

# POPULAR COMMUNICATIONS

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- English Language Shortwave Programs: Spring '95
- Pop'Comm Visits Stations in Guatemala & Costa Rica
- Build a "Limited Space" Antenna
- Monitoring Aeronautical AWOS Stations

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# POPULAR COMMUNICATIONS

MAY 1995

VOLUME 13, NUMBER 9



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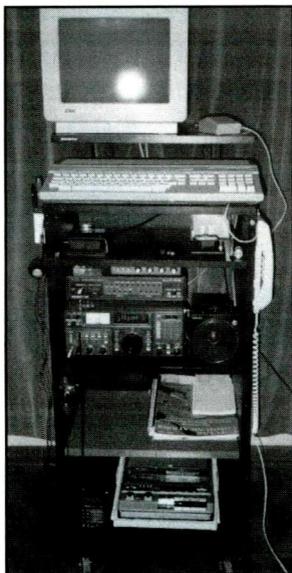
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**This month's cover:** Officers Douglas Bergquist and Michael McGinness, of the New Jersey State Police Marine division, on patrol off Point Pleasant, NJ. Photo by Larry Mulvehill, WB2ZPI.



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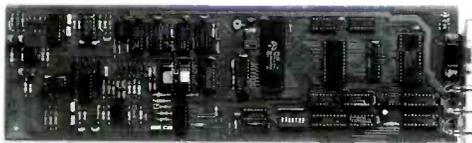
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## Place in the Sun

As we head into the next century, our hobby can take fullest advantage of technological advances made in telecommunications during the past 20 years. Indeed, it's been members of our worldwide hobby community that have made so many vital contributions to these new technologies.

But, let's take a moment to appreciate a few other advances we have made that have also been beneficial. These have been gradual and subtle, and they don't involve technology. Still, nobody ever said that advances in hobby communications must always directly relate to new chip designs, antennas, or circuits.

I'm really pleased to see a generally higher regard for those whose primary interest in communications is monitoring, such as SWL's and scanner owners. For decades, the first question posed to every listener was, "Are you studying to become a ham operator?"

Was there an unwritten law stating that a person would never become fulfilled until they added transmitting capabilities to their receiving station?

Certainly, many (or most) amateur operators began in radio as SWL's or scanner owners. SWL'ing or having a scanner is the best way to start off if someone eventually intends becoming a ham. It's a fine way to trigger interest in the idea if it hadn't even occurred to a person to become a ham. Ham radio is a wonderful hobby, but that doesn't mean that monitoring, per se, is any less of a hobby.

Let's face it, monitoring is a wonderful hobby, *too!* Hamming is an interactive activity, while monitoring isn't. Some hobbyists obviously don't wish to become interactive. These people aren't in ham radio's anteroom waiting for the door to open. Yet after decades of being thought of that way, monitors and the monitoring hobby suffered from image problems. People who, by choice, had spent a dozen or more years as serious monitoring enthusiasts were disheartened upon being asked when they were going to become hams.

This unfortunate perception has, for the most part, faded. The perception of monitoring enthusiasts has been significantly improved as a direct result of several factors. These include the popularity of VHF scanners (invented in 1968, popular by the mid-1970's), also the emergence and years of influence of the two national monitoring publications, *POP'COMM* and *Monitoring Times*.

CB'ers are also worthy of mention. Years ago, CB operators were regarded with suspicion, if not outright scorn, by many ham operators. CB'ers were described as frustrated would-be or quasi-

hams. They were taunted with epithets like *Baked Hams*, *Half-baked Hams*, and *Space Cadets*.

All CB'ers were doing were attempting to enjoy their hobby by informally chatting with one another, maybe shooting a little illegal skip during band openings. Millions of CB'ers were packed onto the few available channels by the late 1970's, so many that the FCC lost the ability to keep up with licensing individual stations in the service. The FCC finally gave up trying to license CB stations. What had happened?

CB got off to a bad start right from its inception in 1959. The FCC established it on 27 MHz, creating the channels from the former little, unused 11-meter ham band, adjacent to the popular 10-meter (28 MHz) ham band.

It wasn't too swift for the FCC to locate CB in this region of the spectrum. The laws of nature say that 27 MHz band is often wide open for strong skip propagation. The FCC's own laws declared it illegal for CB operators to communicate with distant skip stations. The FCC laws impressed neither the CB'ers nor the ionosphere. This created a radio service filled with operators the FCC came to regard as filled with outlaws and lawbreakers.

Annoyed at the reallocation of the 11-meter band, it should have been the FCC that felt the wrath of ham operators. Instead, they took it out on people who played absolutely no role in usurping the band, the CB'ers.

I, for one, never understood why hams directed ire at CB'ers, or seemed to enjoy CB-bashing with such gusto. The activities on the CB channels, good or bad, legal or illegal, were nobody's business except for the CB'ers themselves, and the governments of the USA and Canada that established the radio services. CB'ers didn't interfere with hams, nor did CB operating practices in any way diminish or tarnish amateur radio. Yet, within the communications hobby, CB radio became burdened with the unfortunate and incorrect image of being the somewhat simple-minded second-cousin of amateur radio.

CB'ers were also asked, "When are you going to become a ham?" As with monitors, people assumed that CB was just a temporary jumping-off point for beginners hoping to enter hamming. But not all CB operators sought to enter the ranks of ham radio. Sure, some did want to enjoy ham radio, and passed the test. Maybe they kept active in CB and also in hamming, for what each has to offer.

Others would have liked to become hams, but complained they became discouraged when they couldn't, or didn't wish

to learn the required Morse code. During the 1970's when CB was booming with tens of millions of stations, the FCC was adamant that Morse had to be learned in order to obtain any grade of amateur license.

Long years after CB radio's boom years, when the number of active operators became a fraction of what had once been, the FCC finally began offering a code-free ham license. This appealed to operators who wanted to become hams but couldn't pass the Morse code test. This also brought into the ranks of ham radio those who saw no logic in being forced to learn an obsolescent operating mode they would never use.

What it didn't bring in were the millions who might have become hams in the 1970's had there been a codeless amateur license available at that time. Other CB'ers claimed they didn't go into ham radio because they were wary of joining a hobby where they were being ridiculed so openly and mercilessly.

For whatever reasons, the code-free ham license looks to have played some role in improving the present image of CB operators. Happily, it's rare to hear CB'ers being put down these days. Maybe, after more than 35 years, nobody remembers where the CB channels came from. It's not certain if or how today's hobby might have benefitted had we managed to hang on to many of those who drifted away when CB fever cooled down in 1980.

Should the FCC have designated AM and SSB CB channels? Was the FCC 15 years too late with the code-free amateur license? Who knows now?

Still, it's great to see that two important and contributory areas of our hobby are finally being recognized and respected as worthwhile endeavors. Moreover, they are viewed as independent of other communications activities, not as entry-level steps leading towards something else.

OK, so these things aren't as dramatic or apparent as a direct broadcasting satellite, or the latest hot IC being touted. But they are part of the evolution our hobby requires to keep maturing in order to appeal to new entrants who we need to keep it vital and thriving into the future.

Which is to say, you don't need to be a communications technician or engineer to contribute measurably to the future of the communications hobbies. The message is clear. Just participate in all of the areas of the hobby that you like best. Meanwhile, respect the interests of other hobbyists who are doing what makes them happy—even if you haven't the foggiest notion of how in the hell they could possibly be enjoying themselves. Not so difficult. ■

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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 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 N. Broadway, Hicksville NY 11801.

### Wants QSL's

My name is Jason Ormsby. I'm 15 years old, and I collect QSL cards from hams, CB'ers, and SWL's. I'm into CB'ing and am studying for my ham license. Please put my name and address in *Popular Communications*, as I'd like to receive QSL's from other hobbyists. Thank you.

Jason Ormsby,  
3610 Shirley Dr.,  
Bryan, TX 77808

### Brought Back Memories

I enjoyed the January *Beaming In* about the "Big Broadcast of 1952." I wasn't in broadcasting, but I do remember long distance reception when I was in the Navy going overseas in 1945. Thousands of miles from San Francisco, I heard KPO with a recording of Brahms 2nd Piano Concerto, and recall hearing the announcer (rather faintly) say that it was performed by Horowitz. The ship's sparks allowed me from time to time to listen to their very hefty receiver on the trip.

Wanted to become a ham, but could not learn the code. But my son did learn it, and he became a ham. I remember helping him hard-wire a transceiver kit about 20 years ago when he was around 16 years old. He was thrilled to contact Australia by CW with that 60-watt transmitter.

Have been a shortwave listener for a number of years. It's comforting to hear the familiar voices of BBC, or Deutsche Welle in my travels over the northeastern states, even while in Europe and Egypt.

David E. Licht  
(via e-mail)

### No Thanks for the Memory

This concerns Alice Brannigan's reprinted 1939 news clipping (June, '94 issue) reporting the "Nazi" government attempting to control radio reception by its citizens. What newspaper did the clipping come from? Can you produce any official German documents on this supposed policy? Can you show me the documentation

## Nazis Are Warned to Shun Foreign Radio

Berlin, Sept. 1 (UP)—Effective tonight, anybody in Germany who listens to a foreign radio broadcast is subject to a prison term, while those who spread reports from such broadcasts are liable, in special cases, to the death penalty.

"Every word coming from a foreign radio station is a lie," an official announcement declared.

The war measure, designed to preclude the dissemination of foreign propaganda and information adverse to the interests of Germany, said at the outset:

"Modern war and military weapons are only the means toward a decision. The influencing of the morale of the people is most important."

