 Foxtrot* is similar, but refers to the Vice President's family. Although not related to the campaigns, you may also monitor stations identifying as "Sam" followed by numerals. These are Special Air Missions, which are military or diplomatic VIP flights.



President Reagan's code name, "Rawhide," seems to refer to the many western films he made during his acting career. Photo courtesy Susan Biddle—The White House.

Not having access to Air Force 1 and Air Force 2, the Democratic candidates for President and Vice President must travel on chartered planes or on commercial flights. Any air/ground calls would therefore occur in the standard air/ground bands. The aircraft operate in the 891 to 896 MHz band, with ground stations in the 849 to 851 MHz, although the communication modes include SSB and digital (so these comms won't sound like much on standard scanners).

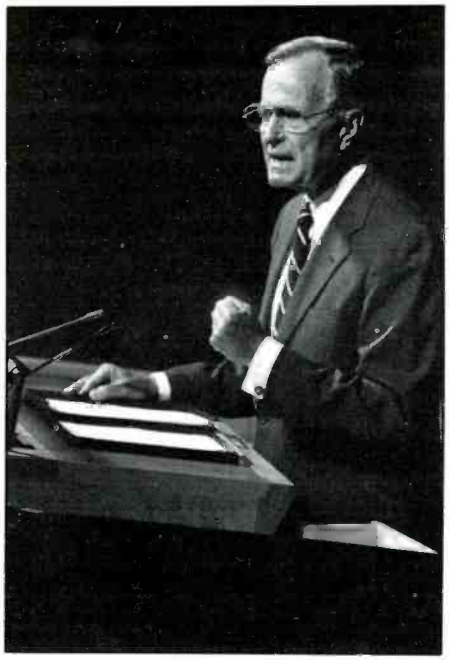
Ground communications by the candidates and their aides will show up on local cellular channels (869 to 891 MHz). The 1992 campaign has, thusfar, hit some new lows in sleaze, and the campaign hasn't yet gotten into high gear. Any talk about additional sleazy doings would most likely show up on the cellular channels, but remember that monitoring there isn't allowed. No wonder they don't want you listening in!

When candidates are in town, the most active Secret Service frequencies that traditionally go into operation include 164.65, 164.8875, 165.2125, 165.375, and 165.7875 MHz. You can search/scan the 163 to 167 MHz range looking for additional channels. About 85 specific frequencies are listed in Kneitel's current *Top Secret Registry of U.S. Government Radio Frequencies*, and they seem be to all the ones known to be in use. Some of these comms are scrambled, but not all.

The White House Communications Agency (WHCA) assigns special code names to certain prominent persons, especially those in higher echelons of the federal government, and their immediate families. You can expect to hear these code names used instead of actual names when monitoring these communications.

For instance, *Timberwolf* is President Bush, while *Tranquillity* is Mrs. Bush. *Scorecard* is Vice President Dan Quayle.

The WHCA sometimes changes the code names. President Bush has, in the past (be-



The code name "Timberwolf" may relate to President Bush's liking for the outdoor life at his vacation home in Maine. He's had at least two previous code names. Photo courtesy Susan Biddle—The White House.

fore being elected President), been known as *Snowstorm* and, at another time, *Sheepskin*. The WHCA also recycles certain code names it happens to particularly like, such as *Sunshine*, which is now Mrs. Quayle's code name. During the Gerald Ford era at the White House, that code name was assigned to Ron Nessen. Nessen had also once been called *Clam Chowder* by the WHCA.

Despite the fact that code names have been changed, and the agency has noted in the past that the code names are all changed regularly, such changes are actually made only rarely. The most likely reason for this is to make it easy for agents to keep mental track of which code name means whom or what. It would be confusing for agents to keep mental track of several dozen active code names if the code names kept changing all the time.

Possibly to aid in code name memorization, the WHCA is fond of using the same initials in the code names given to all members of a single family. For instance, when they got around to calling President Ronald Reagan by the code name *Rawhide*, the WHCA assigned the following code names to others in his immediate family: *Rainbow, Radiant, Reliant, Rhyme, Ribbon*, and *Riddler*. Even the Reagan's home in California was tied in, being known as *Ridgeline*.

Similarly, President Jimmy Carter was known as *Deacon*, while his family took on the handles *Dancer, Deckhand, Derby, Diamond, Digger, Duchess, Dusty*, and *Dynamo*.

The WHCA is not all that anxious to discuss their code names, but has generally denied that the names have any special significance or bear any special relationship to those to whom they were given. Nevertheless, it's obvious that Carter being dubbed *Deacon* wasn't sheer chance, and neither was Ronald Reagan as *Rawhide*. The name *Duchess* for Jimmy Carter's very regal dowager mother couldn't possibly have been more appropriate. And what about *Lancer*, which was the code name for JFK during his Camelot era at the White House?

There are many dozens of these names in use at any given time. Names are also given to objects or places, such as *Crown* for the White House Communications Center, and *Shotgun* for the portable command post in the New York City area. *Acrobat* is Andrews AFB in Maryland, *Horsepower* is the Secret Service Presidential Protective Division. There are also code names for some celebrities, and that's how Frank Sinatra got a code name (*Napoleon*) during the Reagan White House years.

Members of the news media usually monitor the Secret Service channels to try and keep track of the candidates, to instantly be aware of problems, scheduling changes, route modifications, or other relevant factors. The news media knows the code names and who they mean.

Lastly, when the campaign comes to your area, the activity level by reporters on news media requencies will increase significantly. The information there can get very interesting. Newspapers use 173.225, 173.275, 173.325, 173.375, 452.975, and 453.00 MHz. Radio and TV stations use the bands: 161.64 to 161.76 MHz, 450 to 451 MHz, and 455 to 456 MHz. Also, heavy use is made of cellular frequencies.

Whether or not the rhetoric of either candidate makes a lot of sense to you, why not hear at least some of the activity going on behind the scenes when they both campaign in person in your community. ■

Radio—Those Great Old Days

Let's Check Out Some Historic Stations

BY ALICE BRANNIGAN

During the first few years of broadcasting, the airwaves hosted more than the regular "listed" commercial, religious, and school broadcasters. There were other stations on the same frequencies also sending out broadcasts of music, news, and entertainment. This included military and police stations, ham operators, and those that were authorized as "Special Land" (Experimental) stations. Such stations seldom turned up in published station directories although there were hundreds, in all.

Some of these stations were short-lived, others eventually went on to evolve into more traditionally licensed broadcasters. One briefly existing experimental broadcaster was station 9XAG, operated by Harry Hale Buckwalter, of 713 Lincoln Street, in Denver, Colorado.

We came across this station in 1921 to 1923 records, but it wasn't there in 1924, nor did it evolve into a commercial station. It's owner was one of those remarkable people who must have simply been so completely intrigued with broadcasting that he had to try it himself. Hence station 9XAG.

Buckwalter was a professional photojournalist whose work was well known to Denver's newspaper readers of the *Rocky Mountain News* and the *Denver Republican* from the 1890's through the 1920's. He eventually became the Assistant City Editor of the *Rocky Mountain News*, but was into many other things, too. He built the first working X-ray machine in the west, and patented a high speed camera lens. He was also a film maker, with upwards of fifty movies to his credit by 1910. Being one of those interested in radio broadcasting was exactly what one would have expected of him.

His station was located in his home, and it operated on an irregular schedule. Mostly it operated when someone told Buckwalter that they had just built or bought a radio receiver and wanted to see if it was working. Also, when someone famous came through Denver, Buckwalter's position in the local news media would provide him with the opportunity to bring them around to honor his station with an impromptu stint at the large tulip-horn microphone used at 9XAG.

Mme. Frieda Hempel warbles a few bars of an aria over Denver's 9XAG, about 1921. That's Harry Buckwalter over to the right.

There has been relatively little written about this category of occasional and peripheral (although authorized) broadcasters of the early 1920's. We think they are rather interesting. Too bad they were seldom shown in broadcast station directories, so therefore they are generally not included in historical information about broadcasting. We will attempt to bring you some information on others in the future.

Two For The Money

Alexander Durant, of New York State, sent us a 1950's picture postcard showing the Hotel Hilton, Syracuse, New York. On the roof of the hotel (or the building next to it) is a radio tower bearing the callsign WSYR. This sent us into the archives, because Syracuse station WSYR presently claims an indefinite 1922 start-up date, though station listings before 1928 fail to show a station WSYR. Then we checked out a short biography of the station written thirty years ago. That only made things all the more confusing.

Although there are still a couple of unclear things at the very earliest stages, we think that we have at least gotten WSYR's origins clarified a little better than we were able to do at first glance.

It seems that the station's first rumblings occurred on September 15, 1922 in the Fernwood Street home of Clive B. Meredith, of Cazenovia, New York. Meredith had been assigned the Special Land Station (Experimental) call letters of 8XH, and the commercial broadcasting license call letters WMAC. It appears that WMAC may have been jointly owned with someone from Baldwinsville, New York. This was J. Edwin Page, who held the Special Land Station call letters 8XAV. Some old call book editions list the ham station call letters 8AQO under Meredith's name, others show 8AQO as being assigned to Page. Most early records show WMAC under Meredith's name, but several list Page as its owner. Take your choice.

WMAC, *The Voice of Central New York*, began on 834 kHz, but by 1925 it was running 100 watts on 1090, then 1150 kHz. By

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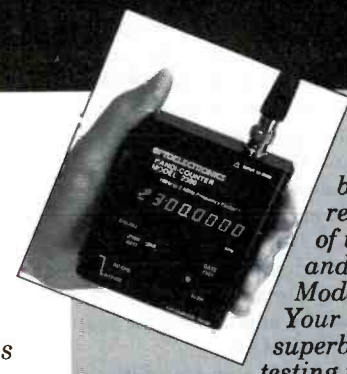

"I was encouraged by one of my readers words of wisdom, and bought the Model 2300. Your service was superb! After testing this unit I personally feel that all serious radio enthusiasts should own an Optoelectronics Frequency Finder"

Ron Bruckman
Radio Monitors Newsletter
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Display	10 Digit LCD w/Function Annunciators	10 Digit LCD w/Function Annunciators	10 Digit LCD	10 Digit LCD	10 Digit LCD	8 Digit LED	8 Digit LED
RF Signal Strength Indicator	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	•	•	•	•
Hold Switch	Yes	Yes	Yes	Yes	Yes	No	Yes
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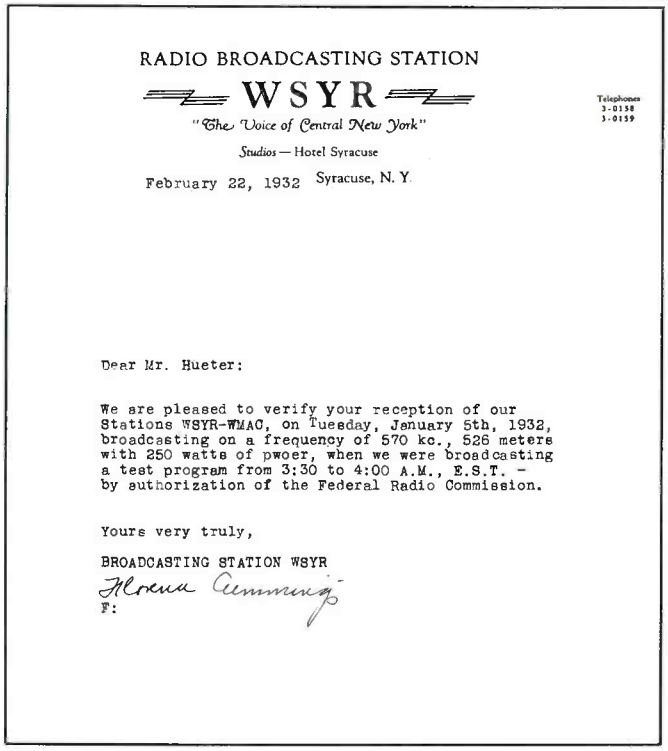


RADIO BROADCASTING STATION

WSYR

"The Voice of Central New York"

Studios — Hotel Syracuse

Telephones 3-0158 3-0159

February 22, 1932 Syracuse, N. Y.

Dear Mr. Hueter:

We are pleased to verify your reception of our Stations WSYR-WMAC, on Tuesday, January 5th, 1932, broadcasting on a frequency of 570 kc., 526 meters with 250 watts of pwoer, when we were broadcasting a test program from 3:30 to 4:00 A.M., E.S.T. - by authorization of the Federal Radio Commission.

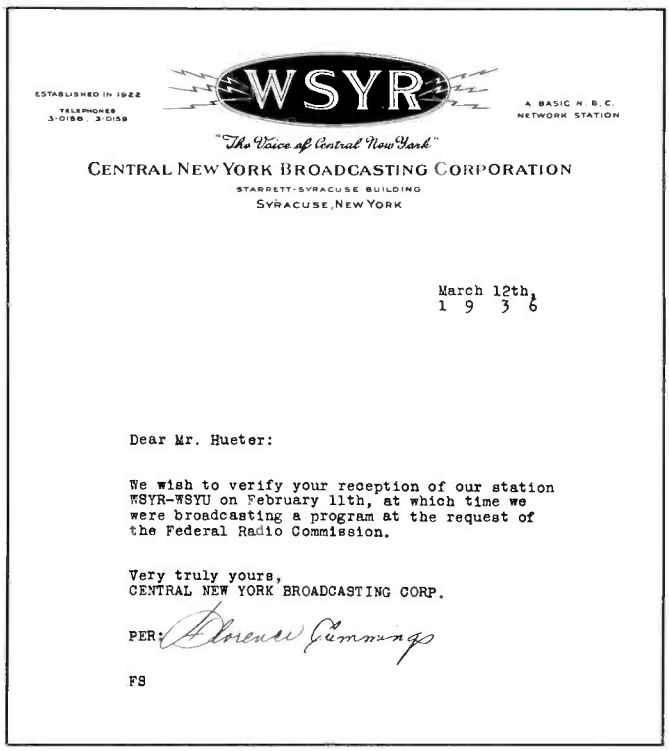
Yours very truly,

BROADCASTING STATION WSYR

Florence Cummings

F:

This 1932 veri letter from WSYR indicates the use of the dual WSYR-WMAC call letters. (Courtesy Joe Hueter, PA.)



ESTABLISHED IN 1922

TELEPHONES 3-0158, 3-0159

WSYR

A BASIC N. B. C. NETWORK STATION

"The Voice of Central New York"

CENTRAL NEW YORK BROADCASTING CORPORATION

STARRETT-SYRACUSE BUILDING

SYRACUSE, NEW YORK

March 12th,
1 9 3 6

Dear Mr. Hueter:

We wish to verify your reception of our station WSYR-WSYU on February 11th, at which time we were broadcasting a program at the request of the Federal Radio Commission.

Very truly yours,
CENTRAL NEW YORK BROADCASTING CORP.

PER: Florence Cummings

FS

In 1936, WSYR's veri letter mentioned the dual call letters WSYR-WSYU, which referred to the station's secondary facilities at Syracuse University. (Courtesy Joe Hueter, PA.)

1928, WMAC had 500 watts on 1130 kHz, which was changed to 1440 later in that year.

But Cazenovia was a small town, and Meredith had his sights on bigger things. Some 14 miles WNW of Cazenovia was the large city of Syracuse. In 1928, Clive Meredith, and his wife Olivia, opened up station WSYR on 1020 kHz (later 1330, and 550 kHz) with 500 watts in Syracuse. This station was located in the Hotel Syracuse. Station WMAC continued separate and independent operations from Cazenovia.

Soon thereafter, both stations were running 250 watts and found themselves splitting time on 570 kHz. By 1930, both Meredith stations had combined their efforts as *The Voice of Central New York* on 570 kHz from Syracuse, announcing the dual call letters of WSYR-WMAC.

In 1932, Meredith sold his station(s) to Mark S. Wilder, and his son, Col. Harry C. Wilder. In the mid-1930's, the station was operating from 315 Starret-Syracuse Building, with a student workshop studio in the gymnasium at Syracuse University. Programs originating from the university were sent out under the callsign WSYU.

The year 1936 saw WSYR increase its power to 1 kW, then go to 5 kW in 1941. In 1948, the station was sold to S.I. Newhouse, although it was still being run by Col. Harry Wilder. At that time the transmitter site was 2341 Valley Drive, with studios in the Kemper-Syracuse Building (probably the same as the Starret-Syracuse Building).

Over the years WSYR was the first station to present a number of personalities who went on to national fame, including Rev. Norman Vincent Peale, and also singer Gordon MacRae.

Presently located at 2 Clinton Square, WSYR is owned by New City Communications of Syracuse, Inc. It remains on 570 kHz with 5 kW and a MOR music format, supplemented by farm news.

Old Salt

Another postcard arrived from Ross Parmlee, of Ohio. Ross picked up a postcard at a flea market and said that he knew it was going to be destined for us as soon as he saw a bunch of radio towers.

The caption on the 1938 card identifies it as "Broadcasting Station, Green Harbor, Massachusetts." Ross writes that he looked it up in the authoritative *Radio Station Treasury*, but couldn't find anything that might clue him in on what station this might be. He hopes we can help. And so we can!

Problem is that Green Harbor, Mass., is a very small New England community located about 35 miles down the coastline from Boston. It's very close to Brant Rock, site of one of the very earliest experiments in voice and music broadcasting. The postcard was printed right in Green Harbor for local sale to the summer tourist trade there. The card shows one of the newest scenic high points of a visit to Green Harbor in the 1930's, something that was undoubtedly known thereabouts as "the broadcasting station."

Green Harbor, being tiny, on a back road, and relatively unknown, is not a place the station decided it wanted to be identified with. Nationalistic Green Harbor residents, however, were not about to relinquish their claims to this station, even though it refused to acknowledge its actual location there. Moreover, this wasn't a broadcasting station in the usual sense of the word as we know it today. The station on the postcard has always claimed its location is Marshfield, Mass., which is three miles to the NW of Green Harbor. Marshfield is on the main highway to Boston, and it's twice the size of Green Harbor.

Put on the air by the New England Telephone and Telegraph Co. in the mid-1930's, and assigned the call letters WOU, this station provided coastal marine telephone service and weather broadcasts to fishing vessels in the Boston Area under the identification "Boston Marine Operator." As such, on 2506 kHz, in the community of Marshfield, it can be found in *Radio Station Treasury*.

Station WOU is still licensed from Marshfield on 2506 kHz, also 2450 and 2566 kHz. At night, especially during the winter, it can be monitored for hundreds of miles. But don't tell any Green Harbor residents that WOU doesn't admit it's in their town.

Older Salt

When it comes to communicating with ships at sea, we like the U.S. Navy's old station on the West Coast. So we dug out a photo of one showing that station that goes way back.

The station is on Mare Island, near San Francisco. It shows up in station data from

The tower on the roof of the taller building at the right was at one time used by WSYR. The building at the left foreground is the Hotel Hilton in this 1950's photo. (Courtesy Alexander Durant, NY.)

NPG, the USN station at Mare Island, San Francisco, sent out these Navy Day QSL's to ham operators in the 1930's.

HC2JSB, of Guayaquil, Ecuador kept drifting to a spot about 25 kHz above its assigned shortwave broadcast frequency. After several attempts to correct the problem failed, the station simply got itself assigned to the other frequency and that was that.

soon after the turn of the century using the call letters TG, and when more formalized U.S. Navy call letters were assigned under international formats, it became NPG. It was using the NPG call letters at least by 1914, and, so far as we know, those call letters still continue to be assigned to this important station. Every USN "sparks" there ever was has copied traffic from NPG.

Information on NPG for the year 1919 showed that this versatile station sent out daily scheduled time signals, press reports, USN traffic, and other messages. It was listed as a high-power undamped spark station transmitting on 34.9, 62.5, 125, and 500 kHz.

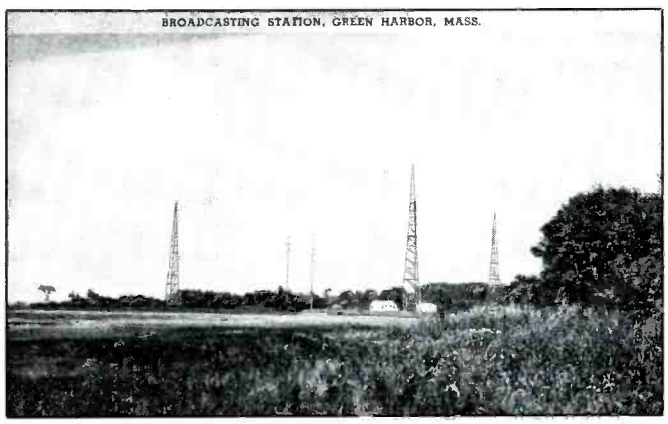
It's always interesting to see how that particular era saw enormous jumps in radio technology. In 1919, NPG was a spark gap station using five frequencies. By 1924, it was no longer using a spark gap, and was transmitting on a wider selection of frequencies, including 28.5, 40.4, 62, 69, 226, 445, 500 kHz, and even the shortwave channel of 2142 kHz At that time, NPG monitored the following frequencies for traffic from other ship and shore USN units: 17.3, 17.5, 33, 35.5, 38, 58, 75.9, 125, and 315 kHz.

As technology continued its march, 1926 saw NPG extend its shortwave coverage to 3701 and 7496 kHz. NPG was widely monitored on all of its frequencies by SWL's and hams practicing their CW copying speed. NPG regularly worked hams every Navy Day. Still in full operation, and on many frequencies, in recent years most of NPG's communications have been via encrypted RTTY. Sad to say, NPG is no longer as familiar a friend as it was decades ago.

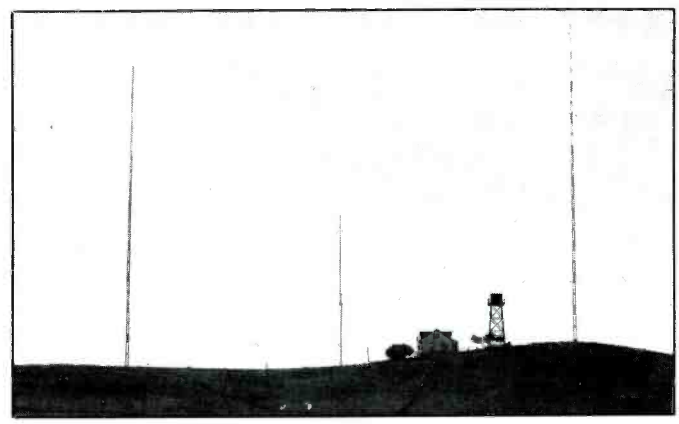
Adrift On The Waves

The mid-1930's saw the advent of shortwave broadcaster *Ecuador Radio*, also known as HC2JSB, in the city of Guayaquil. HC2JSB was assigned to the frequency 7830 kHz. Let's call that frequency the station's starting point every day, because as the equipment warmed up, the station drifted upwards in frequency. Listeners reported HC2JSB as drifting up to 7854 kHz, and having had to track it up the band to that spot on their receivers. A number of station attempts at correcting the problem failed. Eventually,

(continued on page 72)



This 1908 postcard showing three towers bears the caption, "Broadcasting Station, Green Harbor, Mass." In actuality, it isn't a broadcasting station, and the station never admitted it was in Green Harbor, Mass. We solved the riddle. (Courtesy Ross Parmlee, OH.)



An undated photo shows a very early view of the USN telegraph station at Mare Island, Calif. The main antenna supports are the two taller wooden towers. A shorter wooden mast is near the center, in front of the transmitter building and water tower.

DX Delineated

Should We Rate DX Reception?

BY JOHN W. DAVIS

I started listening to shortwave radios back in January, 1964. I immediately began searching for those magazines and books that could help develop my skills as a listener. With time I graduated from Heathkits to a Hammarlund receiver and began in earnest to seek out those elusive stations listed in the *WRTH*. Since then I have wanted to define the term "DX" as I now know it. The *WRTH* simply says DX is long distance. I find this definition a little too vague.

Let me digress for just a moment. In my youth I also used to go cliff climbing. Each route up a cliff was rated for its difficulty. The best climbers were those that amassed a record of climbing the most difficult routes.

I think shortwave radio listeners need to develop a DX rating system. The system should award points based upon the difficulty of reception by taking into account the frequency, transmitter power, receiver and antenna used during reception.

Each time a SWL receives a verification of reception (QSL card) he or she can score it according to the matrix I have developed. The matrix has a lot of subjective factors built in. The premise behind the matrix is that it is not too tough to QSL a 500 kW signal (even if it was not aimed at the United States) and should be scored accordingly. The most difficult stations to hear are the low power broadcasters that are found far away from the international shortwave broadcast bands. The most difficult challenge would be to log them by using a portable shortwave receiver. This would generate the highest score from the matrix, but this type of reception would at best happen rarely. An examination of the matrix will tell you where most of your scores will be found by just knowing your equipment and listening habits.

Since this is my matrix I did it my way. Obviously, it can be revised to include other factors. Factors such as the time of day, use of pre-amplifiers, the season and distance are all variables that can be utilized. I personally would not apply this matrix to any station within three thousand miles of my QTH.

To score a QSL on the matrix one merely adds or subtracts the various factors that are pertinent to the score. Use only those factors applicable to the QSL card.

An enterprising company or radio club could even score all of one's QSL cards and then give each SWL a combined total. The organization could then rank all of the combined totals to produce the SWL DX Honor Roll.

I wonder, how may points does the Patriarch of DX in Invercargill have to his credit?

The Matrix

Receiver	Antenna	Transmitter Power	Frequency
Communications set with deepest dynamic range and a new price of at least $2500	Dipole/inverted V	500 kW	The international SW broadcast bands between 6 and 18 MHz
+1.0	+0.5	−0.5	+0.5
Quasi-comms receiver with a more modest dynamic range and a current new price of $800 to $2,000	Dipole/inverted V or random wire used as the general antenna for all SWL	100 to 499 kW	4.0 to 5.9 or 21.4 to 22.5 MHz
+2.0	+1.0	+0	+1.0
Table models or portables with a price of $150 to $700	Indoor random wire or high Q antenna not more than 20 feet above the ground	50 to 99 kW	2.3 to 3.99 MHz, or 22.5 to 26.0 MHz
+3.0	+1.5 Receiver's whip antenna	+0.5 10 to 49 kW	+2.0
	+2.0	+1.0 1.0 to 9.0 kW	
		+2.0 1.9 kW or below	
		+3.0	

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8. Dual High Impedance Amplifiers.
9. Maximized Sensitivity
10. Hold Switch - Locks in measurements FAST.
11. ± 1PPM Accuracy
12. Direct Count - 1Hz resolution to 220MHz
13. Sensitivity <1mv 10MHz - 200MHz, <5mv - 2GHz.
14. Single Shot Time Interval 100ns, .1ns averaged.
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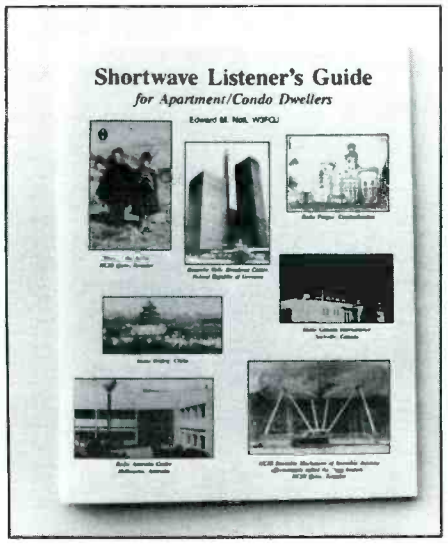
BOOKS YOU'LL LIKE

R. L. SLATTERY

Cliff Dwellers Need Antennas, Too!

Ed Noll, W3FQJ, has his new 56-page *Shortwave Listener's Guide for Apartment/Condo Dwellers* out. It's a introductory-level book for the beginning SWL facing the unique challenges that need to be met in a condo or apartment. Between the landlord, neighbors, and antenna restrictions, there are special considerations that have to be taken into account for suitable DX'ing results, especially if an indoor antenna is going to be used.



Indoor antennas can also be needed in a townhouse, garden apartment, hotel, rooming house, or even a private house. Results differ in various locations. The worst indoor situations are high-rise or condo buildings with their steel frames, and row houses hemmed in by large metallic surfaces. Ed's book is aimed squarely at people with the worst-case scenarios, but is also useful to the listener in better locations such as a mobile home park, or a building without an outside antenna restriction.

While there is general information provided on how to listen, and what bands are the best to search for DX, the real meat of this book is drawn from Ed's encyclopedic knowledge of clever antennas. Long time *POP'COMM* readers will surely recognize Ed Noll's name from the many fine antenna features he has written over the years. There are simple construction plans in this book for several indoor antennas, as well as information on various accessories that can be used to substantially increase the chances of bringing in worthwhile DX without using an outside antenna.

Ed's book has diagrams and photos, and the text is very easy to follow. This book is $9.95, plus $3 postage to USA addresses ($8 overseas) from MFJ Books, P.O. Box 494, Mississippi State, MS 39762.

Radios Throughout The Years

Evolution of The Radio, by Scott Wood, is a colorful 218-page book celebrating the household vacuum tube radio receiver from the 1920's through the 1950's. There's very little explanatory text, but plenty of great stuff to look at in this book. The book is primarily aimed at the many collectors of antique radios, inasmuch as the values of older radios sets increases dramatically each year.

The book's first 102 pages are filled with ads for the old radios taken from catalogs and publications from the years they were being manufactured. More than 30 ads are in full color. Then, there follows more than 600 color photos of table and console radios from companies such as G.E., Fada, Emerson, Crosley, Airline, Arvin, Grundig, Philips, RCA, Silvertone, Zenith, and many others famous and obscure. The photos are big (about six inches to a large size page), clear, and well lit, with bright color. Each photo is identified with the set's name and era of manufacture. At the back of the book, a price guide provides the current collector's market with approximate value of each set shown (prices range from $30 to $2,000).

Additional features in this book include color reproductions of several humorous radio-oriented antique postcards, plus an extensive listing of antique radio dealers and collectors.

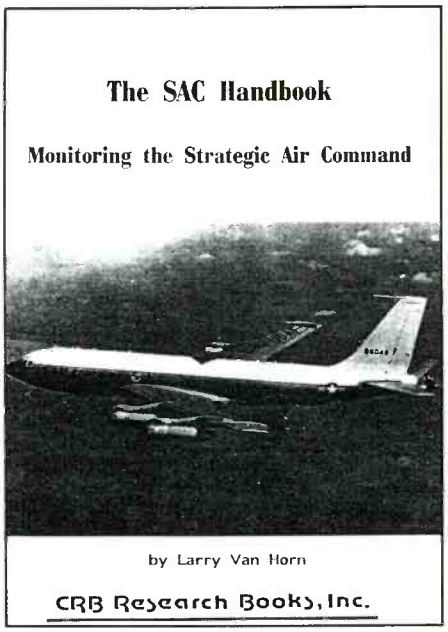
Evolution of the Radio, by Scott Wood, is $22.95, plus $2 for Book Rate postage (sent to US addresses only). Order it from L-W Book Sales, Box 69, Gas City, IN 46933. Residents of IN, IL, MI, MN, OH, and WI please include appropriate sales tax.

Skyking—Please Call Home!

One of the favorite HF and scanner monitoring activities has long been the U.S. Air Force's Strategic Air Command. This is a highly complex military force utilizing a myriad of voice and non-voice communications modes and frequencies. They offer the monitoring enthusiast a chance at the next most exciting thing to actually being a member of one of the B-52, U-2, FB-111, or other SAC aircraft flight crews.

The SAC turns up heavily on the HF bands, and in the 200 to 400 MHz scanner band, using all manner of coded aircraft and ground station ID's, codewords, encrypted messages. It's dazzling, even the frequencies are known by coded identifiers, which sometimes change. You wouldn't think that any hobby monitor could figure out what's going on. Not so!

Keeping in mind that you can't tell the players without a score card, DXpert Larry Van Horn has assembled an enormous wealth of communications information on the SAC in his exciting new book, *Monitoring The Strategic Air Command*.



First, Larry offers a detailed explanation of the SAC and how it operates, plus the bases from which it operates. This includes the flying airborne command posts, and the post-attack command control system. He explains and provides frequencies and monitoring information for the satellite communications systems known to be used by the SAC (you can tune them on a scanner).

Next, he's laid out the *Giant Talk* HF network, with channel code names; this runs approximately 100 channels, plus an additional 18 low-band VHF scanner frequencies of the SAC.

Then there are the SAC's "Bomb Plot" channels, GWEN frequencies, and other assorted channels. From there, Larry explains the SAC's weather broadcast voice formats, plus all sorts of other coded formats, including *Skyking* messages.

At the back of the book there's an exhaustive roundup of the coded SAC callsigns used by aircraft and ground stations.

Larry's comprehensive book touches all the bases and covers the countless frequencies used by this vital arm of the USAF. It makes monitoring the SAC a lot easier and much more exciting. The Cold War may be over, but the SAC still continues its mission as our nuclear deterrent. Sample them at night on 6761 kHz (USB), and days on 11243 kHz (USB) and you'll realize that these people are going to be on guard for years to come—offering white-knuckle monitoring to

those who know how, when, and where to monitor.

Monitoring The Strategic Air Command, is $12.95, plus $3.50 UPS shipping to the 48 contiguous states (1st Class Mail to AK, HI, PR, VI, GU, military addresses, and Canada) from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State please add $1.32 sales tax.

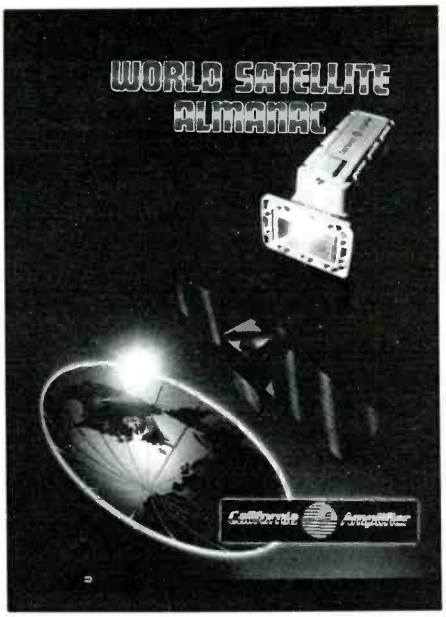
In addition . . .

Lawlor's Radio Values, by Michael Lawlor, is a handy 32-page pocket-guide to the present realistic "street" market values of collector's antique catalin, character, mirrored, novelty, and plastic table radios. Well written text in the guide offers basic buying and collecting guidelines, including how to check the condition of sets when evaluating them, also what to look for, how not to get stung, etc. The radios listed are cross-referenced for listings in the Collins and Sideli antique radio books. This book is $12.50, plus $1.50 postage, from Bare Bones Press, P.O. Box 179, Santa Barbara, CA 93102. Residents of Calif., please add 81 cents tax.

We didn't see a review copy, but got a press release announcing the new (Third) edition of the *World Satellite Almanac*, by Mark Long. This is claimed to be a 1,072 page reference guide, with charts, photos, footprint maps, with tech information "on all of the world's existing and future telecommunications satellites." The price is $74.95 in softcover, or $149.95 in hardcover. Add $12 shipping to USA and Canadian addresses. It's from MLE Inc., P.O. Box 159, Winter Beach, FL 32971.

The 1992 Edition of the *Scanner Frequency Guide* covering upstate South Carolina is out. This is a 75-page frequency guide offering scanner frequencies for its geographic coverage area, including police, fire, EMS, ham repeaters, business, codes, etc. The previous edition contained entire pages boldly ripped off and reproduced "as is" right out of a directory of another publisher, without permission. We declined to recommend that particular edition, but this latest edition looks like they're back on track again. It's $7.95 from Radio Research, 10 Elf Lane, Greenville, SC 29611.

The *Yukon Frequency List*, by Ronald Tull, VY1RT, is a no-frills production, although it contains a lot of good information on various frequencies a person with a scanner can tune in the Yukon, British Columbia, Alberta, and elsewhere in western Canada. Ron doesn't mass produce these, but will make them up and sell them for $25 (Canadian funds, no GST) to other hobbyists. His address is: Ronald Tull, 209-9225 Alaska Highway, Whitehorse, Yukon, Canada Y1A 3Y9. ■



New Shortwave "Whatzit?" Station

The Mystery Translator/Transponder

BY DWIGHT M. BROWN, Jr., W5WE

A few weeks ago I accidentally ran across the "Mystery Translator" on 8880 kHz. I had not heard it since back in 1989, as reported in *Popular Communications* in September, 1990. Although I had contacted several electronic publications, the only one to show any interest was *Popular Communications*.

I found the "Mystery Translator" on the air every night for about ten days. There were at least a dozen hams here who monitored this station and logged stations through it. I contacted *Popular Communications* about my idea for an article, and then made several telephone calls to one of the FCC monitoring stations, who said they knew nothing about the translator. I decided to learn what I could on my own and make a report on this device.

Down To The Basics

To explain myself more clearly, I'll have to get down to the basics of repeaters and translators.

A repeater is a device that receives signals such as FM, detects the signal, imposes the audio on a new RF carrier and transmits it on a new frequency. On the ham bands the offset is usually a few hundred kilohertz up or down. For example, 146.34/94 means the repeater receives on 146.34 MHz and retransmits the signal on 146.94 MHz.

A translator, on the other hand, receives a signal, but does not send the information out on a new carrier, instead it mixes it with a new local oscillator and transmits it as is. For instance, a CW signal goes in CW, is amplified, mixed with a local oscillator, amplified again and sent on its way on the new frequency as a CW signal. Any chirping or other characteristic will be sent along its way in the same condition. It's the same thing with AM, FM, TV or any other type of signal you can think of. The translator may receive signals from several sources at one time and will handle all of them provided the stronger signals do not capture the machine and prevent weak signals from getting through. Unlike a repeater which can handle one signal at a time on a single frequency, a translator will handle all signals within the passband, which may be several kilohertz wide, even if some are, say, CW and others are SSB.

There are two types of translators. Inverting translators take LSB signals and transmit them on USB, and noninverting translators, which receive and transmit on the same sideband. In both cases, the signal is received, amplified, shifted to a new frequency, amplified again and transmitted. The difference is how the signal mixes with the local oscillator. It may be above or below the incoming signal frequency. This is important in using translators in satellites. By using the inverting type there is some cancellation of the Doppler effect, which is the frequency shift due to the translator traveling at a high rate of speed in a satellite, but that is another story.

40 to 38 Meters

The translator I have been listening to seems to have a center frequency on 40 meters of 7014 kHz, is two kHz wide and is translated to the new frequency of 8879 kHz. We did not check and calibrate the individual receivers as we ran our tests, but it appears the device will receive and retransmit all signals that fall between 7013 and 7015 and transmit them on 8878 to 8880 kHz., although this is an approximation. There is some problem with tuning a receiver in the SSB position rather than the CW position. For that reason there may be some shift due to how the receiver was adjusted, and when running the tests we did not check with each of the other hams to be sure we had our equipment set exactly the same.

The 8880 kHz signals on the air are so strong it must be a very high power translator with a good antenna system or there is something I do not understand about wave propagation. The majority of the signals I hear through the machine originate in Russia.

Monitoring The Machine Locally

I alerted several of the local hams and each night we have been listening and logging the stations we hear. Of the fellows who get on each night, one is retired military, one is former Navy security, one is a petroleum engineer, two are retired FAA engineers, two are TV broadcast engineers, one a portrait photographer and one a geologist, plus any others who happen to drop in on us. With all those guys working on it, they have thought of no good reason for this machine to exist.

The 40 meter signals we have been hearing through the translator are mostly located in Russia, followed by Britain, USA, Canada, Yugoslavia, Czechoslavia, Sweden, Germany France, Spain and Italy. It would seem the device is probably located in one of the Eastern European countries considering the station heard and propagation at that time of the evening.

My dad, W5ABA, retired CPA/Attorney has been listening to this machine and he said that he has been building and using electronic equipment since 1914 when he started as a 14 year old kid and this beats all he has ever seen or heard. And from the QSL cards he has collected, I'd say he has heard quite a bit since 1914.

Measuring The Exact Shift

The method used to discover the exact frequency shift was to locate a strong signal on or near the center of the bandpass on 8879 on VFO "B" of my TS 440 S Kenwood transceiver, switch to band "A," find the signal on 7014 kHz, tune for the same audio tone, then switch back and forth between VFO "A" and "B", to be sure the two audio signals are the same. When there is no audio shift when moving from 7 MHz to 8 MHz (VFO "A" to "B") I knew I had them as close as possible.