Here's Alice's controversial 1939 news clipping!

laying down this supposed law and the penalties claimed in the column? One biased American newspaper clipping from the atmosphere of 1939 is not proof of the claim. Produce real proof. Until then, stop writing fiction and stick to the facts.

Richard Monjure,  
109 Tchefoncte Drive,  
Covington, LA 70433

As odious as it was, the ban happened. Denying Nazi deeds that took place more than 50 years ago doesn't mean they didn't happen. The source of Alice's clipping is indicated in its dateline as "U.P." Those initials meant United Press (now known as UPI), a large and reputable press service supplying items to news media, worldwide. That story went out over the U.P. wire and appeared in hundreds of American newspapers. You can check that same date's newspaper file in your nearest library. This information is confirmed in numerous other independent sources, including *The Encyclopedia Britannica* under the "Propaganda" heading.

Insofar as German documentation, read *War Secrets in the Ether*, by Wilhelm F. Flicke. The book, translated by the CIA, was written during WWII by a highly placed German military communications officer. Flicke's book includes details of WWII Nazi laws and penalties relating to German citizens monitoring foreign radio broadcasts. A two-volume CIA translation edition of Flicke's book is published by Aegean Park Press, P.O. Box 2837, Laguna Hills, CA 92653.—Editor.

Perhaps the whole magazine should be renamed "Ye Olde Tyme Radio Enthusiast." Don't tell me Alice Brannigan's column deserves that much space as it has momentarily.

Leif Dehio,  
Philipp-Kittler-Str. 22,  
D-90480 Nurnberg, Germany

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# Maritime Scanning

## Tune Up Your Scanners, It's the Busy Boating Season!

BY CHRISTOPHER BLEECKER, KTX5AM

**C**ommercial marine users are active year-round, but when the good spring/summer months arrive, things really cook! That's when countless thousands of recreational boaters take to coastal waters, lakes, and navigable rivers. To scanner owners, it's a wonderful opportunity to tune in on these activities.

The primary method of maritime communications of interest to scanner users is the VHF-FM band. This consists of a series of numbered channels in the 156.05 to 157.425 MHz range. In North America, 157.175 MHz and below are simplex (stations in contact with one another use the same frequency). The nine channels above this frequency are designated for use by marine operators to pass ship-to-shore telephone calls. Marine operator communications use semi-duplex (ships and coast stations transmit on different channels). Since the marine operators' coastal stations are repeaters, it's normally necessary to monitor only the coast station's channel to hear both sides of a conversation.

The numbering system used in the VHF-FM band appears hap-hazard and confusing to people when the channels are arranged according to ascending frequencies. Channel 70 comes directly ahead of Channel 11. Channel 67 is higher in frequency than Channel 08, but is much lower than Channel 28! Even more bewildering is how some channels have the suffix letter "A" after their numerical designator.

Years ago, when the VHF-FM band was first established and the channel designator numbers were assigned, the frequencies were spaced at 50 kHz intervals. Much later, improved equipment selectivity and a need for additional channels brought about a modernized VHF-FM band with 25 kHz channel spacing. Because so many older radios bearing the original 50-kHz spaced channel numbers were still in use, it wasn't practical to renumber the entire new band. Only the newly created 25 kHz offset channels were given designators, and those had to be out of numerical sequence with the original channel designators. Hence, the patchwork appearance when shown according to frequency.

The VHF-FM band is used throughout the world, where many channels are designated for use in two-frequency (ship/coast) pairs. For instance, internationally Channel 22 allows ships to transmit on



157.10 MHz, and coast stations to transmit on 161.70 MHz. Also, in North America, some VHF-FM channels are unused (such as, Channels 02 and 04).

In North America, a certain amount of those channels internationally designated as two-frequency pairs are used exclusively for simplex communications on the ship frequency. In such instances, the suffix letter "A" is added to the numerical designator

for which signifies *Alternative* simplex operations (hence "Channel 22A") are specified. Not all boaters bother to mention the suffix letter.

### Who, What, Where

Our VHF-FM by-frequency chart provides the most commonly encountered uses for the frequencies this band in North



This crusty trawler has a wagon-load of antennas bristling from its rigging.



*This is the time of year when recreational craft are taking to the water by the hundreds of thousands. Now is the time to start listening.*

America, although there are a few local variations.

Commercial channels are used by, for example, tugs, ferries, tankers, cargo vessels, cable layers, ore carriers, work boats, water taxis, dredges, passenger liners, and fishing vessels. A large number of shore stations dispatching and otherwise communicating with their vessels operates on commercial channels, and can also be monitored on these channels.

Recreational channels are used by power boats and sailing vessels utilized for non-commercial purposes. The channels are employed for chit-chat between skippers, arranging for rafting-up parties, asking where the fish are biting, for coordinating races and regattas, running tournaments, for communications between boats and marinas, and many other purposes.

Distress calls are made on Channel 16. All Coast Guard facilities monitor this channel, as do virtually all commercial coast stations and vessels. When the Coast Guard responds to a distress call, they will shift the communications over to Channel 22A, or another suitable one available to the vessel. Every VHF-FM monitoring effort must

certainly include Channels 16 and 22A.

The majority of distress calls result from running aground or out of fuel. Once in a while there's a dead battery, or an anchor line tangled in a prop. Happily, more serious distress situations are rare. But hoax distress calls are on the rise. Never a dull moment on Channel 16.

Police and harbor patrol vessels can operate on Channels 16 and 22A. Some agencies use Channel 17 as their marine operational frequency in addition to their regular police frequencies.

### Where Else & What Else?

In addition to the VHF-FM band, many boats have made use of cellular phones. Cellphone service is more convenient than placing a phone call via the VHF Marine Operator, where service is often inadequate. (Naturally, you aren't supposed to listen to cellular calls. So please don't scan between 869 and 894 MHz.)

In the U.S., the Coast Guard has dedicated Channels 01A, 05A, 11, 12, 14, and 63A to its Vessel Traffic Services systems. The Coast Guard uses VTS systems in des-

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CIRCLE 94 ON READER SERVICE CARD

ignated large, busy, port areas to coordinate vessel movement and prevent collisions. Vessels are required to contact the Coast Guard to report their positions, navigation and conditions affecting their ability to navigate. VTS may not currently be using Channels 01A and 63A in the New Orleans and Lower Mississippi areas.

The U.S. Coast Guard has VHF-FM band working channels designated exclusively for its own internal operations; use is restricted to Coast Guard stations. These are Channels 21A, 23A, 81A, and 83A.

In various areas, you can also monitor the USCG's operational communications on one or more other frequencies. These include the following:

- |          |            |
|----------|------------|
| 162.05   | 164.9125   |
| 162.125  | 164.9875   |
| 162.225  | 165.2125   |
| 162.25   | 165.3125   |
| 162.325  | 165.5625   |
| 162.5625 | 171.2375   |
| 163.125  | 171.3125   |
| 163.175  | 171.3375   |
| 163.4375 | 171.3625   |
| 164.30   | 381.7      |
| 164.55   | 381.8 MHz. |
| 164.775  |            |

Hams belonging to the U.S. Coast Guard Auxiliary have been monitored over communications networks on 143.28 and 143.875 MHz.

### VHF-FM Maritime Channel Usage (Frequency Sort)

Ship	Coast	Ch. #	Popular usage(s)
156.05	156.05	01A	Port Operations, New Orleans & Lower Miss. River
156.175	156.175	63A	Port Operations, New Orleans & Lower Miss. River
156.25	156.25	05A	Port Operations, Seattle
156.275	156.275	65A	Port Operations
156.30	---	06	Intership Safety & Search/Rescue
156.325	156.325	66A	Port Operations
156.35	156.35	07A	Commercial
156.375	---	67	Commercial Intership
156.40	---	08	Commercial Intership
156.425	156.425	68	Recreational
156.45	156.45	09	Commercial; Recreational Calling
156.475	156.475	69	Recreational
156.50	156.50	10	Commercial
156.525	156.525	70	Distress (Digital Selective Calling only)
156.55	156.55	11	Port Operations, New York, Houston, Pr. Wm. Sound (AK), New Orleans
156.575	156.575	71	Recreational
156.60	156.60	12	Port Operations, New York, New Orleans, & Houston
156.625	---	72	Recreational Intership
156.65	156.65	13	Navigational (Vessels to Drawbridges & Locks, 1 watt)
156.675	156.675	73	Port Operations
156.70	156.70	14	Port Operations, New York, New Orleans, & Seattle
156.725	156.725	74	Port Operations
---	156.75	15	Environmental broadcasts
156.80	156.80	16	Distress, Safety, Calling
156.85	156.85	17	Maritime Control, Gt. Lks. Weather, SAR training
156.875	---	77	Harbor Pilots & Large Vessels while docking, 1 watt
156.90	156.90	18A	Commercial
156.925	156.925	78A	Recreational
156.95	156.95	19A	Commercial
156.975	156.975	79A	Commercial; also Recreational on Gt. Lakes
157.00	---	20A	Port Operations Intership
157.025	157.025	80A	Commercial; also Recreational on Gt. Lakes
157.05	157.05	21A	Coast Guard
157.075	157.075	81A	Coast Guard
157.10	157.10	22A	Coast Guard Liaison with Civilian Vessels
157.125	157.125	82A	Miscellaneous Government Agencies
157.15	157.15	23A	Coast Guard
157.175	157.175	83A	Coast Guard & Coast Guard Auxiliary
157.20	161.80	24	Marine Operators
157.225	161.825	84	Marine Operators
157.25	161.85	25	Marine Operators
157.275	161.875	85	Marine Operators
157.30	161.90	26	Marine Operators
157.325	161.925	86	Marine Operators
157.35	161.95	27	Marine Operators
157.375	161.975	87	Marine Operators
157.40	162.00	28	Marine Operators
157.425	---	88A	Commercial Intership

There are VHF search and rescue frequencies in use, too. When there's a missing vessel or a sinking at sea, many of them activate. Therefore, you'll want to always keep an ear tuned to 123.1, 149.5375, 156.30, 282.8, 383.9, and 156.6 MHz. These are usually the most active of the numerous designated SAR frequencies.

Let's not forget that boaters make good use of CB radio. In many areas, small boats have a favorite locally-picked CB congregating channel for interesting chit-chat and to tell each other where the fish are biting. Fishing fans (even those aboard boats with VHF radios) monitor this all-important channel. The local boating CB channel varies from area to area. Ask any boater or at any fishing station for local marine CB channel information.

If you're into serious fishing, take note that Channels 08, 09, 18A, 67, and 88A are available for use by commercial fishing vessels and their associated fish-spotter aircraft. Aircraft are permitted to fly at a max-

imum altitude of 1,000 feet, and run 5 watts, when using these channels.

Located near a large port, or a busy sea-corridor? Frequencies 457.525, 457.55, 457.575, and 457.60 MHz are assignable for shipboard simplex or repeater (output) use. These are primarily used to allow radio comms to coordinate dockside cargo loading and unloading. Also, some vessels are so large that the crew needs to communicate by handheld radio. They may even use these frequencies at sea for on-board comms, and you'll find them interesting if you're in range. If a cruise is in your vacation plans, bring along your scanner and definitely tune them in.

You have enough frequencies here to keep you busy and interested right through the coming months. The VHF-FM marine band has enough frequencies to satisfy a great many scanning interests. If you haven't given it a try lately, why not punch up a couple of channels and see what it has to offer? ■

## HF 150 IBS★★★★

**REAL RADIO, RUGGED,  
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Simplicity makes the HF150 easy to operate, and the synchronous detection produces superb audio which enhances the outstanding performance!

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## SP150

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The latest from Lowe is a combination audio filter, amplifier and speaker. Works well with any SW receiver or transceiver, but designed to compliment the HF150 and PR150.

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- High pass filter
- Low pass filter
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- Headphone output



*The SP 150, PR 150 and the HF 150 shown  
pictured on the three tier rack system.*

## PR150 Pre - Selector w/ Pre-Amplifier

While a perfect match to the HF 150, this excellent unit is very effective with other SW receivers. Lowe's recently revamped model obtains wide coverage of 100KHz to 30MHz through the use of seven tunable bandpass filters. Multiple antenna inputs, pre-amp attenuator and much more. Hear what you've been missing by eliminating intermod & image interference.

**Antenna input:** 50ohm unbalanced, 600ohm balanced • **Power:** 10 - 15VDC

**Size:** 7.3"w x 3.2"H x 6.3"D



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## HF 225 IBS★★★★

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- Filter for all Modes: 2.2, 4.7, 10kHz 200Hz audio CW filter
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- 10-15VDC .15A (.3A MAX) AC/Nicads Opt.
- Size 10"W x 4.2"H x 8"D; 4.18 lbs.



### ACARS FROM LOWE.....The Air Master!

The Lowe Air Master is a super combination of hardware and software for the receiving and decoding of ACARS (Aircraft Communications Addressing and Reporting System). This is a new teletype message format used to transmit data between commercial aircraft and airport ground stations. ACARS was developed and implemented to reduce the work load of flight crews by using computers to handle routine communications. This information is transferred via VHF to the ACARS ground station. Generally speaking, if your customer is able to receive VHF voice transmission, then ACARS traffic should be no problem from the same source. When using the Air Master software with your PC and an air-band receiver, you'll be able to view the ACARS messages as they are received. The package includes the MS-DOS software for use with a 386 or higher PC, the computer interface and manual. The interest level in this market is growing rapidly. Be sure to get a demo or evaluation unit for your store. Look for upcoming product reviews and new product releases.

## HF 225E EUROPA

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# Selected English Language Broadcasts

## Spring—1995

BY GERRY L. DEXTER

**T**here are hundreds of English language broadcasts aired every day on shortwave. This is a representative listing and is not intended to be a complete guide. While every attempt is made at making the list as up-to-date as possible, stations often make changes in their broadcast hours and/or frequencies with little or no advance notice. Some broadcasters air only part of a transmission in English or may run the English segment into the next hour or more. Some stations have altered schedules on weekends. Numbers in parenthesis indicate an English start time that many minutes past the hour. All times are in UTC, frequencies in kHz.

Time	Country	Frequency	Time	Country	Frequency
<b>0000:</b>	BBC	5975, 6005, 6175, 7325, 9590, 9915, 11750, 12095, 15260		R. Romania Int'l	6155, 9510, 9570, 11830, 11940
	RFPI, Costa Rica	7385USB, 9400, 12050, 15030USB, 17905		R. Cairo, Egypt	9475, 11660
	Radio Havana Cuba	6000, 9550, 13700		(Sun) R. Norway	9560
	China Radio Int'l	9780, 11715		(30) R. Yugoslavia	9580
	Spanish National Radio	9540		(30) R. Portugal	9570, 9705, 11840
	(30) VOIRI, Iran	7260, 9022		(30) R. Budapest, Hungary	9835, 11910, 15220
	AWR, Costa Rica	5030, 9725, 11870		(50) Vatican Radio	6095, 7305
	R. Prague, Czech Republic	5930, 7345		(30) R. Tirana, Albania	9580, 11840
	R. Yugoslavia	9580, 11870		R. Canada Int'l	6120, 9755, 11845
	(40) R. Nacional Venezuela	9540	<b>0300:</b>	R. Educacion, Mexico	6165 (English/Spanish)
	R. Pyongyang, N. Korea	11335, 13760, 15130		Radio New Zealand	15115
	(30) R. Netherlands	6020, 6165, 9840		HRVC, Honduras	4820
	(50) RAI, Italy	9750, 11800		Radio Cultural, Guatemala	3300
	R. Vlanderen Int'l, Belgium	5910		TIFC, Costa Rica	5055
	R. Vilnius, Lithuania	7150		China Radio Int'l	11715, 11840
	Croatian Radio	13830		Radio Prague, Czech Republic	5930, 7345
	R. Bulgaria	7205, 9700		(40) V of Greece	9380, 9420, 11645
	R. Thailand	9655, 11905		Swiss Radio Int'l	6135, 9860, 9885
<b>0100:</b>	R. Ukraine Int'l	7055, 7180, 9620, 9810, 11870		UAE Radio	11945, 13675, 15400
	R. Budapest, Hungary	6025, 9835, 11910, 15220		R. Japan	5960, 9565, 11885, 11895, 15210, 15230, 17845
	V of Russia (Radio Moscow)	5940, 7105, 7165, 7180		R. Lesotho	4800
	Swiss R. Int'l	5885, 6135, 9885, 9905, 12035		R. Netherlands	6015, 6165
	(30) R. Tirana, Albania	9580, 11840	<b>0400:</b>	Voice of Turkey	9445
	R. Japan	9565, 11840, 11860, 11910, 17845		R. Romania Int'l	6155, 9510, 9570, 11830, 11940
	(30) R. Austria Int'l	9655		Voice of America	5995, 6035, 6040, 6140, 7170, 7280, 7405, 9575, 9885
	R. Korea, S. Korea	7550, 15575		R. Botswana	4830, 7255
	HCJB, Ecuador	9745, 12005, 17490SSB, 21445SSB		(30) R. Nigeria	4770
	Slovak R., Slovakia	5930, 7300, 9440		HCJB, Ecuador	9745, 12005
	(30) V of Greece	9420, 9935, 15650		China Radio Int'l	11680, 11840
	Deutsche Welle, Germany	6040, 6085, 6120, 6145, 9565, 9670, 9700		R. Ukraine Int'l	6055, 7180, 9810, 11870
<b>0200:</b>	(30) R. Sweden	6200, 9850	<b>0500:</b>	R. Bulgaria	7335, 9700
	RAE, Argentina	11710		Kol Israel	7435, 9435, 17545
	V of Free China, Taiwan	5950, 9680		(30) R. Austria Int'l	6015, 6155, 13730
				V of Nigeria	7255

W R T H  
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Specifications subject to change without notice. Some accessories and/or options are standard in certain areas. Check with your local Yaesu dealer for specific details.