Next, I read the frequency of the station on 7014 kHz and recorded it, then moved to 8879 and read the exact frequency there and recorded it. This gave me two frequencies tuned exactly the same to tell me how far the "Infernal Machine" had shifted the original input signal. It calculated exactly 1864.9 kHz, which I concluded was probably due to my ear rather than frequency, although this is speculation.

On The Air Tests

Tuesday, December 10th at about 0200 UTC I contacted Virgil Holobaugh, W5LMS, and ran a series of tests. I was blocking my receiver on 8880 kHz when I keyed up on 7015 kHz. With Virgil on the telephone and my Collins phone patch on so he could hear

me key up on 40 meters, I asked him to listen on 8880 kHz for my 7015 signals. He was able to hear my CW signals only after I turned on the Heathkit SB 220 amplifier. I then moved up the band to the point where no signal came through and then tuned down, moving one kilohertz or less at a time. Virgil was using his Kenwood TS 440 S and I was on the KWM-2 and SB 220 running a full kW of power, DC input. I was able to hear the 7015 kHz signal from my station and the translated 8880 kHz signal on the phone patch where I detected a slight delay in the 8880 signal which is a sign of the signal being translated.

The FCC Enters The Picture

I decided to call one of the FCC monitoring stations and asked if they knew where this machine is located and what the purpose of it is. The engineering supervisor said he never heard it, he did not know anything about it, but would leave a note for the evening shift to listen for it. He asked for my telephone number and said they would be back in touch as soon as they could find out what is going on.

More On the Air Tests

Additional attempts to get into the machine met with no success at all until December 15, at approximately 0115 UTC. I gave J.D. Alexander, W5VMY, a call and ran a series of tests with him. He was only able to hear my signals in the center of the passband and when running full power, but said our signal was very weak when I moved to the edge of the passband. J.D. is using a Ten-Tech Paragon transceiver.

I then called the FCC for a second time approximately 0200 UTC. I told the duty engineer what I was hearing on 8880 kHz and he immediately thought I was hearing an image generated by the receiver IF, which is what I though back in 1989 the first time I heard the translator. I told him it was not the receiver and that several other local hams were listening to it. He replied, "Well, I'm listening to 8880 now and I hear all that stuff and I still don't believe it!"

The FCC engineer said it was not their duty to monitor that type of transmission but he was interested in whatever it is and would be back in touch with me as soon as he could learn more about it.

Help From Europe

I contacted J.D. once again and told him what I had done and he said he spoke to a ham in Europe who was about to run some tests and would be back in touch with us if the folks over there were able to learn anything or had any idea what is going on. It will be interesting to hear what they develop over there.

The Plot Thickens

For some strange reason, after sending "test" on the machine for almost a week, alerting the FCC and others, the machine was not on December, 16. It has not been on the air since December 15, the day I notified the FCC and the engineer heard it. It may not be so strange, though, it has been a couple of years or so since the first time I heard it and it went off the air after several days operation. It may have been on the air since then but I have not heard it. It is quite a mystery, but that is what the hobby is all about. Lots of fun, lots of mystery and *always* interesting.

For now this station intends to keep looking for the "Mystery Translator." If it ever comes up again and you hear W5WE on it, send a SWL QSL and I will respond. I will also reply to any correspondence, although at the present time I do not have much information to share. ■

POP'COMM Reviews:

The Cobra Trapshooter Solar Stealth Radar Detector

It Defines State Of The Art

Looks like Cobra thought of everything when they designed the RD-6000 radar detector.

Cobra's new dual-band RD-6000 Trapshooter Solar Stealth Radar Detector is the world's first and only solar-powered cordless radar detector, and it features many other leading-edge technologies. These include Cobra's exclusive *Stealth D-R-O* Anti-Detection system, enhanced Cobra NoFalse anti-falsing circuits, and internal Ni-Cad battery system for about 30-hours of non-daylight use, and an energy-saving pulsed power supply combined with a motion-detection circuit. Let's not get ahead of ourselves.

Utilizing a built-in solar panel with thin-film high-efficiency amorphous silicon solar collectors, the newly developed photovoltaic panel is more sensitive to low light levels and offers more output per lumen than conventional solar arrays.

The solar collector is a nine-segment panel that's molded into the top surface of the aerodynamically shaped, miniaturized Cobra model. It continuously charges a special automotive-grade high-performance battery system while the unit is in use.

The airtight battery pack inside the unit is designed to withstand the wide range of temperature/humidity conditions encountered in an automotive environment. Cobra expects these batteries to have a nominal life of two years or more before replacement is needed. The batteries can maintain a full charge from the solar system, although a 12VDC power/charging cigarette-lighter cord is also provided for internal charging when the unit is first put into use.

The RD-6000 features a piezoelectric motion-detection system for extended battery life. It shuts off the unit after three minutes of no movement. The batteries operate with a pulsed power supply system that uses only a fraction of the power required by traditional radar detectors by sending power to the device once every 1/50th sec.

To further reduce current drain, an auto mute/dim circuit reduces the 90dB alarm, LED indicators and dual SideView alarm lamps to half intensity after 15 sec. of continuous alarm. Additionally, surface-mount technology with low-voltage CMOS integrated circuits are used for lessened power consumption.

Recently, a passive device has been put into use in many areas that, when placed by the side of a highway, can sense the use of radar detectors in specific oncoming vehicles. It does this by detecting minute amounts of signal leakage from the oscillator circuitry used in radar detectors. The RD-6000 uses a new modified dielectric resonant circuitry that, when combined with the use of the pulsed power supply, offers an improved level of anti-detection performance. Exterior signal leakage has been cut to negligible levels, hence the use of the term *Stealth* in the unit's name.

There are two anti-falsing systems in the RD-6000. One system prevents it from triggering from other radar detectors. The other system reduces false alerts caused by traffic counting devices, ship and aircraft radars, and miscellaneous microwave clutter.

Other features include a city/highway switch that permits additional screening (with minimal loss in sensitivity) while operating in urban areas. Also, there is a 5-position LED indicator that displays the relative strength of the received signal. The brightness intensity of these LED's, the warning lights, and the power/on indicator, can be adjusted for day or night driving, or the indicators may be turned off completely. There's a volume control to vary the loudness of the alarm signal.

Interestingly, the alarm signals differ depending upon the band being received. Signals in the "X" band go *beep*, while "K" band signals sound like a *brrrap*. Visually, an "X" band signal causes an amber light to flash, while a "K" band signal flashes a red light. OK, so it might not be a matter of vital importance for a person to be able to discern the frequency band being used to bombard his vehicle with surveillance microwaves, but communications hobbyists will enjoy knowing, anyway.

The RD-6000 will sense signals from both front and rear because of the type of adjustable windshield mounting bracket, which also allows the user to keep the solar panel oriented towards light.

Besides the many innovative circuit advances in the RD-6000, one of the things that immediately struck us as a plus was that the entire unit was self-contained. That means there was no need to route a power cord to the cigarette lighter or elsewhere, or else to have to drive with a visually distracting coiled power cord continually bouncing up and down.

The RD-6000 is small and inconspicuous, and what you can see of it looks good. It's easy to operate, too. Best of all, when we tried it mounted in different locations (on the dashboard and attached to the windshield), it accounted well for itself on both bands. After a couple of weeks' worth of tryout, it didn't false even once. It went off only when it was supposed to do so, which was a goodly distance down the pike from where Kojak's Kodak was hidden away in the shrubbery. The alarm signals are sufficiently early to give you time to roll down your window and give 'em the ol' high five (or high *one*) as you pass by doing double nickels.

This really is a dazzling piece of high technology. At an MSRP of $319.95, it is obviously designed and built for the driver who will settle for nothing less than the most exotic detector available. We thought it easily filled that bill.

The RD-6000 Trapshooter Solar Stealth radar detector comes from the Cobra Electronics Group, Division of Dynascan Corporation, 6500 W. Cortland Street, Chicago, IL 60635. Further information on the unit can be obtained by calling Cobra toll-free at 1-(800)-COBRA-22. Be sure to let them know you learned about the unit in *Popular Communications*.

Reviewed by POP'COMM Staff

THE JAPAN RADIO CO.

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Scanner Notification Nets

Why Not Do What These Folks Did?

BY BOB GAD

Most people got started the same way, with a 6 or 10 channel scanner. You plugged in crystals for fire and police in your town, fire and police in the next town, a state police channel or two, and maybe a fire mutual aid channel. Then along came programmable radios, whose substitution of computer chips for crystal sockets permitted the "huge" capacity of 20 or 30 channels. Unfortunately, the "back of the box" antenna that worked OK for the home town fire department was no longer adequate, and so it's up on the roof late at night to install an antenna with coax so your significant other (or mother) wouldn't find out.

With the march of technology, two things happened. First, each department began acquiring its own channel; gone were the days when one crystal and a good antenna would bring in half a dozen or more stations. On the other hand, the march of computer technology gave us 100 channel sets, then 200 channels, and now 400 to 1,000 channels.

At some point it gets out of hand. Soon you find that, with your "Super-Duper" Model 1 500 channel set, into which every frequency within 40 miles has been programmed, you begin missing fires in your own home town. So you need a second radio, just for the "locals." Then you discover you've missed a second-alarm-on-arrival calloff somewhere because the mega-radio was locked up on a medical. More radios. More antennas and more coax. More frequencies, more coax, and finally there's so much going on you can't hear a thing.

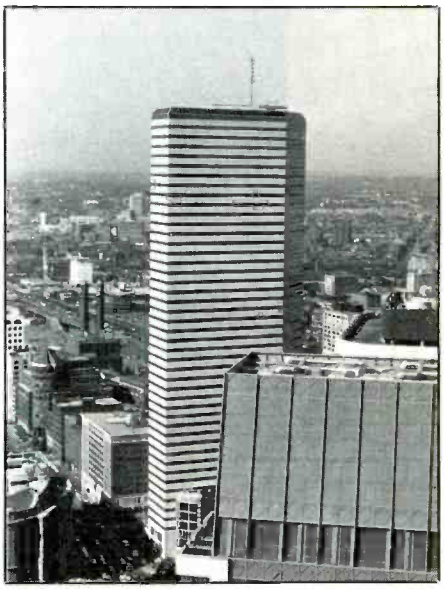
What you really need is a dozen or more radios, located in all the strategic sites around town (or around the state) and manned by a group of people who will listen for the good stuff and give you a call when the "big one" comes in. Of course, there's no such thing, right?

It's time to look for the nearest "notification net."

Notification Systems

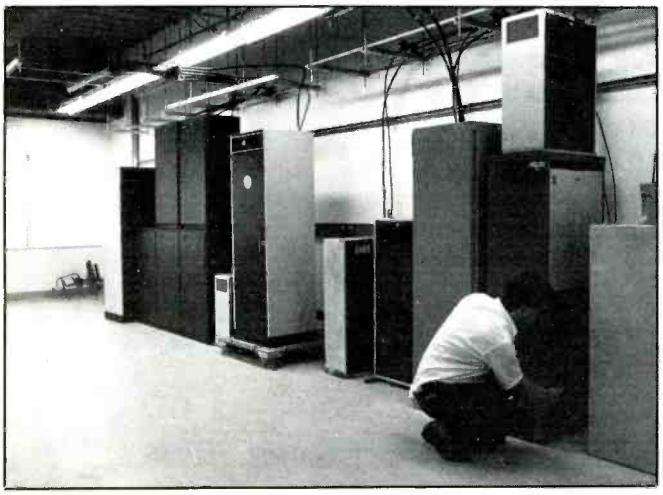
Basically, a notifications system or network is just a group of listeners with access to a common two-way radio system for the instant exchange of information gathered. The system can be five people on the same street, or it can involve hundreds of public safety and news media professionals operating throughout a large geographical area and supported by a sophisticated system of repeaters and multiple channels. Some attempts at establishing a notification net never get off the ground; others take off like a space shot.

An example of the latter is Boston's "MetroRadio System" ("MRS" for short). Founded in 1988 by a small group of professional and freelance news photographers, today the membership roll of MRS exceeds 250 and consists of some of the area's better known police and fire personnel, print and electronic media personnel, and plain old fire buffs. MRS isn't limited to fire incidents (as some notification systems are), but most notification nets have fire buffing as their genesis.



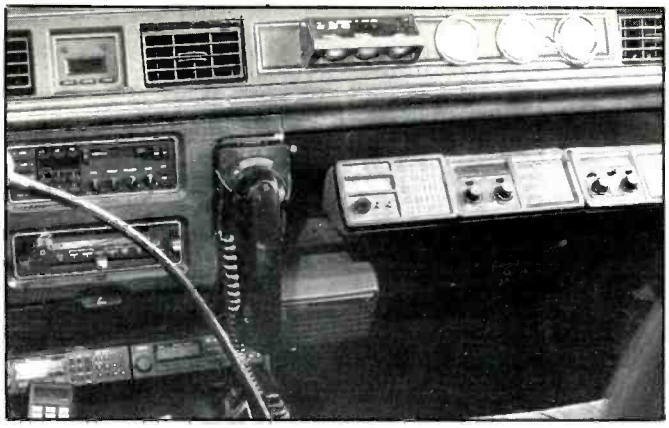
The master antenna system for the MRS graces one of the tallest buildings in Boston.

The MRS radio system consists of a commercial-grade UHF repeater operating from the top of the third tallest high-rise building in Boston. System coverage extends north

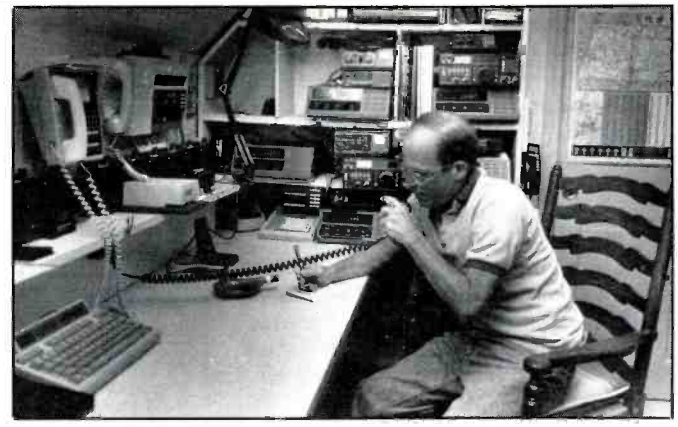


Here's a peek at the repeater equipment used by the MRS. Bill Mullowney (MRS Car101) makes some adjustments.

Antennas abound on the roof of MRS member Nat Whittemore's car/mobile monitoring station.



Five monitor radios (of a total of nine) are located on the dash of Mr. Whittemore's car. A two-way and a cellular phone can also be seen.



Joe Ansin (MRS "401") seated at his combination monitoring station and MRS dispatch desk. His equipment includes 15 Motorola single-channel receivers, five 64-channel Midland two-way radios converted to receive, several ICOM R-7000's, some scanners and two-way equipment.

to New Hampshire, south to New Bedford, and west to beyond Worcester. (Backing up the main repeater is a stand-by repeater on the same frequency but at a different location, which means that the main repeater can go out of service and the membership will never know.)

Channel 2 is a repeater "talk-around" (simplex on the repeater output frequency), which permits units at the scene of a fire (or on the way) to coordinate with one another without tying up the repeater (and without the risk of forgetting to change back to channel 1 and missing something).

Channel 3 is a different simplex channel for semi-private, short-range communications unrelated to an ongoing incident.

On the drawing board for MRS are such enhancements as satellite receivers (to extend the ability of portable radios to make it back to the repeater from a distance and in "dead spots") and a second, "chit chat" repeater.

Augmenting MRS's own system is a collection of "cooperation agreements" with other notification nets in the Northeast. Some of these arrangements provide for the exchange of information between system dispatchers (so that MRS members learn of ongoing events in Maine, New Hampshire, Rhode Island, Connecticut or New York). Other arrangements afford MRS members radio privileges while visiting in the other system's home area (and vice versa).

What makes a successful net is people, and MRS has more than its share. Its 200 plus members cover a wide geographic range, and

it is virtually unheard of for a worthwhile incident to come in and not be picked up by at least one member. In addition, MRS has dedicated system dispatchers who keep traffic manageable and provide a central point for the exchange of information.

The bottom line is that, when in Boston, you can program your scanner for anything you like. If, however, you want to be sure you'll hear about any newsworthy incident, you'll certainly not only want to program in MRS, but to put in one of your "priority" channels. Indeed, the bulk of the MRS system listeners at any given moment is not MRS members, but non-member scanner listeners, as well as police and fire dispatch desks. One estimate concluded that some 5,000 public safety monitors in the greater Boston area are regular MRS listeners. MRS is also received on dedicated radios in the Massachusetts State Police barracks, the Boston and other major fire alarm offices, and emergency medical service dispatch points.

Starting and Running A Notification Net

If there is no notification net in your area, you'll have to start one. Here are some hints.

It is a mistake for a new group to spend a fortune, or to make large rental commitments, for a fancy commercial-grade repeater before you know that the group will endure and prosper. See what arrangements you can make with the operator of an existing repeater on a "trial" basis for starters.

"Open" nets, that is, a network without any control operators or net controllers, tend to get out of hand when everyone talks at once. Also, most users of a two-way system are more comfortable when they have someone specific to address; the making of "general broadcast" messages does not come easily to most folks. Therefore, if the system can arrange for "control operators" to fill reasonably regular time slots, the greater your chances for success.

It is virtually impossible for a "control operator" to function from a mobile or handheld unit. The "control operator" has to have good monitoring equipment, a desk at which he or she can take notes and keep a log, and a control station capable of both comfortable operation and loud and clear control of the repeater.

It is entirely legal for persons to listen to fire and police broadcasts that are "in the clear" (not scrambled), and it is legal to tell others what you hear in these broadcasts. However, this doesn't mean that use of some basic common sense isn't crucial to a successful system and good relations with the agencies you monitor.

There is little damage that can be done by repeating what you hear, but it is a sound practice to have the members avoid second guessing the working fire chief. If the chief reports that the fire "probably will hold *with the existing assignment*," then that is the information net members should give. Saying the fire is "out of control" would be inappropriate and irresponsible.

One thing you should be sensitive to are messages that come over the fire radio after the officer or apparatus has requested that the fire department repeater be "disabled". Usually, this information relates to the identity of the injured members of the department or civilians, and the reason for killing the repeater is so that family members don't hear about the problem before official notification is made. You may well be able to intercept this traffic by listening to the department's repeater input frequency, but it is imperative that the information not be disseminated over the notification net.

On the police side (if your net handles police operations), some more discretion is required. Boston's MRS uses some guidelines that make sense: the exact locations of such incidents as chases and manhunts is not broadcast on the system until after the incident is over. Information regarding raids and undercover operations is never broadcast. And should a member inadvertently begin releasing information that shouldn't be given out, the "control operator" will step in with a "10-71" code.

The use of radio codes is highly recommended. The original function of codes was to compress messages and they continue to have such a value. They also tend to minimize the potential for causing offense to casual listeners. It is a good thing to remember that, if your notification network is successful you may have a listening audience that extends far beyond the membership. "Before you speak, consider who is listening," is the MRS basic operating rule.

Latching On to an Existing Net

If there is an active notification system in your area, taking advantage of it is no more difficult than simply plugging the frequency into your scanner. Becoming more involved usually means being sponsored for membership by two or more existing members, annual dues to cover the costs of the repeater installations, and, of course, investment in your own two-way radio equipment. At whatever level of participation, the "net" assures that, even when you've been limited to "one radio, one channel" (such as holiday dinners with the family), you've still got the entire city covered. ■

MRS Incident Codes

Repeater: 462.725 • Tac 3: 462.650 • PL: 167.9

10-1 Responding
10-2 Cancel Response
10-3 Arrived on Scene
10-4 Acknowledgement
10-5 Repeat
10-6 Stand By
10-7 Verify address or info.
10-8 Call
10-9 Meet
10-10 Your location?
10-11 Radio Test (R1 to R9)
10-12 Preliminary Report
10-13 Need Help
Code 1-Urgent
Code 2-Not Urgent
10-14 Disregard previous info.
10-15 False Call/No Incident
10-16 Freq. Request (fire only)
10-17 Fire Box # Request
10-18 Activity Update
10-19 Monitor Freq. for activity
10-20 Incident Under Control

10-21 Brush/Woods Fire
10-22 Motor Vehicle Fire
10-23 HazMat Incident
10-24 Gas Leak
10-25 Electrical Fire
Code 1-Manhole
Code 2-Vault
Code 3-Substation
10-26 Ship Fire
10-27 Subway/RR Incident
10-30 Fire/Smoke Showing
Code 1-Doubtful Will Hold
Code 2-Probably Will Hold
Code 3-Under Control
10-31 Explosion/Bomb Incident
Code 1-Explosion
Code 2-Bomb Incident
10-32 High Rise Incident
10-33 Structural Collapse
10-34 Construction Accident
10-35 Working Fire
10-36 Search For Person
Code 1-Missing
Code 2-Lost
10-37 Water Incident
10-38 Drowning Search
Code 1-Confirmed Victim
10-39 Aircraft Incident
Code 1-Serious
Code 2-Not Serious

10-40 Motor Vehicle Accident
Code 1-Serious Injury
Code 2-No Serious Injury
10-41 Emergency Vehicle MVA
10-42 School Bus Accident
10-43 MedFlight Requested
10-44 Tractor Trailer Accident
10-45 Fatality/Injuries
Code 1-Fatality
Code 2-Serious Injury
Code 3-Minor Injury
10-46 Weather Alert
10-47 Avoid Area/congestion
Code 1-Flooding
Code 2-Wind Damage
Code 3-Accident
10-48
10-49 Report/Road Weather

10-50 Police Operation
Code 1-Pursuit/Auto
Code 2-Manhunt/Search on foot
Code 3-Raid
Code 4-Other (specify)
10-51 Suicide
10-52 Demonstration
Code 1-Riot
Code 2-Civil Disturbance
Code 3-Volatile Situation
Code 4-Peaceful
10-53 SWAT Team Response
10-54 Homicide
Code 1-Firearm
Code 2-Knife
Code 3-Other (specify)
10-55 Officer Shot/Stabbed
10-56 Officer in Trouble
10-57 Shots Fired
10-58 A&B/Dangerous Weapon
Code 1-Firearm
Code 2-Knife
Code 3-Other (specify)
10-59 Armed Subject
Code 1-Barricaded
Code 2-With Hostage
Code 3-Other (specify)
10-60 Bank Robbery
10-61 Armored Car Robbery
10-62 Armed Robbery
Code 1-Home Invasion
Code 2-Business
Code 3-Other (specify)

10-63 Kidnapping
10-64 Burglary
10-65 Body Found
10-66 Rape
10-67 Selective Enforcement
10-68 Prison/Jail Incident
Code 1-Riot/Disturbance
Code 2-Escape
10-69 Request for K9 Unit

10-70 VIP Arrival/Escort
Code 1-Secret Svc Protection
Code 2-State/local Protection

10-71 Sensitive Incident
Code 1-No Radio; Landline Only
Code 2-Use Radio Discretely

10-90 Essential Radio Traffic Only
10-91 Request Emergency Notification
10-95 Unauthorized Radio User
10-96
10-97 Hold Radio Traffic
10-98 Resume Normal Operations
10-99 Restrict talk to current incident

10-100 Major Emergency
First Unit on scene will update MRS base. All others on scene will operate on direct. Units not involved with incident will hold their traffic until 10-98 or 10-99 is given.

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Killer Quality! The HTX-202 is built to tough commercial standards set by Radio Shack's own active hams. It's thoughtfully designed so it's easy to operate and can take the hard knocks of everyday portable use.

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Killer Extras! Built-in extras are standard, not options that add to price and subtract from value. HTX-202 includes a high-capacity Ni-Cd pack, AC charger, case for alkaline AAs, belt clip, antenna and fact-packed 42-page manual. You also get a one-year parts/service limited warranty. A low-cost five-year service plan is available. Discover for yourself why the competition is nervous. Come in and see the HTX-202 today! ***Only $259.95 at***

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CIRCLE 146 ON READER SERVICE CARD

My Scanner's Not For Sale

I Was Going To Dump My Scanner, But After The Big Fire I Decided To Keep It

BY VAL SCOTT

I am a dyed-in-the-wool, stuck-in-the-mud HF DX'er. One afternoon, when I had a chance to buy a Uniden Bearcat 200XLT for a very good price, I decided to check out some more of the radio spectrum. I brought home the scanner, dug out some back issues of *POP'COMM*, and gave it my best shot. I don't think I was intended to be a scanner enthusiast: after two weeks, I was back at my beloved SWL'ing and the scanner was gathering dust. After six months, my scanner was up for sale.

The weekend of October 18-20, 1991, I had business away from my home of Oakland, CA. Sunday night I was tired and anxious to get back to home and family. When Delta Flight 957 dropped down through the clouds over the San Francisco Bay, I pressed my nose against the window and began to search the lights below for landmarks of home. I found my neighborhood, all right: it was hard to miss. We were host to one of the biggest fires in American history.

There was nothing to do but wait until the plane was on the ground. I grabbed my bag, dashed down the jetway, and headed into the terminal to try to find out what was going on. That was the beginning of a long night of frustration: no one knew anything. No airline representative in sight, either. I asked the people waiting at the next gate for news.

"Everything in the hills over in Berkeley and Oakland is burnt up." ". . . Out of control . . ." "Whole neighborhoods . . . ." No one seemed to know exactly what was going on, but everyone said it was a huge disaster. Then my family walked up, and my greatest worry was out of the way.

"Is the house still there?" I asked hesitantly, after I hugged everyone.

"We don't know."

I phoned a neighbor, and got through on the third try. He told me that the house was still standing, but that there were rumors that the fire might be headed our way.

Should we come home?" I asked him. "I think you'd better," he said, "I don't see any fire here, and I've heard rumors about looters."

In the car, on the way home over the San Meteo bridge, I fiddled with the radio, trying to get some hard news. Every station had a frantic announcer, lots of descriptions of burning mansions, and no information about the exact location of the fire. I gave up after the sixth or seventh station. I flipped it off and hoped that we weren't making a big mistake going home. The sky to the north of us—toward home—glowed red.

Home was still there, but I could taste ash every time I opened my mouth. No fire in sight. Good. No idea where it was, either. Not so good. Over the next ridge? I hoped not.

The TV was no help. They had terrific pictures of burning mansions, and courageous firefighters and people driving cars through walls of fire, but no maps, no hard news about evacuation. I couldn't decide if it was safe for us to stay home or not.

After about a half hour, I realized that the terrible images were clouding my judgement: I needed less emotion and more facts. I shut off the TV and dug out my scanner. While I listened, I packed for possible evacuation.

During my brief fling with scanning, I'd entered two of the Oakland Fire Department's three frequencies, some Oakland police freq's, and an assortment of other local emergency channels into the Bearcat's memory. The Oakland FD channels, 153.785 and 154.355, had exactly the stuff I was seeking.

"Up here by Moraga Ave . . . ." "Holding at the cemetery . . ." I recognized only a few street names, so I got out a map and marked it as I listened.

I spent the night that way, glued to that scanner. While I wasn't conversant enough with the jargon to follow everything I heard, I could track the street names and mark them on my map. As time wore on and I got a clearer sense of the boundaries of the fire, I began to relax. It was definitely closer than I'd like, given the dryness and the wind, but at least I knew where it was. About 3 a.m., the firefighters began to sound hopeful and they stopped naming new streets. When the winds stayed calm on Monday, and the fire channels got quieter, I began to believe it was over.

Residents of the hills faced a lot of decisions on October 20 and 21: should we evacuate? Should we stay and try to save the house? Should we water the roof? Should we run for our lives? Every one of those questions hinged on the single question: Where is the fire? It was terribly difficult to answer that question, listening to the media that afternoon and night. As a neighbor said to me the next day, all anyone seemed to know was that it was headed our way.

Worse, the level of emotion on broadcast radio and TV was so high that it was almost impossible to keep listening and remain calm. After only a short time watching the fire on TV, I was mentally running in circles like a dog chasing its tail. While burning buildings and hysterical residents might be "news" to folks who weren't in the line of the fire, those things were dangerous distractions to those of us for whom "the news" was that one simple question? "Where is the fire?

My scanner isn't for sale anymore, It's probably going to gather some dust, because I'm still not fascinated by police calls and airport approaches, but I'm going to keep it because it's one sure source of cool information in hot times. And the next time I hear someone suggest that scanner users are just "ambulance chasers" I'll tell them about the time I spent the night chasing my own ambulance.

It sure beats chasing my own tail. ■

East Bay Emergency Frequencies

153.785	Oakland FD
154.355	Oakland FD
154.19	Berkeley FD
460.6	Heyward FD
156.09	Oakland PD
155.79	Oakland PD
155.85	Oakland PD
154.92	Oakland PD
158.73	Oakland PD
460.175	Berkeley PD
460.25	Berkeley PD

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Emergency Operations Center has expanded to our new two acre facility and World Headquarters. Because of our growth, CEI is now your one stop source for emergency response equipment. When you have a command, control or communications need, essential emergency supplies can be rushed to you by CEI. As always, for over twenty three years, we're ready, willing and able to help. For 1992, we're introducing new products from Uniden, Shinwa, ICOM, Ranger Communications Inc., Grundig, Sangean, Magnavox and RELM.

NEW! Shinwa SR001-B

List price $799.95/CE price $479.95/SPECIAL

Continuous coverage from 25.000 through 999.995 MHz.

If you're looking for an excellent synthesized scanner designed for mobile surveillance use, the new Shinwa SR001 scanner offers features never before offered at such a low price. When you purchase the wide band scanner from CEI, you'll get a free infrared wireless remote control that allows you to control your scanner from over 20 feet away. Selectable frequency steps of 5.0/10.0/12.5/20.0/25.0/50.0 or 100.0 KHz. are available. Dual antenna inputs terminating in an "N-type" and "BNC" connectors are included. Other features include 200 memory channels grouped in 10 banks of 20 channels, easy to read multi color LCD display, lithium battery for memory back-up, 35 channel per second high speed scanning. priority, timer and even an alarm to alert you to transmissions on your choice of one special frequency. We even include a mobile mounting bracket. The SR001 can be used for base station use with the purchase of the ACS-B 12 volt DC power supply for only $34.95 each. A great sounding external speaker #SPE-B is available for only $24.95.

SHINWA POCKET PAGERS

The fire department hazardous materials response teams and police department SWAT crews who need a reliable radio alerting system stake their lives on Shinwa. We offer a two-tone pocket pager with monitor feature and even a voice storage option at an affordable price. To order, we need your paging frequency as well as tone reed frequencies. For other configurations or two-way radio information, please fax us your specifications to 313-663-8888 or phone 313-996-8888.

ICOM ICR1-B

List price $799.95/CE price $529.95/SPECIAL

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Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.

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A60-B Magnet mount mobile scanner antenna $39.95
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LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Is there a new country on the air right this moment? Chances are probably only 50-50, at best, but it looks like shortwave broadcasts from the Pacific island of Palau, for which a target date of April was set. Since we're past that time now we should already know if they made it. At this writing there is no information available as to schedules and frequencies. Stay tuned.

Here comes still another high power US religious shortwave operation! WEWN (Eternal Word Network) is expected to be active by Christmas from a site near Birmingham, AL. They'll use four—500 kilowatt transmitters and expect to run the first tests by October.

Religious broadcaster Adventist World Radio has leased a ten kilowatt transmitter in Siberia and should be on the air from that site by the time you read this. Programming from that location will be beamed to the India subcontinent and Southeast Asia in 13 languages and operate 24 hours a day. Later on, the station will use 200 or 250 kilowatts from the Siberian site. The programs will be co-ordinated from the new AWR Media Center now operating in Tula, Russia. The service has been named "AWR Russia."

On a similar theme, the Russians are now leasing one of their Moscow mediumwave sites for use as a foreign relay. Among the stations expecting to make use of the facility are the BBC, Radio Liberty (US), Christian Science Monitor and the Voice of America. On the weekends the facility will be made available to various religious broadcasters. Now we have to wonder if they'll expand on this idea and go to shortwave as well!

We don't know when it will begin but we understand that some of Radio Japan's European service broadcasts are to be relayed via BBC transmitters.

Wanna buy a shortwave station? Have your own international/world service? It'll only cost you a million dollars—which is cheap when you consider you'd be getting seven 100 kilowatt transmitters, with appropriate antennas and power generators. The complex belongs to the government of Chile and was used for that old Voice of Chile international service they had a number of years ago.

This is supposed to be the year that Radio France International gets their 250 kilowatt relay station on the air from Djibouti, although, as yet, there's no specific date or other particulars available. Once it's on, logging Djibouti should be significantly easier. Right now the only shot is the government's Radiodiffusion-Television Djibouti which only rarely shows up with sign on at 0300 on 4780.

Incidentally, Radio France now maintains a 24 hour news headline service via telephone. The number is (202) 944-6075.

There are two new Colombian stations on the air, both are not what you'd call snap logs, though. La Voz del Guainia, at Puerto Inirida is operating on variable 3500, with sign off reported at 0000. The other is Radio Catolica, somewhere in Narino province, on 3580, heard by some monitors around 0400. Both are in Spanish, of course.

For several years now the ANARC SWL net has operated every Sunday on 7240LSB. NASWA's head guy, Bob Brown, KW3F and Dave Kirby, W8JQX do the hosting. The net offers DX tips and related news through hams who check in to the net to pass along information. The net is on the air 1500 each Sunday. Reception of the net, though, is largely limited to the east coast. Now a similar net, for those on the west coast, has begun. The West Coast SWL net is hosted by WB6AHY (Bob Olsen). This one meets each Saturday at 1800 on 7265LSB. Jim Olsen, Bob's brother, wants to coordinate regular meetings of SWL's in the San Francisco Bay area so give him a call at (415) 221-1976.

Radio Abidjan, Ivory Coast, is reported to have an English language segment at 1800-1900 except Sundays on 11920. Give this a try. If you can pick out the name of one of the announcers, sending out a reception report to that person's attention might be a way to get around Radio Abidjan's notoriously bad QSL practices.

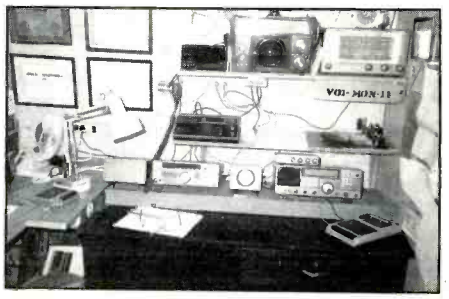
Radio Prague International has announced that it will become Radio Czechoslovakia later this year.

Here's a new schedule for English from Radio Vilnius, Lithuania, courtesy of Charles Brian Goslow, Worcester, Massachusetts: daily at 0000 on 9870, 15180, 17605 and 17690.

Our congratulations to Trans World Radio, which is celebrating its 40th anniversary this year! TWR began as International Evangelism, Inc., operating the Voice of Tangier from Morocco. After the Moroccan government decided to nationalize all radio stations, TWR opened a new station in Monaco. TWR Bonaire began in 1964, TWR Swaziland came along ten years later, TWR Cyprus (mediumwave) started in 1974. In 1977, TWR began KTWG/KTWR from Guam and began broadcasts from Sri Lanka the following year. Currently, the network broadcast over 1,000 hours of programming each week, in 90 languages. It receives about a half million letters each year!

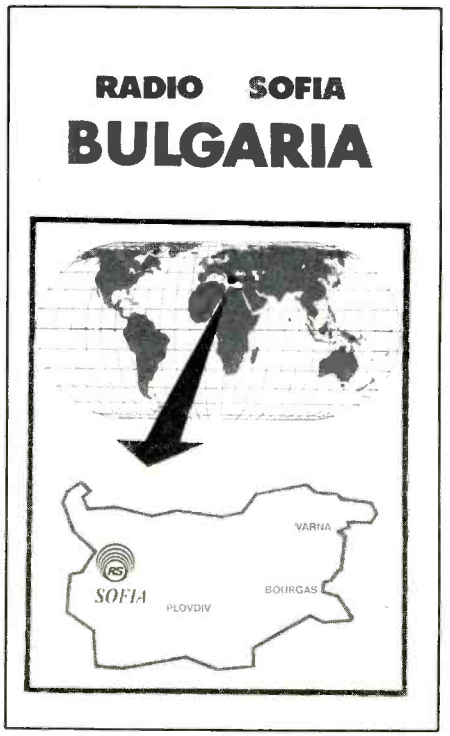
In the Mail: Jack Adams, Rt. 1 Box 239, Iberia, MO 65486, is looking for an owner's manual for a Hammarlund HQ-200 receiver. Just a photocopy would do the job, if you can help him out.

Bill Harbour of Mobile, AL is fairly new to the SWL game and is enjoying it very much, with early logs of Radio New Zealand, Radio



John James Dawe operates a ham and SWL station from Pasadena, Newfoundland, featuring a Yaesu FRG-8800 receiver, Kenwood TS440 transceiver and Bearcat 800XT scanner.

Here's Daryl Rocker in his Frankfort, NY shack, which features a Sony 2010, plus scanners, antenna tuners and cassette recorders.



Radio Sofia, Bulgaria, has dressed up the front of their program schedule folder a bit.

RADIO "ANDAHUAYLAS" S. A.
L. T. N° 9501427 — Reg. Ventas 2-010
Jr. Ayacucho N° 248 - Andahuaylas
APURIMAC — PERU
—o—

Andahuaylas 9 de Diciembre de 1991

Señor
Marie Lamb
U.S.A.

Muy distinguido señor Lamb:

Con mis mejores saludos para Ud. y para su digna familia, escribo esta carta en respuesta a su dign carta de Recepción de fecha 13 de Noviembre de 1991, agradeciéndole bastante de 1 Detalle de Recepcion a vuestra Emisora Radio Andahuaylas en la Frecuencia de 4840 kilociclos, Banda tropical de 60 metros, su Detalle de Recepción está muy bien de acuerdo a nuestra programa trasmitido el 1D de Noviembre de 1991, entre las 1802 y las 1819 hora de Perú. Anunciamos el nombre de la Emisora Radio Anda huaylas a las 1805 según el cassett recibido, mis agradecimientos por el Dollar para gastos de franqueo, y el cassett detalle de Recepcion, en la próxima enviaré el banderin de la Emisora está en confección, se nos ha terminado lo que teniamos.

Hasta pronto - Muy atentamente

Radio "Andahuaylas" GERENTE ANDAHUAYLAS

It's tough pulling QSL's out of Peru these days but Marie Lamb recently got one from Radio Andahuaylas — 4840. Marie's a "Senorita," not a "Senor"!

France, Radio Yugoslavia, VOFC and Radio Havana. He's using a Realistic DX-350. Welcome aboard, Bill.

Another SWL newcomer is Carl Hattan of Melbourne, Florida—though he's been hamming for a long time. Carl is using a Panasonic RF-4900 and doing a lot of 41 and 31 meter band listening recently. Welcome to you, too, Carl. And we'll look forward to those shack photos.

Mrs. Carol Serraon is making progress towards QSL'ing her first 50 countries and says people she knows are "listening with interest to my SWL experiences." Maybe you can spark an active interest in some of them eventually, Carol! It's always great to have local SWL's around!

Mark Wilkerson of Richmond, Kentucky wonders about the shortwave status of Radio Kuwait. As of this writing, Radio Kuwait is still off shortwave, Mark, and we haven't seen any recent information on when they'll be back. Ironically, it didn't take Baghdad very long at all to at least get some sort of shortwave broadcasts going again. Their English service aimed our way can be heard on 11830 at 2300-0100.

Marie Lamb of Brewerton, NY wonders about the current QSL policy (if any!) of Radio Pakistan. She notes that a tape of her reception coupled with a complimentary letter directed to the senior engineer brought a quick and positive reply. Radio Pakistan is sometimes a bit on the difficult side, Marie. You took the right path in writing to the engineering department. Incidentally, hope we've had a chance to meet by now!

Juan Negrin, Ellicot City, Maryland also asks about QSL's, namely if a station doesn't give its address and/or doesn't have diplomatic relations with this country, how do you go about writing. The address of virtually every shortwave station in the world is in the *World Radio TV Handbook* which is available from just about any SWL or ham radio supplier, Juan. and whether or not a country has diplomatic relations with another country seldom has any bearing on being able to send mail. Radio Tirana has always been pretty good with replies.

Thanks to Daryl Rocker for sending his shack photo, which features both scanners and shortwave radios. Daryl has been listening since May of last year and says he tapes 17 DX shows every week! Daryl is an electronics major. Thanks, Daryl and keep up the good going there—on all fronts!

We'd sure like to feature your shack photo one of these months! Come on! Don't be shy!

Remember your loggings are always welcome. Just be sure to list your catches by country, double space (minimum) between each and add your last name and state abbreviation after each. Your letters are always welcome, too—along with station schedules and literature, spare QSL's for illustrative purposes, news clippings, and whatever! Let's hear from you!

Here are this month's logs. Broadcast language is assumed to be English (EE) unless indicated otherwise (AA = Arabic, FF = French, SS = Spanish, etc) All times are UTC.

SWBC Loggings

Albania: Radio Tirana, 7300 in possible Albanian. News at 0000 and 0200 (Negrin, MD) 9580 at 0235 and 11825 at 0230. (Martin, IA)

Algeria: Radio Algiers, 9535 at 2138 in FF with music, news, phone conversations and talk. ID near the hour. (Kurrasch, NY)

Angola: Radio Nacional de Angola, 9535 at 2115. Talk in what seemed PP, many IDs, mentions of Luanda, Angola. Reggae-like music, ID and frequency 2128, news 2130. (Clar, NY).

Argentina: Radio Nacional, 6060 in SS at 0917. (Kimball, IL) 11710 at 0122. (Carson, OK)

Ascension Island: BBC Relay, 7105 in FF at 0620 with Afro-pops. (Kimball, IL)

Australia: Radio Australia, 6020 at 0841, into Pidgin at 0842. Also on 12000 at 1435 in EE. (Kimball, IL) 9580 at 1305, 15160 at 0611 and 1245. (Serraon, GA) 11720 at 1305 and 13705 at 1415. (Northrup, MO)

Austria: Radio Australia, 6020 at 0841, into Pidgin at 0842. Also on 12000 at 1435 in EE. (Kimball, IL) 9580 at 1305, 15160 at 0611 and 1245. (Serraon, GA) 11720 at 1305 and 13705 at 1415. (Northrup, MO)

Austria: Radio Austria Int'l, 9870 in GG at 2354 under Radio Moscow. ID and Strauss waltz. (Kimball, IL) 13730 at 0835. (Rocker, NY)

Belarus: Radio Minsk, 17605 at 0030 in RR with IS, ID as "Goverit Minsk," into news. (Carson, OK)

Belgium: BRT, 9925 at 0015 in SS with folk dances. (Kimball, IL)

Benin: ORTB, Contonou, 4870 at 2140 in FF with music, vocals and talk. ID on the hour. (Kurrasch, NY) 0618 with rock and FF commentary. (Riddle, DC)

Bolivia: Radio Santa Cruz, 6130 in SS at 0930 with ID between songs. (Kimball, IL)

Brazil: Radio Anhanguera, 4914.2 in PP with religious program at 0940. (Riddle, DC)

Radio Universo, 9565 at 0039 in PP with what seemed a sermon or speech to a live audience. (Clar, NY)

Radio Cultura do Para, 4885 at 0352 in PP. 5045 with samba/batucada music. "Cultura" ID in PP at 0751. (Riddle, DC)

Radio Marajoara, 4955 at 0810 in PP with sambas, ID at 0817. (Riddle, DC)

Radio Nacional do Amazonia, 6180 in PP at 0756 with IS and sign on 0759. (Kimball, IL)

Bulgaria: Radio Sofia, 9700 at 2323 with mailbag program. (Rocker, NY) 11660 at 1935. (Serraon, GA)

Cameroon: Radio Garoua, 5010 at 0500 in FF with news, music, talk, ID. (Kurrasch, NY)

CRTV, Yaounde, 4850 at 0552 with African pops, comments in vernacular. EE ID at 0552. (Riddle, DC)

Canada: Radio Canada Int'l, 5960 at 0037, 9755 at 0038. (Serraon, GA) 11940 at 0205, 11945 at 2016. (Carson, OK) 11940 in Ukrainian at 1845. (Kimball, IL) 17820 to Africa at 2130. (Negrin, MD)

CHNS, Halifax, 6130 at 1209 with "Morning Show." (Clar, NY)

CFRX, Toronto at 0708 with commercials, trivia call-ins. (Carson, OK)

Central African Republic: Radio Centrafricaine, 5035 with 0430 sign on. Vocals, drums. In FF. (Kurrasch, NY)

Chad: Radio National, 4904.5 in FF at 0603 with music. Into vernacular at 0605. (Riddle, SC)

China: Radio Beijing, 9665 at 1224 with current affairs feature. (Tucker, GA) 9690 at 0340, 11705 at 0000 and 0301. (Serraon, GA) 11695 at 0330 "News About

Abbreviation Used In Listening Post

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

China." (Wilkerson, KY) 15170 at 2000. (Negrin, MD)

Voice of Jinling, 4875 in CC at 1204. (Clar, NY)

Colombia: Ecos del Combeima, 4785.5 at 0605 in SS with salsa music, ID at 0606. (Riddle, DC)

La Voz del Rio Arauca, 4895 at 0220 in SS with salsa music. (Riddle, DC)

Ondas del Meta, 4885 at 0213 in SS with music. (Riddle, DC)

La Voz DEL Cinaruco, 4865 at 0132 in SS with salsa and comments. (Riddle, DC)

Congo: RTVC, 4765 at 2215 in FF. Vocals and instrumentals, brief talks by man announcer, ID 2227. (Kurrasch, NY)

Costa Rica: Radio Reloj, 4831.4 at 0730, Latin pops, music talk, ID in SS 0730. (Riddle, DC) 4832 0429 SS talks, man and woman talks, light music. (Clar, NY) 6006 at 0615 in SS. (Kimball, IL)

Radio Lira, 9725 at 1100. (Martin, IA) 1413 in SS. (Kimball;, IL)

Radio For Peace Int'l, 7375USB at 0253. (Hattan, FL) 15030 at 2034 and 0305. (Serraon, GA)

Faro del Caribe, 5055 at 0118 with call letters as "TIRC," SS religious programming. (Riddle, DC)

Cuba: Radio Havana, 11760 at 0402, 11950 at 0002, 17835 at 1900 in EE, 2155 in FF. (Serraon, GA) 11950 at 0030. (Tucker, GA) 0330. (Wilkerson, KY) New 13700 at 0320. (Rocker, NY)

Radio Moscow relay, 6045 at 0331. (Tucker, GA) 11840 at 2100. (Carson, OK)

Radio Rebelde, 5025 in SS at 0025. (Clar, NY)

Cyprus: BBC, relay, 21470 at 1501. (Tucker, GA)

Czechoslovakia: Radio Prague Int'l, 5930 at 2306 with news in SS. (Negrin, MD) 7345 at 0301. (Hattan, FL)

Denmark: Radio Denmark, via Radio Norway, 21705 with ID at 1430 and into Danish. (Negrin, MD)

Dominican Republic: Radio Norte, tentative, 4799.8 in SS with music. Heavy QRM. (Riddle, NC) (Station is "La N," in Santo Domingo, Editor)

Radio Barahona, 4930 at 1052 in SS with ballads. (Riddle, DC)

Ecuador: Radio Jesus del Gran Poder, 5049.9, religious program in SS at 1012. (Riddle, DC) Radio Quito, 4920 at 0109 in SS with music. (Riddle, DC)

Radio Catolica Nacional, 5030 at 0017 in SS with "Lo Nuestro" on Ecuadorian folkloric customs and music to ID at 0100. (Riddle, DC)

Radio Paz y Bien, 4820.2 at 0635 in SS with religious music, commentary, telephone call-ins. (Riddle, DC)

Escuelas Radiofonicas, 5010.2 at 0725 in SS with salsa music. (Riddle, DC)

HCJB, 11735 at 0019, 11925 at 0510. (Carson, OK) 15155 at 0130. (Tucker, GA)

Egypt: Radio Cairo, 9475 at 0210. (Carson, OK) 9900 at 2119. (Rocker, NY) 12050 in AA at 0335. (Wilkerson, KY)

England: BBC, 5875 at 0635. (Kimball, IL) 5975 at 0025, 9590 at 2150, 15260 at 1501. (Serraon, GA) 7325 at 2300. (Tucker, GA) 12095 at 2108. (Carson, OK)

France: Radio France Int'l, 17620 at 1604. Also 17795, much weaker. (Serraon, GA) 21630 at 1400. (Negrin, MD)

French Guiana: Radio Japan relay, 9675 in JJ at 0802. (Kimball, IL)

Gabon: Africa No. One, 15474 at 1700 in FF. (Wilkerson, KY)

Germany: Bayerische Rundfunk, 6085 at 0550 with pops, news, traffic, all GG. (Kimball, IL)

Radio Free Europe, 7165 in Romanian at 0548, ID 0559. (Kimball, IL)

VOA relay, 6060 at 0655 to 0700 close. (Kimball, IL)

Deutsche Welle, 6085 at 0110. (Tucker, GA) 6145 at 0130 in EE. (Carson, OK) 0200 in GG. (Wilkerson, KY) 9510 at 0343 and 9565 at 0101. (Serraon, GA)

Ghana: GBC, 4915 in vernacular with EE ID 0032. (Riddle, DC)

Greece: Voice of Greece, 7430 at 0334 in GG; 9420 in EE at 0341. (Hattan, FL) 9395 at 0130-0150, then Greek music. (Serraon, GA) 15650 in EE at 1236, into Greek at 1244. (Tucker, GA)

Guam: KTWR, 11580 at 2315 in presumed CC, religious program. (Clar, NY)

KSDA, 11980 in JJ at 1345 with religious program ID at 1355. (Kimball, IL)

Guatemala: Radio Cultural, 3300 in EE at 0308. (Martin, IA) 0335. (Rocker, NY)

Radio Ke'kchi, 4844.8 at 1215 in Quechi with music and news. (Riddle, DC)

Radio Tezulutlan, 4835.2 at 0204, ID in Quechi. (Riddle, DC)

Guyana: GBC, 5950 at 0905-0930 with news, music, time checks, commercials, severals IDs. Good til overpowered by QRM at 0952. (Kurrasch, NY)

Honduras: La Voz Evangelica, 4820 with SS religious programming to 0502 sign off with requests for reports to Apartado Postal 3252, Tegucigalpa. (Riddle, DC)

Hungary: Radio Budapest, 11910 at 0332. (Carson, OK)

India: All India Radio, 11620 at 1310, woman with Indian music. (Northrup, MO) 2200 with news on India-Pakistan relations. (Tucker, GA)

Israel: Kol Israel, 7465 in HH at 2349, brief news at 0000 and 0100. (Kimball, IL) 0210-0300 in HH. 9435 at 0113-0200 in HH. (Serraon, GA) 9435//11605 at 2000. (Wilkerson, KY) 9435//11585//11605 at 2230. (Cohen, ONT)

Japan: Radio Japan, 11840 at 0100 sign on. (Carson, OK) 15195 at 2352. (Serraon, GA)

Jordan: Radio Jordan, 9560 at 1630 to 1726 sign off in EE with music, news, weather, talk, several IDs. (Kurrasch, NY)

Libya: Radio Jamahiriya, tentative, 15235 at 2200 in AA. (Negrin, MD)

Lithuania: Radio Vilnius, 17605 at 0021. (Carson, OK)

Mali: RTV Malienne, 5995 at 0716 with stringed instrument, ID 0717. (Kimball, IL) (Presume in French. Editor)

Mauritania: ORTM, 4845 in AA at 0640 with Koran. (Riddle, DC) 2305 in FF with vocals, ID near the half hour. (Kurrasch, NY)

Monte Carlo: Trans World Radio, 9480 at 0750. (Martin, IA)

Morocco: VOA relay, 21635 at 1835 in Special English. (Tucker, GA)

Namibia: Namibian Broadcasting Corp., 3290 at 2159-2300 with news and vocals in EE, numerous IDs. (Kurrasch, NY)

Netherlands: Radio Netherlands, 6020 at 0030. (Martin, IA) 6020//9895//15315 in SS at 0015. (Negrin, MD) 11720 at 0334, 17605 at 1900. (Serraon, GA)

Netherlands Antilles: Radio Netherlands Bonaire relay, 6165 at 0030. (Martin, IA) 9590 at 0352. (Hattan, FL)

Trans World Radio, Bonaire, 9535//11930 at 0030 and 11815 at 1100. (Cohen, ONT) 11875 at 1230. (Serraon, GA) 11930 at 0335. (Rocker, NY)

New Zealand: Radio New Zealand Int'l, 9700 at 1100 with "All Night Program" and "Tales From the Back Country." (Cohen, ONT) 17770 at 0550 reading story. (Carson, OK)

Nigeria: Voice of Nigeria, 7255 at 0456. (Kimball, IL) 0530 with news, commentary, Nigerian news, press review. (Tucker, GA)

North Korea: Radio Pyongyang, 6550 at 1200 sign on in SS with ID, anthem, news. (Kimball, IL) 11700 at 2307 with news. (Tucker, GA)

Norway: Radio Norway Int'l, 9605 at 0200 in EE. (Carson, OK) (EE weekends only, editor) 17730 at 1905 in EE. (Tucker, GA) 21705 in Norwegian to 1420. (Negrin, MD)

Peru: La Voz de la Selva, Iquitos, 4824.5 with Latin pops and ID in SS at 0842. (Riddle, DC)

Radio Atlantida, Iquitos, 4790 at 0900 in SS with local pops, heavy re-verb ID at 0900. (Riddle, DC)

Radio Andina, Huancayo on 4995.8 in SS with sports at 1017. (Riddle, DC)

Portugal: Radio Portugal, 955 at 2315 in PP. (Serraon, GA) 0230 in EE. (Martin, IA)

Deutsche Welle relay, 6085 in EE, abrupt switch-on in mid-IS at 0300. Also 0539 in GG with abrupt off at 0559. (Kimball, IL)

IBRA Radio at 1859 on 11700, ID "This is IBRA Radio, Portugal" and into Russian. (Clar, NY)

Russian: Radio Moscow via Cuba 4765.8 0347 in SS. Again at 0612 in RR. Kharkov, 4795 at 2200 in RR, off at 0000. 4860 at 2200 in SS. (Riddle, DC) 6045 via Cuba at 2330. (Wilkerson, KY) 7115 in EE at 0330, into RR 0400, 9750 at 0517, 17665 at 0048. (Carson, OK) 7150 at 0130, 17810 at 1700. (Tucker, GA) 7150 at 0159, 7160 at 0201, 7240 at 0205, 7400//7420 in RR at 0254. (Hattan, FL) 7160 at 2100, 9420 at 2230. (Negrin, MD) 7420 at 0157. (Hassig, IL) 9685 at 0559, 9740 at 2110, 11840 (via Cuba) at 1504 and 17880 at 1451. (Serraon, GA)

Saudi Arabia: BSKSA, 9885 at 2141 in AA. (Rocker, NY)

Senegal: Tentative ORTS, Dakar, 4890 with numerous metions of Dakar and West Africans pops. 0120 in FF. (Riddle, DC)

Solomon Islands: SIBC, 9545 at 0650 with pops, ID at 0700, services messages, more pops, commercials. (Carson, OK)

South Africa: Radio RSA, 11900 at 0400 with news. (Cohen, ONT) 11900//15230 at 0427 with discussion, music. (Carson, OK)

South Korea: Radio Korea, 9750 at 1217 with ID. (Martin, IA)

Spain: Spanish National Radio, 6055 with SS news at 0008. 9530 with news in EE at 0009. IN SS at 0300 and 0450. (Negrin, MD) 11880 at 2032 in SS. (Tucker, GA) 0106. (Serraon, GA)

Switzerland: Swiss Radio Int'l, 6165 at 0730. (Kimball, IL) 9555 at 0744 in GG, 12035 in EE at 0207., (CArson, OK) 0650 at 0212 and 17730 (via Brazil) at 0110. (Serraon, GA) 13635 at 1310 with IS. (Northrup, MO) 17830 to Asia and India at 1312. (Negrin, MD)

Syria: Radio Damascus, 9950 at 2125 with news brief. (Rocker, NY) 12085 with news at 2005. (Martin, IA)

Tahiti: Radio Tahiti, 15170.3 at 0840 in Tahitian and FF with vocals and talks. ID 0803. (Kurrasch, NY)

Taiwan: Voice of Free China, 9680 (via WYFR) at 0212. (Serraon, GA)

Turkey: Voice of Turkey, 9445 at 0418 with news. Good level. (Rocker, NY)

Tunisia: RTT Tunis, 7475 at 2030 in AA. (Wilkerson, KY)

Ukraine: Radio Kiev, 4825 at 0250. (Riddle, SC) 0239-0310 with "Ukraine Today." (Kurrasch, NY) 7400 at 0145. 0200 sign off. (Kimball, IL)

United Arab Emirates: UAE Radio, Dubai, 13675 at 0325. (Rocker, NY) 21605 at 1600. (Negrin, MD)

United States: WINB, 15295 at 1720 with "The Jewish Voice Broadcast," ID 1730. (Clar, NY)

Voice of America, 6873 dual SSB feeder. LSB in EE, USB in RR at 0455. (Rocker, NY)

WWCR, new 5935 at 0345. (Rocker, NY)

WMLK, 9465 at 0748. (Carson, OK)

Radio Marti, 6030 at 0802 in SS. (Carson, OK) 9525 at 0102. (Serraon, GA)

Radio Free Croatia, via WHRI, 7315 at 0007-0020 in EE, into Croatian. (Serraon, GA)

Uzbekistan: Radio Tashkent, 9540 at 1215. (Martin, IA)

Vatican: Vatican Radio, 6245 at 0608 with religious news. 7305 at 0303. (Hattan, FL) 11625 at 1740 "This is the Vatican Radio broadcasting to Africa." (Clar, NY)

Venezuela: Radio Rumbos, 4970 at 0448 with SS ID, salsa music. (Riddle, DC) Here and stronger 9660 at 0115 with sports event. (Clar. NY)

Radio Valera, 4840 in SS with folk music, ID at 1030. (Riddle, DC)

Ecos del Torbes, 4980 in SS at 0205 with classical music on program "Conciertos Dominicales" to 0400 sign off. (Riddle, DC)

Radio Continental, 4939.6 in SS at 0235. (Riddle, DC)

Radio Tachira, 4830 in SS at 0139 with salsa. (Riddle, DC)

Radio Yugoslavia: Federal Radio of Yugoslavia, 9580 with news and music and EE to US at 0130. (Negrin, MD)

That's the lot. And thanks a lot to the following reporters this month: Bill Kurrasch, Ontario, NY; Pete Kimball, Chicago, IL; Juan Negrin, Ellicott City, MD; Mark Wilkerson, Richmond, KY; Carol J. Serraon, Rome, GA; Carl Hattan, Melbourne, FL; Mark Northrup, Gladstone, MO; Beale Riddle, Washington, DC; William T. Hassig, Mt. Prospect, IL; John S. Carson, Jr; Norman, OK; Murray Cohen, Fonthill, Ontario; Daryl E. Rocker, Frankfort, NY; Robert E. Tucker, Jr., Savannah, GA; Mike Martin, Monroe, IA and Jim Clar, Rochester, NY.

Thanks to all and until next month—good listening! ■

YOU SHOULD KNOW

HARRY HELMS, AA6FW

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Chips Off The Old Signals

Last month I described how some receivers can generate images and other spurious signals that can make it seem like a station is operating on a frequency that it's not supposed to. Suppose you're tuning across the shortwave bands on frequencies below 4000 kHz and hear an AM broadcast band station that's assigned to 1050 kHz on 3150 kHz. An image or other problem in your receiver? Maybe, but there's also a good possibility that you're hearing a signal known as a *harmonic* that's being inadvertently radiated from the station transmitter. This month we'll take a look at what harmonics are all about and the DX possibilities they offer.

It Starts With A Fundamental

The frequency that a station is supposed to be transmitting on is known as its *fundamental*. In the example in our opening paragraph, 1050 kHz is the fundamental frequency. A harmonic is a signal that is an integer multiple—two, three, four, or more times—of the fundamental frequency. For a 1050 kHz fundamental, possible harmonics would include 2100, 3150 and 4200 kHz. The fundamental frequency is sometimes called "first harmonic." Two times the fundamental frequency is called the *second harmonic*, three times the fundamental is known as the *third harmonic*, and so forth. Thus, for a 1050 kHz fundamental, 2100 kHz would be the second harmonic.

Harmonics can be produced intentionally or accidentally in a transmitter. It's common in multiband transmitters to generate a signal at a lower frequency and use deliberate harmonic generation to reach higher frequencies. Take a look at the lowest frequency point of the most popular ham bands below 30 MHz—3.5, 7, 14, 21, and 28 MHz. How's that for a neat "harmonic relationship" between signals!

As DX'ers, we're most interested in harmonics that are produced accidentally in transmitters. They are most commonly generated in vacuum tube transmitters whose internal circuitry must be "tuned" each time they are switched on. All transmitters produce some harmonics, but these are normally suppressed by the transmitter. However, if a transmitter is tuned incorrectly, harmonics can be radiated.

There's only so much power available in any transmitter, and harmonics rob the fundamental of transmitter power. However, harmonics are usually significantly weaker that the fundamental. If a transmitter's rated output power is 1000 watts, for example, the power of the second harmonic will typically

be less than 10 watts. The power on the third and higher harmonics will be proportionately less. Thus, harmonics are superb DX! But despite the low power, harmonics can be heard at surprising distances from the transmitter if propagation conditions are right!

The Magic Third

Despite the fact that less transmitter power is normally available to it, the third harmonic of a transmitter can sometimes be heard better than the second. This is possible because of an interesting fact about many antennas: an antenna resonant on the fundamental frequency is often resonant on the third harmonic. Many ham radio operators make use of this fact by using their 40 meter (7000 to 7300 kHz) dipole on 156 meters (21000 to 21450 kHz). The second harmonic from a transmitter may be stronger, but if the antenna is not resonant at that frequency it won't be radiated well. The third harmonic may be weaker, but if the antenna is resonant at that frequency more of its power will be radiated. Thus, don't be too surprised if you can hear the third harmonic of a station but not the second.

(Of course, there's another reason why you might hear the third harmonic but not the second—the transmitter might be mistuned so that more power is developed at the third harmonic instead of the second!)

Hunting For Harmonics

Because harmonics can pop up anywhere and everywhere, you'll need some patience and persistence to hear them. I sometimes go weeks without hearing a harmonic. It's been my experience, however, that you have the most success looking for harmonics *outside* the major interational broadcasting bands. For one thing, harmonics are weak and can easily get squashed by QRM in major broadcasting bands. Perhaps more importantly, harmonics with the broadcast programming really stand out in the utility and ham radio bands!

A good place to start is during the evening hours on frequencies below 4800 kHz (that is, three times the 1600 kHz upper limit of the AM braodcast band). For years, most harmonics floated up from south of the border from Mexico or other countries. More recently, however, an increasing number of harmonics come from stations in the United States. Many American stations no longer have a full-time transmitter engineer on staff, and instead rely on contract engineering services instead. While this is legal and might help a station's bottom line, it can mean it might take a few days before someone realizes something is wrong with the station's transmitter and does something about it!

Another good place to look is during the morning and early afternoon on frequencies above 25 MHz. Here is where you can hear harmonics of international broadcasting stations.

But Beware . . .

If you're using a less expensive shortwave radio, you might find quite a few signals from AM broadcast band stations on frequencies below 4800 kHz. However, that doesn't necessarily mean you're hearing harmonics. The signals could be produced by your receiver, not by the station. Many less expensive shortwave radios have trouble handling the strong signals from AM broadcast band stations, and as a result such stations can be heard on frequencies they are not really transmitting on.

The key to remember is that a harmonic is always heard on an integer multiple of the station's operating frequency. Suppose you're hearing an AM broadcast band station on 3300 kHz. If the station's normal operating frequency is 1100 kHz, that's a good indication that you're hearing a harmonic. But if the station's normal operating frequency is 1500 kHz, then odds are that the problem is in your receiver and not at the station!

Do They QSL?

How do stations react to reception reports about harmonics? About as well as a politician caught in a lie. The usual reactions are to deny that a harmonic is being radiated or to ignore your report altogether, particularly if it's a U.S. station. Stations in the rest of the world are sometimes a bit more forthcoming, often QSL'ing harmonic receptions and thanking the SWL for letting them know about the harmonic.

Sub-Harmonics???

Back in April, 1990, I was tuning the 60 meter tropical band around 0300 UTC and was puzzled to find a new signal on 4907.5 kHz. After listening for a few minutes, I was surprised to hear a clear identification for KUSW in Salt Lake City, Utah. There are a lot of ways to describe Salt Lake City, but "tropical" isn't one of them! What was going on? On a hunch, I tuned my receiver to exactly twice the frequency I was receiving—9815 kHz—and sure enough there was KUSW with the same programming. And when KUSW left 9815 kHz at 0500, the signal on 4907.5 kHz also vanished.

Earlier, we noted how harmonics are sometimes deliberately produced in a transmitter to enable operation on a higher frequency band. In this case, the transmitter fundamental was 4907.5 kHz and the intended transmitter output—9815 kHz—was the second harmonic of that fundamental. But some problem with KUSW's transmitter was causing both the fundamental and second harmonic to be radiated. This particular condition lasted about 10 days before KUSW got it cleared up. (Since this time, KUSW has been sold to new owners and has changed call letters.) DX'ers have coined the inaccurate term *sub-harmonic* to describe the unintended radiation of a transmitter's fundamental frequency.

Almost as interesting as my reception was the reaction of various people to it. I phoned KUSW while they were on the air to report the sub-harmonic, and was politely told it was impossible. Then I called two West Coast FCC monitoring stations. They were both hearing the signal, but weren't sure if it was an authorized signal or not! ("Sometimes Washington doesn't notify us about these things like they should," an engineer at the FCC's Douglas, AZ monitoring station helpfully explained to me.) Finally, I sent a reception report consisting of a tape of the 4907.5 kHz signals to KUSW, even going so far as to briefly tune to 4905 and 4910 kHJz during the reception so they could hear how well their inadvertent tropical band service cut through adjacent channel QRM. Alas, no QSL received!

These elements neatly sum up what makes harmonic DX'ing so challenging—receptions are usually only possible for a few days and stations are reluctant to QSL their harmonic signals. (Even the fine folks at the FCC seem a bit puzzled by harmonics!) But if they were easy to hear and QSL, they wouldn't be DX, right? ■

POP'COMM'S World Band Tuning Tips

June – 1992

Freq.	Station/Country	UTC	Notes
2390	La Voz de Atitlan, Guatemala	0230	
2485	LV8K, Katherine, Guatemala	0230	
3200	Trans World Radio, Swaziland	0300	
3215	Radio Oranje, South Africa	0300	Afrikaans
3220	HCJB, Ecuador	0500	SS
3235	R. Clube Marila, Brazil	0200	PP
3240	Trans World Radio, Swaziland	0345	close
3250	R. Luz y Vida, Honduras	0230	SS
3260	R. Madang, Papua New Guinea	1030	
3270	Ecos del Oriente, Ecuador	1030	SS
3280	La Voz del Napo, Ecuador	0300	SS
3290	R. Centro, Ecuador	0900	SS
3290	Radio Nambia	0330	
3320	R. Orion, South Africa	0245	
3350	R. Cumanda, Ecuador	1030	SS
3365	R. Rebelde, Cuba	0300	SS
3377	R. Nacional, Angola	0430	PP
3389	R. Chortis, Guatemala	1130	local lang.
3500	LV del Guainia, Colombia	1030	SS
3905	R. New Ireland, P. New Guinea	1100	SS
3925	R. Tanpa, Japan	1100	JJ
4000	CRTV, Bafoussam, Cameroon	0455	
4212	R. Tucuban, Ecuador	1100	SS
4485	Kamchatka R., USSR	1300	RR
4650	R. Miskut, Nicaragua	0300	
4745v	R. Popular, Ecuador	0130	SS
4760	R. Tingo Maria, Peru	1100	SS
4785	Ecos del Combeima, Colombia	1100	SS
4790	BSKSA, Saudia Arabia	0330	AA
4800	R. Buenas Nuevas, Guatemala	1155	s/on, SS&vern
4809	Rdf. Libertad, Bolivia	1030	SS
4810	R. San Martin, Peru	0930	SS
4815	RTV Burkina, Burkina Faso	0600	FF
4815	Rdf. Londrina, Brazil	0130	PP
4825	R. Kiev, Ukraine	0300	
4832	R. Reloj, Costa Rica	1100	SS
4840	R. Valera, Venezuela	1030	SS
4850	CRTV, Cameroon	0430	FF/EE
4855	R. Centario, Bolivia	0000	SS
4865	La Voz del Cinaruco, Colombia	0300	SS
4865	Gansu PBS, China	1130	CC
4870	ORTB, Benin	0457	sign on, FF
4875	V of Jinling, China	1100	CC
4885	Ondas del Meta, Colombia	1000	SS
4890	LV del Rio Arauco, Colombia	0430	SS
4900	La Voz de Saquisili, Ecuador	0230	SS
4904.5	R., National, Chad	0427	sign on, FF
4910	Radio One, Zambia	0300	
4918	R. Relogio Federal, Brazil	2330	ex-4905
4934	R,. Tropical, Peru	1000	SS
4939	R. Continental, Venezuela	1000	SS
4950	R. Nacional, Angola	0400	PP
4965	R. Sante Fe, Colombia	0400	SS
4985	Ondas del Ortegueza, Colombia	1030	SS
4990	Hunan PBS, China	1230	CC
5011	Escuelas R/fonicas, Ecuador	0225	sign off, SS
5015	R. Pioneira, Brazil	0230	PP
5020	SIBC, Solomon Islands	0800	
5025	ORTB, Benin	0600	FF
5030	R. Catolica, Ecuador	0200	SS
5035	R. Aparecida, Brazil	0030	PP
5040	R. Ala, Russia	0330	s/on
5044	R. Rebelde, Cuba	0000	irr. SS
5047	RTV Togolaise, Togo	0600	FF
5260	R. Alma Ata, Kazakhstan	2230	RR
5275	WYFR, Florida	1500	via Taiwan
5935	R. Prague Int'l, Czechoslavakia	0100	
5960	R. Monte Carlo, via Canada	0400	AA
5970	R. Miskut, Nicaragua	0200	SS
5905	R. Kiev, Ukraine	0300	EE
5995	R. Melodia, Peru	1000	SS
6005	CKFX, Canada (relay CICQ)	0600	
6006	R. Reloj, Costa Rica	0700	SS
6010	R. Mil, Mexico	0300	SS
6010	R. Mil Cuarenta, Venezuela	0830	SS
6010	R. Mil, Mexico	1200	SS
6015	R. Austria Int'l	0530	via Canada
6020	R. Netherlands	0030	
6040	Deutsche Welle, Germany	0130	via Antigua
6050	Caracol, Colombia	0100	SS
6050	R. Nigeria, Ibadan	2230	
6055	Spanish National Radio, Spain	0430	SS
6060	Voice of America via Germany	0500	
6100	INBS, Iceland	0715	Icelandic
6105	Su Pantera. Mexico	1130	SS
6116	La Voz del Llano, Colombia	1000	SS
6120	R. Globo, Brazil	0900	PP
6130	R. Portugal	0700	sign off
6135	R. Santa Cruz, Bolivia	1000	SS
6135	Swiss Radio Int'l	0230	
6140	Australian Bc Comm.	1100	
6160	CKZU, Canada	1300	
6185	R. Educacion, Mexico	0130	SS
6190	Sender Freis Berlin, Germany	0430	GG
6210	Croatian Radio	0000	Croatian/EE
6245	Vatican Radio	0430	
6300	R. Venceremos, El Salvador	0100	SS
6515	Tadzhik Radio, Tajikistan	0100	
6560	Baghdad Radio, Iraq	0500	AA
6670	R. Santa Monica, Peru	1100	sign on, SS
6754	R. La Merced, Peru	1100	SS
6910	R. Russia (feeder)	0230	RR
7125	IRRS, Italy	0500	
7165	R. Free Europe	0600	Romanian
7185	Voice of Turkey	2300	sign on
7190	Rep of Yemen Radio, Aden	0300	sign on, AA
7185	RTM, Mali	2130	FF
7200	Somali Bc. Service, Somalia	0259	sign on
7203	R. Lubumbashi, Zaire	0430	FF
7205	Adventist World Radio, Italy	0530	
7215	Voice of UAE	2300	
7235	Deutsche Welle, Germany	0400	AA, via Malta
7240	Croatia Radio, Croatia	0300	
7255	V of Nigeria	0500	
7265	Voice of America, Botswana relay	0258	s/on
7275	ELBC, Liberia	0650	sign on
7315	Croatian Radio	0000	via WHRI
7345	R. Prague Int'l, Czechoslovakia	0100	
7375	R. For Peace Int'l, Costa Rica	0200	USB
7390	R. Kiev, Ukraine	0100	
7445	Voice of Asia, Taiwan	1100	
7475	RTV Tunisienne, Tunisia	0400	AA
7500	R. Baghdad, Iraq	0400	AA
8000	JJY, Japan	1100	JJ, time stn
9022	VOIRI, Iran	0030	EE
9265	Icelandic Ntl Bc Svc	0730	EE
9280	Voice of Asia, Taiwan	1000	CC
9388	Israel Radio	1330	home svc
9395	V of Greece	1900	GG
9420	R. Europe Int'l, Italy	1000	II
9445	Voice of Turkey	2330	TT
9455	WCSN, Maine	0200	
9465	WMLK, Pennsylvania	0400	
9480	TWR, Monaco	0645	
9486	R. Tacna, Peru	0400	SS
9505	R. Yugoslavia	2230	to Europe
9520	R. Veritas Asia, Philippines	1200	
9530	Spanish National Radio	0500	
9540	R. Tashkent, Uzbekistan	1200	
9540	R. Nacional, Venezuela	1100	SS
9545	R. Tirana, Albania	0530	sign on
9555	R. Portugal	0230	
9565	R. Universo, Brazil	0500	PP
9565	All India Radio	1300	
9570	R. Romania Int'l	0300	SS

Freq.	Station/Country	UTC	Notes
9570	R. Korea, S. Korea	1400	
9580	R. Tirana, Albania	0230	
9580	Africa No. One, Gabon	1900	FF
9590	FEBA, Philippines	0130	QRM'd
9600	V of UAE, Abu Dhabi	2200	EE
9605	Vatican Radio	0300	
9610	ORTM, Mauritania	0830	FF
9625	CBC No. Quebec Service, Canada	2100	
9635	R. Portugal	2200	PP
9635	R. Afghanistan	1230	
9645	R. Norway Int'l	0300	
9655	TWR, Swaziland	0256	sign on
9660	R. Rumbos, Venezuela	1100	SS
9665	R. Marumby, Brazil	2300	PP
9690	R. Beijing, China	0330	via Spain
9695	R. Sweden	0330	
9700	R. New Zealand Int'l	0830	
9700	R. New Zealand	1100	
9710	R. Centras, Lithuania	0600	(last Sat/mo)
9720	VOIRI, Iran	0030	EE
9725	Adventist World R., Costa Rica	1250	
9735	R. Nacional, Paraguay	0000	SS
9735	Cyprus Bc. Corp.	2230	wknds, Greek
9740	BBC via Singapore	1100	
9745	Spanish Ntl Radio, Spain	2200	SS
9746	R. Bahrain	2000	AA, QRM-HCJB
9750	R. Korea, S. Korea	1245	EE
9755	R. Monte Carlo Middle East	0400	via Canada
9765	V of the Mediterranean, Malta	0600	
9765	VOIRI, Iran	0100	EE
9770	R. Beijing, China	0000	via Mali
9815	KNLS, Alaska	0900	RR
9830	Croatian Radio	0600	
9840	Voice of Vietnam	1500	
9875	Spanish National Radio	1900	
9885	BSKSA, Saudi Arabia	2200	AA
9905	BRT, Belgium	2100	
9910	All India Radio	0115	s/off
9942	La Voz del CID (clandestine)	1330	SS
9950	All India Radio	2200	
9985	V of the People (Iraqi clandestine)	2030	AA
11335	R. Pyongyang, N. Korea	0900	KK
11455	R. Kisangani, Zaire	0400	s/on, FF
11470	Iran's Flag of Freedom (clandestine)	0329	s/on
11550	RTT Tunisia	1800	AA
11588	Kol Israel	0500	
11600	R. Beijing, China	1330	
11620	All India Radio	2000	
11620	Vatican Radio	0145	SS
11645	Voice of Greece	0300	Greek
11685	BSKSA, Saudi Arabia	2200	AA
11685	R. Prague Int'l, Czechoslovakia	0100	EE
11695	BRT, Belgium	0600	Dutch
11700	IBRA Radio, Portugal	1800	sign on
11710	RAE, Argentina	0100	
11715	R. Beijing, China	0330	via Mali
11715	KNLS, Alaska	0800	sign on
11715	R. Korea, S. Korea	1030	via Canada
11720	R. Sofia, Bulgaria	0300	
11725	VOA relay, Botswana	0200	
11734	R. Tanzania, Zanzibar	1730	
11735	R. Japan, via Gabon	2300	
11760	R. France Int'l	1130	FF
11760	R. Vedo, Russia	1600	RR
11780	R. Austria Int'l	1530	
11790	R. Kiev, Ukraine	0000	
11790	R. Vilnius, Lithuania	2300	
11795	UAE Radio	1600	
11795	Cyprus Bc. Corp.	2213	s/on, weekends
11805	R. Globo, Brazil	2300	PP
11810	R. Korea, S. Korea	0600	
11810	R. Jordan	1400	AA
11825	R. Tirana, Albania	0330	EE
11830	R. Baghdad, Iraq	2300	EE/NA
11830	R. Anhanguera, Brazil	2200	PP
11840	R. Japan	0130	via Sri Lanka
11855	R. Beijing, China	1300	
11870	R. Norway	1500	sign on
11870	R. Denmark	1530	via Norway
11880	R. RSA, So. Africa	1615	
11885	R. Yugoslavia	0230	
11910	R. Budapest, Hungary	0300	
11935	R. Encarnacion, Paraguay	2300	SS
11940	R. Romania Int'l	0200	
11940	VOA Botswana relay	0300	
11950	R. Havana Cuba	0000	
11955	Voice of Turkey	0400	TT
11960	R. Sweden	1130	
11960	RTV Malienne, Mali	0900	FF
12000	R. Australia	1400	
12035	Swiss Radio Int'l	0200	
12055	Deutsche Welle, via tx in ex-USSR	0156	s/on
12070	R. Georgia, Georgia	1700	GG
12085	R. Damascus, Syria	2110	
13335	R. Pyongyang, N. Korea	0000	
13605	Capital Radio, via Voice of UAE	2230	
13605	R. Australia	1600	
13630	R. For Peace Int'l, Costa Rica	0200	
13635	R. Canada Int'l	1500	
13655	BRT, Belgium	2330	
13670	R. Canada Int'l	0245	
13675	UAE Radio, Dubai	2000	AA
13685	Swiss R. Int'l	0700	
13710	BRT, Belgium	2330	
13710	Voice of Europe, Italy	24 hrs	
14917.8	R. Kiribati	0600	
15020	All India Radio	1300	
15060	BSKSA, Saudi Arabia	0400	AA
15084	VOIRI, Iran	0430	Farsi
15095	R. Damascus, Syria	2110	
15100	Kol Israel	2130	EE
15110	Spanish National Radio	2000	SS
15115	R. Pyongyang, N. Korea	0030	
15140	R. Nac. del Ecuador	1630	SS, via HCJB
15170	R. Beijing, via Mali	1600	
15180	R. Vilnius, Lithuania	2300	
15185	R. Finland Int'l	2300	
15195	R. Japan	0500	
15200	R. Bangladesh	1230	EE
15205	V of Palestine via R. Algiers	1700	AA
15208	R. Bangladesh	1230	
15215	V du Sahara Libre (clandestine)	2200	via R. Algiers
15230	R. RSA, S. Africa	0355	s/on
15260	VOIRI, Iran	0230	sign on
15260	BBC, Ascension Island relay	0300	
15320	UAE Radio, Dubai	2300	
15325	R. Japan	1500	via Fr. Guiana
15325	Spanish National Radio	2230	SS
15330	R. Sofia, Bulgaria	2330	
15345	Trans World Radio, Bonaire	1230	
15350	R. Luxembourg	1900	EE
15365	R. RSA, S. Africa	0300	sign on
15425	R. Portugal	1500	
15430	R. Austria Int'l	1330	
15440	R. RSA, South Africa	0400	sign on
15445	VOA relay, Botswana	2100	
15470	R. Tashkent, Uzbekistan	1330	
15485	R. Vilnius, Lithuania	2300	
15510	R. Afghanistan	1730	GG, via USSR
15525	R. Kiev, Ukraine	0000	
15530	R. France Int'l, via Hungary	0630	FF
15550	Central People's Bc Stn, China	0230	CC
15610	KSDA, Guam	2330	
15670	Brit. Forces Bcsting, via Cyprus	1400	USB
15750	R. Russia	1800	RR
17525	Voice of Russia	1515	
17554	R. Pakistan	1615	
17605	R. Vilnius, Lithuania	0000	
17665	R. Kiev, Ukraine	0000	
17670	R. Moscow, C.I.S.	1700	
17710	R. Norway Int'l	1200	NN/EE
17730	Swiss Radio Int'l, via Brazil	0200	
17740	R. Yugoslavia	1200	
17740	R. Sweden	1300	EE
17740	R. Jamahiriya, Libya	2200	AA
17745	RTV Algerienne, Algeria	2000	AA
17770	R. New Zealand Int'l	0445	
17810	R. Japan	2330	
17840	R. RSA, S. Africa	1630	EE
17865	Vatican Radio	1550	
17880	V of Turkey	2230	
17890	Spanish National Radio	1200	
21460	R. Moscow, Russia	1330	
21500	R. Sweden	1530	
21510	V of UAE, Un. Arab Emirates	0630	AA
21555	Qatar Bc Service	1330	AA
21850	R. Pilipinas, Philippines	0230	
21690	R. Moscow	0800	RR
21705	R. Norway Int'l	2200	NN
25730	R. Denmark, via Norway	1255	s/on, DD

BY GORDON WEST, WB6NOA

Homing In On VHF

Rescue agencies may have at their disposal several different devices to home in on ELT and VHF FM signals. These manual and automatic direction finders might be as simple as a homebrew beam, or as exotic as a $10,000 cathode ray tube (CRT) goniometer unit. However, there's no guarantee that the $10,000 VHF ADF equipment is going to give you a better bearing than a little 3-element quad you put together down in your basement. To get good bearings, you may need to better understand the nature of VHF signals.