Time	Country	Frequency	Time	Country	Frequency
	Radio Havana Cuba	9820		(30) R. Tashkent, Uzbekistan	9540, 15220, 17745
	CBC Northern Service	9625		(30) R. Finland	11735, 15400, 17740 SSB
	Deutsche Welle, Germany	5960, 6045, 6120, 6185		(35) Voice of Greece	15630, 17520
	R. Japan	6025, 9565, 11885		(30) UAE Radio	13675, 15320, 15395, 21605
	(Sun) R. Norway	5910		(30) (Fri-Sun)	
	(30) R. Finland	6120, 9635, 11755		R. Ulaanbaatar, Mongolia	12000
<b>0600:</b>	GBC, Ghana	4915		Tue-Wed	
	V of the Mediterranean, Malta	9765		R. Ulaanbaatar, Mongolia	12015
	Radio Kiribati	9825		R. Polish Radio	6135, 7145, 7270, 9525, 11815
	Vatican Radio	6245	<b>1400:</b>	Kol Israel	15640, 15650
	ELWA, Liberia	4760		R. Australia	5995, 7240, 9610, 9710, 11800
	Channel Africa, S. Africa	9695		China Radio Int'l	7405
	V of Russia (Radio Moscow)	5905, 5930, 7175, 7270, 7345, 9850, 9895, 12050		V of Mediterranean, Malta	11925
	R. Korea, S. Korea	11945		(Sun) R. Canada Int'l	11955, 17820
<b>0700:</b>	R. Prague, Czech Rep.	5930, 7345, 9505		R. Jordan	9560
	Wings of Hope, Lebanon	11530		All India Radio	7412, 9950
	(40) TWR, Monaco	7110		(Sun) RTV Morocco	17595
	V of Free China, Taiwan	5950		(30) R. Sweden	11650, 15240
	(16) Radio New Zealand	9700		(35) V of Greece	15650, 17520
	(15) HCJB, Ecuador	9745, 11925, 21455 USB	<b>1500:</b>	R. Algiers Int'l	11715, 15205, 17745
	Croatian Radio	5920, 13820		FEBA, Seychelles	9810, 11710, 15330
<b>0800:</b>	Radio Australia	5995, 6020, 6080, 7240, 9580, 9710, 11720, 15240, 17695		Polish Radio	7285, 9525, 11840
	KNLS, Alaska	7365		R. Pyongyang, N. Korea	9325, 9640, 9977, 13785
	SIBC, Solomon Is.	5020, 9545		KSDA, Guam	9370
	CFRX, Canada	6070		R. Ethiopia/V of Ethiopia	9560
	(30) R. Austria Int'l,	6155, 13730		Channel Africa, S. Africa	11770
	(30) R. Vlanderen Int'l, Belgium	5985, 9925		(30) All India Radio	7412, 9910, 11670
<b>0900:</b>	(10) R. Ulaanbaator, Mongolia	11850, 12015	<b>1600:</b>	R. France Int'l	6175, 11700, 12015, 15530
	(30) FEBC, Philippines	11690		R. Pakistan	9470, 11570, 13665, 15515, 15555, 17555
	Radio One, Singapore	5010, 5052, 11940		BSKSA, Saudi Arabia	9705, 9720
	AWR, Italy	7230		(30) Vatican Radio	11640, 15090
	KTWR, Guam	15200		UAE Radio	13675, 15320, 15395, 21605
<b>1000:</b>	V of Vietnam	9840, 12020, 15010		AWR, Costa Rica	13750
	AWR, Costa Rica	5030, 9725, 13750	<b>1700:</b>	(30) HCJB, Ecuador	15350, 21455 USB
	Voce of America	5985, 9590, 11915		Voice of Azerbaijan	15240
	Kol Israel	17545		Channel Africa, S. Africa	11770
	Radio New Zealand	9700		R. Pakistan	11570, 15550
	FEBC, Philippines	9800, 11685		(30) Vatican Radio	9725, 11625
	(30) UAE Radio	13675, 15320, 15425, 21605		V of Russia (R. Moscow)	7205, 9550, 9890
	(30) Georgian Radio	11815		V of America	11920, 12040, 13710, 15410, 15445, 17785, 17895
<b>1100:</b>	R. Singapore	9530	<b>1800:</b>	RAE, Argentina	15345
	R. Japan	6120, 9610, 15295		Radio Kuwait	11990
	R. Pyongyang, N. Korea	6576, 9977, 11335		BSKSA, Saudi Arabia	9705, 9720
	HCJB, Ecuador	15115, 17890		(40) Voice of Greece	15640, 15650, 17525
	R. Jordan	13655		R. Nacional, Brazil	15265
	NBC, Papua New Guinea	4890		(Sun) R. Norway	11930
	R. Korea, S. Korea	6145, 9650, 9980		(30) R. Sweden	6065, 9655, 15145
	R. Vlanderen Int'l, Belgium	6035, 15510, 17595	<b>1900:</b>	WRMI, USA	9955
	AWR, Costa Rica	5030, 9725, 11870, 13750		HCJB, Ecuador	17490USB, 17790, 21455USB, 21480
	Kol Israel	15640, 15650, 17575.		(30) R. Netherlands	17605, 21590
	R. New Zealand	9700		(30) VOIRI, Iran	9022, 11965
	Monitor Radio, USA	7395, 9355, 9425		Spanish National Radio	11775
<b>1200:</b>	(30) R. Finland Intl	11735, 15400, 17740 USB		R. Japan	6035, 9560, 9580, 11800, 11850
	R. Australia	6020, 6080, 7240, 9580, 9710, 15630	<b>2000:</b>	(30) Kol Israel	7405, 17575
	(30) R. Bangladesh	13620		(05) R. Damascus, Syria	12085, 15095
	R. Tashkent, Uzbekistan	9540, 15220, 17745		(45) All India Radio	9910, 9950, 11620, 11715, 15225
	Radiobras, Brazil	15445		(30) R. Cairo, Egypt	15375
	China Radio Int'l	9655, 9715, 11660, 11795		Swiss Radio Int'l	9885, 12035, 13635, 15505
	(30) R. France Int'l.	9805, 11615, 15195, 15325, 17575		R. Kuwait	13620
	(30) V of Vietnam	9840, 12020, 15010			
	(30) SLBC, Sri Lanka	9720, 15425			
	(30) Croatian Radio	5920, 7370, 13640, 13830			
<b>1300:</b>	KNLS, Alaska	7365			



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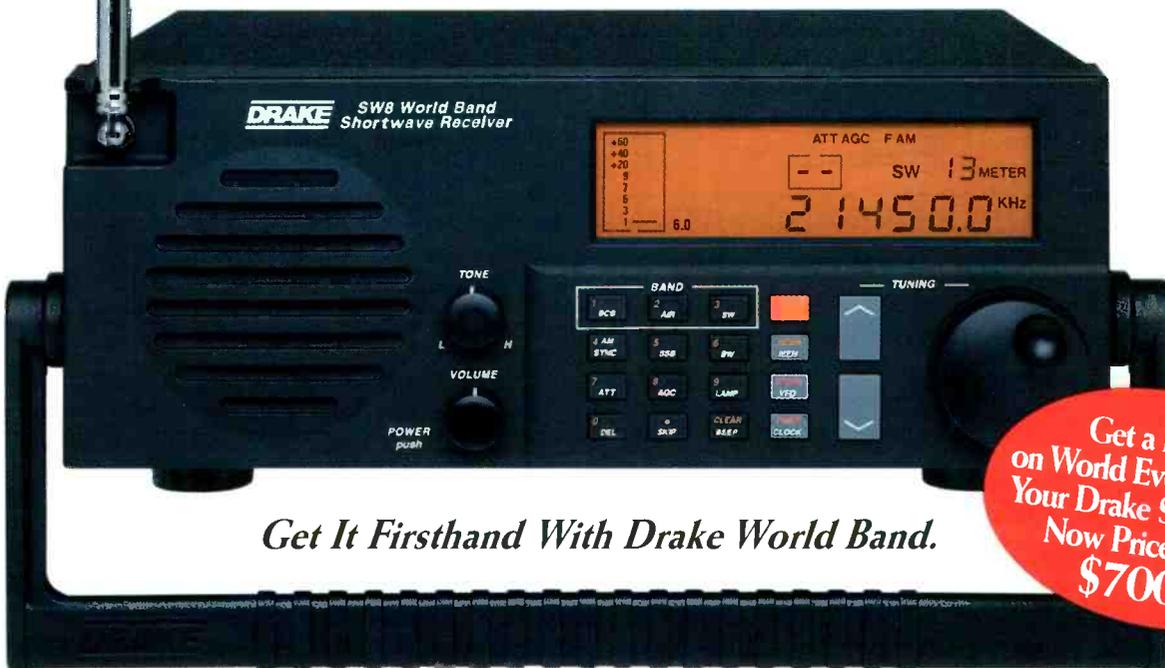
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	(10) R. Damascus, Syria	12085, 15095	
	(30) R. Yugoslavia	6100, 9505	
	(15) Radio Cairo, Egypt	9900	
	(30) R. Canada Int'l	5995, 7260, 11945, 13650, 13670, 15140, 15325, 17820	
	(30) V of America	7415, 13710, 15410, 15445, 15580, 17800, 21485	
	2200:	Radio Havana Cuba	6180, 17760
		V of Free China	17750, 21720
		R. Bulgaria	7105, 9700
R. Ukraine Int'l		5940, 6020, 7180, 7240, 11870	
R. Havana Cuba		9550	
V of UAE		9605, 9770, 11885	
(45) All India Radio		9705, 9910, 9950, 11620	
V of Russia (R. Moscow)		5995, 6055, 7150, 7380, 7400, 9550, 9620	
BBC, England		6195, 7325, 9410, 12095	
2300:		V of Turkey	9445
	(30) R. Vlanderen Int'l, Belgium	9930, 13655	
	R. Pyongyang, N. Korea	11700, 13650	
	(30) R. Netherlands	6020, 6165	
	(35) V of Greece	9425, 11595, 11645	
	R. Canada Int'l	5960, 11845	
	(30) V of Vietnam	90840, 12020, 15010	
	AWR, Costa Rica	5030, 9725, 11870	
	R. Pyongyang, N. Korea	11700, 13650	
	(30) R. Vilnius, Lithuania	5990, 6105, 9680	
Radio Japan	6055, 6155, 9560, 9580, 11850		

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# Radio: A Look Back

## Examining Our Rich Heritage

BY ALICE BRANNIGAN

In the January issue, we wrote about *Radio Normandy*, a 1930's British-owned station. Inasmuch as the BBC didn't run radio commercials on its stations, *Radio Normandy* had been established in France in order to beam commercial radio into Britain. We noted that one of *Radio Normandy*'s advertisers was Selfridges.