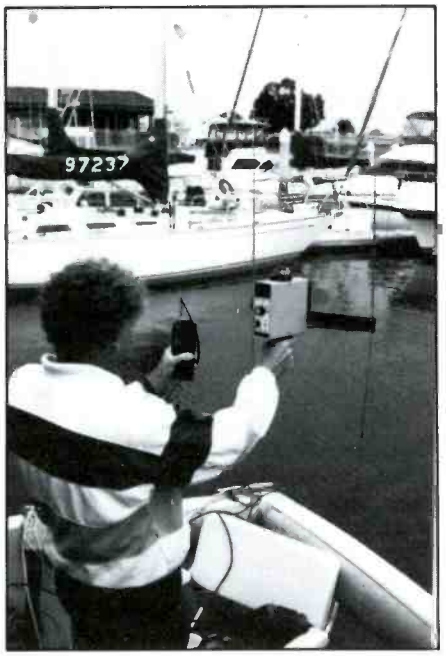
On the VHF marine band, tracking down a stuck carrier on VHF FM Channel 16, 156.800 MHz, the international and distress calling frequency, is as simple as aim and home. As long as your equipment is out on the water, and at least 1/4 mile away from any tall buildings on land, or at least a couple hundred yards away from any other ships, incoming bearings over the water are normally within 1 or 2 degrees on target.

About the only exception to accurate signals on the water are conditions of severe tropospheric ducting. This condition persists in the presence of a high pressure system on a windless day. Sinking air gets warmer as it gets compressed between cool air above, and the cool air just above the water. This creates a warm tropospheric duct which appears as a band of brown haze over the water.

You can also spot a duct when smoke rises, and then abruptly turns horizontal, and gradually drifts off in a specific direction. It's this horizontal bend of the rising smoke that indicates a significant tropospheric duct. Temperature rises, rather than falls; water vapor content slightly increases; and pressure slightly increases within the duct. This traps VHF and UHF signals, and funnels them for hundreds of miles over the water and sometimes over land.

When the signal finally emerges at the other end of the tropospheric "tube," it might be as much as 10 or 20 degrees off from its original direction. This is why it's important to home in on any long-range VHF signal carefully, and to avoid erroneous incoming bearings due to tropospheric ducting.

Many ham radio "T-hunters," as well as emergency communications search and rescue teams, use the Adcock Array and ADF system in locating signals on VHF frequencies. This equipment is relatively expensive, and there are no moving parts. Everything is electronically spun up in the 4-pole Adcock Array, and the direction of the incoming bearing is read out on an LCD or LED compass rose.

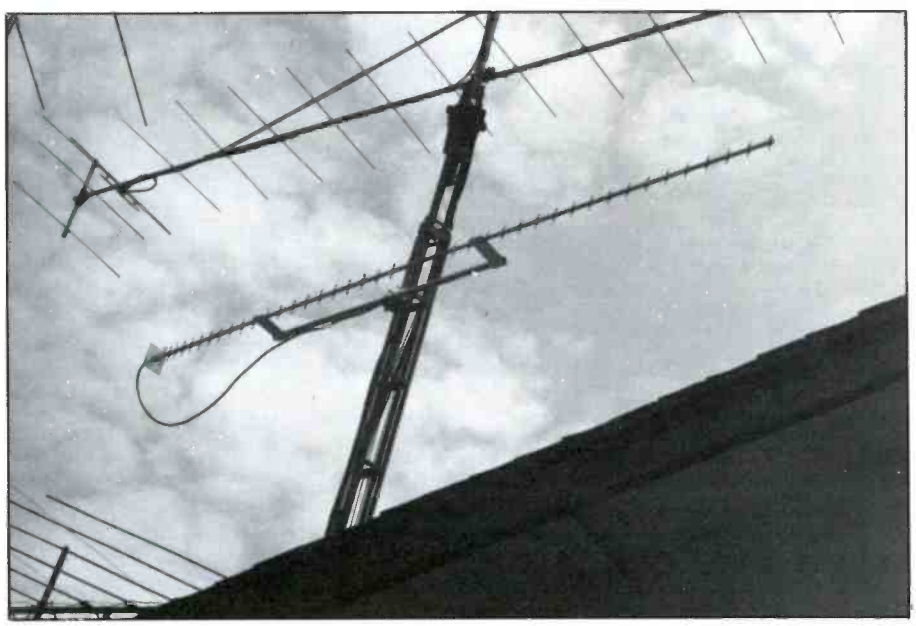


Author West uses a portable VHF direction finder to track down a stuck mike on channel 16.

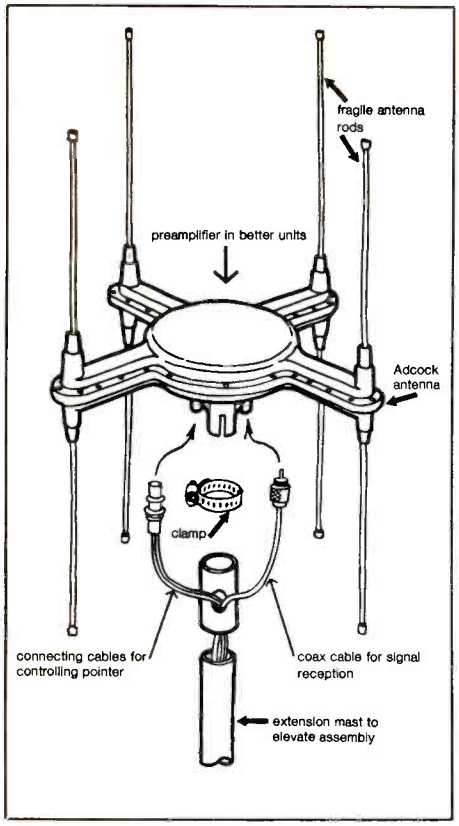
These are good systems in strong signal areas, but are plagued with reflections that might throw off incoming bearings. Since the unit is scanning in a 360-degree pattern, reflections may sometimes appear stronger than the real signal. At VHF frequencies, signals bounce around within a valley, and are reflected by a tall mountain in a direction that is really not the exact path to the transmitting station. You might travel hundreds of miles out of your way, only to discover that where you think the signal is coming from is really a bounce off a big mountain range. Similar occurrences happen in big cities—many a policeman has driven around and around, trying to spot that 219 MHz signal coming from the inside of the bank money bag, only to have his equipment confused by reflections coming in from tall buildings all around the culprit.

Some ham radio T-hunters have gone back to the tried and true Yagi antenna. The Yagi is a directional antenna, and the length of the boom determines the amount of gain that the Yagi will exhibit, and how tight its main lobe will be. The longer the boom, the tighter the lobe, and the higher gain of the Yagi. Some DF'ers run it vertically, yet others will find horizontal positioning better to minimize reflections. Since the Yagi for 156 MHz is relatively small, it is easily mounted on a vehicle, turned by hand, and gives a positive reading on where the strongest signal component is coming from. Sometimes this is the actual station, and sometimes it's a reflection. But the Yagi lets you "see" all of those other reflections, too. The Adcock and Doppler Array may not.

One of the nicest pre-assembled PVC quad



Big base station beams are the best way to triangulate a VHF signal.



This is the popular "Adcock Array" VHF antenna system.

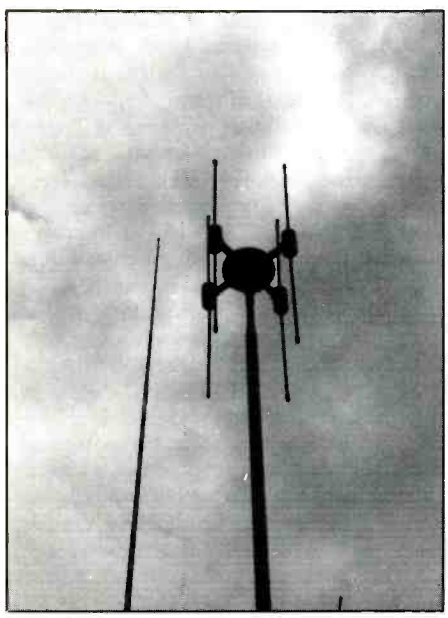
antennas for VHF direction-finding was developed by Tom, K0TB, of Cellular Security Group, 4 Gerring Road, Gloucester, Massachusetts 01930. It may be easily adjusted for frequencies above the 144-148 ham radio 2-meter band. If you plan to use the unit out in wet weather, order it in front of, and in back of, the mast. The 6 shorter spreaders go into holes forward of the mast, the next longer pair into the holes just back of the mast, and the 2 longest spreaders in the remaining holes. You must carefully sort out the elements.

For vertical polarization, the feedpoint is along the vertical side of the driven element. The elements are made up of pre-soldered stranded wire. Use the self-tapping screw to secure the boom to the mast. For extended outside duty, cover the coax fitting and feedpoint insulator with RTV.

And if you need something even more portable than that, Tom has developed a little beam antenna made up of telescopic whips. Simply pull the whips out their limit, eyeball that everything is lined up just right, and add it to your handheld with some short coax cable. You are all set to try your hand at direction finding.

One of the most important secrets that professional direction finders will tell you is to take multiple readings on a signal as you are moving down the highway. If you're standing, walk for several hundred feet to verify that the signal is not a phantom reflection. If you stop your vehicle, or stand still, and take a bearing at VHF frequencies, you very well might lock into a reflection, rather than the real signal. You can see this happening as you drive down the street, and watch the incoming bearing on an Adcock Array. It jumps all over the place, but the real signal usually remains relatively stable and reoccurs over and over again. In your mind, you simply cancel out all of the erroneous bearings, and work with the main bearing that you see most often. Hopefully, this will get you to the signal, or it may get you to the reflection point where you will once again start out your search anew.

Many of the amateur radio magazines have articles about "T-hunting." Even if you're not a ham, join a local amateur radio group that specializes in T-hunting. They will be happy to have you along, and you don't need a license to receive the signals from an incoming hidden transmitter. All you need is the equipment. And you don't need $10,000 equipment, either. Many T-hunts are won by the enterprising ham with a little home-brew quad, wings on his feet, and the ability to sort out reflections from the real incoming signal on VHF frequencies. ■



VHF ADF Adcock Array antenna system.

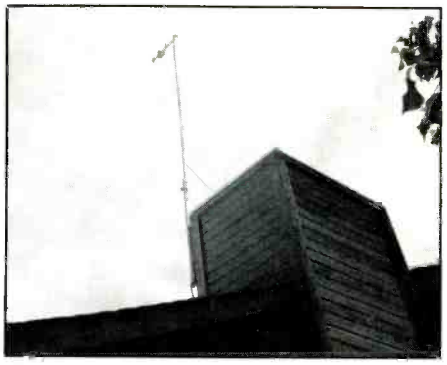
SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

Summer is a hot and I'm talking about the scanning, not the weather. There's more going on during the warmer months and more people outdoors. That means more two-way radios in use, particularly at travel and tourist destinations. Amusement parks generally use business band frequencies in the 151.625-151.955, 154.515-154-625 and 461-465 MHz band, while parks and recreation areas have rangers and maintenance units generally on the 151.145-151.475 and 159.255-159.465 MHz ranges. If you scan these ranges during your vacation travel, you're bound to find plenty of activity upon your destination.

Here's Richard Kowalski of Grand Junction, CO at the helm of his monitoring post.



The scanner antenna is mounted high outside Richard Kowalski's home.

Joe Bagrowski, N3FOE, of Baltimore, Maryland, writes in with some local amateur frequencies of interest to radio listeners. Joe says that the 147.030 MHz repeater in the Baltimore area has a weekly "Listener's Post" net at 8 p.m. local time every Sunday. The net discusses everything outside the ham bands, including shortwave and scanner stuff. Joe says that by listening in, there's always plenty of information being exchanged that can be picked up. Joe also reminds scanner listeners that space shuttle audio is retransmitted during shuttle flights on 147.450 MHz by the Goddard Amateur Radio Club in Greenbelt, Maryland. The transmissions can be heard in the Washington, Baltimore and northern Virginia areas.

Don Hallenbeck of Pittsfield, Maine, passes along some frequencies used by the Maine Central Railroad that he likes to listen to: 160.380, road/yard; 160,620, yard/road maintenance of way; 161.250, yard; 161.310; 161.400. Also, the Bangor&Aroostock Railroad in Bangor and Herman, Maine, uses 160.680 in northern Maine.

Rodney Bonck of Verona, Virginia, writes in with a mystery. He says he's been tuning around the 931 and 932 MHz bands on his Regency HX2200 scanner. He thought those frequencies were used for paging, however, he says he has been hearing telephone conversations and ringing phones on frequencies such as 931.525, 932,175 and 932.625. He wonders what is going on.

Even though the HX2200 can tune in cellular frequencies in the 869-894 MHz band, the scanner's receiver is mixing a product of the cellular frequencies and adding quadruple the receiver's intermediate frequency, resulting in an image popping up above the actual frequency. Bearcat scanners generally have an IF of 10.8 MHz (some have been 10.85 MHz), while most other scanners have an IF of 10.7 MHz (some can have IFs as high as 750 MHz). If you take one of the 932-MHz frequencies you received phone calls on (take 932.175 for example), and double the IF (10.7 times 2, equals 21.4 MHz). By listening in on 440.300, we would be able to hear DEA units with some degradation of signal. But the trick worked! Now those who have cellular bands eliminated from their scanners can use this image trick to bring up the frequencies o the cellular calls outside the normal band limits.

If you want to check to see if you are actually picking up an image, when you tune in the signal quickly check on the frequency, double or quadruple the IF down in frequency for the actual signal. For instance, as soon as you hear a phone call on 932.175 MHz, quickly check for the same exact signal on 889.375 MHz. If you are hearing the same voices, then you've just stumbled across an image of the frequency.

By the way, the 931 MHz band is used by paging companies on local, regional, statewide and nationwide basis. But don't expect to hear more than a bunch of tones and grinding noises on these frequencies. Private paging systems used by individual companies for their own employees and contractors can use the 929 MHz for paging.

Trace Klassen of Victoria, British Colombia, Canada, writes with some interesting frequencies heard north of the border. Royal Canadian Mounted Police undercover F1, 155.590, and F2, 155.975; Canadian Coast Guard, Channel 22A, general, 157.100, Channel 04A, working, 156.200, and Channel 83, tactical, 157.175 transmit, 161.775 receive; Emergency Response Team, F1, 159.050, and F2, 159.895. Trace uses an old Hallicrafters S38C and DX370 for shortwave listening and Realistic PRO-2021, PRO-34 and PRO-37 scanners. He uses a custom-made discone to capture all the action.

Marine Cpl. Tim Kimble, currently stationed at Kelly Air Force Base in San Antonio, Texas, says he uses a Uniden Bearcat 200XLT handheld scanner. Since he likes listening to hams on the 10-meter band when DX is coming in, he strung up a half-wave dipole in this room in the barracks, running the wire from a vent above the door across the ceiling to the curtain rod. He says he's had incredible success with this setup, even though he uses a phone cord for lead in instead of coaxial cable. Tim likes listening to the various 10-meter repeaters from 29.6-29.7 MHz and keeps tabs on the various states and countries he's heard. As of this past winter, he had heard hams in 33 states (including Alaska and Hawaii), as well as Cuba, Germany, Great Britain, the Netherlands and Gambia. He also has heard three Canadian provinces.

Tim said that he heard Civil Air Patrol units trying to spot the space shuttle flying over the area one evening and by listening to their conversation on 148.150, he also was able to spot the shuttle as it buzzed over San Antonio. Tim also notes that military police at his base use 173.4375, 164.200 and 163.4625. Further, Tim says he hears hams on the 2-meter ham band also on frequencies 21.7 MHz higher in the 166 to 168 MHz bands. This is because of the image effect, as described earlier in this column. It sure can be frustrating trying to tune in government spies on the 162-174 MHz federal government band only to stumble across constant images from hams, paging operations and more.

Richard Kowalski, Registered Monitor, KCO0CH, of Grand Junction, Colorado, says the best time for him to catch low-band skip is all day every Saturday. He recently updated his listening post by adding a Uniden Bearcat 310A and Realistic PRO-2023 scanners. Here are some of his recent DX catches: 39.88, military; 39.76, Massachusetts police; 39.04, Connecticut police; 38.50, military "range control"; 37.70, gas utility in Sloatsburg, New York; 30.66, taxis or car rental company on Long Island, New York; 31.80,

Reception Report

From Monitoring Station

KOK5CL

35°30'17"N 97°30'06"W

Date: Time:

Freq: Call Sign:

Signal Quality:

Receiver: Antenna:

word processors are great!

Thank you Very Much for your Time.
Yours Truly,
Dick Sharp

Dick, Registered Monitor, KOK5CL, of Oklahoma City, sends out this form to stations heard. He observes, "word processors are great," which means that the forms were designed on his WP.

taxis in New York; 31.88, taxis in Brooklyn, New York; and 31.14, game wardens, possibly in Texas.

William Franceschi Rivera of Bayamon, Puerto Rico, says he likes to listen to emergency services on the island. He uses a Realistic PRO-2005 with a discone antenna. Some frequencies William wishes to pass along to readers include: 155.220, Estate Civil Defense; 158.820, Estate Civil Defense repeaters; 156.045, Bayamon Civil Defense; 462.975, San Juan Medical Emergencies Services; 148.905, Puerto Rico National Guard; 156.700, San Juan harbor control for U.S. Coast Guard; 450.4125, WAPA-TV Channel 4 news; 464.925, Plaza Las Americas security; 46.42, fire department secondary; 463.150, state medical services; 462.950, state medical services; 173.350, Water Authority.

Robert S. Familton, of Glendale, California, writes in with a question that pops up every so often. He wonders whether a scanner could be hooked up with a computer to decode data communications, such as the mobile radio terminals now used in some police patrol cars. I have not heard of anyone who has done this so far, although the question has been posed over and over again since the first mobile data terminals were installed in police and fire vehicles a long time ago. Although not a computer wiz, the main reason such a marriage is not possible is that mobile data terminals use proprietary programs. Without this information or programs in your computer, it would be impossible to receive data communications sent over the air.

What are you listening to on your scanner? What is booming in on your communications receiver on VHF/UHF? Your questions, photographs and frequency lists are welcome here at Scanning VHF/UHF. Send your correspondence to: Chuck Gysi, Scanning VHF-UHF, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909. ■

BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Here's One To Try For: We received a brochure from *Radio Monte Carlo*, Monaco, listing their AM frequencies as 216 and 1467 kHz in French, also 703 kHz in Italian. The station also has quite a few FM outlets in Monaco and adjacent areas of France. Their address is: Radio Monte Carlo, 16 Boulevard Princesse-Charlotte, Monte Carlo 98080, Monaco.

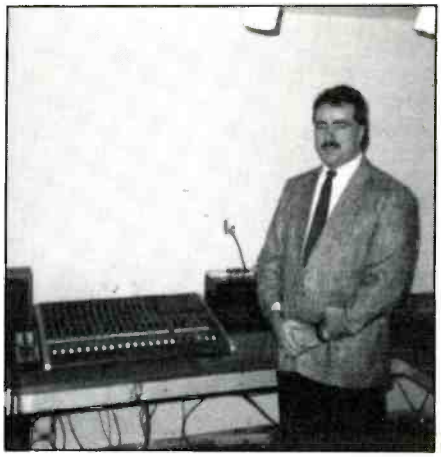
Alternative on Phoenix: KAPW/88.9, which is operating low power in Phoenix (and we believe possibly without FCC sanction), advises that they had some trouble putting the station on the air last November, but since then they have been serving the community and championing the cause of LPFM (Low Power FM) community broadcasting.

KAPW tells us that they offer uncensored viewpoints from across the entire political spectrum, discussions of topical social issues, a community forum, programming for the visually impaired and physically handicapped, programs reflecting minority ethnic viewpoints, jazz and music of many ethnic and national groups. At 6 p.m. every Tuesday and Thursday, KAPW broadcasts the *Voice of Inquiry* series of programs. Sunday evening broadcasts were added in January.

The station gives its address as P.O. Box 47473, Phoenix, AZ 85068-7473. Contact them directly for additional details about their programs, or about their hopes for a future LPFM service. It would be thoughtful to furnish a SASE for their reply.

Clever Arrangement: KRXV says that they're into their twelfth year FM'casting. Station "98 & 99 FM" started with two transmitters, 98.1 MHz on Calico Peak, Yermo, Calif.; also 99.5 MHz in Mountain Pass near the Nevada Border. Last year they added a third transmitter (98.9 MHz) located off of I-40 in Essex, Calif. Each of the transmitters is assigned different call letters (KRXV, KXFR, and KHWY), and they all simulcast the KRXV programming with the combined identification "98 & 99 FM." In addition to the three transmitters, there's also a translator on 98.3 MHz in Apple Valley.

When KRXV went on, they were the only two-transmitter FM operation. Now they are certainly the only three-transmitter operation. The reason for all of the transmitters is to provide Las Vegas visitors driving on I-15, and Laughlin visitors traveling on I-40, the opportunity to enjoy continued radio reception along the entire extent of these highways. This could be accomplished only by the use of multiple transmitters. Of course, along with serving vehicles on I-40, KRXV programming is also heard in all the communities that fall between Cajon Pass, Kingman, Las Vegas, and Edwards AFB. Programs primarily consist of music, news, and traffic information.



John W. Smith, Jr., President of WCTV/5, in the control room. (Courtesy of R.C. Watts, Kentucky.)

One of the WCTV/5 vehicles. (Courtesy R.C. Watts, Kentucky.)

Thanks to Mike Carland, of Valencia, Calif., for filling us in on this out-of-the-ordinary broadcast facility.

Best Laid Plans Dept.: In the Dallas/Fort Worth area, station KRSR/105.3 was known as "Star 105," and playing pop hits. When the station decided to drop this format and play country music as "Young Country FM-105," they led into the change with a computerized countdown that apparently began sometime late one Saturday night or early Sunday morning. Reader Cliff Mullican tells us he tuned in on this around 3 a.m. on Sunday and the count was still up in the region of 25,000, and descending. He couldn't believe his ears, but since this was more intriguing than it was creative programming, he kept on listening. When would it end? How many others were still listening to the computerized voice droning out its endless countdown? It became a matter of principle, no, a test of endurance, to Cliff.

Finally, after 6 p.m. on Monday, the numbers were winding down. Then at 6:20 p.m. the computer finally reached "Number 1." Apparently, the engineers and deejay still weren't quite ready for the big moment. The poor computer wasn't programmed to go into negative numbers, so it said "Number 1" again. Then, again, and again, and . . . well, you get the idea. By Cliff's actual count, it repeated "Number 1" exactly 231 times.

Around 6:35 p.m. they finally got the computer shut off, which resulted in what was essentially a minute or so of dead air time. It wasn't truly dead air, says Cliff, because he cranked up the volume on his receiver and could hear bleedthrough of the deejay and the engineers talking in the studio right before the station came back on the air with programming.

The last bit of conversation was:

"OK, get me that cart off the rack there."

"Are we ready, are we ready?"

"OK, when that red light comes on you say *Now*."

"You mean the one that says, *On The Air*?"

"Yeah, I'm gonna give you a countdown: 10-9-8-7-6-5-4-3-2-1, Go!"

This was immediately followed by what sounded like a jet engine starting up, a jet flyby, several explosions, plus other assorted hideous noises, superimposed on top of a taped station ID followed by the song "Young Country," sung by Hank Williams, Jr.

It's always interesting to learn about these memorable disasters and nightmares. They happen at most stations sooner or later, but you seldom get a chance to find out about them.

Cliff collects broadcast station bumper stickers. He would be pleased to hear from (or swap with) other collectors. Contact him at: Cliff Mullican, Rt. 1, Box 95B, Ferris, TX 75125-9801.

Big Signal; Big Problem: WCFL/104.7, in Morris, Ill., found itself in a strange situation recently. When the station changed tower sites, its signal suddenly jumped from 11 kW to 50 kW. This event didn't make a lot of points with other broadcasters in the region close to this frequency, several of whom complained to the FCC about interference from the strong WCFL signals.

WCFL contended that an engineering miscalculation had caused the power to be run at more than the authorized 11 kW ERP level from the new site.

The FCC told WCFL to cease operations at the unauthorized power level, and to install a directional antenna system instead of the omnidirectional one at the new site. The agency also complained that WCFL didn't

Applications Filed For New FM Stations

AZ	Wickenburg	93.7 MHz	1.5 kW
CA	Baker	94.9 MHz	15.5 kW
CA	El Rio	103.7 MHz	
CA	Lenwood	96.9 MHz	1 kW
CA	Santa Ynez	105.9 MHz	6 kW
FL	Miramar Beach	106.3 MHz	
GA	Bostwick	92.3 MHz	3 kW
GA	Statesville	98.7 MHz	6 kW
MI	Bay City	89.1 MHz	
MN	Brainerd	103.5 MHz	6 kW
NC	Beech Mountain	102.3 MHz	
OH	Delhi Mills	90.1 MHz	
OH	Westerville	103.9 MHz	
OK	Ada	91.3 MHz	2 kW
PR	Cabo Rojo	90.9 MHz	
TX	Jasper	107.3 MHz	
VA	Ivanhoe	90.1 MHz	
WA	Roy	89.7 MHz	

Changed AM Facilities

KMTA	Kinsey, MT	1050 kHz	Moved to Miles City, MT
KTGG	Spring Arbor, MI	1540 kHz	Dropped to 450 watts.
KULA	Maunawilli, HI	1460 kHz	Moved to Honolulu, HI

Permits Granted For New FM Stations

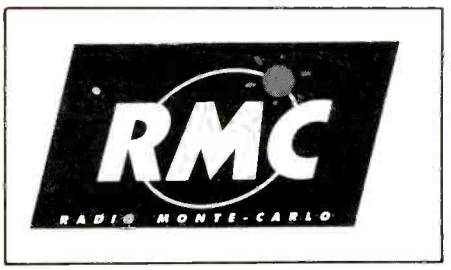
NY	Chateaugay	94.7 MHz	1.7 kW
NY	Morristown	102.9 MHz	3 kW
TX	Floresville	89.7 MHz	9 kW
TX	Lubbock	90.9 MHz	5 kW
TX	Midland	92.3 MHz	100 kW
WA	McCleary	96.9 MHz	2.3 MHz
WI	Nekoosa	93.7 MHz	3 kW

Requested To Change FM Facilities

KCLW-FM	Hamilton, TX	92.1 MHz	Move to Glenn Rose, TX
KGBX-FM	Bolivar, MO	106.3 MHz	Move to Nixon, MO
WJMQ	Clintonville, WI	92.1 MHz	Change to 92.3 MHz, 6 kW

Changed FM Facilities

KOCN	Pacific Grove, CA	104.9 MHz	Changed to 105.1 MHz, 4.2 kW.
KWYN-FM	Wynne, AR	92.7 MHz	Changed to 92.5 MHz, 25 kW.
WDHR	Pikeville, KY	92.1 MHz	Changed to 93.1 MHz.



The Radio Monte Carlo sticker is very stylish.

Very neat looking sticker from WPDH/101.5, Poughkeepsie, NY. (Courtesy Kris Abrahamson, Inglewood, Calif.)

have personnel at the transmitter site, as would have been required because the remote control circuits had not yet been completed. The FCC told WCFL to stop broadcasting, which the station did.

On the other hand, a spokesman for WCFL said that the FCC had told WCFL that, in the mean time, they could have resumed broadcasting from their previous transmitter site until the new site had been made right. The station felt that they were so close to having the problem taken care of that they would just go dark briefly until they could resume operations from the transmitter and antenna at the new site.

WCFL said that when it got back on the air it planned on capitalizing on all of the publicity the incident brought the station, and that it gave the station a desirable "rebel" and "underdog" image. The station thought that the situation opened several doors for poking some good natured fun at itself, too.

We appreciate this info from Allen Powell, of Earlville, Ill.

We Visit an LPTV Station: Reader R.C. Watts, of Louisville, Kentucky, visited LPTV broadcaster WCTV/5 (actually W05BE), TV Channel 5, operated by the Christian Television Network, in Jeffersonville, Indiana.

They pick up off a satellite or use tapes for their programming. The signal is beamed across the Ohio River to the transmitter atop the First National Tower in downtown Louisville, Kentucky. Another transmitter (TV Channel 26) will soon begin operating from the former WAVE/3 tower near Floyd Knobs, Indiana.

Hard Boiled Cops?: Seems that the *St. Louis Post-Dispatch* ran a story about how a drunk mistook the new Area III Police Station for a fast food restaurant's drive-up window and had attempted to order a hamburger via its outside intercom at 2 a.m.

Possibly seeing some chance for a deejay getting some laughs out of the concept, station WKBQ-FM/106.5 sent deejay "Wacky Pat" Fortune over to the police station with a remote transmitter at 8 a.m., suggesting that he order a croissant via intercom.

Too bad those at the Area III Police Station didn't find much humor in the idea. But they checked their computer and found that the deejay had a few outstanding minor traffic violations from other communities. Therefore, instead of getting a croissant, he got arrested. And he also got a trespassing summons.

The $225 bond was raised over the air from Fortune's listeners. Taking a philosophical view of the incident, the station's promotions director commented that sending Fortune to the police station to order a croissant sure seemed like a good idea at the time. All's well that ends well, and the $385 that listeners sent in beyond what was needed for Fortune's bond was contributed to the St. Louis Police Relief Association.

Unfortunately, the police failed to see any humor at all in the entire incident which, after all, they said grew out of and was based on the original situation involving a drunken dri-

Requested Changed AM Call Letters

Now	Seeks	
KCFA	KFFR	Eagle River, AK
KTER	KPYK	Terrell, TX
WDSG	WTRO	Dyersburg, TN
WFKB	WCRJ	Colonia Hts., TN
WHYM	WVTJ	Pensacola, FL
WSOC	WYFQ	Charlotte, NC

Changed AM Call Letters

New	Was	
KBLV	KLSY	Bellevue, WA
KBOS	KKAM	Fresno, CA
KNNS	KLFF	Glendale, AZ
KTMT	KMFR	Medford, OR
KWDO	KFIG	Fresno, CA
KZAP	KLUC	Las Vegas, NV
WAQE	WMYD	Rice Lake, WI
WFQL	WXLO	Fitchburg, MA
WHBY	WYNE	Kimberly, WI
WHIM	WKCD	Kittery, ME
WIFI	WRLB	Florence, NJ
WMBN	WWPZ	Petoskey, MI
WMQA	WMYN	Minocqua, WI
WOON	WWON	Woonsocket, RI
WSCR	WPNT	Chicago, IL
WWEZ	WQWQ	Muskegon Hts., MI
WWRX	WHIM	Providence, RI
WXBQ	WFHG	Bristol, VA

Requested Changed FM Call Letters

Now	Seeks	
KDMG-FM	KFMG	Pella, IA
KPAC	KYFS	San Antonio, TX
WMKS	WCFR-FM	Springfield, VT
WSRX	WJYO	Ft. Meyers, FL
WWOX	WXNJ	Avalon, NJ
WYHA	WWBV	Beaver Springs, PA

Changed FM Call Letters

New	Was	
KAOY	KOAS	Kealakekua, HI
KAXX	KAGR	Ventura, CA
KBOS-FM	KBOS	Tulare, CA
KBZS	KRMX-FM	San Diego, CA
KCDQ	KMGP	Monahans, TX
KHOV	KHRA	Mariposa, CA
KHTX	KDUO	San Bernardino, CA
KKBZ	KMA-FM	Clarinda, IA
KLRB	KMTY	Aurora, NE
KNCI	KZAP	Sacramento, CA
KRKN	KVNM	Oro Valley, AZ
KRXX	KLXK	Minneapolis, MN
KTMT-FM	KTMT	Medford,OR
KXKB	KEQI	Kings Beach, CA
KXSR	KOUJ	Groveland, CA
KYFX	KLVV	Little Rock, AR
KYJC-FM	KFMJ	Grants Pass, OR
KZRX	KGRX	Globe, AZ
WAZK	WUIC	Trinity, AL
WBOG	WTRL	Tomah, WI
WBSI	WQIA	Bay Shore, NY
WBYN	WYCL	Boyertown, PA
WCAL	WCAL-FM	Northfield, MN
WETH	WYHG	Hagerstown, MD
WGGO-FM	WWGO	Silver Springs, FL
WGRG	WQXT	Oswego, NY
WHTX	WAXF	Sharpsville, PA
WHCH	WQXO-FM	Munising, MI
WHIM	WKCD	Kittery, ME
WIMJ	WWEZ-FM	Cincinnati, OH
WLMD	WSRQ	Bushnell, IL
WMWA-FM	WWMH	Minocqua, WI
WNAX-FM	KNCM	Yankton, SD
WNCG	WLCO	Clyde, OH
WNEX-FM	WMRW	Gordon, GA
WRQI	WZSH	S. Bristol Twp., NY
WWRX-FM	WWRX	Westerly, RI
WYZK	WVCM	Valdosta, GA

New FM Call Letters Issued

KBIQ	Fountain, CO	KYFT	Lubbock, TX	WQIL	Chauncey, GA
KCVI	Blackfoot, ID	KZXA	Santa Fe, NM	WRXT	Roanoke, VA
KGY-FM	McCleary, WA	KZXB	Homer, LA	WWIO	Brunswick, GA
KKOA	Volcano, HI	WCKX	London, OH	WWIP	Wabash, IN
KQEH	Lenwood, CA	WCOT	Jamestown, NY	WWIQ	Gray, GA
KQEI	Blue Earth, MN	WEKX	Jellico, TN	WWIR	Fairbluff, NC
KQEJ	New Braunfels, TX	WFLE-FM	Flemington, KY	WWIU	Roanoke, VA
KQEK	Ely, MN	WFYR	Elmwood, IL	WWIV	Trussville, AL
KQEP	Rock Valley, IA	WLKS-FM	W. Liberty, KY	WZED	Berne, IN
KWCB	Floresville, TX	WQIB	Springfield, IL		

ver. They see little humor to be made from DWI.

This was sent to us by James Stulce, St. Charles, Missouri.

Looking For Reports: Station WNUR/89.3, operated by Northwestern University, Evanston, Illinois, is a 24-hour station that is fully student-programmed. They run 7.2 kW from an antenna right on the edge of Lake Michigan.

A note from Prof. James Schwoch, who is the Faculty Advisor at WNUR, advises that last February the station installed a new state-of-the-art Harris "Platinum Series" transmitter. They would be interested in reception reports (especially DX) regarding this new rig. The station's address is WNUR, 1905 Sheridan Road, Evanston, IL 60208-2260.

Filled to Capacity: What is described as the very last available AM frequency in the Los Angeles area was filled with the opening of station of KPLS/830. This 2.5 kW station operates from Orange, and is simulcasting with KCTQ/850 in Thousand Oaks. Programming format is all talk, and in Spanish, which is a format change for KCTQ.

It took the Villanueva family about eleven years to work things out for KPLS to become a reality. We wish them many years of success with KPLS.

A tip of the capacitance hat to W.R. McIntosh, of Granada Hills, Calif., for letting us know when the Los Angeles frequencies got filled to the brim.

Don't forget to come back next month. We will be looking forward to your photos, recent AM/FM photos, newspaper clippings, DX loggings, format changes, bumper stickers, stories, comments, and whatever. ■

SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Our first letter this month is from Paul Munsel, N4XMV, of Hearne, Texas. Paul has a keen interest in Amateur satellites and packet radio. He would like some information on tracking programs, antennas, and the PK-88 TNC.

Well, Paul, there are two sources of tracking programs. The first place to look is AMSAT. The Amateur Satellite Corp. is located at 850 Sligo Ave., Silver Springs, MD. 20910. Their Software Exchange has programs for most of the popular computers on the market. The second place to look is in your neighborhood. There might be a local Ham who can tell you where you can buy a program from a local dealer.

The antennas for the Low Earth Orbit (LEO) satellites can be kept simple. For the Packet satellites you can use a dual band vertical for 2M and 70cm. The RS satellites will require no more than a 10M dipole and a 2M vertical or horizontal beam. The PK-88 should work fine for HF and satellite Packet. You must remember, however, if you want to transmit through a Pacsat you will need an additional Phase Shift Keying (PSK) modem. These are available from Radiokit, P.O. Box 973, Pelham, NH. 03076. (603) 635-2235. Good luck with your satellite ops, Paul.

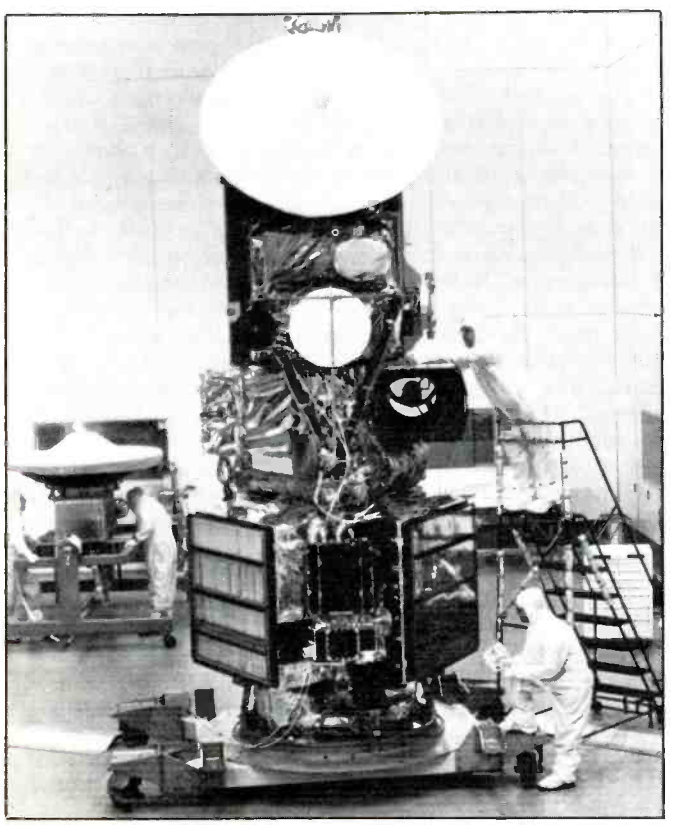
Our next letter comes from, how shall we say, a friend of *Satellite View*. He has some information on the Milstar Satellites. Congress virtually cut off funding of the Milstar project last year. It was at that time I reported that the two or three Milstars that were already in production would be launched, and that DOD was moving more and more toward microsat technology. Well, it would appear, according to my source, that Milstar has received a needed shot-in-the-arm. Funding for a fleet of six Milstar satellites has been approved and the program is back in business. While the exact dimensions of the Milstar have not been released, my source reports it is over 50 feet long with two even longer solar panels. Its weight could come in at around 1,500 lbs. I very much appreciate hearing from such informed sources as I am sure you do.

Oh yes, one other note, the fourth Milstar is scheduled for launch sometime in 1997. For those of you unfamiliar with Milstar, it is the most sophisticated communications satellite ever designed. It will put all military communications on the same satellite system making communications between the services during war and peace time possible. The Milstar is much like the TDRS satellites with their relay and crosslink capability.

Bill Bowers of Chandler, OK wants some information on the new GPS (Global positioning System) satellites. Bill has a few questions. But, first lets look at the system.

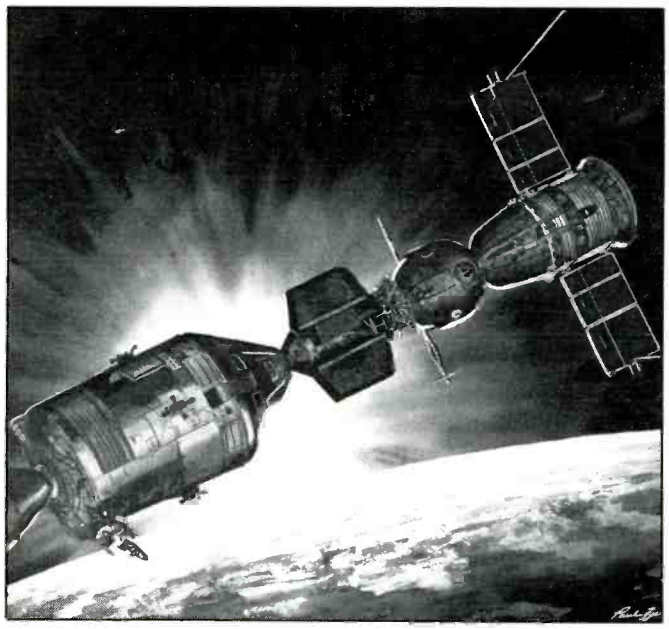
The US government has launched 11 of a planned constellation of 16 navigation satellites. By the turn of the century it is expected to replace the Loran-C and Tecan systems of navigational aids. The spacecrafts are at an altitude of 12,625 miles in an orbit that has a 55° inclination. These satellites are so accurate that your latitude, longitude and even altitude can be determined to within 100 feet. This is accomplished by monitoring 3 to 4 GPS satellites simultaneously and computing the time lag between the times it takes the signal from each spacecraft to reach your handheld receiver. The satellites transmit on 1,500 MHz in Spread Spectrum.

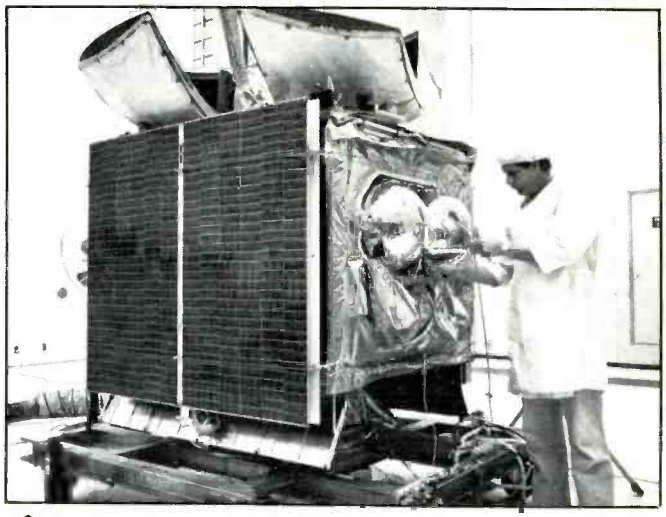
So Bill, back to your questions. Are the sats reliable? Yes, very. Are there dead spots? None I know of in the US, but world wide 24hr a day coverage will not be available until 1993. You ask if antenna tuning is critical. It is not. Most handheld units have a small omni-directional antenna attached. Current Loran systems suffer from accuracy problems, for example, in hilly terrain. Satellites eliminate this problem. I can't recommend a specific receiver but Magnavox, SportNav, Megellan, Trimble and Sony are just a few of the companies that make GPS receivers. As I have not used a GPS receiver I can not vouch for their quality. For more detailed information on the GPS and receivers I suggest



The landsat remote imaging spacecraft. Photo courtesy NASA.

W5LFL operating from the shuttle. Photo courtesy NASA.





SatCom III being readied for launch. Photo courtesy NASA.

The joint US/Soviet Apollo-Soyuz mission of 1975. Photo courtesy NASA.

you refer to the January '89, February '90, December '90 and November '91 issues and read Gordon West's *Emergency* columns.

Back issues can be obtained from CQ Communications, 76 North Broadway, Hicksville, NY 11801 or all (516) 681-2922. Back issues are $3.50 each. (Check, Money Order, Mastercard, Visa and Amex welcome).

The GPS satellites were used by the Army during the Gulf War. They were used by the Army's intelligence forces, those advance teams that penetrate deep into enemy territory during the early hours of a battle. GPS was pressed into service for an even more important mission. It seems the Army lost so much hardware during the staging of US troops that extraordinary means had to be taken to insure enough tanks, armored personnel carriers, jeeps and guns would arrive to use in the war. What was lost was no doubt lost to the black market. To minimize further losses, the next 12 shiploads of hardware were equipped with solar powered transmitters and cone-shaped antenna. Every 4 hours it would send a signal to a GPS satellite and it would tell the army the location of the ship. No more losses were incured. The GPS satellites offer both a commercial version of location determination and a far superior military version which obviously has other capabilities. Ground stations in Germany and Colorado monitored the ships movements.

Landsat 6, the latest US Earth Observation satellite, has had its launch delayed. This is due to problems with GE and Harris IC chips.

The Russians are planning a manned launch of their space shuttle Buran sometime this year. It may have already taken place by the time you read this.

Westar VI, a Hughes spacecraft was recovered by a shuttle crew in 1984. It was reconditioned and sold to China who launched it in 1990 with the name Asiasat 1. The Palapa B2 was also re-conditioned and sold to Indonesia.

During January and February the Cosmonauts onboard the Mir Space Complex were very active. Perhaps it's their new found freedom that loosened their tongues. U4MIR and U5MIR or their comrades can be heard on 145.550 MHz.

Aviation Week and *Space Technology* reports that the Tomahawk cruise missile worked so well during the Gulf War that 400 more have been ordered at 1.5 million apiece. Our deficit is now at 318 billion dollars. That is a full 100 billion over last year. Let the good times roll!

Since we are celebrating the International Year in Space in 1992, I think it's time to make some changes in the way we think. The Soviet Union and communism are gone. So is the Cold War. Gorbachev, before his fall from power, was not only pushing for a reduction in the world's nuclear weapons, but was also trying to put forward the idea of an international space agency and or at least more cooperation between East & West. In fact, he and President Bush were to have talked about more joint space projects this year. The Association of Space Explorers have put emergency communications and standardization of space hardware (for safety reasons) at the top of their priority list. (The Association of Space Explorers is made up of Astronauts and Cosmonauts).

Now would be a good time to work with the Russians to establish a new International Space Organization, consider money saving methods to standardize equipment, set-up an emergency communication network. Why not talk of the possibility of joint missions on the Mir, why not lease, buy or build a module of our own to be attached to Mir. Put our money in a more profitable venture than the unnecessary duplication of building the world's second space station. How about a joint, or better yet, International Moon base from which missions to Mars can be directed. The Russian's extensive knowledge of long duration space flight can be shared in exchange for a US diversion of some defense money into the new International Space Agency (see July '90 issue).

Do I think these suggestions are practical? . . . Yes. Do I think they are probable? . . . No not likely at all. But it is time we started thinking differently about space. If there is going to be a new world order, why shouldn't the space faring natiions of the world take a leadership role in its development. ■

HOW I GOT STARTED

We invite our readers to submit, in about 150 words, how they got started in the communications hobby. Please send them typewritten or otherwise easily readable. If you have a photo of yourself, please include it with your story. We can't return or acknowledge material, whether or not it is used. Your story need be submitted only once, we'll keep it on file to consider it for future issues. All submissions become the property of *Popular Communications*.

Entries will be considered on the basis of their story being especially interesting, unusual, or even amusing. We reserve the right to make any editorial changes we deem necessary to improve style or grammar.

Each month, we will select one winner. The author will receive a 1-year gift subscription (or subscription extension if already a subscriber) to *Popular Communications*.

Address all entries to How I Got Started, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Our Winner For June

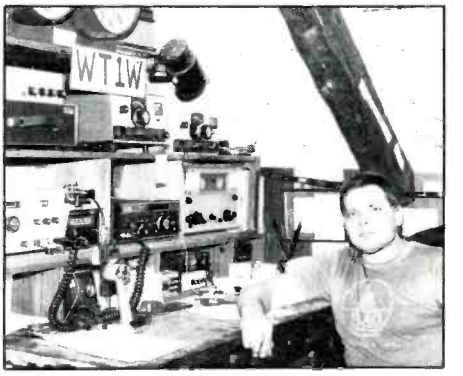
This month, our winner is Ed Libera, Jr., WT1W, of Palmer, Mass. Ed told us:

"When I was seven, a neighbor gave me a really old Philco radio. Hooked to a window screen antenna, it would receive local stations. After a few months, my curiosity got the best of me and I decided to dissect the radio to see if I could discover the magic inside of it that let it spew forth voices and music.

"About two years later, a family friend gave me an old RCA console receiver with three bands and a built-in antenna. This set brought in shortwave, and I was fascinated by the strange signals that went *clickety-thump* and *quacka-quacka*, which I later learned were CW and SSB.

"Soon, I began collecting dilapidated radios, changing tubes as necessary, and generally using the sets as sources of parts. I would visit local TV shops and the town dump. With the blessings of the proprietor, I would happily pluck tubes and other vital components out of derelict electronic gear.

"In 1990, after 20 years of plucking, experimenting, and studying, I decided that it was time to get a Novice ham ticket. Seven months later, I had an Extra Class license.



Ed Libera, WT1W, began in radio as a kid with an old Philco receiver that a neighbor gave him.

"I like to think that somewhere in the world there are other youngsters tuning around on battered and discarded old radios, wondering about the special magic the sets contain, and how voices and music can fly through the air. I did it 25 years ago, and the magic still fascinates me." ■

BY DON SCHIMMEL

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

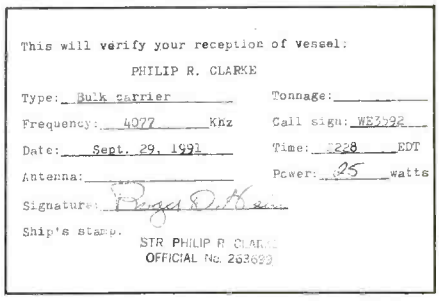
Roger Caldicott, MA told of his lack of sleep due to SW listening and passed on a tip concerning the recording of late night transmissions. "I heard some talk master on the radio tell a listener that he could tape the show while he was at work by hooking up his radio to a VHS recorder and getting several hours of recording vs. a conventional 90 minute tape cassette. I connected an ordinary shielded audio cable with mini ear phone plug to the phone jack of my Realistic DX-440 and plugged the other end (push on center conductor, split ground shell) plug to the audio input of my Panasonic VHS video cassette recorder. I preset the SW receiver to the desired frequency, then preset the VHS recorder as one would do for normal TV program/time selection. It does not matter what channel is chosen as the audio input connection will block out any voice from the video channel on the VHS recorder. The listener can select 2, 4, or 6 hours of VHS mode and be able to monitor a frequency for much longer than a conventional tape. I recommend however, the TV be turned off to eliminate TVI which can be fed back into the SW receiver if the length of the audio cable restricts the distance from the TV. Rewind the VHS tape and 'Presto' you have your program and refreshing nights sleep to boot."

Perry Crabill, Jr., VA is continuing with his Beacon coverage. He explained "By new loggings, I mean stations I have not previously heard, or stations that I have heard, but which have changed some aspect of their operation. This includes a different ID, a new frequency, or a change in modulation frequency. My grand total is now 676 loggings on this basis."

An interesting letter was received from Robert E. Lachance, Jr., NV. "From November 1977 thru October 1978 I was assigned to the USAF Command MARS Station while stationed at Scott AFB. Of all the duties I performed while in the Air Force I consider my time and duties at the Command MARS Station the most enjoyable to date. While I was stationed there, the radios we were using were Collins KWM-2A transceivers, with 30S-1, 30L-1 power amplifiers.

The frequencies I recall are Charlie Delta (CD) 7540 kHz, Charlie Echo (CE) 13996 kHz, and Tango Romeo (TR) 7560 kHz, Tango Uniform (TU) 13996 kHz, and Tango Quebec (TQ) 7545 kHz. The Charlie (C) prefix signifies a calling frequency, and the Tango (T) prefix signifies a traffic frequency. I'm not sure about the TR and TQ frequencies since I was at Scott AFB over 15 years ago.

A busy day at that MARS station and the MARS network is on a Wednesday when the office staff stop by HQ Air Force Communications Command and picks up equipment requests. During the evening AGA3HQ broadcasts the requests to the various regions. During the evening hours AGA3HQ (Soctt), AIR (Andrews AFB), and AGA6TR (Travis AFB) are the only stations that are broadcasting. AIR is the 'Gateway' station for 'APO NY' message traffic, while AGA0TR serves as the 'Gateway' for 'APO SF' traffic. The other active stations during the daytime are AGA1MC (McGuire AFB), AGA2LA (Langley AFB), AGA4KE (Kelly AFB), AGA4RA (Randolf AFB), AGA5MC (McChord AFB), AGA2MD (MacDill AFB), and AGA6TR (Travis AFB)."



This will verify your reception of vessel:

PHILIP R. CLARKE

Type: Bulk carrier Tonnage:

Frequency: 4077 KHz Call sign: WEZ292

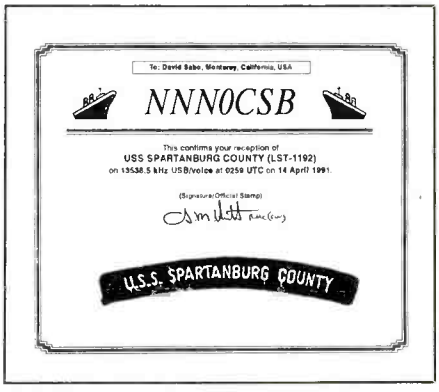
Date: Sept. 29, 1991 Time: 2228 EDT

Antenna: Power: 25 watts

Signature:

Ship's stamp: STR PHILIP R. CLARKE OFFICIAL No. 263699

Russ Hill, MI sent us a copy of his PFC.



Dave Sabo used this PFC for verification from a shipboard MARS station.

Jeannette Johnson, NY says she is now the proud owner of a Sangean ATS-818CS. "The built-in cassette recorder is certainly convenient, and the receiver seems to be a bit more sensitive than the ATS-803A (unless it's the 30' longwire on the 818 that's pulling in signals better than the dipole on the 803. When I have a chance I'll switch antennas & see)."

Tom Mazanec, OH advised he had observed two YL/SS 5F broadcasts 0600 with one on 81132 kHz and the other on 7846 kHz. Each transmission was heard in the background of the other.

William Tripp, IL wrote "I would like to report that I monitored one of the infamous 'Spy Stations.' It was my first, and I'm happy to be joining in on the shadowy side of DX'ing. I use a Sangean ATS-803A and a Radio Shack DX-440."

Steven F. Scharff, NJ sent in some loggings he made on his Sangean ATS-803A receiver.

Jerry Brookman, AK indicated he uses a Kenwood R-5000 with Alpha-Delta DX-SWL Sloper for his antenna. Jerry asked about he location of WLO and the meaning of some terms which he noted during his monitoring of CW transmissions.

Jerry, WLO is located at Mobile, AL. The abbreviation OBS stands for weather observations which are reports of weather conditions sent in by merchant vessels. These messages are coded and sent in five-figure groups.

AMVER is the acronym for Automated Mutual-Assistance Vessel Rescue system. This system is operated by the US Coast Guard and through reporting by merchant vessels of all nations, information is available which assists in any Search & Rescue operations in the oceans of the world. Five types of AMVER voyage reports can be noted. Sailing Plan, Departure Report, Position Report, Arrival Report, and Deviation Report.

In a recent list of publications available from the Superintendent of Documents I found a book which will be of interest to those who want to really dig in to the subject of time and frequency calibration services in the world. The books is entitled "Time & Frequency Users Manual. Serial Number 003-003-03050-3 and its costs $8.50. Order it from the USGPO, Washington, DC 20402.

Please remember to place your name and state abbreviation after each logging. This saves me a lot of time and helps to properly credit each item.

I am running low on my stock of QSL cards and PFC's sent in by you readers. So let's have some from those who have not as yet sent in any, and to those who have sent in some, additional ones are welcome. Do not send your originals as I cannot return them. Good clear and crisp Xerox copies are fine.

Ute Intercepts, All Times UTC.

201: Beacon RI, Riviere du Loup, PQ, Canada at 2205. (Crabill, VA)

204:: Beacon YFY, Iqualuit, NWT, Canada at 1122. This is a new freq, ex-206 kHz. Beacon located on Frobisher Bay, about 200 miles south of the Arctic Circle; for me, that's real DX. (Crabill, VA)

220: Beacon IHM, Mansfield (Airport), MA at 0618. (Caldicott. MA)

221: Beacon HM, Hamilton, Ont., Canada at 1105. (Crabill, VA)

227: Beacon, TAN, Taunton Municipal Airport, MA at 0620.

Abbreviations Used For Intercepts

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

239: Beacon OJ, Footner Lake, AB, Canada at 1055. (Arens, BC, Canada)

252: Beacon LQV, Pennington Gap, VA at 1145. (Crabill, VA)

260: Beacon X, Prince George, BC, Canada at 1302. (Arens, BC, Canada)

274: Beacon CQI, Council, ID at 1145. (Arens, BC, Canada)

275: Beacon AMW, Ames, IA at 1205; Beacon AV, Winnipeg, Man., Canada at 0455. (Crabill, VA)

277: Beacon VT, Roanoke, VA at 0457. (Crabill, VA)

288: Beacon P, Cape Flattery, WA at 1113. (Arens, BC, Canada)

304: Beacon PH, possibly ex-301, Portland, ME. Hrd 0852. (Crabill, VA)

320: Beacon K, Cape Kiwanda, OR at 1149. (Arens, BC, Canada)

335: Beacon AJR, unlocated. Slow ID; once in 20 secs. Almost missed it because of infrequent ID. Hrd at 1355; Beacon VER, Boonville, MO. (Crabill, VA)

353: Beacon LLD, Lanai, HI at 1143. (Arens, BC, Canada)

356: Beacon GR, Green Bay, WI at 0950; Beacon LLU, Lamar, MO at 0949. (Crabill, VA)

373: Beacon EP, Estaven Point, BC, Canada at 1514. (Arens, BC, Canada)

382: Beacon VCY, Valley City, ND at 1211. (Crabill, VA); Beacon YPW, Powell River, BC, Canada at 1300. (Arens, BC, Canada)

395: Beacon OS, Oshkosh, WI at 1448; Beacon TSO, Carrolton, OH at 1104. (Crabill, VA)

397: Beacon, OW, Norwood Airport, MA at 0621. (Caldicott, MA)

400: Beacon MQ, Miquelon, STP (French possession in Atlantic Ocean just South of Newfoundland), at 1026. (Crabill, VA)

404: Beacon SVH, Statesville, NC at 1032. (Crabill, VA)

405: Beacon OX, Ocean City, MD at 1408. New ID, ex-OIK. (Crabill, VA)

406: Beacon YLJ, Meadow Lake, SK, Canada at 1318. (Arens, BC, Canada)

409: Beacon CQW, Cheraw, SC at 1128. (Crabill, VA)

410: Beacon CYE, Wilkes Barre, PA at 1129. (Crabill, VA)

411: Beacon RD, Redmond, OR at 1321. (Arens, BC, Canada)

415: Beacond HJM, Bonham, TX at 1209. (Crabill, VA)

418: GLD/GNF (Land's End/Northforeland) in CW at 1230 w/tfc list. (Boender, Netherlands)

425: USWD, MV Leningradskaya Slava in CW wkg Norddeich Radio at 1007. Vessel on 474 kHz; UIEF, MV Youly Danichevsky in CW at 1144 w/DAN; 3EYY, MV Hersing in CW at 1153 w/ETA Elbe. (Boender, Netherlands)

444: UVVY, MV Koporie in CW at 0925; 7THU, MV ISmara in CW at 1214; UFIX, unid MV in CW at 1215. All were clg DAN. (Boender, Netherlands)

454: BPOF, MV Anping 6 w/request for pilot. CW at 0847; LAHL4, MV Bergen Falcon clg LGQ in CW at 1125; 3EKX2, MV Hegg clg FFB in CW at 1126; SXVJ, MV Akmi in CW at 1045 w/ETA Immingham Pilot. (Boender, Netherlands)

474: 9HLA3, MV Montevideo Reefer in CW at 0955 w/msg for Horn Line. (Boender, Netherlands)

500: UFDF, MV Anton Goubarev clg OST in CW at 1109; P3KT4, Unid Ship clg OST in CW at 1106; FFB, Boulogne-Sur-Mer announcing Nav Wrng & QSW 450 kHz. CW at 0720. (Boender, Netherlands)

512: UWFL, MV Engure in CW at 0935 w/request for Pilot Hoek Van Holland. (Boender, Netherlands)

2670: USCG Cape May, NJ in SSB w/coastal navigational aid advisories to NJ mariners at 2300. (Caldicott, MA)

2697: GLD3, Land's End, Great Britain, Hrd approx 0650. (Caldicott, MA)

3130: C5W, u/i stn in USB at 0140 clg "any stn in the net" w/no reply. (Burkart, LA)

3261: Two OM/EE (fishermen) in USB at 0342 complaining to each other re too few fish & too many boats in area. Hrd intermittently for 20 mins. Almost every noun preceded by the same obscene adjective. Faded out around 0400. (Johnson, NY)

3330: CHU, Canadian time station at 2145. (Mazanec, OH)

3517: GNI1, Niton, Great Britain in CW clg CQ foll by fog horn at 0654. (Caldicott, MA)

3910: YL/EE rptng 03289 from 1920-1925 then Ready Ready 31 31 and into 5F grps. On top of Pirate stn Radio Fax which broadcasts radio/SWL-DX related programs. (Mason, England)

4357.4: KMI, Dixon (San Francisco), CA w/pp's in USB at 0720. (Grote, IL)

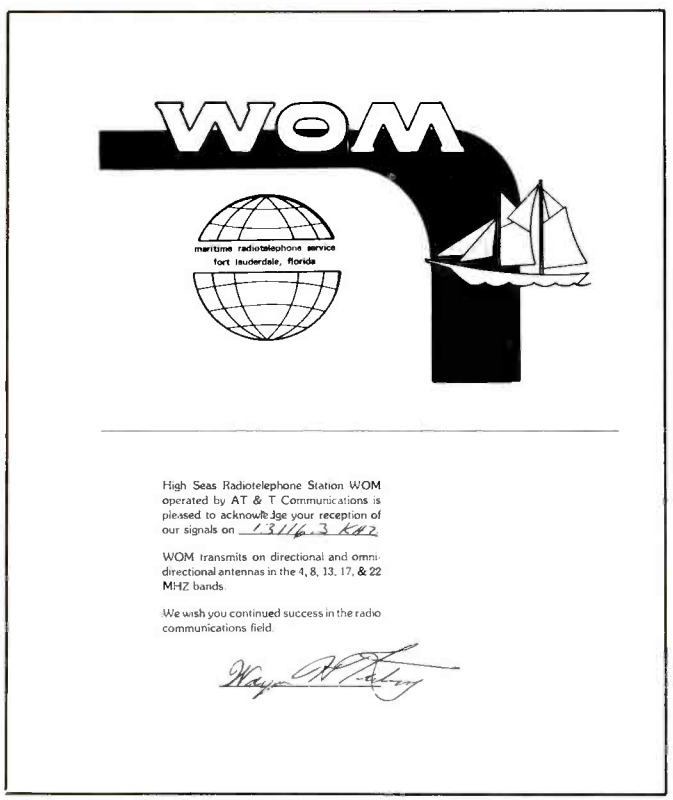
4384: Vancouver CG in USB w/forecast for British Columbian and lower Alaska water and coastal regions. Stn bcsts daily from 0701-0709 w/these advisories. (Caldicott, MA)

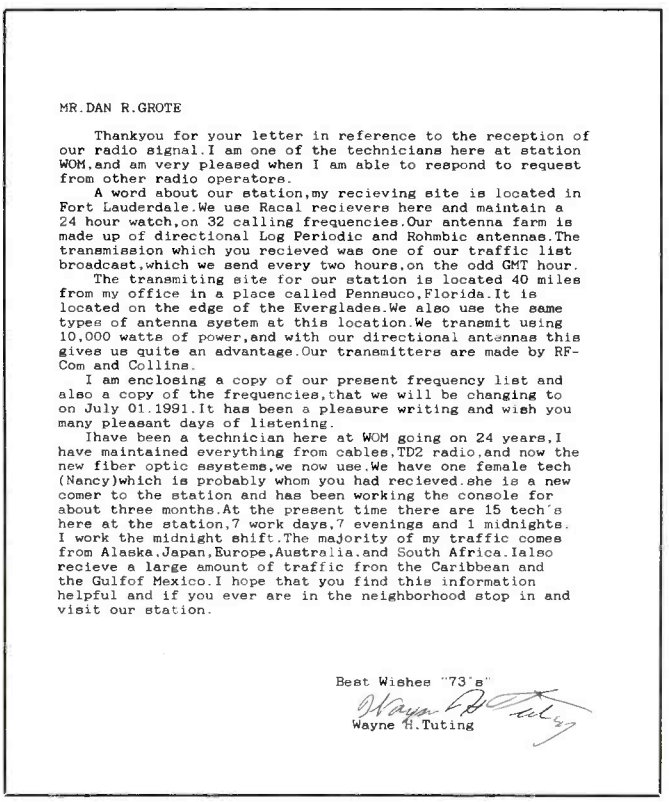
4426: SVA, Athens, Greece in USB at 2156 relaying National Time Sig announced by YL/Greek who announces time every 10 secs w/hrs, mins, secs foll by time pip. Hrd till 2204. Time given was UTC + 2. (Chinaski, Italy)

4555: OM/RR w/137 from 2105-2110 then 514 x2 37 x2 & into 5F grps. Ended w/00000. (Mason, England)

4780: YL/EE rptng 288 oblique zero zero from 2000-05 then off. (Mason, England)

5410: YL/EE in AM at 0325 w/5F grps each rptd twice. YL rolled her R's a bit & pronounced the figure 7 as "sevvun". Off at 0330 w/93567 6 / 00000. (Johnson, NY)





MR.DAN R.GROTE

Thankyou for your letter in reference to the reception of our radio signal.I am one of the technicians here at station WOM,and am very pleased when I am able to respond to request from other radio operators.

A word about our station,my recieving site is located in Fort Lauderdale.We use Racal recievers here and maintain a 24 hour watch,on 32 calling frequencies.Our antenna farm is made up of directional Log Periodic and Rohmbic antennae.The transmission which you recieved was one of our traffic list broadcast,which we send every two hours,on the odd GMT hour.

The transmiting site for our station is located 40 miles from my office in a place called Pennsuco,Florida.It is located on the edge of the Everglades.We also use the same types of antenna system at this location.We transmit using 10,000 watts of power,and with our directional antennas this gives us quite an advantage.Our transmitters are made by RF-Com and Collins.

I am enclosing a copy of our present frequency list and also a copy of the frequencies,that we will be changing to on July 01.1991.It has been a pleasure writing and wish you many pleasant days of listening.

Ihave been a technician here at WOM going on 24 years,I have maintained everything from cables,TD2 radio,and now the new fiber optic sayste ms,we now use.We have one female tech (Nancy)which is probably whom you had recieved.she is a new comer to the station and has been working the console for about three months.At the present time there are 15 tech's here at the station,7 work days,7 evenings and 1 midnighte. I work the midnight shift.The majority of my traffic comes from Alaska,Japan,Europe,Australia,and South Africa.Ialso recieve a large amount of traffic fron the Caribbean and the Gulfof Mexico.I hope that you find this information helpful and if you ever are in the neighborhood stop in and visit our station.

Best Wishes "73"s

Wayne H.Tuting

In addition to the QSL card, Dan Grote, IL, receive an informative letter from one of the WOM operators.

5417: YL/SS at 0302 in AM w/Atencion 867 01 rptd. At 0305 01 58 rptd x3 then into 5F grps. (Johnson, NY)

5505: Shannon Volmet in USB at 0350. (Grote, IL)

5550: Powerful carrier on at 2140. At 2145 OM/RR said 550 once. At 2147 w/550 again. Then rptng 550 continuously at 2200 until 2205. Then 674 x2 29 x2 & into 5F grps. (Mason, England)

5600: Drum and Trumpet marching music from 2200-2205. Then YL/Czech w/Noma 716 Gruppi 18 and into 5F grps. AM mode. (Mason, England)

5696: Rescue 1493 in USB at 0741 wkg Commsta Portsmouth (NMN) w/msg informing that pilot was dropping off his passengers. (Burkart, LA)

5710: OM/GG rptng 358 from 2030-2035. Then 274 274 30 30 and into 5F grps. This is same OM who sends 5F in RR. Indeed, OM turned up at 2100 w/718 x3 000 on 5550 kHz. Both used full carrier AM. (Mason, England)

5762: YL/SS rptng 858 00 from 0230 until 0236 then 00 90 x5 and into 5F grps. (Willmer, MI)

5812: Punter, Headset, Ladder, Mount Tainier and Jacket? in USB net at 0311 w/authentications then QSYed to W9Q for rdo checks. (Willmer, MI)

6230: YL/EE in AM at 0342 ending msg of 5F grps (x2) w/149 149 00000. (Willmer, MI)

6286.5: MV Niv Komsomolsk (u/i call) in CW at 2130 w/QTC to Radio Sankt Peterburg (URD). Was in port at Izmir, Turkey. (Chinaski, Italy)

6420: UON, Baku, Adzerb in CW at 2100 w/mkr: VVV 4KK DE UON QSS 8500/6420. (Chinaski, Italy)

6501: USCG CAMSPAC Sanfrancisco clg USCGC Blackhawk at 0019. Cutter not hrd on paired freq of 6200 kHz. (Dubee, WA)

6675: YL/EE rptng 43276 from 2140-2145 then Ready x2 22 22 and into 5F grps. Same YL w/13698 from 2320-2325 then Ready x2 26 26 but on 4740 kHz. At 0000 on 6675 kHz YL/Czech w/Noma 41 Gruppi 18 after drums & trumpet sign-on. All probably Czech bcsts. (Mason, England)

6676: VLS, Sydney Volmet w/aero wx at 0900. (Dubee, WA)

6677: Honolulu Volmet w/wx for West Coast airports. USB at 0455. (Grote, IL)

6693: CZW, Halifax Military, Canada wkg CanForce 305 re poss alt. landing sites at 0904. (Dubee, WA)

6753: CHR, Trenton Military, Canada in USB at 0733 w/wx bcst. (Burkart, LA)

6757: Sunshine in USB at 0240 requesting MacDill inject an EAM into the AutoDin system. MacDill complied and later confirmed injection of msg. During this, Andrews had SAM 60200 QSY to F989. (Willmer, MI)

6761: Super-74 (KC-10) wkg in USB at 0234 w/J-Walk on S-391 w/pp to Blue Thunder Control. 74 wanted a status report on Hawk-86 (B-1B) out of Dyess AFB because they didn't rendevous as scheduled. (Burkart, LA) Riot 62 clg Wildman requesting pp to Robbins AFB, GA for metro. USB mode. Robbins advised 34 degrees w/snow & ice. (Fenlon, OH)

6786: MCW stn sending 775 x3 TTT (no msg) from 2000-2015 then off. Zero was only nbr cut, others sent full. (Mason, England)

6825: FAV22, u/i French Gendarmerie in CW at 1542 w/mkr VVV DE FAV22 QLH 3881/6825 KHZ. At 1545 drill msgs sent w/heading LECON 25/1. Two msgs were in cipher grps and one in French. Off at 1610 w/CQ DE FAV22 AR. (Chinaski, Italy)

6840: YL/SS in AM at 0231 rptng UNO DOS UNO SIETE, DOS DOS CUATRO CERO over and over. Off at 0241. (Johnson, NY)

6860: FDG8, u/i French Airforce in CW at 0940 w/V's. Also hrd on 5558 kHz at 2140. (Chinaski, Italy)

6880: Italian Finance Guard net in Sicily region using special calls "Melo + nbr". OM/II sending clear unclas msgs to local VHF repeaters wkg in the 152-153 MHz range. (Chinaski, Italy)

6933: YL/SS at 0408 in AM w/326 326 and count 1-0. At 0410 ten tones foll by Grupo uno cero cuatro and into 4F grps. Off at 0434. (Johnson, NY)

7335: CHU, Canadian Time stn at 2137. (Mazanec, OH)

7375: Real pile-up here. At 1700 YL/GG w/1-0 count and 545 rptng until 1710 when ten tones were sent. After Gruppe 111 went into 3/2F grps. On same freq diff. YL rptng 543 543 543 07573 049 until 1705 when five tones sent and into 5F grps. Both stns on top of Radio Beijing in RR bcst. (Mason, England)

7420: YL/SS at 0300 rptng 338 x4, 1-0 count. At 0310 CW tones and sent 2 3F grps foll fy 4F grps. (Kimball, IL)

7552.1: WNIM867, SW Bell, St. Louis, MO in USB at 1510 ending exercise w/WNFT417, Washington DC Control. Later that day, KJL412, New York Telephone advising WNFT417 that they would be testing a repaired radio with them in a few hours. (Willmer, MI)

7629: FWV, NAS Nimes-Garons in USB at 1410 clg Breguet 3 an u/i a/c foll by crypto FSK tfc. Guess this is a MATELO channel (NAS surveillance). (Chinaski, Italy)

7655: YL/EE in AM at 2110 w/741 x3 1-0 count, 10 pulses & Count 198 foll by lengthy msg of 5F grps w/pause between 3rd & 4th digits. Msg rptd then End at 2149. (Scharff, NJ)

7887: Lincolnshire Poacher turn hrd at 0400. (Fenlon, OH)

7888: YL/SS at 0311 w/5F grps. Cut off in middle of a group. (Mazanec, OH)

8145: Woodpecker w/whistles in background hrd at 2216. (Scharff, NJ)

8240: USCGC Polar Sea (WAGB 11) in USB at 0234 wkg Honolulu ComSta re inability to run an unsecure data link. (Willmer, MI)

8241.5: 6YSJ, u/i, sending coded msg to NMN, USCG Comsta Portsmouth, VA at 0633. Msg consisted of a long set of numbers. (Dubee, WA)

8294: OMC, CSPD Bratislava (Danube River National Shipping Co.) wkg Polava & several other river ships w/position reports. Also some pp all in Czech. (Chinaski, Italy)

8327: IAVE, Italian Navy ship Visintini w/plaintext msg to EOBU, Comgrupnav 22, Durres. This channel normally used for FSK crypto mode by EOBU, IDR & ships patrolling the area. (Chinaski, Italy)

8404: YJYH4, MV Fend Nian, Vanuatu flag, a bulkwheat vessel bound LaPallice, France to China w/canal transit authorization msg to SUP, Port Said. CW at 1530. (Chinaski, Italy)

8453: HWN, French Navy, Paris-Houilles w/VVV de HWN in CW at 1750. (Johnson, NY)

8861: Dakar ATC, Senegal wkg Varig 710 w/pos report at 0658. (Dubee, WA)

8951: Tokyo ATC wkg foll a/c w/pos reports, clearances & selcal checks between 0845-0900. Flights NW 002, AA 026, NW 004, NW 026, Delta 026, AA 808, JAL 066 and NW 024. (Dubee, WA)

8972: Hotel Foxtrot clg Ghost 01 in USB at 0720 w/msg "My pony in-bound to home plate." (Fenlon, OH)

8984: USCG Copter 1603 wkg NMO, USCG ComSta Honolulu w/rdo check at 0532. (Dubee, WA)

9023: Chalice Bravo in USB confirming id of airborne tracks w/Side Car at 1530. Side Car advised Voice Tell could not be correlated due to track being outside of radar range. (Willmer, MI)

9090: YL/EE w/1-0 count and 155 from 2100-2110. After ten tones, Count 70 and into 3/2F grps. Also parallel w/7654.5 kHz. (Mason, England)

9092: YL/EE at 2100 w/3 + 2F grps. (Mazanec, OH)

9155: YL/SS at 0930 w/5F grps. Sign-off at 0945. I'm certain that it is a computer-generated voice. The tones in like numbers were exactly the same. (Tripp, IL)

9162: VDD in USB clg VEL at 2100 for rdo check. No response. Rptd several times. At 2110 he said "Xmtng on Delta, listening on Bravo. VDD listed as RCEC, Debert, NS, Canada. VEL listed as Winnipeg, Manitoba, Canada. (Johnson, NY) The RCEC stands for Royal Canadian Engineers Corps. (Ed.)