That reference rang a bell with reader Monty Bancroft, W6NJW (ex-G5BUR, ZLOADJ, and VK4CPE), of Sun Valley, Calif. Monty, now age 77, just retired from a career in commercial radio. He wrote to point out that Selfridges is a world famous department store located on Oxford Street in the heart of London. It was founded in the early 1900's by an American, Gordon Selfridge. Monty was born and lived only a few blocks from Selfridges.

It wasn't only Selfridges' role as a great store that Monty fondly recalls from his youth. In 1926, the store was the location of 2LO, London's first radio station, memorably known as *London Calling*.

In those days, Selfridges had a tea garden on the roof. As an eight-year-old would enjoy being taken there by his parents for afternoon tea. He would go over to the window of the 2LO transmitter building to gaze in awe at the large transmitting tubes with their glowing filaments. Says it created the curiosity that shaped his future career.

His father built a crystal set and connected it to a bedspring antenna. Monty lived so close to the station, and the signal in the headphones was so loud, that 'phones could be placed in a large bowl to reinforce the



A 1926 view showing one of 2LO's towers atop Selfridge's, London.

sound for the entire family to gather and listen together.

Monty also remembers that this was when British citizens were required to pay about 10 schillings to purchase a license to own a radio. That was more than his fam-

ily felt the honor was worth. They used to have to hide the radio when strangers came to the door. They feared it might be the dreaded radio inspector looking for unlicensed radios.

Monty's letter sent us to the archives for additional information. We were able to find a couple of photos of 2LO while it was located at Selfridges, and learned that this was quite a notable broadcaster in its day.

This station was one of the BBC's two main outlets. Intended for reaching London-area audiences, 2LO operated on 822 kHz, and ran 3 kW. The BBC's other major transmitter at the time sought to cover the entire British Isles. That was 5XX, Daventry, which ran 26 kW on 188 kHz. Many local stations in the British Isles received 5XX and relayed it on mediumwave frequencies. These stations included locations in Scotland, Ireland, Wales, as well as cities such as Liverpool, and Manchester.

Station 2LO had one of the first transatlantic signals that could be monitored in North America. It was a relatively powerful station, it used English, and was on a good frequency for reception here. These factors helped 2LO become famous in North America during the 1920's.

It was being monitored in eastern areas by listeners having the most advanced radios, and using large antenna systems. Yet, the ability to receive 2LO became the standard 1920's "big fish" lie. A popular boast of the era concerned receiving 2LO's signals. Almost everybody claimed they could hear 2LO. Even people with the most basic junk radios contended they heard



The 3 kW transmitter used by 2LO. It was installed on the roof of Selfridge's, London.



This late-20's cartoon ridicules selling gullible American customers inferior radios at ridiculously high prices. Merely install them in antique-styled wooden cabinets and guarantee the radios could receive London's 2LO.

2LO. Salesmen trying to hype inferior radios never failed to point out the sets were good enough to bring in 2LO.

Monty's first-hand information about this historic broadcasting station is valuable. As a matter of fact, it's priceless.

## Here's a Station You've Heard

Salt Lake City's KSL is a 50 kW powerhouse on 1160 kHz. Chances are that any DX'er who's ever tuned the AM band at night has heard their signal. Reader Keith D. West, of Bountiful, Utah, wrote to mention that he likes this section of POP-COMM, but hasn't ever seen information about this pioneer broadcaster.

Keith pointed out that, before retiring last August, he spent 37 years working for the *Deseret News*, Mountain America's first newspaper. He mentioned the paper was first published in 1850. In the early 1920's, the newspaper started a weekly radio page, including lessons in basic technology. The author of this radio page was radio hobbyist, H.C. Wilson, 6ZM.

Keith tells us that Wilson's enthusiasm eventually caught the interest of the newspaper's editor. This led to the establishment of a 500-watt station, KZN, owned by the publication. Keith told us that KZN was the starting point for today's KSL. We went to the archives to dig out the story.

KZN received its license on April 21, 1922, and commenced broadcasting on May 6th. It was one of America's earliest broadcasters. The single-operator station had a homebuilt transmitter operating on 833 kHz. It was little more than a hobby broadcaster. The KZN antenna, as described on the station's QSL card, was a 120-foot long Inverted-L, located 40 feet high atop the newspaper's office building. There were eight wires spaced 39 inches apart. This antenna doubled on 800 kHz for CW operations over Wilson's amateur station, 6ZN. The antenna was mounted on a tall smokestack until it came down in a lightning storm.

In 1924, the station was purchased by F.W. Cope, and his son, John Cope. The licensee name changed to Cope and Johnson, the frequency shifted to 1120 kHz, and the call letters KFPT replaced KZN. Soon after, the licensee name was changed to Radio Service Corp., of Utah.

The new owners got the Latter Day Saints Church and the Salt Lake Tribune Publishing Co., interested in lending the station the money to put up a 1 kW transmitting facility. This was to be in exchange for about 51% of the stock. The Salt Lake Tribune acquired partial ownership in exchange for interest and news services. In 1925, the call letters were changed to KSL, the frequency shifted to 1000 kHz, then later to 900 kHz. In 1928, the first transcontinental feed of the Salt Lake (Mormon) Tabernacle Choir went out over NBC. Late in 1928, the frequency was changed to

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*H. C. Wilson*

Manager Radio Dept.

Rare QSL from short-lived Utah pioneer broadcaster KZN, which evolved into modern-day station KSL. (Courtesy Keith D. West, Utah.)

1130 kHz. KSL's slogan was *The Voice of The Intermountain Empire*.

In 1930, KSL increased its power to 5 kW, further upped in 1932 to the maximum 50 kW from its transmitter site in Saltair, Utah. In 1941, the station changed to its present 1160 kHz slot on the band.

The present licensee of KSL is Bonneville International Corp. May, 1995, marks the KSL's 73rd year on the air. Alas, another great broadcaster that can trace its roots back to a ham operator's homebrew transmitter.

We appreciated Keith's letter about KSL. It sent us into the dusty archives to find out more. Also, thanks to Keith for sending in the rare KZN veri card. KZN wasn't widely heard, it existed for only two

years, and that was more than 70 years ago. We would venture a guess that this QSL from KZN might well be the only one still extant.

## Early Police Radio Systems

In 1915, the New York City Police Department established its first station, KUVS. This station had a spark transmitter and was used for harbor communications. It operated on 667 and 1000 kHz. KUVS attracted much attention during WWI when it served the newspapers by supplying lists of names of American troops on returning ships. In 1928, the NYPD replaced KUVS with a more mod-

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*R.A.G.*

This 1930 QSL from KSL indicates the owners were Radio Service Corporation of Utah.

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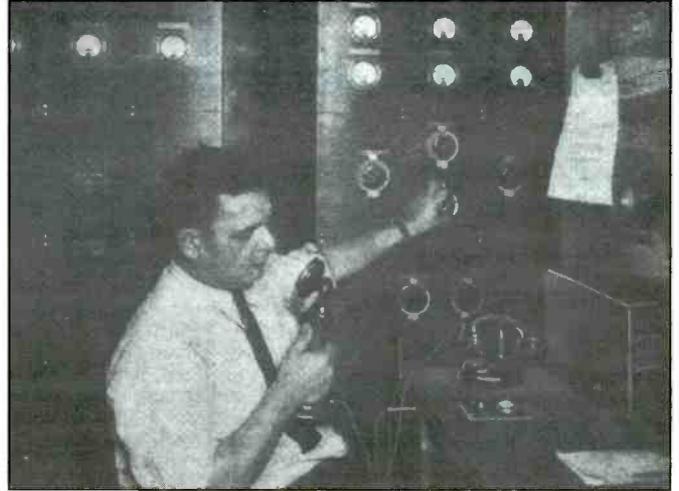
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Operating room of the New York City PD's 1931 station, WPY. This station was used mainly for harbor communication. Dispatching was handled over the AM broadcast band!



In 1931, the Los Angeles PD opened its dispatching station, KGPL, on 1712 kHz. Here's it's first day in operation.

ern vacuum-tube station. It was known as WPY, and it operated on 408 kHz (later changed to 438 kHz).

The NYPD had one-way voice traffic and alarms in the early days, too. In 1923, the agency opened WLAW, a 500-watt station on 833 kHz for this purpose. WLAW was licensed as a regular broadcasting station. In 1924, WLAW apparently evolved into the 500-watt New York City municipi-

pal broadcasting station, WNYC, which continued dispatching police units. By 1931 the Federal Radio Commission told WNYC to end this practice because it was no longer within the scope of the broadcast service regulations. This was OK with the NYPD as, they were ready to move their dispatches to the shortwave bands where things were more confidential.

Fact is, in 1931, other cities around the

nation already had well-established operational police dispatching services on the shortwave frequencies. Plenty of new systems were in the planning process or were awaiting licenses. The Michigan State Police Michigan maintained a shortwave network. Curiously, the five station network of the Pennsylvania State Police was on longwave, 257 kHz.

Detroit's Police Dept., had been oper-

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*Station 5XX, the BBC's magnificent 26 kW longwave broadcast station at Daventry. This 1926 view was from the top of one of its two towers. The other tower is at the top of the photo.*

ating shortwave station WCK, at Belle Isle, since at least 1928. At first the 400-watt station was on 2072 kHz, but by 1931, WCK was on 2416 kHz. During daylight hours, police patrol cars units could copy WCK's dispatches from as far as 20 miles away. DX'ers across North America logged it every night. An even better signal came from 5 kW WRDS on 1662 kHz, the Michigan State police station at Lansing.