9245: YL/EE w/4F grps, occasional 3F grp. Hrd at 1420 until 1451. (Scott, NY)

9785.2: YL/EE in USB w/3 + 2F grps at 0030. (Fenlon, OH)

CCJUNE 8972: Hotel Foxtrot clg Ghost 01 in USB at 0720 w/msg "My pony in-bound to home plate." (Fenlon, OH)

USCG Copter 1603 wkg NMO, USCG ComSta Honolulu w/rdo check at 0532. (Dubee, WA)

9023:: Chalice Bravo in USB confirming id of airborne tracks w/Side Car at 1530. Side Car advised Voice Tell could not be correlated due to track being outside of radar range. (Willmer, MI)

9090: YL/EE w/1-0 count and 155 from 2100-2110. After ten tones, Count 70 and into 3/2 grps. Also parallel w/7654.5 kHz. (Mason, England)

9092: YL/EE at 2100 w/3 + 2F grps. (Mazanec, OH)

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9785.2: YL/EE in USB w/3 + 2F grps at 0030. (Fenlon, OH)

10048: Tokyo wkg UAL 807 and UAL 805 w/pos reports at 0554. Tokyo also wkg a/c on 13273 kHz at about same time. (Dubee, WA)

10078: Lufthansa Company freq w/call DLH, Frankfurt, Germany wkg LH 475 re technical problem at 0610. Wkg u/i flight w/eta to Frankfurt at 0620; wkg LH 401 re connections of some passengers & poss overbook of connecting flight at 0624; wkg LH 475 relaying poss solution to 475's problem at 0627; told LH 475 they have to stop at FRA for maintenance and that passngers would be put up in hotel and repair parts will be available. All comms in German. (Dubee, WA)

10240: YL/SS rptng 832 x3 00000 from 0200-0204 in AM. (Willmer, MI)

10663: Algerian PTT net in USB at 1508. Asking for rdo checks. Also hrd Tamanrasset and Beskra w/short comms to Bouira. Seems to be a backup for local PTT comms. (Chinaski, Italy)

10836: YL/EE in USB at 0230 announcing 383 and count 1-0. (Fenlon, OH)

11104: DOD Cap wkg USCGC Dependable (WMEC 626) in USB plus USS Jack Williams, FFG-24, King 1 and King 2, w/shuttle launch support. During support DOD Cape switched to a different console and identified as Cape Osborn, an alternate DOD site. (Willmer, MI)

11160: Coyote 1 in USB wkg on a data link problem w/Coyote 2 at 1602. (Willmer, MI)

11176: AFD14, Ascension Auxillary Air Field, USAF Ascension Island at 1155 w/pp re amplifier which needed for HF radio. (Caldicott, MA)

11191: Backspin in USB clg Hershey. Backspin no joy. Hrd at 0210. (Fenlon, OH)

11226: Redeemer in USB at 2225 wkg LongJohn on X-905. Also tfc for War-46 at 2235. (Burkart, LA)

11267: Three Hotel Xray clg Foxtrot Seven Oscar in USB at 0510 w/request F70 to go to Hotel Foxtrot frequency Zulu Golf November. The request sent blind. (Fenlon, OH)

11300: Khartoum Aeradio wkg a/c 972 for position report. USB at 0225; Tripoli Aeradio wkg several a/c in USB at 0223. (Grote, IL)

11451: Central Jungle in USB at 1710 relaying SHARES exercise msg to WNAC426 (unk location) that ATV's are needed for relief ops and to contact disaster control point. (Willmer, MI)

11532: YL/SS in USB at 0230 w/3 + 2F grps. (Fenlon, OH)

12661: CBV, Valparaiso, Playa Ancha, Chile in CW at 2322 w/mkr. (Caldicott, MA)

12709: XFQ, Salina Cruz, Mexico in CW at 2249 w/CQ mkr. (Caldicott, MA)

12750: RIT, Vaigatch Ostrov in CW at 2037. This is a wkg freq. (Caldicott, MA)

12755: CKN, Vancouver, BC, Canada in CW at 0055 w/CQ mkr. (Rice, OH)

12843: HLO, Seoul, Korea in CW at 1219 w/CQ QSX 12 MHZ mkr. (Caldicott, MA)

12855: BWW, China? in CW at 005 w/callsign mkr. (Rice, OH)

12864: XSW, Kaohsiung, Taiwan clg at 1240 in CW. (Caldicott, MA)

12867: NRV, Guam Weather NWPAC Bulletin Naval Oceanography Command Center w/High wind/seas warnings & synopsis for NW Pacific Ocean. Stn also hrd at 1103 w/coastal wx & High Seas forecast for the Marshall Islands. (Caldicott, MA)

13257: Trenton Military at 1832 in USB w/pp for Air Canada 599. (Johnson, NY)

13457: WWJ83, FHWA Jefferson City, MO in USB passing a NDMS (National Department of Motor Safety??) SHARES exercises msg to KDM52, FAA Memphis, TN. (Willmer, MI)

13550: ZKLF, Aukland Meteo, New Zealand in CW at 0858 w/pt wx in EE. (Margolis, IL)

13360: At 1110, one side of a conversation in USB

by OM in u/i oriental-sounding language. Talked excitedly w/some laughing until 1140. At 1201 in CW 457 sent over & over. Then into 5F grps, off at 1213. At 1216 the same OM returned. His first two words sounded like Ahn Dah." Again I could only hear his side of the conversation. Off at 1219. Other words I hrd were "Radyo" and two words he used frequently were pronounced "Zee-uh" and "Ney-uh." At 1830 in CW hrd GPA5, Portishead, England w/callsign mkr foll by 8 chirps rptd over & over. (Johnson, NY) The chirps are SITOR-A RTTY. (Ed.)

13361: YL/EE at 1300 w/266 266 & count 1-0 rptd. At 1310 ten tones then Count 210 x2 and into 3/2F grps. At 1330 "Repeat, Count 210 count 210" & msg rptd. Off at 1349 w/"End." Msg rptd every day at same time for 10 days. Then addee changed to 989 with group count of 210 but text was different. Some days same YL up at 1400 & 4F grps. AM mode. (Johnson, NY)

13881: During a SHARES exercise KK2XCE (unknown) wkg WWJ40, FHWA Washington DC rep problems w/9600 linear power amplifier and a RT9000 coupler. WWJ40 advised he had to end conversation and take over running the exercise. USB at 1910. (Willmer, MI)

13993: KGD34, National Coordinating Center (SHARES), Arlington, VA ending transmission w/unknown stn at 1927 during a SHARES exercise. (Willmer, MI)

14355: BCJ, poss Shanghai, China in CW at 1102 w/CQ mkr & indicating QTC1. Then at 1105 42 grp msg of 5F grps rptd twice. SK at 1110. (Chinaski, Italy)

14441.5: NNN0CUJ clg for any stateside MARS stn. (Grote, IL)

14487: "Vive la Compagnie" music mkr & YL/EE callup hrd on sev. days at 1600 in AM. Goes into 5F grps at 1610 w/each 5F grp rptd. (Margolis, IL)

14704: YL/EE at 1300 w/969 x3 & 1-0 count til 1310. Then ten tones, Count 210 x2 and into 3/2F grps, rptd at 1330 & off at 1350. At same time, same day, same YL was on 10526 kHz and 14811 (Simulcast) w/diff batch of 3/2F grps. Same day she was on 13361 at 1400 w/4F grps. This YL has also been hrd at 15938 & 11602 kHz. All AM mode. Warbler jammers frequently present especially on 14703 kHz. Always finishes w/"End." (Johnson, NY)

14832: KDM52, Memphis, TN (ARTCC) FAA stn, (member of Southern Region Emergency Net) in USB clg AGA6TR (USAF MARS Travis AFB) but no reply during SHARES exercise. (Willmer, MI)

15015: AHF, Albrook, AFB, Panama at 1830 w/announcement it commencing 24 hour restriction of operation. All a/c to contact Ascension or MacDill on 8993, 11176 or 15015 kHz until stn resumes operation. (Caldicott, MA)

15630.3: YL/SS w/5F grps at 2043 in AM. (Willmer, MI)

15754: YL/EE w/3 + 2F grps at 1712 in RCS. (Willmer, MI)

16420: LXPJ, Sailing ship Margot from Luxembourg in USB at 1947 clg Cape Town, RSA at 2200. IMVD, Italian cargo ship Cielo di Genova clg Rome, Italy at 2212. (Margolis, IL)

16434: Powerful carrier here at 1300. At 1330 YL/EE w/4F grps started up without 1-0 count. Powerful warbler jamming signal soon afterward. (Mason, England)

16948.5: VCS, Canadian CG Halifax, NS in CW at 2355 w/mkr. Off at 2400. (Rice, OH)

17091: XSQ/4/7, Canton, China at 1356 in CW wkg ships. (Caldicott, MA)

17094: AQP4, Karachi, Pakistan (Navy stn) at 1335 w/V's then broke into series of coded decimal signals at 1338. Stn difficult to log as SVA6, Athens, Greece shares same freq. (Caldicott, MA)

17430: YL rptng Hotel Sierra from 1100-1105 w/elec tones then YL/GG w/84 grp msg of 5F grps for addee 344. (Mason, England)

17590: YL/GG w/3 + 2F grps in USB at 1611. (Willmer, MI)

18650: RBI71, Radio Moscow feeder in USB at 1414. (Burkart, LA)

19171: Aria 1 wkg Aria Control in USB at 1840 w/on station report. Aria 1 also recd first motion times for objects Xray and Yankee, reported nominal flights for Xray and Yankee, and advised that terminal area for Xray and Yankee is green. (Willmer, MI)

2000:: WWV, Ft. Collins, CO Time station at 2142. (Mazanec, OH)

20019: Lovejoy wkg apparent Forward Air Control stns Rammer, Gambit, Recall, Curio, Radium, Jersey Cod Fish, and Jamaica at 1856 in USB. FAC stns would contact Lovejoy for air support missions. Lovejoy would either deny air support due to organic fire or approve support passing mission numbers, callsigns, and number of a/c involved. Air support a/c were A-10's and F-16's. (Willmer, MI)

20368.5: Importer wkg Dwarfish Alpha in USB at 1941 w/pp re forwarding individuals 45. Base camp was not 100% ready. (Burkart, LA)

26105: WLO, Mobile, AL in CW at approx 0030. Callsign foll by four short (approx 5 secs each) transmissions. (Brookman, AK)

26123: WLO, Mobile, AL in CW w/OBS AMVERS mkr & QSX freqs. (Brookman, AK)

26728: NMN/NAV/NAR, Portsmouth, VA USCG/Hqs USN-USMC MARS, Cheltenham, MD/USN Key West, FL-Notice to mariners in CW re avoiding territorial waters of Yugoslavia until further notice due reports of port blockades/vessels being fired upon. Hrd at 2200. (Caldicott, MA)

27870: At 2327 OM/EE advising unk stn they were still sounding good. Gave a voice check. Talk of a shift change. Signed off as "12" (probably Ascension Is.). Also noted on this freq was the tone associated with the Customs/FAA SelCal system, and a guard tone (loke those noted on other NASA freqs) was noted on LSB. (Willmer, MI) ■

CB SCENE

27 MHz COMMUNICATIONS ACTIVITIES

BY BILL SANDERS, SSB-295

What's undoubtedly the world's smallest, full-power handheld CB rig has been brought out by Cobra. Without its accessory battery pack attached, Cobra's new HH-40 is just slightly larger than a cigarette pack. That makes the weather-resistant portable ideal for recreation and emergency applications.

The interest in smaller cellular and other two-way handhelds pointed out to Cobra that it was time for full power 27 MHz handhelds to keep up with this sophisticated technology. Handhelds have always been popular with CB users, so it seemed like a natural.

What emerged was this HH-40 handheld, which is not only sleek, small, and rugged, but puts out a full four watts. That makes it ideal for hobby comms, as well as for taking along while fishing, camping, hiking, boating, exploring, biking, and hunting. It's suited for use by motorists for summoning emergency assistance, and excellent for all emergency uses. With batteries, it weighs just 1 lb.

In its basic configuration, the HH-40 can be operated in a vehicle with its cigarette-lighter power cord, or you can operate it at home on AC power with the AC power adapter. The unit's (approximately 10 inch) rubber ducky whip is attached via a BNC type connector, so it may be easily removed and you can then easily operate the HH-40 using a CB base station or mobile antenna for coverage that equals any base or mobile station. External speaker and mike jacks are also provided for times when you don't want to use the built-in mike or speaker.

For portable use, a compact snap-on battery pack is included for use with ten rechargeable batteries or eight AA-size alkalines. A red indicator lights up while the batteries are being charged.

The Cobra HH-40 has a large, backlit LCD display that shows the channel number, also provides RF/S-meter function, low battery charge, low power transmitter option, transmitter on, and if you're on Channel 9.

The on/off volume control is on top of the HH-40, along with the squelch. The PTT bar is on the side. The face of the HH-40 has the channel up/down control buttons, also the "Instant Channel 9" button, and the transmitter output power (1 watt or 4 watt) selector button. A belt clip attaches to the back.

Accessories included with the HH-40 are the rubberized antenna, snap-on battery system, cigarette lighter plug, AC power supply and battery charger, belt clip, and the slide-on battery contact cover. Optional accessories available are a weather resistant carrying case, telescoping metal antenna, remote speaker/ PTT mike with clip and coil cord. The telescoping metal antenna (Model CA-41, $16) has a clever flexi-base that resists the damage and kinks common to this type of antenna that can result during normal use. Cobra's accessory hot-line toll-free ordering number is (800) 638-3679.

Cobra's beautiful new HH-40 is a small CB handheld that puts out a full 4-watt signal. We tried it and liked it a lot.

We were most impressed with the HH-40 unit Cobra provided for our use and inspection. It was a feisty little thing that held its own on the channel. Despite its small size, when run from a base station antenna, nobody could tell the difference between the HH-40's signal and any regular full-sized base station. Good ears, too.

In its handheld configuration, with the rubberized whip, we took the HH-40 outside and sat down at a rest stop on Interstate 80. With ease, we knocked off mobiles several miles out on Channel 19, who gave us "5 by" signal reports. I might add that the receiver was sufficiently selective to as to allow a contact on Channel 18, despite the passing parade on Channel 19 (which included its share of linear amps rolling along in those 18-wheelers).

The Cobra HH-40 carries an MSRP of $159.95, and comes from the Cobra Electronics Group, Div. of Dynascan Corp., 6500 W. Cortland St., Chicago, IL 60635. Their toll-free number for more information or the name of your nearest dealer is 1-(800)-COBRA-22. Be sure to let them know you learned about it here. Or, you can circle 101 on our Reader's Service for more information on the Cobra HH-40.

What A Contrast

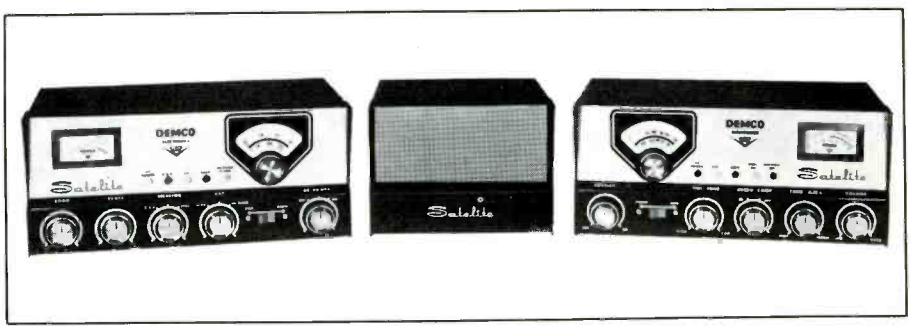
As a contrast to the tiny HH-40, we thought it would be fun to go back to the early days of CB equipment and look at the totally opposite approach. In 1964, a company called Demco Electronics, of Bristol, Ind. brought out one of the first large, modular unit, super deluxe base stations. It was called the *Satellite*.

This consisted of separate transmitter, receiver, speaker, and power/SWR meter. A separate power modulator was also available. All of these large and handsome units were interconnected to form a massive and very showy base station that occupied the top of a large desk.

The transmitter covered all 23 authorized channels, although was supplied with only a crystal for Channel 9. The unit had 5 tubes and 3 diodes, offering Heising modulation.

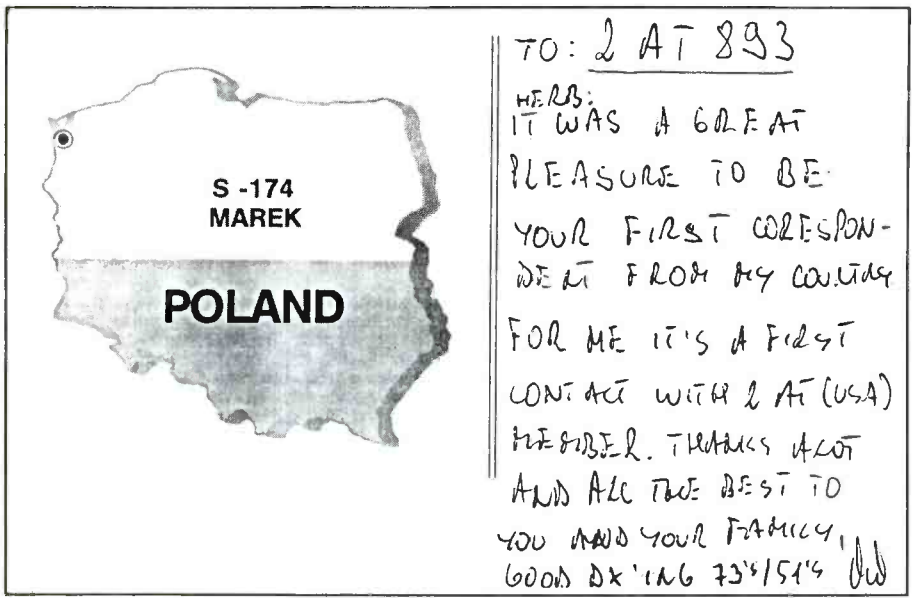
The receiver had 0.1 uV sensitivity, and was dual conversion (455 kHz and 10 MHz). The circuit was designed around 8 tubes and 5 diodes, offering 14 tube performance. It had continuous tuning over all channels, plus bandspread, as well as 5 pre-set channels.

Later versions were produced offering all sorts of bells and whistles for those who loved knobs and dials. You could peak the final and tune the antenna output impedance, and there were all kinds of little panel lights to thrill



Demco's Satelite base station from the mid-60's. Nice try, but no cigar for this excellent unit that was a commercial flop.

This REACT message is being given wide national publicity to promote the usefulness of CB as a motorist's emergency aid.



Here's a QSL from S-174, operated by Marek in Szczecin, Poland. He says that he monitors 26.285 and 27.555 upper side, running 30 watts into a 5 element beam. (Courtesy Herb, Apollo 893, in Virginia.)

and delight. This was excellent equipment and, although a commercial flop, was very highly regarded by those who had the cash to shell out for its purchase.

Demco also produced a mobile transceiver they called the *Travelier*, but it was their base station that was their star performer. Although the Browning *Eagle* is the modular station that went on to fame and fortune, there were others (now almost forgotten) that were also excellent. This short-lived unit was one of them.

Happy Birthday

We want to take this opportunity to note that this year marks the 30th anniversary of the formation of REACT. This is a fine public-spirited organization that has had a richly textured history. Did you know that in its early days, before it became an independent organization, REACT was commercially sponsored by a succession of several different companies, including Hallicrafters?

React is always looking for volunteer members to participate in its Channel 9 emergency monitoring teams. They are also seeking new teams to increase their coverage in the USA and Canada.

For further information, the organization may be contacted at: REACT International, Inc., P.O. Box 998, Wichita, KS 67201.

Needs Help

A request for help on several levels was received from Reginald Clark, SSB Network Member SSB-9017G (also Registered Monitor KNY2ABC). First, Reg needs a copy of a Browning *Mark III* owner's manual. And he needs the address of a company that makes the Sadema line of microphones. Also, he became a member of the SSB Network many years ago and he would like the group's current address.

The only help we can offer is the information that the SSB Network is at P.O. Box 908, Smithtown, NY 11787. Enclose an SASE when writing to them if your letter needs a reply. As for the other things, we can't help. If any of our readers can, his address is Reginald R. Clark, 36 Mt. Defiance St., Ticonderoga, NY 12883.

From The Ground Up

This time is as good a time as any to bring up the fact that two-way radio installations can come up with more ways to start a fire than a barrel filled with Boy Scouts on an overnight hike. It seems that antennas with inadequate grounds can set off a blaze that can even get a round of applause from a pyromaniac.

That's why I have put together some ways to greatly reduce this fire risk, especially that which might be caused by lightning. For example:

1. Wires used for grounding purposes should be heavy and made of copper, aluminum, or some corrosion-resistant material. Wire sold for grounding TV antennas is fine for CB installations, too. Wire size should be at least No. 8 for aluminum, No. 10 for copper.

2. A ground wire need not be insulated and may be attached directly to any surface. Protect it at places where it could become broken.

3. Run grounding wire in as straight a line as possible.

4. The shield of coaxial cable running down from an antenna mast can serve as a ground lead. In this instance, it is called an operating and protective ground. This coax shield, however, must be connected to a good electrical ground, done in one of several ways, such as:

A. To a metal cold water pipe that subsequently runs underground.

B. To rigid conduit.

C. Directly to the earth. In this case, the grounding wire or shield is connected to an 8-ft. ground rod, made for the purpose, which is driven several feet down into the earth.

D. To the metal frame of a building that is grounded.

5. Try to keep the ground wire short.

6. The ground wire may run inside our outside the house.

7. Where coaxial shield serves as ground, there is no need for a lightning arrester. Coax-type arresters, however, may be installed for the measure of protection they afford the shield. When used, such arresters should be as close as possible to where the coax enters the house. It should not be near any combustible material. A ground wire must be attached to the lightning arrester to complete the system.

These recommendations could save your station, your home, or even your life during an electrical storm. Your own community probably has its own antenna safety codes regarding grounding systems, so it might be wise to check further with your local Building Inspector. Ask for a copy of your town or city's official recommendations or requirements for antenna grounding systems. ■

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Cellulars continue to prove their value as emergency communications tools. With June being in the peak season for travel and recreation activities, it's worth remembering to take the phone along with you.

While we generally think of relying on a VHF-FM radio as the primary emergency two-way radio on a small boat, think about the fishing boat *Mary Jo*, out of Alabama. The crew of that vessel would tell you not to count out their cellular.

According to the folks at Contel Cellular, last winter, Capt. Sam Holder and his two-man crew embarked on his newly repaired 40-ft. fishing boat for a leisurely trip back to Gulf Shores. At about 11 p.m., the hull sprang a leak so large that the vessel's bilge pumps plus the frantic bailing efforts of the crew couldn't stem the flow. The *Mary Jo* was sinking fast, and soon enough the water level rose over the boat's VHF-FM radio, rendering it useless.

Crew member Larry Bratton recalls that once they realized that there was no way of controlling the inrush of water, and that the VHF-FM radio was useless, "Our first thought was to call 911 from our cellular phone, which was close at hand."

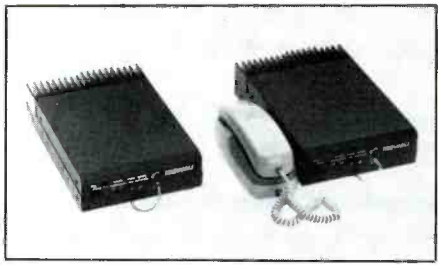
The call went through to the Dauphin Island Police dispatcher who contacted the Coast Guard. The Coast Guard wasted no time in dispatching a rescue chopper from its Aviation Training Center at the Mobile Regional Airport.

The darkness made the site hard to find, but the water was only 58 degrees and time was short. By keeping in constant contact with the Coast Guard, the men were able to help direct a tugboat to their area. The tugboat, in turn, focused a spotlight on the stricken boat to guide the pilot and crew to find the boaters.

When the rescue team arrived, only two feet of the boat rail remained visible above the water. The three crew members had been in the water for a half hour. The Coast Guard helicopter hoisted them out of the water, one at a time, and returned them to shore. None suffered any injuries or hyperthermia.

Holder said, "We carry the portable phones with us everywhere we go—it's a good thing we had them on the boat. I feel the cellular phone saved our lives. We had begun to make alternative plans in case the Coast Guard couldn't find us, but I don't know if the plans would have worked, we had been in the water so long."

Remember, too, that a portable cellular is self-powered and doesn't rely upon the boat's power supply. Long before the VHF-FM radio had gone below the surface of the water, its power source was most likely of no use to the equipment. Boat owners know that dead boat batteries aren't at all that uncommon, even under normal use conditions. This is why a self-powered backup radio is always good to keep aboard; preferably VHF-FM, or at least a cellular.



Single subscriber BETRS point-to-point radio telephone for use in bringing telephone service to rural areas.

In keeping with the idea of the safety aspects of a cellular, Larry Seabury, of Lake Worth, Fla., brings up another good point. He tells us that he's partially disabled. He can drive anywhere and can walk around for short distances. On the other hand, if his car has a problem on the road, he's got a problem, too. He can't walk a couple of miles to find a phone. That's when he realizes the value of having a cellular in the car.

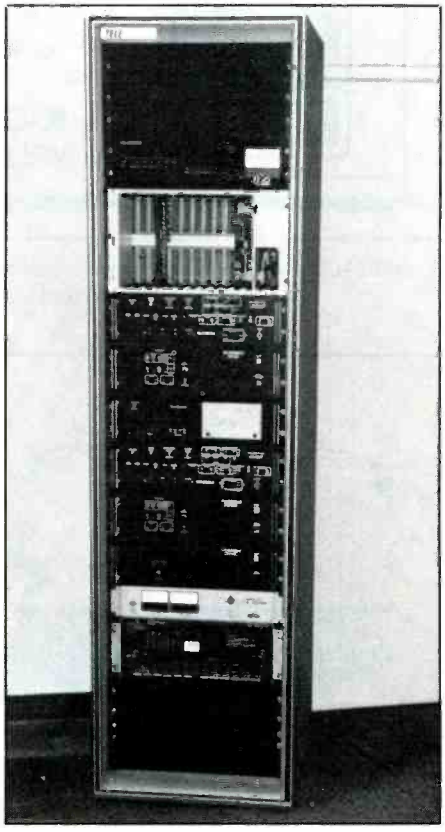
BellSouth Mobility recognized that this is not all that uncommon a situation, and that many motorists have various existing situations that would prohibit them from walking down the highway looking for a phone when their car has a flat, or it overheats, or runs out of gas, or has another problem. Perhaps the driver has a heart condition, is confined to a wheelchair, or has some other specific disability. This may not directly relate to your own situation, but think about members of your family who might have great difficulty in dealing with even a minor car problem on some lonely stretch of highway.

In order to encourage such persons to avail themselves of the advantage of a cellular phone, BellSouth Mobility is now offering reduced rates to persons with disabilities. Installation is half price and monthly service charges and air-time costs are also reduced. BellSouth Mobility customers who have qualified for and received handicapped parking permits will be able to avail themselves of these reduced rates.

BellSouth Mobility cellular subscribers seeking more information on this can call BellSouth's Matthew DeLawyer at (305) 938-1556. This is a fine program.

Rural Radio Telephone

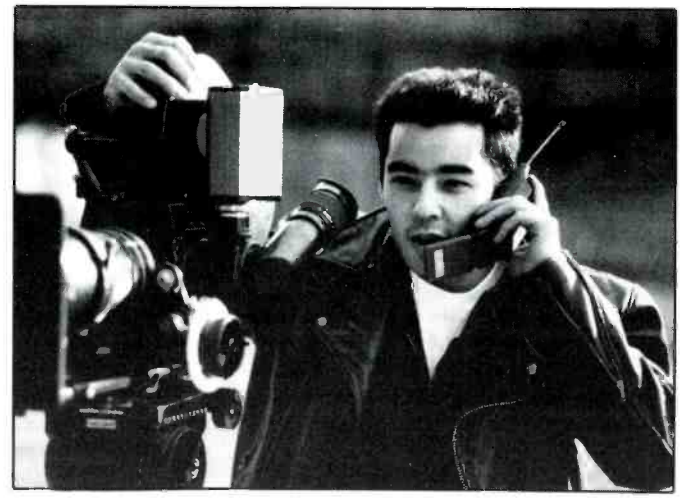
Telemobile, Inc., of Torrance, Calif., has introduced a new series of BETRS point-to-point rural radio telephone systems. These phones can be used by US and Canadian



Multi access terminal (MRRT) for 16 subscribers made by Telemobile, Inc. It can be expanded to handle 96 subscribers.

How thin can you get? That's what Panasonic is trying to find out with their new EB-H60 Palm Phone.

Los Angeles County is in the process of installing solar powered cellular call boxes along the 500 miles of freeways it operates. Here various officials show off one of the installations on a new section of the Harbor Freeway.



Anthony Hartwick, a free-lance assistant cameraman in New York City, uses his cellular to keep in touch with producers while shooting on location, day or night. (NYNEX photo.)

phone companies to extend service to subscribers as much as 50 miles off the main line at a very economical cost using the BETRS frequencies set aside for rural telephone service.

Phone companies in rural areas can now install a point-to-point system for each subscriber in a rural area immediately upon receipt of phone equipment. When there are sufficient subscribers to utilize Telemobile's MRRT, multi access system, the phone company then purchases a multi access terminal covering a wide area. This conversion process is accomplished by changing one signaling module.

Normally, up to eight subscribers in an area are serviced by point-to-point before the new MRRT multi access is put in. Service is expanded immediately with the MRRT terminal to cover a minimum of 16 subscribers within a 50 mile radius of the phone company's office. The service is easily expanded up to 96 subscribers from a single terminal. Various terminals operated by the same phone company may be strategically located around an area and linked back to the central office via satellite or microwave in order to provide ser-

vice for a wide regional area. Repeater links may be used in mountainous areas.

Solar Cellular Call Boxes

The Los Angeles County Transportation Commission (LACTC) selected the Los Angeles Cellular Telephone Company to provide cellular service for the new solar-powered, cellular call box system serving the county freeway system.

The cellular call boxes are preferred over call boxes using landline hookups because of their lower cost and better reliability. The self-contained units contain a cellular phone, a solar power pack with back-up battery, and a micro computer.

Each call box automatically transmits its own distinctive identification so that the CHP can pinpoint where it is within seconds. By the end of this year, there are expected to be about 4,000 of the new GTE Cellular cellular call boxes in use on the 500 miles of county freeways. They replace the 3,500 old style call boxes. The completed system will be able to handle 90,000 calls per month.

Smile, You're On Cellular Camera!

We came across an interesting guy with an unusual job who found that cellular made his life easier. That would be Anthony Hartwick, who can be seen at all hours of the day and night on the streets of New York City with a motion picture camera.

Sometimes Tony is shooting a TV commercial. Or, maybe he is working as a motion picture camera assistant. It's not easy being a freelancer, and in a rather unpredictable business, and in a busy metropolitan city that goes full-blast around the clock. For instance, he could be filming a commercial in Times Square at 1 a.m. when a producer decides to contact him about showing up for a job that must shoot at 8 a.m. during the next morning's rush hour.

Tony quickly realized that in his business, if he's out of touch, he out of work. His solution was a NYNEX cellular that he can carry around in his pocket.

"When I'm working on a commercial, it's crucial that my office remain in contact with me. If producers can't reach me, they just go to the next person on the list. Access to a phone in a studio is difficult, and on location it's virtually impossible. My transportable phone keeps be one step ahead of the competition."

Since he began carrying around the cellular, he's being hired 30 percent more often. During one recent location shoot, his cellular rang no less than three times from producers assembling crews for upcoming filmings.

By the way, Tony's work has been done for a variety of nationally-known advertisers. He also assists on many music videos, including work for C&C Music Factory, Aretha Franklin and Harry Connick Jr.'s video, "Blue Light, Red Light."

Palming Off Their Radio

In the unofficial race to see who can build the smallest and/or pocket-sized cellular, Panasonic offers their new, ultra-thin EB-H60 *Palm Phone*. It's got that *Trekkie* flip-open design that most people seem to like so much, and measures just over a half inch thick when closed. It weighs a shade over 9 ounces.

An interesting feature is that when the battery requires changing, the phone can remain operational for 5 seconds while the new battery is being installed. I don't know how useful this is, but it's something Panasonic specifically points out. The phone can last for 12 hours in the standby mode on a single charge.

A call may be answered by pressing just about any button on the keyboard, which is handy when the device is used in a moving vehicle. It will store 200 phone numbers in its memory, and allow scrolling through them for finding one being sought. The unit has last number redial, dual NAM's, and a lot of selectable security features that sharply restrict or completely prevent the unit from being used without the owner's consent.

And, it has one-touch dialing, clock/timer, volume control, along with all of the other standard handheld features. It comes with a battery pack, travel charger, strap, and leather carrying pouch. The quick charger and DC adapter are optional.

Panasonic hung a suggested retail price tag of $1,300 on this device. That obviously classifies it as something you'll want to think about using along with a keychain attached to your belt so you don't forget it on the counter at the Burger King.

The ED-H60 *Palm Phone* is from the Panasonic Company, One Panasonic Way, Secaucus, NJ 07094.

Take Another Bow

We got such a lively response the first time we mentioned the *On Board* marine information service, we thought we'd give it another quick shot for those who might have missed it the other time. This is a computer-based marine information service for boaters that offers shopping services, weather data, specialized on-line publications for boaters, teleconferencing, E-mail, etc. Topics include boating aspects of ham radio, search and rescue, and electronics. I suppose that's thanks to Martha, KA1UUO, being one of the good people who operate this useful service.

The 24-hour computer/modem (1200, 2400, 8, n, 1) number for members is 1-(800)-835-7899. For non-members to view the service and sign up on-line, call via modem 1-(207)-871-1358; the membership fee is quite reasonable. Need more info (by voice)? Call 1-(207)-871-0767; or write to: Ocean Connect, Inc., P.O. Box 776, Portland, ME 04104.

We will be shoving off until next issue, and we invite your comments and thoughts. ■

NEW PRODUCTS

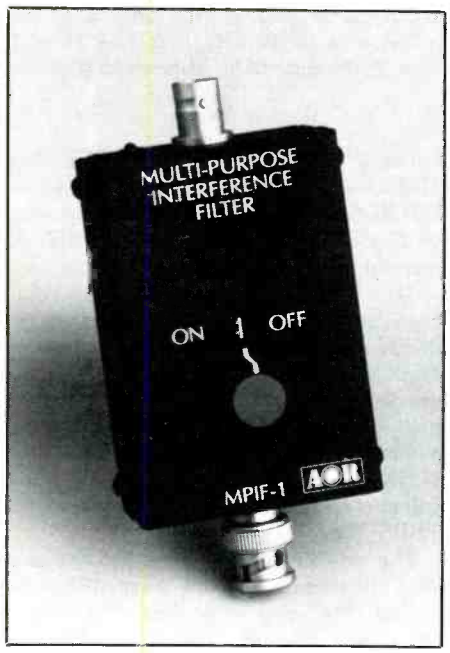
REVIEW OF NEW AND INTERESTING PRODUCTS

LTR® AmeriCom™ Networking Duplex Mobile

E.F. Johnson introduced LTR® 800 MHz mobile with AmeriCom™ networking to its line of trunking mobiles. The new networking mobile features duplex interconnect operation, roaming with automatic check-in, over-the-air programming and updates, hands-free operation and 50 number memory.

The new 8625-AN duplex mobile has 12 watts RF power and up to 10 systems with 10 groups per system. This mobile offers the user both a telephone and a dispatch mobile in one radio conveniently operated by a cellular-type handset.

For more info, contact E.F. Johnson Co., PO Box 59089, Minneapolis, MN 55459-0089.



Receiver Filter Eliminates A Variety of Undesired Signals

ACE Communications announced the introduction of a new receiver interference filter. The unit eliminates most of the interference sources common with broad banded receivers.

The external filter is extremely compact, measuring 3″ in height, 2″ in width, and 1 ½″ in depth. Filtering is fixed for elimination of signals in the 54-1-8 MHz range, the 174-220MHz range, the 512-806 MHz range and the range above 869 MHz. BNC connectors, are used to facilitate versatility; the filter can even operate on hand held receivers.

A switchable notch will also eliminate the 150-153 MHz range, a common source of interference in many locations. Filtering broadcast frequencies solves many of the interference problems common with new, "high I.F." receivers; while the 869, 512, and 174 low pass filters aid old 10.7 and 10.8 I.F. receivers.

The new unit is manufactured in the U.S.A. by ACE Communications. A suggested retail price of $59.00 has been set.

For more information, contact: ACE Communications Monitor Division, 10707 East 106th St, Fishers, IN 46038, or circle 103 on our Readers' Service.

The AEA-FAX Grey FAX Demodulator

AEA brings you the latest breakthrough in weather fax reception with AEA-FAX. Designed to work alone or to compliment the black and white fax reception in the PK-232MBX, AEA-FAX provides a high-quality, high-value, easy-to-use system for anyone interested in the weather.

- 16 Grey levels. With a VGA monitor, AEA-FAX can receive and display up to 16 shades of grey, providing excellent detail on satellite photos. EGA monitor displays false color separations. CGA, Hercules also supported.
- Daisy-Chain RS-232 input. Your external Hayes-compatible RS-232 device (PK-232MBX, PK-88, telephone modem) can share a COM port with AEA-FAX.
- On-screen Tuning Display. Oscilloscope-like display aids in tuning a fax signal; visible on screen even when receiving an image.
- Slide show mode. Run two or more images in succession to show cloud movement. Great for tracking storms and hurricanes.

Other features include Autolist for unattended reception and disk capture, unlimited zoom, user-definable grey levels (EGA colors) and more. Available now.

Align Feedhorns On Satellite TV Systems

Natropolis International offers a line of Focus Finders designed for precisely aligning feedhorns on Satellite TV Systems. The units are made of a molded, clear lex-sand plastic that fit snugly on the throat of the feedhorn. the newest of 3 is The Laser Focus Finder (pictured here) that by a hit of a button a Red Laser Beam Light appears to enable the user to get to the direct center of the dish. All Focus Finders are a two-piece set that works on most popular feeds, including Chaparral, Fujitsu, Channel Master, Cal Amp, ADL, button hook feeds, Commercial and others. Designed for both C & Ku band and Colorator II as well. The manual focus finder has a telescoping rod, which extends up to 60 inches. Twenty inches in each length is used to locate the center of the dish. Optimum Ku band performance can be achieved only when the feedhorn is located at the precise focal point and looking squarely into the center of the dish. C band retails for $35.00, manual C & Ku band for $65.00 and New Laser C & Ku band set sells for $259.00. Laser pen available without caps sells for $199.00.

Natropolis also offers a complete line of quality Satellite installation tools for setting up and maintaining your Satellite TV Systems. General Public order now welcomed.

For more information, contact: Mercy Flemino at (612) 646-4700.

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

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SCHIERA CON IL FRONTE FAVOREVOLE ALLE ELEZION  ANTICIPATE.
   DOPO IL PRESIDENTE DEL CONSIGLIO, GIULIO ANDREOTTI, E IL CAPO
DELLD STATO, FRANCESCO COSSIRAUZC
AXI - A BRUXELLES PER IL
VERTICE DEI LEADER SOCIALLII EUROPEI - HA DETO OUN CHE IL PSI
INTENDE INTERRTNPERE QUELLA CHE SI PRESENTA COME LA PIU' LUNGA
CAMPAGNA ELETTORALE DELLA STORIA ITALIANA, PERCHE' QUESTA
''ECCITEREBBE GLI ANIMI E LE FANTASIE'' E SAREBBE ''UN LUSSO''
CHE I
 PAESE NON SI PUO' PERMETTERE.
  PRACISANDO CHE NON STA AI SOCIALISTI DECIDERE LA DATA DELLE
ELEZIONI E LE MODALITAJ PER GIUNGERVI, IL LEADER PSI HA PERO'
DETIDIKEETUSGUEDXUNDENDUADER
DIMPEDIRE IL PROTRARSI DI UNA SITUAZIONE ''AMBIGUA, CONFUSA E
TORBIDA''.
   UNA SITUAZIONE CHE ESIGE - A GIUDIZIO DI CRAKIGA  IN
9;34,9 STABILE. E PER ESSO HA SOSTENUTO DI NON AVER MAI PARLATO
DI ''ASSE DC-PSI S MATDIF
EMERE GIUSTO LASCIARE APEATA LA
COLLABORAZIONE FRA I DUE PARTITI. SECONDO IL LEADER SOCIALISTA,
COMUNQUE, UN ''RIESAME DEI RAPPORI CON LA DC'' NON E' IN
CONTRADDPIONE CON IL PROGETTO DI UNITA' SOCIALISTA. KSGUE).
    GCAD
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3'44
N ECO SOA S04 S24 S90 S32 NY06 VOBXC
BORSA MILANO:IINDIIILERCATO AZIONARIO 70).
                                        I
   KAN AS A KMILANO, A DIN - GLI EVCF
LISBCI DELMERCATO
AZIONARIOI,,9 REGISTRATO LE SEGUENTI VARIAZIONI.
   INDICE MEDIOBANCA, MENO 1,01 KPER CENTO (A QUOTA BNQYNUOLB
   INDICE COMIT (BASE 1972 UGUALE A 100), MENO 0,93 PERCENTO (A
QUOTA 509,01).
   KIL RENDIMENTO EFFETTIVO DELLE OBBLIGAZIONI, MCALCOLATO DA
NEBIOBANCNOLI A TASSO FISSO E9 PARI AL 12,569 PER
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N EST SON S24 QBXCNCEE: MAASTRICHT, ADAS O TOCCA AI LEADER 9 ANNUNCIATO
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D   KANSA) A BREXETLES, C DIC - CON BOZZE DI TRATTATI P N' NATRE
PER ACCORE
 SULL'UNIONE MTNETARIA CHE SULL'UNIONE POLITICA, FRA
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ANSA, Rome, Italy, sent this news broadcast in Italian on 10905 kHz, at 0716 UTC, 50 baud. (Monitored by Robert Margolis.)

Just as the shortwave radio frequency of 7415 kHz has become the playground for numerous pirate radio broadcast stations in the United States, the area around 27538 kHz has become the gathering spot for several freebanding computer-run bulletin board systems that use packet radio, SITOR-A (ARQ), SITOR-B (BEC) modes, and 45-baud RTTY.

Nearly hidden by these freebanders are some apparently business-related stations in the U.S. sending messages at 170/45N. And for them it's all quite legal. This part of the radio spectrum, after all, has been set aside by the Federal Communications Commission for use in the U.S. by fixed and itinerant businesses.

I first reported about an international packet radio BBS, appropriately named "IPRNET," on 27538 kHz, being used by Europeans, Africans, and Americans, in the April '91 *POP'COMM*.

Revisiting the 27 MHz frequency last January, I readily noticed how much IPRNET had grown. It seemed to be well run and now included stations in the Caribbean and South America, and also those from former Soviet bloc nations. About four other BBS's, all quite minor in comparison with IPRNET, shared the same frequency. Callsigns took on an air of pseudo legitimacy, with most consisting of three letters, giving a station's geographical location, followed by a number and two more letters.

IPRNET was controlled by personal computers. It utilized data compression and virus-checking techniques, and had sysops to keep things running smoothly. The chatter was similar to that of amateur radio operators, i.e., "73 and 88 for the QRA and good DX," and many probably were. Sometimes information such as solar terresterial forecast would be given. The main controlling station apparently was in France.

Some of the regular callsigns I saw were BEL1AB, BEL1M1, BEL1PL, BEL2AL, BEL3AG, BEL3BA, and BL7PR, in Belgium; BRA3A and BR3AA, in Brazil; DOM8RA in Dominican Republic; ESP7DH and ESP7GA in Spain; FIN1JE, which I guess is in Finland; and FRA1AB, FRA1GM, FRA1JD, FRA1JF, FRA1JH, FRA1PC, FRA2AB, FRA2MG, FRA3AB, FRA3AS, FRA3AX, FRA3HT, FRA3PO, FRA3RM, FRA3YB, FRA4AS, FRA7BG, FRA124, and RATM94, all in France.

Also, GAB2AB, which I think is in Gabon; GUA1AA, GUA1AC, and GUA3AA in Guadaloupe; GUY1AC, GUY1AD, GUY1AE, GUY1AF, and GUY3AC, in French Guiana; IR5KFB, possibly in Ireland; ITA1AK, ITA1TO, ITA4CA, ITA4EX, ITA4FP, ITA4FZ, ITA4FP, ITI1NE, IT3CSR, IT5FRC, IT5MGA, IT5RCY, IT5WX, and IT9WWW, in Italy; NDL6AK in The Netherlands; NOR1AA in Norway; PL1ANG, POL1AB and POL1AF, in Poland; QUE1AA and QUE3AA in Quebec Province, Canada; REU3AI, which may be in Reunion; RUS6AT in Russia; USA1CA (location given as the Mojave Desert in Southern California), USA3AA, USA3PG, US2NY and US04NY (New York State), US12WY, US40WY, US50WY (all Wyoming), in the United States; YUG1AA in Yugoslavia; and ZIM1AA, possibly in Zimbabwe.

Callsigns which I was unable to connect immediately with any certain country were FEV000, FEV107, FEV139, FG3FG, FG3FY, GRA124, GRA3CD, G8BPQ, IB0FRA, JO21KE, JRY51C, NCA3AA, NI2CA, RA3IR5, RA3MR5, RJ205, R1NCO1, R1NCO2, TH3DX, VN5DU, WI3N5, WI9N3, WI9N$, XPW110, 01PGA3, 6Y5TD, 13PG10, 14FR9, 14WR13, 14WR14, 19PG17, 19PG22, 22PG03, 74F2 and 165PG2.

There also appeared to be minor BBS's operating on the same frequency. For instance, EP7DH, was seen with a sign-on message welcoming his amigos to his PBBS in Seville, Spain. BR3AA in Brazil ran what was called the BRANET.

Some other oddities included ITA4CA calling "Arcade," RATM94 calling "Agora," and ESP7GA calling "Pika."

While eavesdropping on these BBS's I occasionally heard a slow twittering sound in the background. Retuning the frequency slightly downward, I found some business band radio stations using HF Radio, instead of telephone lines, to send teletype messages. The messages pertained to contracts, certificates, bills of lading, authentications, and other business related vocabulary.

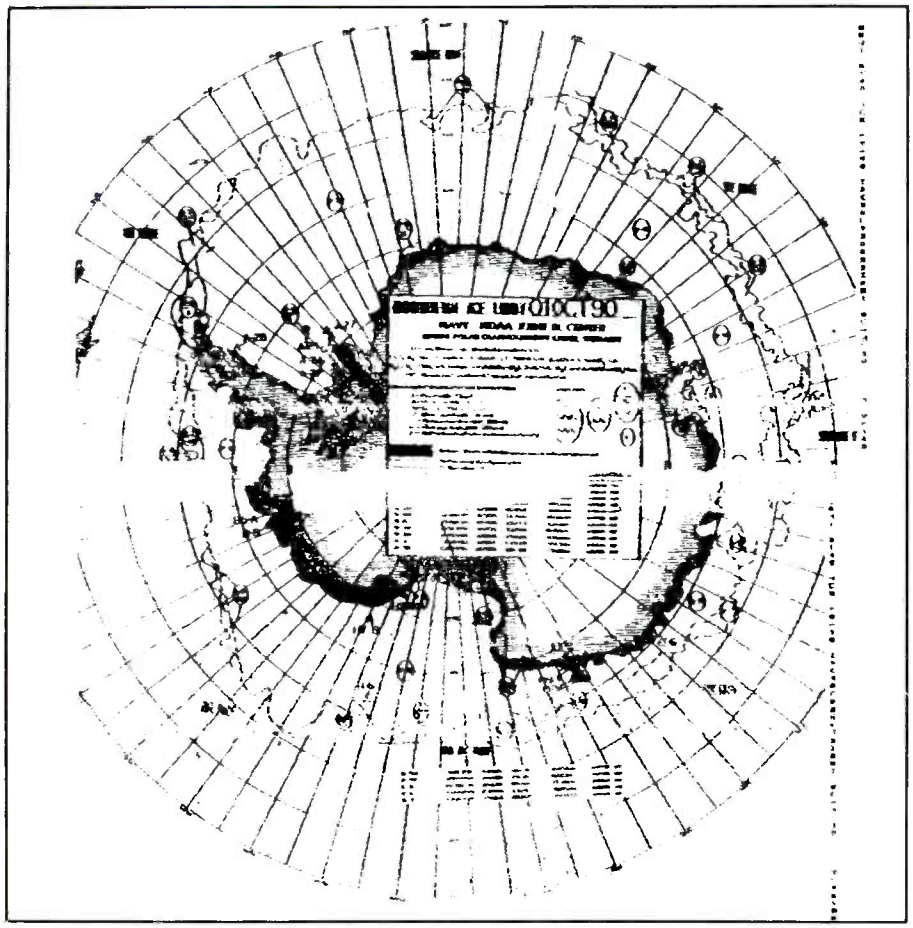
One station, with the callsign of WT8198, in New York State, was seen sending messages on 27537.8 kHz at 1930 UTC, 170/45N. Its signal was flea powered compared with the powerful lower sideband voice communications on the nearby 27535 kHz, which garbled a lot of its messages. At one point, however, I saw a message, containing another callsign, WT8757, that ended with "CQ de WT8198," and a garbled location in New York State. To make matters worse, the station transmitted sporadically for short lengths of time, sometimes for about 10 seconds.

The callsign is of the type used by business radio stations and the frequency it was on is within the band set aside by the FCC for use by business base and mobile radio stations. An FCC spokeswoman said the callsign WT8198 and WT8757 indicate the stations have a permanent license, the spokeswoman said, their callsigns will consist of two letters followed by the seven digits that make up the telephone numbers of the licensees.

On 27537.7 at 1408 UTC there came this test slip in FEC mode, "CQ CQ CQ ZD2XX ZD2XX selcal ZDXXUSA ZDXXUSA ZDXXUSA." A message in Spanish was seen on 27538.5 kHz at 1829 UTC, 170/45N. It seemed to be from Mexico.

Then there were two Italian language stations, one on 27537.6 and the other on 27537.7, talking to each other in SITOR-B mode at 1352 UTC. The two never seem to use carriage returns or line feeds in their correspondence. Periodically some type of garbled ID could be spotted. At 1400, one of them signed off with, ". . . prova piu di una vulra vai no ricordo vado via ti saluto metto il BBS. Ciao."

The weekends always had the heaviest load of traffic on IPRNET, as might be expected. One Saturday, however, it was very, very quiet on the net. "Everyone's probably watching the Winter Olympic Games," I thought, for that day, February 8, was the first day of the Games from Albertville, France. Or maybe it was quiet because a minor solar storm had occurred that day and disrupted



"Northern Ice Limit" radiofax chart sent by ZRO4, Pretoria Meteo, RSA, on 18238 kHz, at 0816 UTC, 120/576. (Submitted by Robert Hall, RSA)

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TO: KO2XBK FROM: NEW286 (1) 2345678901234567890123456789012345678901
TO: NEW286 FROM: KO2XBK (S)
TO: KO2XBK FROM: NEW286 (1) 890123456789012345678901234567890123456?
TO: KO2XBK FROM: NEW286 (1) 890
LINE #20    12345678901234567890123
TO: KO2XBK FROM: NEW286 (1) 4567890123456789012345678901234567890
!
TO: KO2XBK FROM: NEW286 (1) 4567890123456789012345678901234567890
L
TO: KO2XBK FROM: NEW286 (1)
TO: KO2XBK FROM: NEW286 (1) 4567890123456789012345678901234567890
L
TO: KO2XBK FROM: NEW286 (1) INE #21    12345678901234567890q23456789
TO: KO2XBK FROM: NEW286 (1) 01234567890123456789012345678901
LINE #2
TO: _EW286 FROM: KO2XBK (S)
TO: KO2XBK FROM: NEW286 (1) 012345678901250(
TO: KO2XBK FROM: NEW286 (1) 0123456789012345678901?s##'"
TO: KO2XBK FROM: NEW286 (1) 01234567890123456789012345678901
LINE #2
TO: KO2XBK FROM: NEW286 (1) 01234567890123456789012345678901
LINE #2
TO: KO2XBK FROM: NEW286 (1) 01234567890123456789012345678901
LINE #2
TO: KO2XBK FROM: NEW286 (1) 01234567890123456789012345678901
LINE #2
TO: KO2XBK FROM: NEW286 (U)
TO: KO2XBK FROM: NEW286 (U)
TO: NEW286 FROM: KO2XBK (U)
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Figure 1

shortwave radio communications. In place of the net was an unidentified station, most likely military, sending encrypted traffic at 170/75 for several hours.

In other news, the U.S. Army Corps of Engineers was recently heard with upper sideband and SITOR-B (FEC) communications on its HF Radio channels 8, 10, and 13. All voice and RTTY communications were quite routine.

I came across the nationwide net at 1525 UTC on 9122.5 kHz (channel 8) upper sideband, and heard WUG in Vicksburg, Mississippi, leading the net. Participants at the time were WUA, WUG/A, WUE4, WUD, WUF, WUG, WUH, WUI, WUJ, WUJ2. A SITOR-B transmission was heard at 1530 UTC on 9124.7 kHz, from which I obtained a printout.

At 1539 UTC, the net moved to 12070 kHz (channel 10), met strong interference from a Voice of America broadcast, and was forced to move to 16382 kHz (channel 13), where conditions were much quieter. The RTTY transmission heard earlier on channel 8 was rebroadcast on 16384.2 kHz. Shortly afterward, WUH in Omaha, Nebraska, told WUJ in Keyport, Washington, to switch back to channel 10, where the same RTTY message was sent by WUH on 12072.2 kHz. The VOA broadcast was no longer heard at that time.

Meanwhile, the rest of the net that was on channel 13 ended official business. An open period was declared for the stations to talk informally to one another. Joining the net were WUB2, WUB5, WUC5, WUE5, WUH5, WUK3, and WUN. The net was closed at 1635 UTC.

The net, which was heard on Friday January 17, was held as a National Communications System (NCS) exercise. Results of the exercise was to have been made known at a later date, according to a teletype message.

Whozit/Whatzit Dept.: The callsign "NEW286" was spotted on 9081.7 kHz at 2118 UTC, using packet radio to send "1234567890" repeatedly for quite some time to "KO2XBK" (see figure 1). Callsigns similar to NEW286's have been seen occasionally on various frequencies, but to date no one has come forth with an identity.

A Civil Air Patrol packet radio net was observed on 7921.7 kHz at 2000 UTC. Welcoming others to his personal bulletin board was "NC0484," who identified himself as being with the North Carolina wing of the CAP. A little later, "PA0018" from Pennsylvania signed on. Joining in were "FL08753" from Florida and "WV00004" from West Virginia. Also heard was "NC0003," identified as the CAP's Chief of Staff at Kitty Hawk, NC.

U.S. Air Force MARS station AFA2VA, at the USAF Communications Center, Disputanta, Virginia, was seen attempting to contact NNN0KUU, a U.S. Navy MARS station, using packet radio at 1410 UTC on 7332.5 kHz.

It seemed strange early last January that Tass's RTTY news broadcasts had disappeared from the airwaves. The news service couldn't even be found on 14901 kHz on the Cuban transmitter. An explanation wasn't to be learned for the next couple of weeks.

All transmissions apparently were put on hold while awaiting the signature of Russian President Boris Yeltsin to a proposal that would merge Tass with the Novosti press agency, thereby creating a news agency to be named Russian Information Telegraph Agency (Rita).

Rita was to become an umbrella news service to the other republics that are part of the Commonwealth of Independent States. The Tass bureaus in those republics were handed over to the local governments. Rita was to be a source of official reports from the Russian Government.

Kerch Radio, Ukraine, appears to be operating a maritime coastal HF radio station with the callsign UJH. While monitoring teletype messages of the former Soviet merchant shipping fleet recently, I saw a test tape that read "RYRYRY . . . UJ# UJ# de UNNP UNNP." UJ# on a Cyrillic teleprinter becomes UJH on our machines. The ship was the factory trawler "Zvezda Chernomorya." It sent weather reports and telegrams to its home port, Kerch, given as "KR4" in the telegram headers. "KR4" on our teleprinters is "KRCH." This 50-baud transmission was on 12561 kHz. The UJH callsign was not listed in any of my 1991 frequency guides or ITU lists. Kerch is on a waterway that connects the Sea of Azov to the Black Sea.

Confusion descended upon the RTTY Ranch, where I have my antenna farm, about the USAF radiofax station on 23197 kHz. I first monitored the station last October and

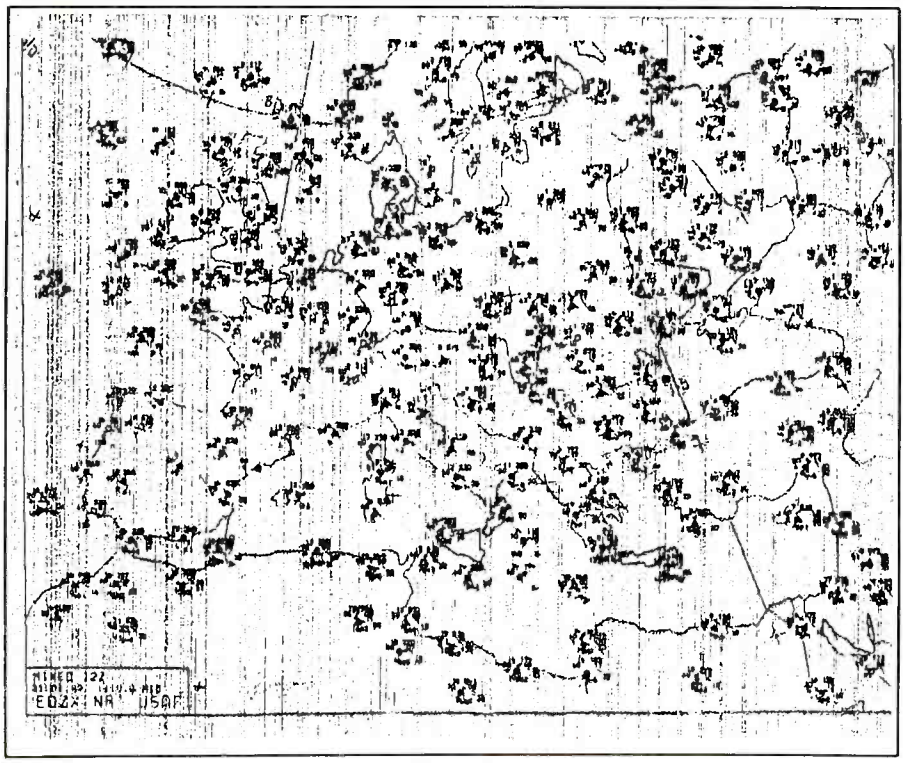


Figure 2

wrote about in the February *POP'COMM*, saying that it was located at Offutt AFB, Elk Horn, Nebraska. Now the Air Force tells me it's not from Elk Horn and that the frequency is not their's either. Well, then, who's running the show? How come some of the weather charts I viewed had the letters U-S-A-F in their legends, and were similar to weather charts sent by Offutt AFB on lower frequencies?

Air Force officials said they were unaware of their having a radiofax broadcast on 23197 kHz. While checking into my inquiry, they learned that the frequency had been linked to the Air Force. The frequency was submitted to the national Oceanic and Atmospheric Administration (NOAA) to be placed in its Selected Worldwide Marine Weather Broadcasts manual that was to have been issued in a major revision this month.

I talked with an NOAA official involved with the publication's revision who told me that the frequency had not been submitted to him for inclusion. There was also a possibility that because of cutbacks to spending by the U.S. Government the updated manual may not be printed at all, he told me. (Check with U.S. Printing Office sales store in your area for the lastest information about the pending release of the manual.)

A civilian, well known to both the Air Force and NOAA, who supposedly has knowledge of the frequency, said, according to the Air Force official, that it was for the use of U.S. Air Force personnel stationed at the Royal Air Force Base at Croughton, England, the official told me. This might explain why I was always seeing a preponderence of charts depicting weather conditions in Europe.

I began an inquiry about the station in February because it seemed strange to me that Offutt AFB would be sending numerous weather charts showing Europe, while a small percentage showed the United States or a polar view of Northern Hemisphere weather that were commonly seen in Offutt AFB transmission on lower frequencies. Many charts had an International Civil Aviation Organization identifier of "EDZX" along with the letters USAF (see figure 2). "EDZX" is the military weather communications center at Traben-Trarbach, Germany. Once in a while some charts would show the identifier "EDKG," a German weather station that wasn't listed in my 1990 reference guide (see figure 3). The European weather charts did not bear the wording "U.S. Department of Commerce" nor NOAA's logo, but some of the maps showing the United States did.

I can't really tell if the broadcasts are coming from Europe. Most days they would end 2000 UTC, but on Feb. 5 the broadcast ran well past 2000 UTC. I was able to get crystal clear printouts up until 2340 UTC, when darkness enveloped the area where I live. Ten minutes later the printouts became quite grayed, and, shortly afterward, no features could be seen. But still the radiofax signal could be heard, and it remained audible until about 0038 UTC on February 6.

I live in a time zone that is six hours behind UTC time. If the weather station was in England, it would've been nearly midnight there, as I continued to receive the printouts. If the station was in Germany, it would've been nearly 1 a.m. there. Would a radiofax station in either one of those countries still be broadcasting on the 23 MHz band at such a late hour? And would reception at my home, more than 4,000 miles away from either location, be as clear as I claim them to be? I don't have answers to either question.

I do know that most of the time, even under the best of propagation conditions, I'm not able to pull in Bracknell Meteo, England, or Pinneburg Meteo, Germany, as loud and clear as I was receiving this fax station. Moreover, the transmitter output at the Croughton facility was a puny 10 watts, I was told.

One Air Force official told me that there are two Air Force bases in the United States that send radiofax charts, Offutt AFB in Nebraska and Homestead AFB in Florida. But neither, he said, uses the 23 MHz band to send any kind of traffic, whether it be radiofax, radioteletype, or voice communications. I find the transmission on the 23 MHz band to be unique. It is not parallel to any transmission from Offutt AFB found on the lower frequencies.

Other tidbits I was told about the Air Force's radiofax weather broadcasts were:

1) The transmission schedule may vary on a day-to-day basis, based upon request. Requests may be made to send certain kinds of weather charts. This is the reason why I would see transmissions on some days and not others, or transmissions ending at different hours, and why I saw certain charts some days but not on others.

2) Some charts may be requested to be transmitted for use in military exercises or for training purposes.

3) The Army has no weather stations of its own and relies on the Air Force for weather information. Any Army base that has Air Force weather personnel stationed at it will receive radiofax broadcasts from Offutt or Homestead Air Force bases. The Army-Air Force relationship goes back to 1947, which saw the end of the Army Air Corps and the establishment of the U.S. Air Force.

It appears that a budget cut has affected the air weather station at Offutt AFB. During a RTTY weather transmission on January 30, I read this notice: "Note to users . . . due to staffing shortages we are forced to decrease our coverage to 16 hrs per day and eliminate one (graphic) sim package. Effective February 9, 1992, we will issue scheduled sim narratives at 01Z, 0630Z and 1830Z with the graphic sim transmitted about one half hour later. There will not be a scheduled 1230Z transmission. Unscheduled sim updates will continue . . . ."

Offutt send what is called a "military weather advisory . . . TTY graphic bulletin" at around 1945 UTC, in case you want to look in and see how bad flying weather is depicted graphically, using a computer's text mode. If you ever played "connect the dots" on paper as a kid, you'll get some idea what broadcast seems to resemble.

Last year at this time there was a famine when it came to logging RTTY stations because of major and minor solar storms that occurred for several months. Now things have quieted down considerably and I find a feast of stations as a reward for putting up

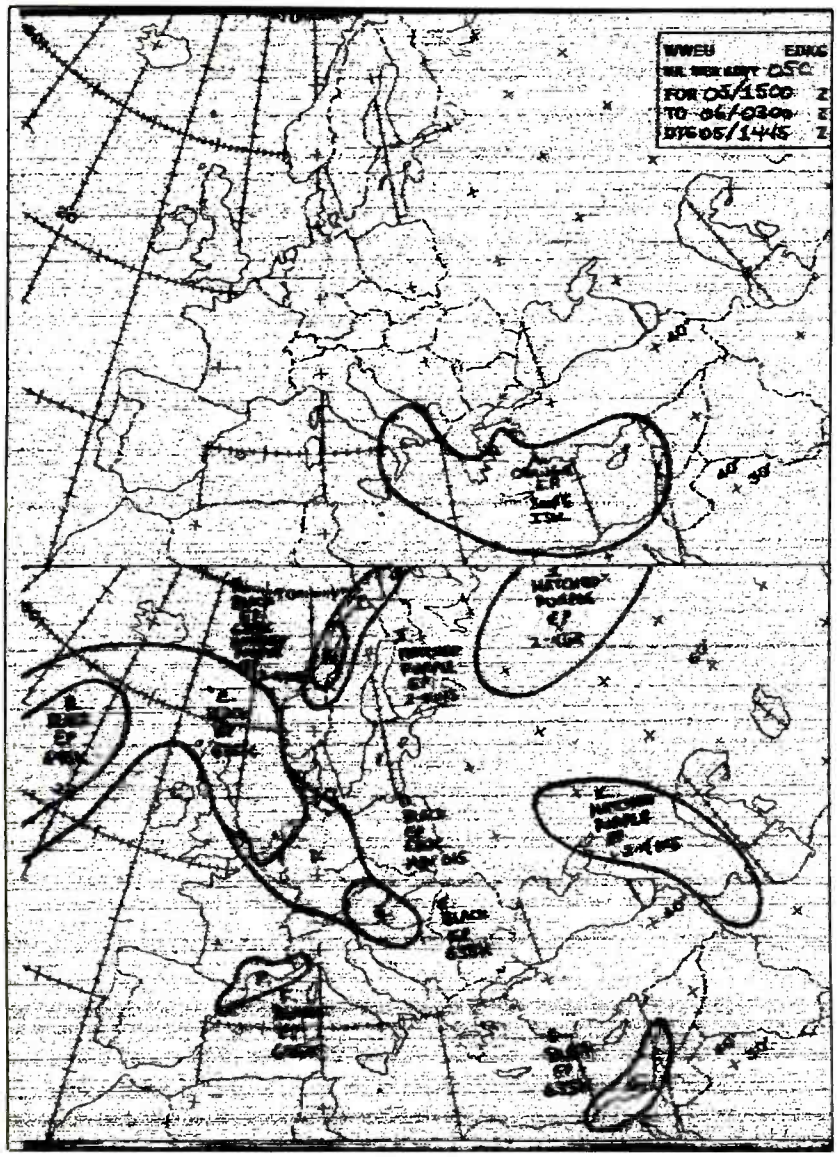


Figure 3

with last year's suffering. Because there was so much to write about this month, I had to, unfortunately, postpone using readers' loggings in the *RTTY* column until next month. For this I apologize and I urge you to keep sending in your material. I encourage you to write details about some of your catches, just as I do monthly with mine, for discussion here.

RTTY Intercepts

5574.5: CSY, Santa Maria Aero, Azores, w/RYRY, 50 baud at 0120.

5740: HZN, Jeddah Meteo, Saudi Arabia, w/coded wx, 50 baud at 0114.

7360.8: U.S. Army MARS sta. AAA3MD w/msgs to AAR3EG, 110-baud ASCII & FEC at 1520.

7365: NNN0MPI, USMC MARS, Parris Island, SC, w/MARSgrams, 75 baud at 1405.

7396.3: AFS, Offutt AFB, Elk Horn, NE, w/aero wx, 75 baud at 1408.

7715.7: Un-ID w/a clerical msg in SS, ARQ w/a 425-Hz shift, at 0158.

7808: DFZG, MFA, Belgrade, Yugoslavia, w Tanjug nx in SC, 75 baud at 0700.

7892.5: SOH289B, PAP, Warsaw, Poland, w/nx in Polish, FEC at 1436.

7961.3-7962.9: MKD, RAF, Akrotiri, Cyprus, w/RYI's & foxes, 50 baud FDM at 0315.

8020: HMF85, KCNA, Pyongyang, North Korea, w/RYRY, foll by nx in EE, 50 baud at 1459.

8062: Un-ID in ARQ at 0808. May be mil. because "ZN-6" mentd in s/off msg in SS.

8067: Un-ID ends ARQ xmsn at 0454, then idles until 0459, probably while getting a QSL.

8094.7: RFFVA, French Air Force, Paris, France, w/5L grps, ARQ-M2/200, channel A, at 0035.

8383.4: WBJF, the USA ore carrier "Energy Independence, " w/an AMVER to WLO, ARQ at 0422.

8388.9: 3FGV2. the Panamanian passenger liner "Seabreeze I," w/a telex at 0358, ARQ.

8416.5: NMC, USCG, San Francisco, CA, w/plain-text wx, FEC at 0015.

9043: 5YE, Nairobi Meteo, Kenya, w/RYRY, CQ's, and coded wx, 100 baud, at 2109.

9081.7: "NEW286" w/"12345678901234567890 . . . " to "KO2XBK" at 2188, packet.

9154: D4B, Sal Aero, Cape Verde, w/RYRY & coded wx, 50 baud at 0613.

9190: RDZ75, Moscow Meteo, Russia, w/coded wx, 50 baud at 0634 & 1258.

9287: TLO, ASECNA, Bangui, Central African Republic, w/RYRY, 50 baud at 2159.

9430: ZAT, ATA, Tirana, Albania, w/nx at 1303, 50 baud.

10134: TZH, ASECNA, Bamako, Mali, w/RYRY at 0604, 50 baud.

Abbreviations Used In The RTTY Column

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

10150: SUA246, MENA, Cairo, Egypt, w/RYRY at 0554, foll at 0558 w/nx in AA, 50 baud.

10283: RFLI, French Navy, Fort de France, Martinique, w/"controle de voie." This was, in reality, being relayed back to RFLI from Paris, France. Was ARQ-E3/100 at 0329.

10493.7: French Navy, Port Bouet, Ivory Coast, relaying a "de RFTJ . . . "controle de voie" msg back to Dakar, Senegal, at 0351, ARQ-E3/48.

10639.3: ZLK . . . USN, Christchurch, New Zealand, w/coded wx, 75 baud at 1335.

10918.3: RFTJ, French Navy, Dakar, Senegal, w/a 5L msg at 0750, ARQ-E3/48.

11118.5: AFS, Offutt AFB, Elk Horn, NE, w/a miltary wx advisory, 75 baud at 1625.

11198.7: "LYNX" w/ARQ phasing sig & CW ID at 0255. This sta has been around for some time now. Has anyone been able to find its QTH or to come upon it with any tfc?

11342.3: "W7E" of an un-ID S. American mil., w/RYRY to "L6S," who was on 11342.8. Was 50 baud at 0510. "L6S" sent a return RYRY at 0511 + a msg in SS saying that he was momentarily leaving the radio room.

11403.2: NNN0MPI, USMC MARS, Parris Island, SC, w/ARQ tfc at 0332.

11541: 7OC, Khormaksar Aero, Yemen, w/RYRY, 50 baud at 0342.

11604: YZJ3, Tanjug, Belgrade, Yugoslavia, w/nx in EE, including nx pooled from African nx agencies. Was 50 baud, 0426-0505 s/off.

11998-12000: VER, Canadian Forces, Ottawa, ON, w/75 baud encryption on all FDM channels at 1949.

12083: IRJ50, ANSA, Rome, Italy, w/nx in EE, 50 baud at 1834.

12118: ZLK43, USN, Christchurch, New Zealand, w/coded wx, 75 baud at 1311.

12186: JANA, Tripoli, Libya, w/nx in EE, 50 baud at 1506.

12190.3: RFVI, French Navy, Le Port, Reunion, w/"controle de voie," ARQ-E3/100 at 1421.

12212.9: YZO7, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 1222, 50 baud.

12479: DGTN, the German tanker St. Nikolai, w/ARQ tfc at 1153.

12496.5: GQEH, the British cargo ship "Moraybank," enroute to Papeet, Tahiti, w/ARQ tfc at 0501.

12561: UNNP, the factory trawler Zvezda Chernomorya, w/wx & position rpts, & telegrams in RR to Kerch, 50 baud at 0250.

12562: UYDV, RKTS More Sodruvestwa, w/telegrams in RR to Sevastopol, 50 baud at 0210.

12576: ESKD, the cargo ship "Kirovograd," w/telegrams in RR to Iuchevak, 50 baud at 0147.

13440: YZJ5, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 1300, 50 baud.

13541.5: ZRO3, Pretoria Meteo, RSA, w/coded wx, 75 baud at 0637.

13563: 3MA22, CNA, Taipei, Taiwan, w/RYRY at 1336, 50 baud.

13580: HMF36, KCNA, Jungsan, North Korea, w/nx in EE, 50 baud at 0415.

13581.2: HBD46, Swiss Embassy, Havana, Cuba, w/5L grps, ARQ at 1842.

13656: XVN8, VNA, Hanoi, Vietnam, w/nx in EE at 1335, 50 baud.

13665: 6VU73, Dakar Meteo, Senegal, w/coded wx at 0505, 50 baud.

13736: 5YD7, Nairobi Aero, Kenya, w/aero wx, 50 baud at 0535.

14367: BZP54, Xinhua, Yuryumqi, China, w/nx in EE, 75 baud at 1325.

14381.5-14383.5: GXQ, Royal Army, London, England, w/RYI's, foxes & 10 count on all FDM channels, 50 baud at 1225.

14397: MFA, Sofia, Bulgaria, w/encryption, & Bulgarian text, 75 baud at 0937 & 1330.

14452: HMF57, KCNA, Jungsan, North Korea, w/nx in FF, 50 baud at 1338.

14461.7: RFTJF, French Navy, Port Bouet, Ivory Coast, w/"controle de voie," ARQ-E3/48 at 0407.

14484.2: RFLIG, French Navy, Cayenne, French Guiana, w/a clerical msg, ARQ-E3/96 at 0000.

14497: CSY, Santa Maria Aero, Azores, w/aero wx, 50 baud at 0951.

14531.7: Un-ID French diplo w/5L msgs, 1305-1315, ARQ6-90/200

14537.9: MKK, RAF, London, England, w/RYI's, foxes, & 10 count, 50 baud at 2235.

14567.3: HMF32, KCNA, Bosong, North Korea, w/nx in EE at 0515, 50 baud.

14595.3: JAL54, Kyodo, Tokyo, Japan, w/nx in EE at 0542, 50 baud.

14654.5: SPW, Warsaw R., Poland, w/nx in Polish, 2345-0030, ARQ.

14699: YIK70, INA, Baghdad, Iraq, w nx in AA at 1349, 50 baud.

14764: A9M70, GNA, Manama, Bahrain, w/nx in EE, 75 baud at 1535.

14912: DFZG, MFA, Belgrade, Yugoslavia, w/crypto after XPXPXP, 75 baud at 1441. Was // 18425 & 18972 kHz.

15779.5: AFS, Offutt AFB, Elk Horn, NE, w/"KAWN" wx data, 75 baud at 1755.

15801.5: Un-ID French diplo w/5L grps, 1936-2000, ARQ6-90/200.

15804: Un-ID Polish diplo w/a msg in Polish, POL-ARQ at 2010.

15811.4: Un-ID Italian diplo w/a msg in II, foll by 5L grps, ARQ at 1526.

15835: HET5, SRI, Schwarzenburg, Switzerland, w/nx in EE, 50 baud at 1741.

15856.7: DMK, MFA, Bonn, Germany, w/nx in GG, ARQ-E/96 at 1714.

16000: CNM69, MAP, Rabat, Morocco, w/nx in FF, 50 baud at 1545.

16067: IRO30, ANSA, Rome, Italy, w/nx in EE, 50 baud at 1705.

16107.5: HBD20, MFA, Berne, Switzerland, w/nx in FF & GG, ARQ at 1707.

16111.1: HBD20, MFA, Berne, w/msgs in FF & a 5L msg, ARQ at 1711.

16174.7: NNN0CUG, the MARS sta. aboard the USS Texas (CGN-39), w MARSgrams, ARQ at 1608. The ship is a Virginia class nuclear-powered guided-missile cruiser.

16238: Un-ID w/RYRY at 2044 & "AS" at 2045, 50 baud.

16242: Un-ID w/the last line of a 5F msg, foll by RYRY, 2047-2048.

16324.6: RFTJ, French Mil., Libreville, Gabon, w/clerical msgs at 1955, ARQ-E3/48.

16348: CLN30, PL, Havana, Cuba, w/nx in SS, 50 baud at 1815.

16421.8: RFTJ, French Navy, Dakar, Senegal, w/"controle de voie," at 1802, ARQ-E3/48.

16685.5: LAPJ3, the Norwegian passenger ship "Nordic Prince" w/telexes, ARQ at 2118.

116697: WNRD, the USA container ship "President Monroe," w/an AMVER, ARQ at 1615.

17055: Un-ID w/crypto after RYRY + VMGTCNJBH, 75 baud at 2056.

17135: UJQ, Kiev R., Ukraine, w/navareas in RR, 50 baud at 1534.

17155: UKA, Vladivostok R., Russia, w/telegrams in RR, 50 baud at 2212.

17432: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC from Tanjug & "Rojter" (Reuters) nx agencies, 1538-1541, 75 baud, foll by crypto after XPXPXP.

17450: Un-ID w/encryption using a 192-baud asynchronous sig at 1348.

17454.7: Un-ID French diplo w/several 5L msgs at 1443, ARQ-6/90/200.

17478.3: MFA, Bucharest, Romania, w/encryption, 1558-1603, ROU-FEC/218.

18055: DFZG, MFA, Belgrade, Yugoslavia, w/RYRY, 75 baud at 1433.

18058: STK, Khartoum Aero, Sudan, w/RYRY at 2125, 50 baud.

18230: GFL25, Bracknell Meteo, England, w/coded wx at 1318, 50 baud.

18646.6: PCW1, MFA The Hague, The Netherlands, w/telexes in Dutch to San Jose, Costa Rica, ARQ at 1715.

18805: Un-ID w/5L msgs that had headers beginning 11177. Was 75 baud at 1503.

18900.7: USMC MARS telegrams seen at 0006, ARQ.

18962: MFA, Warsaw, Poland, w/5F grps & nx in Polish, POL-ARQ at 1533.

18986.7: RFHI, French Navy, Papeete, Tahiti, w/plaintext wx in FF, ARQ-E3/100 at 1603.

19529: JMG5, Tokyo Meteo, Japan, w/coded wx at 0150, 50 baud.

19621.8: SAM, MFA, Stockholm, Sweden, w/text in Swedish, ARQ at 1351.

20022.5: DFU20H3, PIAB, Bonn, Germany, w/nx in GG at 1419, FEC-A/96.

20204.3: YZJ, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 1333, 50 baud.

20618: OMZ, MFA, Prague, Czechoslovakia, w/"diplomatic bulletin Czechoslovakia—weekly special service" header to a nx b/c in Czech. Was 100 baud at 1400, and was beamed to London, England.

20734: 4UZ, UN, Geneva, Switzerland, w/telexes in FF & EE to Luanda, Angola, 1506-1530, ARQ.

20754.5: HBC88, ICRC, Geneva, Switzerland, w/a clerical msg in FF to an un-ID Red Cross sta., ARQ at 1447.

20756.5: RFLIGA, French Navy, Cayenne, French Guiana, w/tfc at 1455, ARQ-E3/96.

20805.3: RFQP, French Navy, Djibouti, w/"controle de voie," ARQ-M2/200 at 1443.

20933.5: SOV293B, PAP, Warsaw, Poland, w/nx in Polish, FEC at 1402.

218131.5: Spanish Embassy, Managua, Nicaragua, w/encryption & msgs in SS, ARQ at 1555.

21844.6: Dutch Embassy, Port of Spain, Trinidad, w/a telex in Ducth, ARQ at 1743.

22288.5: CBAK, the Chilean cargo ship "Anakena," w/a ETA telex in SS, ARQ at 2123.

22289: Un-ID ship w c/s of V2GH (Antigua and Barbuda registry) in ARQ at 2117.

22418.4: Un-ID Argentine coastal sta., possibly Boca R., w/2 brief nx items in SS sent on request to a ship. Was ARQ at 1850.

22550.6: GYA, Royal Navy, London, England, w/an availability tape at 2204, 75 baud.

22854: Un-ID French diplo w/5L grps, ARQ6-90/200 at 2057.

23021.7: Un-ID Pakistani embassy w/crypto after an "india quebec golf victor romeo" header. Was ARQ at 1320, & sent to Islamabad.

23163: MFA, Rome, Italy, w/clerical msgs in II to Brasilia, Brazil, ARQ-E/96 at 1612.

23193.6: Un-ID in Great Britain, w/"EGWR" coded wx, 75 baud at 1639.

23369.6: HZN50, Jeddah Meteo, Saudi Arabia, w/aero wx, 100 baud at 1410.

23460.3: DMK, MFA, Bonn, Germany, w/crypto after VVVVV to Rio de Janeiro, ARQ-E/96 at 1730.

23520.3: Un-ID N. Korean diplo w/5F grps, 1618-1620, 50 baud. Then moved to 23530.2 to resend 5F grps, ending w/a msg in KK at 1645.

23536: Un-ID Italian diplo s/off 1651 w ". . . un abraccione ciao b. domenica ci sentiamo con questo turno martedi' ciao." Mode was ARQ-E/96.

23561.6: PCW1, MFA, The Hague, The Netherlands, w/ARQ phasing sig & ID in CW at 1631.

23977: LOR, Puerto Belgrano Navrad, Argentina, w/5L grps, 75 baud at 2100.

24012.3: MTO, Royal Navy, Rosyth, England, w/availability tape, 75 baud at 1746.

24102: DGZG, MFA, Belgrade, Yugoslavia, w/an overview report in EE of current events in Yugoslavia, 75 baud, 1610-1628.

24804.5: Un-ID Cuban diplo sta. w/crypto after ZZZZZ and a clerical msg in SS, 75 baud at 1555.

24871.7: RFHJ, French Navy, Papeete, Tahiti, w/"controle de voie." ARQ-E3/96 at 2125.

25013.3: MTO, Royal Navy, Rosyth, England, testing at 1728, 75 baud.

25227: HBD20, MFA, Berne, Switzerland, w "reflets de la presse suisse" at 1726, ARQ.

25420.4: DMK, MFA, Bonn, Germany, w/encryption, ARQ-E/96 at 1640, foll by "fernschreiben offen" (teleprinter open, i.e., in the clear) and a telex in GG.

25422.5: DMK, MFA, Bonn, w/telexes in GG & FF to Port-au-Prince & Santo Domingo, ARQ-E/96 at 1805.

26101.5: OXZ, Lynby R., Denmark, w/nx in Danish, FEC at 1634.