By 1931, the Chicago Police Dept. was operating three stations on 1712 kHz, WPDB, WPDC, and WPDC. The Los Angeles Police Dept. had just set up shop on 1712 kHz with its dispatching operations. This was the LAPD's station, KGPL.

Some other PD's on popular 1712 kHz in 1931 included Beaumont, Cincinnati, Cleveland, Dallas, Rochester, and Syracuse. On 2416 kHz there was Franklin Co. (Ohio), Minneapolis, and Seattle. Frequency 2440 kHz was occupied by Flint, Grand Rapids, Miami, Lansing, and Phila-

delphia. Over on 2422 kHz, you could find Buffalo, Louisville, Passaic, St. Paul, and Kansas City (Mo.). On 2470 kHz, Davenport, Cedar Rapids, and Kokomo held forth. There were others, too, but in 1931, these were the largest cities on the air and the dominant police frequencies.

Until about 1950, municipal, county, and state police dispatchers, as well as fire service radios, could be monitored on frequencies between the high frequency end of the broadcast band and 2500 kHz. By 1950, two-way systems on frequencies above 30 MHz had turned HF dispatchers into history.

We look will be looking for you in June. Hope you will be looking for us! Your support of these pages is encouraged. We depend upon and always appreciate old time QSL's, photos and postcards showing radio and wireless facilities, old station listings, clippings, suggestions, and personal recollections. ■

**IF YOU TURN THIS PAGE, YOU GET SOMETHING**

**FREE**

# Scanning AWOS

## The VHF Weather Stations NOAA Never Told You About!

BY LEWIS KESEBERG, KCA6BK

**T**here has been plenty of publicity about the NOAA VHF weather services that are provided nationally on several channels in the 162 MHz band. You can get special receivers for these channels, and some scanners have front-panel buttons that will provide instant access to these stations. The NOAA VHF weather stations provide a useful and convenient information to the general public.

Lesser known to the public-at-large are AWOS stations. These are also transmissions that broadcast weather information. Most of them are VHF, and can be received on scanners that tune the VHF aero band. Well, that is, if the scanner is in range of an AWOS station. There aren't (yet) nearly as many AWOS stations in operation as NOAA weather stations, although the number has been increasing.

AWOS stations are operated at airports for the benefit of aviation interests. Their transmitter power is less than that used by the NOAA stations, and their VHF antennas aren't as high (nor do they have the signal gain). Therefore, AWOS signals don't have the ground-level coverage equal to the average NOAA station.

The letters AWOS represent the words *Automated Weather Observing System*. Although there are several categories of information service that might be offered by an AWOS, most provide what is termed AWOS-3 service. That means an automated voice provides data relating to: temperature, wind, dewpoint and density altitude, visibility, cloud and ceiling information, as well as altimeter setting. This AWOS is constantly being fed data from weather instruments. The information it transmits is always being revised, so it is updated and correct to the minute.

Except during periods of unusual or severe weather, NOAA stations don't change or update their "current readings" data nearly as often as AWOS stations. If you are within receiving range of an AWOS, you'll find that it offers a quick way of getting the current weather stats, and you don't need to wait for the NOAA an-



*AWOS stations are intended to serve aeronautical interests. They can be useful to scanner owners who know their frequencies and locations.*

nouncement tape to cycle through several minutes of chatter that might not be of immediate interest to you.

Keep in mind that NOAA weather radio provides short and long range forecasts forecasts and a considerable amount of other vital weather-related information not given by an AWOS station. NOAA stations also broadcast tornado and storm warnings and alerting tones. These alerting transmissions are not provided by an AWOS. So, while an AWOS station isn't a substitute for an NOAA station, it's an excellent quick-check to obtain current readings.

Accompanying this report is what we believe to be a complete listing of all AWOS stations. Several operate below 500 kHz in the LF band. These must be monitored using a communications receiver.

### Alabama

Auburn-Opelika Pitts: 119.275 MHz  
Gadsden: 127.825

### Alaska

Ambler: 125.5 MHz  
Aniak: 124.3 MHz  
Arlington: 135.075 MHz  
Campbell: 125.9 MHz  
Gustavus: 125.9 MHz  
Hooper Bay: 135.1 MHz  
Mekoryuk: 123.9 MHz  
Point Hope: 123.8 MHz  
Quinhagak: 134.8 MHz  
St. Mary's: 128.7 MHz  
Sand Point: 121.1 MHz  
Savoonga: 121.3 MHz  
Togiak Village: 119.3 MHz  
Unalakleet: 135.4 MHz  
Unalaska: 125.8 MHz  
Valdez: 118.8 MHz

### Arizona

Casa Grande: 132.175 MHz  
Tucson-Ryan: 118.05 MHz

### Arkansas

Batesville: 126.375 MHz  
Marion County: 132.075 MHz  
Rogers-Carter: 134.375 MHz  
Stuttgart: 125.075 MHz  
Walnut Ridge: 135.925 MHz

### California

Columbia: 124.65 MHz  
Corona: 132.175 MHz  
Lompoc: 133.875 MHz  
Siskiyou County: 124.55 MHz  
Visalia: 133.875 MHz

### Colorado

Durango: 135.175 MHz  
Fort Collins: 135.075 MHz  
Perry Stokes: 135.075 MHz  
Rock Springs: 135.075 MHz

### Connecticut

Waterbury-Oxford: 128.175 MHz

### Florida

Kissimmee: 128.775 MHz  
Ocala: 128.125 MHz  
St. George: 135.075 MHz

### Georgia

Baldwin County: 380.0 MHz  
Callaway: 126.325 MHz  
Douglas: 390 kHz  
Fitzgerald: 118.625 MHz  
Jesup: 340 kHz  
Rome-Jessup: 118.575 MHz  
Vidalia: 372 kHz

### Idaho

Caldwell: 135.075 MHz  
Coeur D'Alene: 135.075 MHz

**Illinois**

Galesburg: 109.8 MHz  
 Quincy: 293 kHz  
 Whiteside County: 119.175 MHz

**Iowa**

Ames: 126.55 MHz  
 Boone: 120.925 MHz  
 Clinton: 125.525 MHz  
 Fort Dodge: 124.75 MHz  
 Monticello: 119.275 MHz  
 Newton: 127.825 MHz  
 Shenandoah: 125.525 MHz

**Kansas**

Great Bend: 119.95 MHz  
 Newton: 123.875 MHz

**Kentucky**

Ashland: 132.425 MHz  
 Henderson: 128.175 MHz

**Louisiana**

De Ridder: 385 kHz  
 Hammond: 109.6 MHz  
 Patterson-Williams: 134.575 MHz  
 Natchitoches: 407 kHz  
 Slidell: 371 kHz

**Maine**

Auburn: 118.025 MHz  
 Bar Harbor: 118.025 MHz  
 Knox County: 119.025 MHz  
 Presque Isle: 118.025 MHz  
 Waterville: 120.025 MHz

**Maryland**

Cumberland: 128.625 MHz  
 Frederick: 124.875 MHz  
 Westminster-Poage: 121.25 MHz

**Massachusetts**

Provincetown: 119.025 MHz

**Mississippi**

Columbus/Starkville: 126.375 MHz  
 Natchez-Adams: 124.675 MHz  
 Hattiesburg: 128.325 MHz

**Missouri**

Kaiser/Lake Ozark: 135.325 MHz

**Montana**

Cumberland: 128.625 MHz  
 Lewistown: 135.075 MHz

**Nebraska**

Beatrice: 110.6 MHz  
 Columbus: 125.525 MHz  
 Kearney: 123.875 MHz

**Nevada**

Reno-Stead: 135.175 MHz

**New Hampshire**

Laconia: 135.525 MHz

**New Jersey**

Belmar/Farmingdale: 121.625 MHz  
 Wildwood: 119.875 MHz

**New Mexico**

Alamogordo: 127.825 MHz  
 Artesia: 126.725 MHz  
 Clovis: 135.375 MHz  
 Silver City: 126.725 MHz  
 Taos: 132.975 MHz

**New York**

Jamestown: 118.425 MHz  
 Olean: 118.375 MHz

**North Carolina**

Salisbury: 111.0 MHz

**Ohio**

Findlay: 132.725 MHz  
 Portsmouth: 125.175 MHz

**Oklahoma**

Ada: 117.8 MHz  
 W. Woodward: 118.425 MHz  
 Corvallis: 135.775 MHz  
 La Grande: 135.075 MHz  
 Newport: 133.9 MHz  
 North Bend: 135.075 MHz  
 Redmond: 135.725 MHz

**Pennsylvania**

Butler: 133.825 MHz  
 Coatesville: 126.25 MHz  
 Connellsville: 133.325 MHz  
 Du Bois: 132.725 MHz  
 Franklin: 118.175 MHz  
 Philadelphia/WingsFld.: 127.525 MHz  
 Philipsburg: 127.525 MHz  
 Pottsville: 127.575 MHz  
 Reedsville: 123.85 MHz  
 Washington County: 118.425 MHz

**Rhode Island**

Pawtucket: 120.025 MHz

**South Carolina**

Donaldson Center: 127.325 MHz  
 Hilton Head: 124.675 MHz  
 Myrtle Beach: 124.50 MHz  
 Walterboro: 221 kHz

**South Dakota**

Mitchell: 124.675 MHz

**Tennessee**

Athens: 125.425 MHz  
 Columbia/Mt. Pleasant: 128.625 MHz  
 Dyersburg: 135.625 MHz  
 Morristown: 126.725 MHz  
 Savannah: 123.925 MHz  
 Shelbyville: 119.275 MHz