26105.5: WLO, Mobile R., AL, w/ARQ phasing sig & ID in CW at 2119. ■

THE HAM COLUMN

KIRK KLEINSCHMIDT, NT0Z
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Safety

During Field Day 1986, 36-year-old Mike Mankey, WB0TEE, North Dakota Section Manager, was electrocuted when a vertical antenna he was helping to install contacted commercial power lines hidden in the trees. In addition to killing Mankey, the jolt seriously injured another ham.

Recounting such a grim story has a purpose beyond the grotesque. The message is this: *Anyone who works around electrical equipment needs to be careful*

Although the number is not astronomical, more than a few amateurs have been killed or seriously injured by working on radio gear or installing antennas. As the above paragraphs illustrate, even experts make mistakes.

High voltages are not necessary to bring about disaster. Surprisingly low voltages can injure or kill a human, and strong radio-frequency (RF) fields can damage body tissues and organs. There's also the obvious danger in working on rooftops and antenna towers.

Amateur radio is not an inherently dangerous hobby especially when practiced with a little common sense. And I know what a pain it is to constantly be lectured on safety, but with the number of new hams on the increase, another look at electrical safety is in order—for newcomers and old-timers alike!

Here are some practical tips to keep in mind when building, repairing, adjusting and operating Amateur Radio equipment.

Recommended Procedures For Electrical Protection

- Whenever possible, disconnect equipment from its power source before working on it. Do it yourself, or confirm that it has been done *in person*.
- Use tools with insulated handles.
- Be sure capacitors are drained before touching them (short them to ground).
- If equipment must be serviced or adjusted with the power on, don't give electricity a good path through any part of your body. Follow the traditional electrician's rule of keeping one hand in your pocket—that way, electrical energy won't have an easy path across your chest should your working hand contact a live source of electricity.
- Try not to work alone. Have a friend or family member assist or observe in case you need help or become incapacitated.
- Keep small children and pets away from your work area.
- In your radio room or workshop, install a master power cutoff switch ("panic button") in a convenient location, and instruct others howk and when to use it.
- Keep a nonconductive pole or staff handy, so a would-be rescuer may push you away from a live electrical source without coming in direct contact with your body. A 4-foot wooden 2 × 4 is ideal.
- Work in a well-lighted area and beware of hidden sharp edges and components that aren't clearly visible.
- Quit working if you're tired or distracted.
- Always assume power is on, uless you have personally made certain it is off. This includes current that may be supplied by internal batteries, and so on.

Recommended Procedures For RF Protection

- Never operate an RF amplifier with its protective shielding removed.
- Never handle antennas with RF power applied.
- Take precautions to ensure that antennas cannot be energized while you're working on them. If you'll be up on a roof or tower, disable transmitters and label them "Danger: Do Not Operate. Antenna work now in progress!" To be safest, pull out the fuses and put them away, and disconnect all feed lines at the transmitter.
- Provide an effective, reliable chassis and RF ground.
- Never look into an open end of a power waveguide; never point a powered directive antenna (a beam or a dish, for example) toward people. Keep all VHF and UHF transmitting antennas up as high as possible, away from human activity.
- Use good-quality, well-constructed, coaxial cable and connectors.
- Think RF and electrical safety first; test later!

Recommended Procedures For Climbing Safety

- Never climb alone. Have at least one assistant, or "spotter."
- Never climb when tired, hungry or distracted.
- Always wear (and use!) a secure safety belt when climbing a tower.
- Stay away from power lines and be sure no cables, tools, antenna parts, masts or other items can fall, tip, slide or be lifted into contact with power lines.
- Plan you work carefully. Go over and rehearse each step you will take when performing a job. Make sure you have the proper tools and equipment. Be concerned about potential problems and obstacles.
- Rest often. A short break to relax your muscles and clear your head may save you from making a serious mistake.
- Don't be afraid to admit that you're "over your head" (no pun intended). Not all of us like high places. If you begin a climb and find that you're frightened or queasy, carefully descend and locate someone who's experienced and comfortable with heights.

A Little Insurance

Take the time to attend a Red Cross course in first aid. Get a friend—or your entire ham club—to join you. Many of life's experiences are dangerous. No one should be afraid of taking part in Amateur Radio activities, but everyone who does so must exercise respect and caution in potentially hazardous situations.

End of lecture. Now have fun—and be safe!

Your photos, questions and suggestions are welcome. Send them to me at ARRL, Department PCN, 225 Main St., Newington, CT 06111. ■

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Illegal CB Equipment Seized From Four Dealers In Amarillo, Texas

Under the direction of Assistant United States Attorney Mark Nichols, the United States Marshals with the assistance of the FCC's Dallas office and the Amarillo Police Swat Team, seized an estimated $20,000 of illegal electronic equipment. The equipment was seized from four businesses in the Amarillo, Texas, area: S&S CB Shop, Radio Depot CB Sales, Ben's CB Sales and Repair and Tri State Radio.

After receiving a report from the Crime Stoppers office of the Amarillo Police Department, an investigation was conducted by the FCC's Dallas Office with the assistance of the Amarillo Police Department. The seized equipment included linear amplifiers and non-type accepted CB transceivers capable of boosting transmitter power to over 1000 watts. This level of power is well over the legal 4-watt limit.

The use, sale, or manufacture of linear amplifier or other devices that boost CB radio power beyond legal limits is prohibited by the Communications Act and the FCC's Rules and Regulations. These devices are capable of disrupting public safety and aeronautical communications, and causing interference to home electronic entertainment equipment.

Federal law provides penalties, which include fines up to $100,000 and imprisonment for up to one year, for a first offense.

Three Pirates Sentenced In Texas

Three Odessa, Texas, men have been sentenced by a United States District Court for operating two unlicensed FM broadcast stations. The unlicensed FM stations used the callsigns "KROX" and "KFRE" and identified the operation as the "Pirate Radio Network". Agents of the Federal Communications Commission, Unite States Border Patrol, United States Marshal's Service and the Odessa Police department cooperated in the investigation and issuances of search warrants which led to the arrests.

Thomas Eugene Barnes pled guilty to one count of aiding and abetting unlawful operation of a radio station. Both men were ordered to perform 100 hours of community service and placed on a three-year probation term.

Unauthorized operation of a broadcast station creates serious potential of harmful interference to stations licensed by the FCC and is a violation of Section 301 of the Communications Act of 1934, as amended.

Fed's Snitch Gets Cloaked

The Commission denied a request by Jimmy Shillington for review of a ruling by the Chief, Field Operations Bureau (FOB), which denied, in part, Shillington's Freedom of Information Act (FOIA) request. Shillington sought access to FCC records compiled in the course of an investigation of a now dismissed complaint against his business firm, Quality Transportation Company, for alleged operation on unauthorized radio frequencies.

Although the Bureau granted most of Shillington's request, it withheld the names of the complainant and an informant as confidential and, thus exempt from disclosure. FOB stated that the complainant had explicitly requested confidentiality and that the informant had cooperated in a law enforcement proceeding under circumstances from which an assurance of confidentiality could reasonably be inferred. Seeking review, Shillington argued that the Commission has no further use of any information from these individuals and therefore could release their identities without comprising its investigatory efforts.

Upholding the Bureau, the Commission stated that Exemption 7(D) of the FOIA permits the FCC to withhold the identity of informants, notwithstanding the completion of the law enforcement proceeding. The Commission said that to disregard the confidential status of its sources could inhibit its investigatory efforts in other matters and hamper the production of information in future cases.

Synthesized Voice On Marine Distress And Safety Frequencies

The Commission amended its Marine Service Rules to permit the use of synthesized voice technology to transmit distress messages on marine distress and safety frequencies. This will permit marine electronics equipment manufacturers to use synthesized voice technology to generate a preset distress message that contains, among other things, the name of the vessel and its location.

The Commission said allowing the use of synthesized voice to generate distress messages on maritime channels allotted for distress and safety communications, including those in the MF and HF bands, had the capability to enhance maritime safety. The U.S. Coast Guard agreed that such could have benefits for mariners in distress.

The Commission adopted the rules basically as proposed but extended the permissible length of the message from 30 to 45 seconds and said it would allow use of synthesized voice on the MF and HF bands.

Handbook On Telecommunications Relay Services For Individuals With Hearing And/Or Speech Disabilities Issued By FCC

The Commission issued an informational handbook on Telecommunications Relay Service (TRS), a new telephone service that allows people with hearing and/or speech disabilities to use the voice telephone network. TRS facilities are equipped with specialized equipment and staffed by communications assistants who relay conversations between people who use text telephone and those who use the general telephone network.

The FCC Handbook contains background information on TRS, instructions on using TRS, a glossary of commonly used TRS terms, telephone numbers for placing TRS calls and telephone and fax numbers for TRS outreach offices throughout the nation.

Single copies of the seven-page TRS Handbook are available at no charge from the FCC's Consumer Assistance and Small Business Division, Room 254, 1919 M St., NW, Washington, DC 20554 (202/632-7000; (202/632-6999 (TDD). The TRS Handbook may be reproduced without prior approval from the FCC. Additional information on TRS may be obtained by writing to the FCC, Common Carrier Bureau, Domestic Facilities Division, 1919 M St., NW, Washington, DC 20554.

Telephone Service Disruption Notification Requirements For Common Carriers

The Commission amended its rules to require that common carriers notify the Commission within 90 minutes when telecommunications services they provide are disrupted.

The Commission has added Section 63.100 to the rules which specifies that common carriers that operate either transmission or switching facilities notify the Commission of service outages immediately whenever telephone services provided by their networks are disrupted to 50,000 or more potential customers for 30 or more minutes. The new rule is essentially the same as that proposed, but expands the class of carriers required to report to include resale common carriers that have transmission or switching facilities. Satellite, cellular and competitive access carriers are exempt from this reporting requirement.

Although some commenters argued for other reporting thresholds, the record was not

sufficient. The Commission is concerned that the 50,000 customer threshold inform the Commission of all significant outages, particularly those affecting public safety. Thus, it is referring to the Network Reliability Council the questions of whether the reporting threshold should be adjusted in the future and whether a separate threshold for reporting outages affecting 911 services or major airports should be adopted. The Commission established the Network Reliability Council to provide the Commission and industry with recommendations on how public telephone outages can be avoided and, if they occur, how their impact can be minimized.

Despite this encouraging trend, the country has experienced several telephone service outages during the last two years. All have been thoroughly investigated by the Commission. Although they have been temporary and resulted from a variety of causes, the Commission said it is clear that there should be a systematic means to monitor major telephone service outages throughout the nation on a real time basis.

The Commission's purpose in requiring notification is twofold: first, to become aware quickly of significant outages so it can monitor developments, serve as a source of information for the public and take immediate steps as needed; and, second after analyzing the information submitted, to determine what action, if any, should be taken.

The Commission's new rule requires that notification be served on the FCC's Monitoring Watch Officer by record means, providing, as available: (1) the date and time of the incident; (2) the geographic area affected; (3) the number of customers affected; (4) the types of services affected (e.g., interexchange, local, cellular, 911 emergency services); (5) the duration of the outage; (6) the estimated number of blocked calls during the outage; (7) the apparent or known cause of the incident, including name and type of equipment involved and specific part of the network affected; (8) methods used to restore service; and (9) the steps taken to prevent recurrences of the outage.

Notification is to be made to the Watch Officer at FCC Headquarters, Washington, DX, FAX (202) 653-5402 or alternatively, in the event that Headquarters cannot be reached, to the Watch Officer at Grand Island, NE, FAX (308) 381-4757.

Changes In Complaint Procedures Against Common Carriers

The FCC proposed streamlining its procedures for resolving formal complaints against common carriers.

The proposed rules would:

Shorten filing deadlines, such as those for answering complaints and responding to discovery;

Eliminate certain pleading opportunities which do not appear particularly useful or necessary, such as routine replies to answers to complaints and replies to oppositions to motions;

Expedite and consolidate the discovery process by shortening the deadlines for initiating, responding and objecting to discovery and limiting the scope of discovery;

Adopt rules providing for confidential treatment by opposing parties of certain materials produced through discovery; and

Authorize the staff to deliver verbal rulings, promptly memorialized in writing, on a variety of interlocutory matters such as objections to discovery and submission of briefs or other record evidence.

The Commission noted that some current procedures, particularly those pertaining to discovery, have resulted in unnecessary delay to the process. Therefore, it proposed these changes to promote just, fair and timely resolution of complaints. It acknowledged that rule changes cannot address all factors affecting speed of resolution, for instance, staffing, case complexity and other litigation related issues, but said the proposed revisions should reduce delay by encouraging more concise and thorough pleadings and minimizing protracted disputes over discovery issues.

Commission Addresses Various Petitions For Reconsideration Of The "Pioneer's Preference" Rules (Gen. Docket 90-217)

The Commission amended and clarified its "pioneer's preference" rules adopted April 9, 1991. The rules provide preferential treatment in the FCC's licensing processes for parties developing new communications services and technologies.

In this action, the Commission decided that a petition for rulemaking will not be required from a pioneer's preference applicant when a relevant new radio service or technology already is under consideration in an existing proceeding that has not reached the notice of proposed rulemaking (NPRM) stage. The Commission also granted, in part, the petition filed by Ellipsat Corporation and agreed to consider requests for waiver of the rulemaking petition requirement in those cases in which no change to existing rules is necessary to implement the innovative technology or service.

In response to a petition filed by Strother Communications, the Commission clarified that a tentative preference will not be awarded at the NPRM stage unless a preference applicant has either commenced an experiment or submitted an acceptable technical showing. It reaffirmed that a preference generally will be awarded for only one service area.

In considering the appropriate time for terminating acceptance of preference requests, the Commission decided that it is administratively desirable to establish a deadline for preference requests prior to Commission consideration of an NPRM that will make tentative pioneer's preference decisions. The Commission stated that such a deadline will provide it time to evaluate all pioneer's preference requests more efficiently and fairly in advance of consideration of such decisions. Public notice will be given at least 30 days in advance of the deadline date to permit innovators sufficient opportunity to file preference requests.

The Commission denied the National Association of Broadcasters petition, stating that the pioneer's preference criteria are sufficiently clear, that a guarantee of a license is necessary to induce innovators to submit proposals, and that a technical showing can be as useful as an experiment in some instances.

Finally, in response to petitions filed by TV Answer and United P[illegible] Commission reaffirmed that [illegible] preferences will not be considered in proceedings that had reached NPRM stage before the pioneer's preference rules were issued on May 13, 1991.

New Technical Standards For Cable Television Systems

The FCC adopted new technical standards that will define the basic technical quality of service cable subscribers are entitled to receive. This is the first major revision of the cable technical rules in over 15 years. The new standards take into account changes in the American television household environment since the 1970's.

In 1972, the Commission established technical standards to govern the video signals of cable channels retransmitting broadcast programming (Class I channels). In 1974 the Commission preempted the authority of local and state governments to set more stringent standards than the Commission. In 1985, the Commission announced it would no longer enforce the standards as such, but would retain them as voluntary guidelines, while maintaining the preemption of local authority in this field. No standards were ever set for other classes of cable channels (Classes II, III and IV), even though they involve video programming such as cable-originated programs and pay channels.

Franchising authorities appealed this decision, which was remanded to the Commission by the appellate court. The court found that the Commission's failure to set standards for class II through IV channels, coupled with federal preemption, prevented franchise authorities from performing the requisite analysis of whether a franchise should be renewed, as required by the Cable Act.

Responding to this remand, and also to the requirement in the Cable Act that the Commission report to Congress on rate regulation and related matters in 1990, the Commission gathered a voluminous record addressing cable technical standards. Finding merit in criticisms of the current guidelines as outdated and inadequate, the Commission began this proceeding proposing to reimpose mandatory technical standards, which would be extended to all video signals.

The standards adopted today address the

Radio - Great Old Days

(from page 17)

the station obtained a new frequency assignment for itself on 7854 kHz. It was easily the one certain approach to solving the problem.

This station was on the air twice a day, from 1400 to 1830 UTC, then again from 2300 to 0415 UTC. The interval signal was a single gong. A red, yellow, blue, and black, QSL card was sent out in reply to reception reports. The call letters were based upon the initials of the station's owner, Juan S. Behr.

HC2JSB also had a mediumwave outlet that ran 20 watts on 1100 kHz, but was up to 200 watts on 1250 kHz soon after WWII.

End of The Page

What with this being a Presidential election year, it reminds me that 1992 marks the 70th anniversary of the first radio being installed in the White House. It was installed on February 8th, 1922, for use by President Warren G. Harding. In 1920, the Harding-Cox election returns became the first such coverage ever broadcast. Harding won in a landslide, but ended his single term in office embroiled in scandal.

Now we have reached the end of our space for June, even though we have lots more left. We'll save it for next month. Hope you will join us. And thank you for helping us out with old QSL's (originals or good quality copies), old radio station photos, old station directories, newspaper clippings, and the like. ■

delivery of National Television Systems Committee video signals to cable subscribers for display on standard television sets. These standards, the Commission said, strike an appropriate balance between ensuring that quality television signals are delivered to cable subscribers, and unduly burdening cable operators' ability to distribute multichannel services to the public.

Generally, the technical standards adopted retain the former guidelines as rules. New standards were adopted for the delivery of color signals, as well as requirements for the delivery of closed captions data.

To implement uniform, nationwide standards, the Commission generally preempted local standards which differ from the standards adopted today. It said it would, however, allow cable systems serving rural communities, as well as systems serving fewer than 1,000 subscribers, to negotiate for certain lower technical standards with their respective franchising authorities. Franchising authorities will be permitted to set standards for these systems, as long as the standards do not exceed the Commission's.

Because local authorities are most familiar with the local system operation and plant, as well as any local factors that could affect the resolution of a problem, the Commission said initial enforcement of the technical standards will generally take place at the local level. Cable systems will be required to have a process for resolving complaints about technical service. ■

Beaming In

(from page 4)

thorities, home made tape recordings clearly qualify as physical evidence that some law or other has been violated. Maybe the ECPA, possibly an anti-wiretapping law, but most definitely any law that specifically makes it illegal to record cellular or cordless calls. Possession of such tapes puts a person on the road to an illegal recording charge, even if the tapes were weeks or months old, or had actually been recorded by someone else. Such physical evidence might first be used to press a state case for violation of the recording law, then, later go on to be given double duty as evidence in a later federal ECPA violation action.

I have never agreed with restrictions placed on the public being allowed to 1eely monitor any and all radio frequencies. If someone wants communications privacy on the public's airwaves, they're welcome to take steps to scramble or code their messages to achieve that confidentiality. If they decline to do that, they have neither reason nor right to expect or demand privacy. Neither should they have a right (nor expectation) to gain privacy by means of seeking to institute laws set aside from public inspection the frequencies they use.

That being stated, I must admit that I have not personally seen any positive reasons for scanner owners to tape record cellular conversations, with or without wiretapping or special anti-recording laws in effect. If a person wants to tune across the bands and listen to what there is to hear as it is happening, I feel they should have every right to do so. That's what the communications hobby has been all about for 80 years or more. But I just can't think of any good reasons to justify someone taping cellular phone conversations. Nothing good can come from it.

It can't be denied that there are certainly plenty of juicy things to hear on the cellular band—drug deals, political deals, fighting, cheating, bizarre romances, family secrets, and everything else that makes up the human experience. Still, I question the motives of those who tape these calls. Shame on me, but I surprise myself at how remarkably unsympathetic I am to scanner owners who get busted for making these tapes.

The feds have been rather casual about pursuing the ECPA, probably because all except the most blatant alleged violations have a low priority. Evidence is hard to obtain. Still, those few ECPA cases that have been pushed have used tapes as evidence. State authorities, however, might vigorously enforce their wiretap or anti-recording laws. The penalties could be just about as inconvenient and unpleasant as a federal ECPA conviction.

When a person makes a tape recording of cellular conversations, they do more than produce self-incriminating evidence. It's reasonable to assume that the tape will be given to, or at least played for, others. Each and every person receiving a copy of the tapes, or hearing them played, is then turned into an instant potential witness against in any court case that might come up.

The dumbest of criminals knows to take all precautions to get rid of every shred of evidence. Nobody creates self-incriminating evidence and then stores it in their own home on a long-term basis. Furthermore, the general idea is to have no witnesses at all. You wouldn't think it wise to go around playing the tapes in order to generate as many witnesses as you possibly could between here and Wichita. Good grief, even Tricky Dick knew enough not to get caught with any tapes! So, what's with these cellular tape recording people? Is it some kind of New Age existentialist approach to shooting themselves in the foot?

I have had readers send me tapes that were either especially funny or dramatic, or contained the voices of well-known people. When I get one of these, I think of it as potential evidence. I can't help but imagine how many other people were also given copies, or heard them. I wonder if one of those people might turn the guy in. I picture how the tape would sound being played in a courtroom, with the scanner owner on trial. I can't even guess at the logic of why anybody would make and then distribute or audition for others potential evidence against themselves.

My advice: Tape recording cellular or cordless conversations is definitely risky. At the very least, it's a bit tacky. ■

BY GERRY L. DEXTER

CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

The signing of a peace agreement to end years of guerrilla warfare in El Salvador has brought an end to the clandestine status of two long active stations of the Farabundo Marti Liberation Front (FMLN). However, both Radio Venceremos and Radio Farabundo Marti are now legitimate broadcasters, even playing commercials. Radio Farabundo Marti seems to be active only on local channels. Radio Venceremos, silent on shortwave during several periods late in the war, has now reappeared. It is being heard in North America evenings on 6300, all in Spanish. It's very possible that both FMLN stations may soon have listed addresses within El Salvador, so there's real hope for those who haven't yet received QSL's from these stations.

Another now legitimate clandestine station is the Voice of the Broad Masses of Eritrea, which supported the EPLF in its long effort to overthrow the government in Addis Ababa. It now broadcasts from Asmara, the capital of Eritrea, according to information in a QSL received by Richard D'Angelo of Pennsylvania. Eritrea will hold a referendum on full Spanish. Yes, Bob, this one has been operating in this area, as well as several other 60 meter band frequencies, and its usual 6300 area, too.

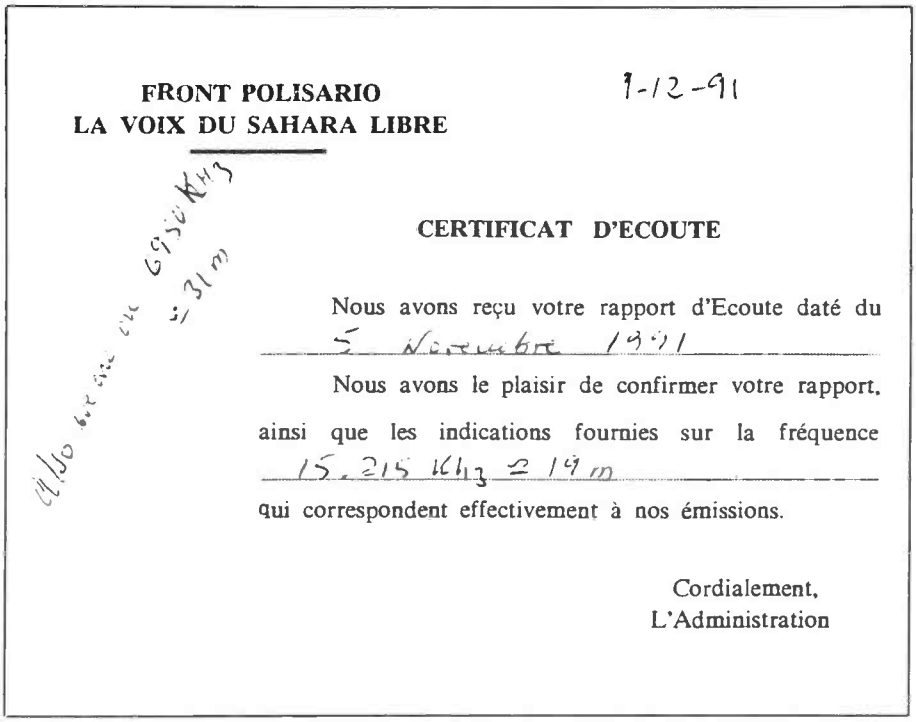
The Voice of Young Albanians in Exile is a new program beamed to Albania via WWCR. The program is in Albanian and includes Albanian music and news of Albania. It airs on 15690 Fridays at 2200 and 12160 Mondays at 2330.

DX'ers continue to report good reception of the Voice of the Resistance of the Black Cockerel (A Voz Resistencia do Galo Negro) on 7100 around 2100 and later and also on 9700 around 0400-0500, though not as frequently or as well.

The Voice of Palestine is still aired over Radio Algeria on 15205 between 1600 and 1800, but it's a difficult catch on most days.

Radio Freedom, the program of the African National Congress is still aired by Radio Tanzania at 1815 Mondays, Wednesdays and Fridays and at 0415 on Tuesdays, Thursdays and Saturdays, all on 9684 slightly variable. ANC programming via government stations in Zambia, Ethiopia and Madagascar has been discontinued.

US shortwave broadcasters WHRI, WWCR and WRNO continue to carry any number of freedom, exile and surrogate broadcasts, with the tab paid for by the individual groups producing the various programs. You might want to get on the mailing lists for program schedules from these three stations as the line-up tends to be rather changeable. While such broadcasts are not clandestine in the strictest sense of the word, they do have that clandestine "flavor" to them and thus are covered in this column.



FRONT POLISARIO
LA VOIX DU SAHARA LIBRE

1-12-91

CERTIFICAT D'ECOUTE

Nous avons reçu votre rapport d'Ecoute daté du 5 Novembre 1991

Nous avons le plaisir de confirmer votre rapport, ainsi que les indications fournies sur la fréquence 15.215 KHz = 19 m

qui correspondent effectivement à nos émissions.

Cordialement,
L'Administration

La Voix du Saraha Libre, operated by the Polisario Front and aired via Radio Algiers at 2200 on 15215 sent this QSL to R.C. Watts in KY. Note the mention of a 31 meter frequency 6950! Maybe they mean another Radio Algiers frequency — 9640.

At present, your best bet at hearing the Voice of the Broad Masses is on 7490 around 0400. An address that will probably work for QSL's is c/o the Eritrean Relief Committee, 475 Riverside Dr, Room 907, New York, NY 10115.

Bougainville, one of the islands making up the nation of Papua New Guinea, has a serious break-away effort in progress, serious enough that the government station Radio North Solomons has been closed down and is now operating temporarily from Rabaul, on its normal 3325 frequency. Meantime, an anti-PNG government station, Radio Free Bougainville, has come on the air. It is scheduled to operate a "national service" in local languages from 0900-1200 on 3890 and an international service on 21500 (Upper or lower sideband) at 0100 to America, 0400 and 0700 to Asia, Africa and the Pacific.

Several DX'ers in the Eastern time zone continue to catch occasional receptions of one of the Kurdish clandestines—the Voice of Iranian Kurdistan (Ayra Dangi Kurdistani Irana), operating on 4065 at around 0400. Robert Ross in Ontario recently had the station around 0330, broadcasting in Kurdish and shouts of "Kurdistan!"

Another one, the Voice of Iraqi Kurdistan (Ayra Dangi Kurdistan Iraq), is showing up on 6295 in Kurdish around 0430 (This may be your unidentified, Bob Ross).

Watch for both the Association of Clandestine Enthusiasts (A*C*E) and the North American Shortwave Association to announce award certificates for hearing and verifying clandestine stations sometime in the coming months.

Please keep sending your clandestine loggings, station schedules, QSL news, addresses, press clippings, literature and other information about clandestine stations and their backers. It is invaluable! Those who also send logs to our *Listening Post* column may include clandestine logs in the same envelope but it helps greatly if the clandestine loggings are on a separate sheet.

Thanks to all and, until next month, good hunting! ■

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY EDWARD TEACH

The number of reports received this time can only be described with words like "avalanche." There's no way I can even come close to covering everything so I'm going to start with the new and seldom reported stations and work down from there. First, though, a note that Gary Daniels says the Voice of Bono and Voice of Stench are being relayed by WSKY (Whiskey Radio) and, later, may be on other stations as well.

Radio D.C. heard on 7416.1 by Edward Kusalik, Ontario at 2026, announcing as located "just around the corner from the FCC!". Off at 2032.

Radio Strange, 7415 on "longwave, mediumwave, shortwave and rubberband" heard by Thomas White, IL to 0115 close. Also by Joshua Wilkes, KY at 0110 on 7416 and Pat Murphy, VA at 0335 and 7414 at 0101, at 0110 on 7416 by Jeff Foster, MI, 7418 at 0407 by William Hassig, IL.

Marie Lamb, NY heard the Dreamland Broadcasting Corporation on 15050 with punk rock, with an ID at 0151 and off at 0154 with no QSL info copied.

All the world seems to have logged CISC ("seasick") Radio in and around 7413 and at a wide variety of times. Announced as running 100 watts and also 15055 where some reporters also heard it. Uses the song "Psycho Chicken" at sign on and/or sign off. $1 or mint stamps for QSL's to the Blue Ridge Summit address. Logged by Lamb, NY; Foster, MI; Hassig, IL; Steven Scharff, NJ; Chuck Menard, IL; Pat Murphy, VA; Dan Grote, IL; Joshua Wilkes, KY and Scott Greig, IL.

Radio Audubon International, 7416 with at test at 0041, giving the Blue Ridge Summit address, noted by Dan Grote, IL. Greig noted it on 7415 at 0035 advertising a station t-shirt for $15.

Pat Murphy found the Voice of Elmer Fudd at 0709 on 7384LSB with ID repeats and "we'll be back in the near future when that washkille fcc is asweep." No QSL info given.

Scottish pirate Radio Omega was heard by Kusalik on 7415 2025. Also by FOster, MI who notes it was very strong (you think it may have been a US relay?) Address as 23 S. Beechwood, Edinburgh, EH12 5YR, Scotland.

Rastafari (or Rastafarian) Radio, 7417LSB at with reggae music heard by Hassig at 0140. David Gasque, SC noted them to 0220 close. Also by Skip Harwood, CA at 0125; 7415 at 0159 by Paul Johnson, AZ; 7417.5LSB at 0656 by Murphy, 7416LSB at 0137 by Foster.

WNOT with the "amazing Mumford," heard by Murphy on 7415 at 2232 announcing the Blue Ridge Summit address.

KAWU, 7414 with weather, livestock report and obits. Claimed to be in Lake Tahoe, says W.O. Brooks, Tn, who had them at 0238.

Voice of Anarchy, 7414 heard by Harwood at 0800, announcing a Chicago location. Foster had them at 0730, Murphy at 0747 and by Ron Bruckman, MD at 0745.

New Age Radio, 7415 was heard by Hassig at 0224 with a special broadcast for, or to, George Zeller.

Omega Radio, 7416.8 at 2230 heard by Kusalik, giving the Wellsville address. Menard, IL had them on 7417 at 2250 with religious programming and Blue Ridge Summit address. Foster had them on 7415USB at 2230.

Murphy had Radio Beaver on 7415 at 2101 with Bucky Beaver hosting.

Radio Lymphnode International heard by Grieg at 2343 on 7412-13. Wilkes had them on 7412 at 2340. Murphy at 1920 and 2357.

Murphy had Pirate Radio New England on 7414 at 2356 with just repeated ID's and open carrier.

Murphy also had WFRC on 7416 at 0446 ID'ing as "WFRC Worldwide, broadcasting in a wasteland of propaganda."

Jolly Roger International, 7415 heard by Harwood at 0700 with "Blackbeard the Pirate." Greig had them on 15050 at 0019. Murphy here at 0015 with instructions to post reception reports on the ANARC BBS. He has also had them at 0656 on 7415, as did Hassig. Bruckman found them at 0720.

Other stations reported this month: XERK-7417 (POB 25302, Pittsburg, PA 15242) . . . KXKVI (Interplanetary Radio)-7415 . . . Radio USA-7415 (Wellsville address) . . . East Coast Beer Drinker-7414 . . . WSKY-7415 variable . . . He-Man Radio-7415USB (POB 109, Blue Ridge Summit, PA 17214) . . . EXP Radio-7415 . . . (POB 452, Wellsville, NY 14895) . . . WKND-7415 (Blue Ridge) . . . WRFW-7415 . . . Radio FAX-6205 . . . Radio Free New England-7413 (Wellsville) . . . Voice of Bono-7415 . . . Hope Radio International-7285 (Blue Ridge).

Nice going, folks! Happy pirate hunting and keep the reports coming my way! ■

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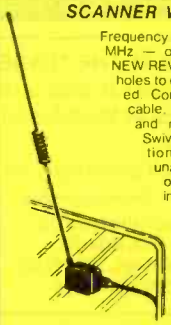

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RCI-2950 OWNERS: New modification manual including Power Increase, Clarifier Modification, Operating Hints, and More. Parts included. Only $20.00 ppd in U.S. (Mo. residents add $1.15 tax). Scott, P.O. Box 510408, St. Louis, MO 63151-0408.

Absolute best HR2510/2600 mods ever published. Expert technician's mods for more power, frequency shifting, cw, packet, broadbanding and much more. Satisfaction guaranteed. Send $15 US for complete manual or $2 for info to: Total Radio Service, 1355 Kingston Rd., Box 83-110, Pickering, Ontario, Canada L1V 1B8.

AR2500 for sale - $360. Bill Strickland, 4312 Hunt Dr., Huntsville, AL 35816. (205) 842-8878, 7AM-4PM CST.

Looking to form Pacific NW Radio Monitors group. WA-OR-ID-BC. Exchange frequency info, DX sessions. Write: VOX, 540-C NE Northgate Way #439, Seattle, WA 98125.

The North Hills Amateur Radio Club of Pittsburgh, PA announces its 7th annual Hamfest. It will be held in the Northland Public Library on July 12, 1992 from 8 am until 3pm. Talk-in will be on 147.09, the W3BIS Allegheny County Public Service Repeater. There are limited indoor tables at $10.00 each. Free admission, free parking, and one free automobile-sized space per tailgater; each additional space $5.00. The Hamfest is wheelchair accessible. Refreshments will be available. For additional info contact: Don Jackson, N3LAZ, 8 Dale Avenue, Bradford Woods, PA 15015, (412)935-3343.

NEEDED! Meca's Andrew Tobias 1990 tax cut, final version, 3.5" disk for IBM compatible (Tandy). Company is out of stock. Have book. George Rech, POB 961, Cape May, NJ 08204.

HELP! PRO-2021 modification D44 removed shows frequencies, won't receive 806-960. Swap scanner frequencies for Indianapolis Indiana and surrounding area. J. Kinsinger, 998 S. 8th St., Noblesville, IN 46060.

WANTED: Schematic or unit. Western radio "BA80-40," two band CW novice transceiver. advertised in POP'COMM. K3YCA, 3628 Kimble Rd., Baltimore, MD 21218.

FOR SALE. Sony 2010 shortwave, AM, FM, AIR band. New condition with original box and manuals - $275. I will ship. Call Mike, (614) 377-9103.

The Wayne Amateur Radio Technical Society of Wooster, OH will operate N8CEY 1200Z for 15 hours on July 11, 12, 17, 18, 19, 1992 to celebrate The Ohio Agricultural Research and Development Center's, "A Century of Science" at Wooster. CW-3.550, 7.050, 10.125, 14.050, 21.050, 24.920, 28.150; phone-3.900, 7.275, 14.275, 21.350, 24.960, 28.350. For certificate, send QSL and a SASE to OARDC, Mike Brugger N8CEY, 1680 Madison Ave., Wooster, OH 44691.

SCANNER MODIFICATION HANDBOOK VOL.1 by Bill Cheek ("Doctor Rigormortis"). New 160-page book. More than 20 performance improvement modifications. Simple step-by-step instructions, many photos. Primarily PRO-2004 & PRO-2005, some for PRO-34, BC-200/205XLT, BC-705XLT, BC-705XLT. Restore blocked out bands, speed ups scanning rate, disable "beep," increase number of channels, improve squelch action, add an S-meter, interface with shortwave receivers, etc. Make the PRO-2004 & 2005 into a 6,400 channel scanner; put 3,200 channels into the PRO-34! Plus, cellular frequency charts, antenna info & mods, inside info on frequency management, operating hints, emergency power supplies, scanners & the law, lots more! Only $17.95, plus $3.50 shipping to addresses in USA/Canada. Residents of NY State add $1.72 tax. **Big 220 page VOL.2** with 18 more mods for PRO-2004/5/6, PRO-34, PRO-2022, BC-760/950XL, BC-200/205XL, now available, $17.95 plus $3.50 shipping. NY state residents include $1.72 tax. If both books ordered at the same time, send only $4.50 shipping. Order from CRB Research Books, Inc., PO Box 56, Commack, NY 11725.

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NEED Browning Golden Eagle Mark IV owner's manual and any other information. Glad to pay or reimburse for copies. Glenn Hendrix, PO box 144, Ardmore, OK 73402 (405) 657-3327.

FOR SALE: AOR 1000XC. Brand new in unopened box. Full warranty. $409.00. Randy (716) 798-0772.

YAESU FT-23R. Two meter amateur handheld. Receives from 140 MHz to 164 MHz. Includes DTMF keypad, both 120vAC and 12vDC power supplies/chargers - $159.00. Paul Malone, 4 Pine Tree Dr., #330, St. Paul, MN 55112. (612) 490-7848.

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Coverage:	500KHz-1300MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM
Speed:	20 ch/sec. scan. 40 ch/sec. search
IF:	561.225, 58.075, 455KHz or 10.7MHz
Increments:	5 to 955KHz selectable/ 5 or 12.5 steps.
Audio:	.4 Watts
Power:	Input 9 - 13.8 V. DC
Antenna:	BNC
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Base type antenna 25 to 1000MHz w 50'coax.	AS300	$59.95
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Wide band preamp	GW-2	$89.00
Extended Warranty. 2/3 yrs		$40/$55

Specifications:

Coverage:	27-54, 108-174, 406-512, 830-950MHz
Sensitivity:	.4uV Lo,Hi. .8uV Air. .5uV UHF. 1.0uV 800
Scan Speed:	15 ch/sec.
IF:	21.4MHz, 455KHz
Increments:	10,12.5,25,30
Audio:	1W
Power:	12.8VDC, 200MA
Antenna:	BNC
Display:	LCD w/backlight
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Standard Features:

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- 64 Scan Banks.
- 16 Search Banks.
- RS232 port built in.
- Includes AC/DC pwr crd. Antenna, Mntng Brckt.
- One Year Limited Warranty.

Options:

Earphone.	EP200	$2.00
External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs.		$65/$75
Mobile Mounting Bracket.	MM1	$14.90
RS232 Control Package (software & cable) offers spectrum display and database.	SCS2	$295.00
Wide band preamp	G-W2	$89.00

Specifications:

Coverage:	1MHz-1500MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	38 ch/sec. scan. 38 ch/sec. search
IF:	750.00, 45.0275, 5.5MHz 455KHz
Increments:	5,12,5,25 KHz
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 300mA
Antenna:	BNC
Display:	LCD, backlighted
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D Wt. 1lb.

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400 Channels. 100KHz to 2036MHz.

Standard Features:

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- Continuous coverage.
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- AC adaptor / charger. DC power cord.
- Telescopic Antenna
- One Year Limited Warranty.

Options:

Earphone.	EP200	$2.00
External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs.		$65/$75
Mobile Mounting Bracket.	MM1	$14.90
RS232 Control Package (software & cable) offers spectrum display and database.	SCS3	$295.00
Wide band preamp	G-W2	$89.00

Specifications:

Coverage:	100KHz-2036MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	20 ch/sec. scan. 20ch/sec. search
IF:	736.23, (352.23) (198.63) 45.0275, 455KHz
Increments:	50Hz and greater
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 500mA
Antenna:	BNC
Display:	LCD
Dimensions:	3 1/7H x 5 2/5W x 7 7/8D Wt. 2lb 10oz.

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The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection super easy! Other useful features include programmable scanning, large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels, and many deluxe features such as programmable scanning, dual 24-hour clocks with timer all-mode squelch and noise blankers, a large, front-mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 108-174 MHz VHF capability with VC-10 option.

Optional Accessories R-2000:

- **VC-10** VHF converter
- **DCK-1** DC cable kit for 12 volt DC use.

R-5000:

- **VC-20** VHF converter • **VS-1** Voice module • **DCK-2** for 12 volt DC operation • **YK-88A-1** AM filter • **YK-88SN** SSB filter • **YK-88C** CW filter • **MB-430** Mounting bracket.

Other Accessories:

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Optional Accessory

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