**Texas**

Draughton: 134.975 MHz  
 Killeen: 128.575 MHz  
 McGregor: 135.525 MHz

**Utah**

Blanding: 127.75 MHz  
 Brigham City: 135.075 MHz  
 Delta: 127.75 MHz  
 Provo: 119.025 MHz  
 Wendover: 135.075 MHz

**Vermont**

Rutland: 118.375

**Virginia**

Blacksburg/VA Tech: 133.325 MHz  
 Farmville: 132.725 MHz  
 Franklin: 124.675 MHz  
 Hampton Roads: 109.6 MHz  
 Hot Springs: 118.8 MHz  
 Leesburg: 125.225 MHz  
 Lonesome Pine: 118.6 MHz  
 Melfa: 118.175 MHz  
 New River Valley: 127.375 MHz  
 Richmond: 128.625 MHz  
 Shannon: 128.125 MHz  
 Shenandoah: 125.525 MHz  
 Winchester: 124.85 MHz

**Washington**

Arlington: 135.075 MHz  
 Bremerton: 121.20 MHz  
 Pangborn: 135.075 MHz

**Wisconsin**

Eau Claire: 127.575 MHz  
 Manitowoc: 111.0 MHz

**Wyoming**

Jackson Hole: 135.175 MHz  
 Riverton: 108.8 MHz

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# Shortwave Sits in the Lap of Luxury

## The Drake R8 Brings Shortwave Entertainment to Guests at the Peninsula Hong Kong Hotel

BY DEENA MARIE AMATO, ASSOCIATE EDITOR

The finest accommodations and amenities are expected by astute travelers when trekking abroad. When on a holiday, the same level of service should be available when wanting up-to-date information on every day events. Finally, individuals staying in the Peninsula Hong Kong's Presidential Suites receive timely world and business news, even entertainment, compliments of the Drake R8 worldband communications receiver.

The world renowned Peninsula Hong Kong recently added Drake R8's to its Presidential Suites' many amenities as a way of providing guests with around the clock news, business information, and entertainment. The luxurious and exclusive hotel recently completed a 30-story tower housing 132 new guest rooms.

In addition to the ultimate in facilities, including a striking Roman-style swimming pool, a fully-equipped business center, extensive banquet and conference facilities, and a fleet of brand new Rolls Royce cars; the immense tower reflects the Peninsula Group's endeavor to merge modern technical innovations with traditional elegance. Imagine sitting in your suite eyeing the panoramic view of Hong Kong Island and the Kowloon peninsula while listening to a clear BBC broadcast! Each room is complete with classic European and Oriental decor, as well as user-friendly technology that offers guests a variety of worldwide information and services available at a moment's notice.

Fraser Hickox, Group Research and Technology Manager for the Hong Kong and Shanghai Hotels Ltd., parent company of The Peninsula Group, was primarily responsible for the selection and installation of Drake equipment in the hotels. "The R8 was selected...because of its user-friendly operation, excellent sensitivity, and synchronous detector which works well," says Mr. Hickox. "Drake has been a well established name in the radio business for many years, which, in turn gives us great confidence in the equipment." The Peninsula Group also uses Drake satellite and cable equipment in all of its hotels, according to Georgia Morgan, Drake Marketing Assistant.

The Drake R8 provides an easy-to-use front panel with clearly labeled functions; and easy access to all operating controls and push-buttons to accommodate the curious first-time shortwave listener. Experienced hobbyists also benefit as the Drake R8 has several fine tuning and filtering fea-



The Drake R8 worldband communications receiver is the Peninsula Hong Kong's newest amenity.

tures providing clear world band reception. The unit's synchronous detector improves reception of AM signals under severe fading conditions, while a dual-mode noise blanker minimizes electrical interference and impulse noise. A built-in pre-amp and attenuator "processes" both weak and strong signals to enhance reception; and a signal strength meter provides an indispensable aid for fine-tuning even the weakest stations. Finally, a sophisticated passband offset system eliminates adjacent interference, enabling the user to focus on the desired signal.

According to company representatives, the Drake R8 operates in the AM, LSB, USB, CW, RTTY, and narrow band FM

modes. The 100 kHz to 30 MHz frequency range covers all world band frequencies as well as most amateur bands.

Why travel half-way around the world only to find out you are unable to tune in international news, current events, entertainment, or other important information? Mike Brubaker, Vice President of Sales for Drake explains the R.L. Drake Company takes pride in knowing it plays a key role in this hotel's overall technology. "The R8 is the perfect radio for guests at a hotel where the finest quality in service and amenities is expected," he says. "We believe that guests will find the R8 a perfect compliment to the accommodations in the Presidential Suites." ■



The Peninsula Hong Kong—new home to the Drake R8!

# The FCC Frequency Almanac<sup>©</sup>

## Finest Set Of Frequency Books Available

Scanner frequency directories have entered a new generation of sophistication with the introduction of **The FCC Frequency Almanac<sup>©</sup>**. With one book for each state the publishers are able to give the scanner hobbyist more frequencies than other directories.

The simplified frequency format is also unique. First frequencies are listed by county. Each county then lists public safety by state, county and city agencies, including 800MHz. As if this were not enough, businesses and *all other services* are then listed. This makes for an incredibly large and complete frequency source for the scanner hobbyist (see table 1).

All data comes direct from the FCC data files and covers all land mobile and fixed, between 30MHz and 2GHz.

*wave and no broadcast.* **U.S. Scanner News** specializes in in-depth unbiased reviews, outstanding feature articles, accurate frequency information, the latest FCC actions affecting the hobby, helpful scanning and technical hints, plus regular monthly columns. **This magazine is a must if you own a scanner.**

Subscription rates are 1yr \$18, 2yr \$32, 3yr \$46, Canada \$49 1yr. A sample copy is available for \$1 by 3<sup>rd</sup> class or \$3 by 1<sup>st</sup> class.

These directories and magazine are published by U.S. Scanner Publications, PO Box 14923, Portland OR, 97214. 800-890-6999, Fax 503-233-5176.

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CA	829	NH	88
CO	224	NJ	272
CT	100	NM	94
DC	See MD	NV	96
DE	48	NY	504
FL	472	OH	480
GA	336	OK	230
HI	56	OR	127
IA	272	PA	464
ID	128	PR/VI	116
IL	520	RI	56
IN	320	SC	164
KS	252	SD	121
KY	223	TN	261
LA	212	TX	840
MA	231	UT	104
MD(DC)	152	VA	270
ME	120	VT	72
MI	365	WA	172
MN	292	WI	288
MO	280	WV	136
MS	170	WY	128

Table 1

Prices depend on the size of the state:

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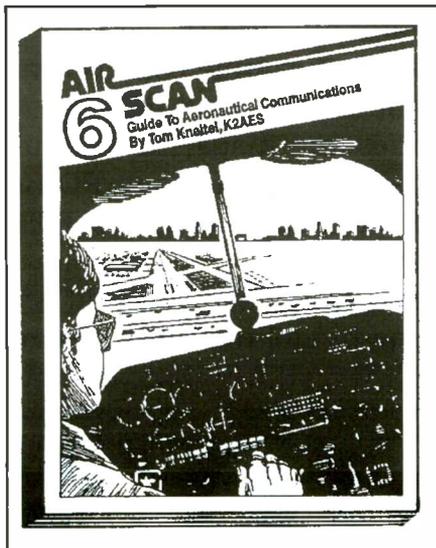
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## Ultimate VHF Aero Scanner Directory

It's here! The all-new updated 6th Edition of *Air-Scan Guide to Aeronautical Communications* is just out. This is a gigantic compilation of USA (including PR and VI) and Canadian VHF communications frequency and station information. Over the years, *Air-Scan* has become the most popular aero scanner guide. It's the largest single volume source of this data available. Prepared especially for scanner monitors, the new version contains far



more listings than any previous edition.

This latest edition of Tom Kneitel's guide brings into sharp focus every aspect of VHF aero band (118 to 136 MHz) monitoring of aircraft and ground stations and comms. For the USA, there are state-by-state listings of some 6,000 large and small landing areas (civil and private airports, heliports, seaplane bases, many "unlisted" airports, and military fields). Information provided includes (as applicable) control tower, approach and departure frequencies, operations, clearance delivery, ground control, unicom, ATIS, weather data, Flight Service Station, VOR, etc., channels.

To enhance scanning enjoyment, a number of U.S. airports are also shown with supplementary aero-related frequency listings for their ground and other activities. These might include (as appropriate, and per available information), for instance, activities such as airport security, airport operations, airline ground services, fire/rescue, federal agencies, hot air balloons, ultralights, soaring, military tactical, National Guard, Air National Guard, and other categories. These bonus listings include communications in the 30 to 50, 138 to 174, 406 to 512, and 800 MHz bands.

*Air-Scan, 6th Edition* individually lists

each of the (approximately) 700 Canadian civil and private airfields, seaplane bases, and military fields, having VHF communications facilities, and provides their frequencies. Listings include (as applicable) control tower, approach and departure, Flight Service Stations, unicom, VOR, clearance delivery, operations, ATIS, and other known VHF frequencies, such as for soaring, commercial users, etc.

The new *Air-Scan* also shows U.S. and Canadian Air Route Control Centers with all of their remote controlled VHF sites and frequencies. Also, there's a directory of all the remote VHF sites of the U.S. Navy's Fleet Area Control and Surveillance Facilities (FACSFAC). Several of these frequencies have been hard to come by in the past.

There's a useful frequency-sort showing the many aero-related frequencies between the 30 MHz band and the 800 MHz band. These include channels and sub-bands used by federal agencies, test pilots, flight schools, air/ground phones, traffic helicopters, search and rescue, military, and other services, as well as airlines for their own private company communications.

A new feature we especially like in this edition is the inclusion of the names of the airports listed. Also, the specific users or purposes of the ground-services frequencies listed, are identified in this edition. These, and a number of other user-friendly upgrades, maintains *Air-Scan's* latest edition as the most comprehensive, and essential VHF aero scanner monitoring guide covering North America.

The new 6th Edition of *Air-Scan* is \$18.95, plus \$5 shipping and handling (\$6 to Canada). Residents of NY State please add \$2.36 tax. Order from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725-0056. VISA/MC welcomed. Toll-free phone order line: 1-800-656-0056. Canadian/AK/HI orders: (516) 543-9169. Your favorite communications dealer may also carry this book.

## Look, Up in the Sky!

POP'COMM has often extolled the joys of direct reception of weather satellite imagery from NOAA satellites. POP'COMM reader Tom Loebel is an avid satellite monitoring enthusiast, or, as he calls it, an *arm-chair astronaut*. He says, "There's nothing like seeing real-time pictures appear on your own PC as the satellite continuously transmits pictures from low orbit over the Earth." Excluding the PC, which he had anyway, Tom's receiving gear cost less than \$1,000.

Tom has collected more than 120 beautiful photographs of North America and its weather, and has included them in an attractively published book entitled, *View*

## View From Low Orbit



*A photographic tour of North America and its weather by satellite*

*From Low Orbit*. These are black and white photos using high resolution picture transmissions (1.1 km) from low-orbit US and Chinese weather satellites.

These excellent photos show geographic features, striking cloud formations, and easily discernible weather systems. Each photo is captioned, providing information on the scene, the satellite being monitored, the date, and other relevant observations.

Here's a book that's not only fascinating for those interested in satellite imagery, but is also a fine educational tool for teachers and students. More than that, Tom Loebel's book provides a dazzling cat-bird seat view of our continent.

*View From Low Orbit* is regularly priced at \$16.95, plus shipping and handling. The author is offering POP'COMM readers the special price of \$12.95, plus \$3 shipping and handling. Mass. residents please add 5% tax. Order from Imaging Productions, 53 Underwood Rd., Hubbardston, MA 01452-1613.

## Remember Cathedral Radios?

We take modern high-tech radios for granted. Open a carton, remove the contents, plug the set in, and you can hear things like FM local stereocasters, AM stations, or shortwave broadcasters in Chile. Let's not forget that 70 years ago, when broadcasting was in its infancy, they had to design and build reliable broadcast radios simple enough for the average citizen to figure out how to operate. Not an easy task.

In David Rutland's book, *Behind The Front Panel*, we learn the way 1920's radios were made, why they operated, and the engineers' struggle to make them work. Rutland's well-researched story begins with the simplest crystal radios, proceeds through basic vacuum tube detectors and

amplifiers, and ends up with the super-heterodyne.

In his excursion, he takes readers through the operations of the circuits and their components. Many of the components used back then were either renamed or replaced by newer developments, and you come across objects such as variometers and varicouplers. Rutland explains all of these things, as he shows and describes many of the wonderful old circuits, explaining how they worked.

This is by no means a dry technobook. Rutland makes all of this quite interesting and easily understood. After all, these circuits are not very high-tech. He provides lots of good information on the pioneer companies and bright personalities involved in development of those early radios, as well as the problems they ran into. You'll find out about about circuit disasters, lawsuits and patent problems, cost factors,

**BEHIND THE FRONT PANEL**  
The Design & Development of 1920's Radios  
David Rutland

production and marketing considerations, and other factors that led to the creation of the radio manufacturing industry.

You'll see how and why some of the early companies, like Zenith, GE, Westinghouse, and RCA, are well known today. Others, whose names were household words in the 1920's, are forgotten now. So are the trade names of their radios and proprietary circuits so well known to 1920 consumers. Names like Neutrodyne, Superdyne, Technidyne, Counterphase, Synchophase have long vanished from our vocabularies.

This is an interesting story, skillfully told by David Rutland in his well-illustrated 186-page book. *Behind The Front Panel* is \$18.95 from Wren Publishers, P.O. Box 1084, Philomath, OR 97370. Phone (503) 929-4498.

## CQ's Amateur Radio Almanac

The 1995 Edition of CQ's *Amateur Radio Almanac* contains more than 500 pages of facts, figures, sources, tables, regs,

**CQ 1995 AMATEUR RADIO ALMANAC**  
Edited By Doug Grant, K1DG  
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• Useful Tables • Thousands of Facts & Figures

and other information relating to amateur radio. If it has to do with hamming, you'll find it in this reference book!

New updated in this edition includes propagation data, latest FCC regs, index of equipment reviews, FCC General Class question pool, revised US ham census, ham services on the Internet, ham club listings, and a lot more.

This edition has larger type than before, and a simplified format, making it even more useful. Next to a pot of hot coffee, and a stack of QSL cards, we can't think of anything else more useful than this book around an active ham shack.

CQ's 1995 *Amateur Radio Almanac* retails for \$19.95, and is available from many radio dealers. It may also be ordered from its publisher, the same folks who bring you *POP'COMM* each month, CQ Communications, 76 North Broadway, Hicksville, NY 11801. Phone orders: 1-800-853-9797.

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CIRCLE 91 ON READER SERVICE CARD

# More Central American Adventures

## We Visit Shortwave Stations in Guatemala and Costa Rica

BY DR. ADRIAN M. PETERSON, N9GWY

Let's go on a Central American odyssey with a visit to Costa Rica—in particular, to four different shortwave stations located in that country.

Oddly enough, in order to get from Guatemala City, in Guatemala, to San Jose, Costa Rica, it was necessary for me to return to Miami, and then take the next flight down. Same route both ways. Again, I was met at the airport by Manager David Gregory who took me to his comfortable home and his shortwave station in nearby Alajuela.

### Harmonics

Interestingly, while in Costa Rica, I heard harmonic radiation from AM stations located in three different countries, all at a good level. These were:

Country	kHz	AM	kW	Call	Slogan	Location
Guatemala	2100	1050	5	TGSL	Voz de Los Cuchamatanes	H'H'tenango
Costa Rica	2560	1280	2	TIHT	Radio Alajuela	Alajuela
Costa Rica	2960	1480	1	TIAW	Radio Puntarenas	Puntarenas
Ecuador	2968	1484			Off-channel; tentative identification	

### Monitoring Observations

Among many interesting DXing observations heard while in Costa Rica are the following:

kHz	kW	Country	City	Observations
1530	50	Belize	Punta Gorda	VOA Spanish to Central America
1580	50	Belize	Punta Gorda	VOA Parallel to the above
4420	1	Bolivia	Santa Rosa	Radio Santo Rosa
4485		Peru		Two stations listed, only one heard.
4506		Iraq/Iran		Kurdish station under flutter jammer.
5030	10	Ecuador	Quito	HCRP1, Radio Catolica, very strong.
88.3		Costa Rica	Santa Ana	Radio for Peace Int'l; parallel to SW

### Stations Not Heard

Perhaps just as important is the following list of stations that I did not hear while in Costa Rica indicating that, more than likely, they are off the air.

kHz	kW	City	Country	Call	Notes
3285	1	Belize City	Belize		Listed as being off the air.
6006	3	San Jose	Costa Rica	TIHB	Radio Reloj (Station personnel said it is on the air, but I did not hear it.)



Meet AWR Alajuela's announcer busy at work in the production studio.

6075	1	Cartago	Costa Rica	TICAL	Radio Rumbo
6105	2	San Jose	Costa Rica	TIUCR	Radio Universidad Vacation?

### Faro Del Caribe

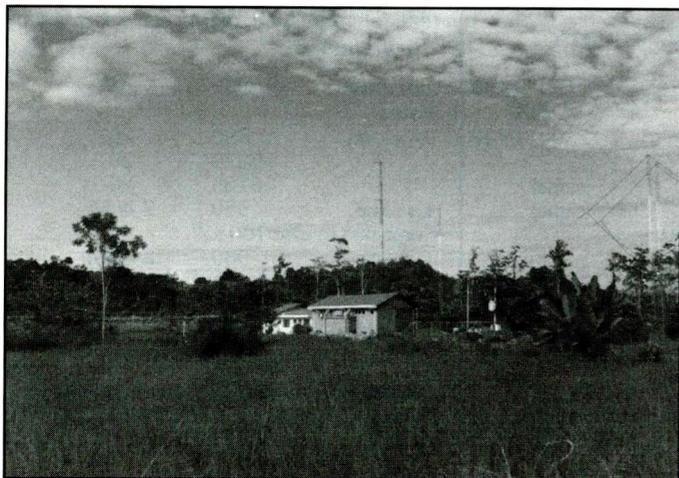
The story of the well-known Faro Del Caribe, Lighthouse of the Caribbean, goes back more than 40 years. Soon after the end of World War II, a small 300-watt transmitter was installed at their location on the edge of the capital city, San Jose. It was licensed with the callsign TIFC, and programming was in Spanish and English on 9645 kHz.

Today, this well-known Central American broadcaster is in a state of transition. Currently, they are on the air with just one program channel broadcasting in parallel over five transmitters. Four of these units are located at their studio/office building in the same suburban area of San Jose, utilizing a simple antenna system above a nicely manicured green lawn. The FM unit is located, line in sight, atop Volcano Irazu. However, in May of this year "Faro Del Caribe" plans to inaugurate their new transmitter complex located at Heredia, a major town on the edge of the capital, San Jose.

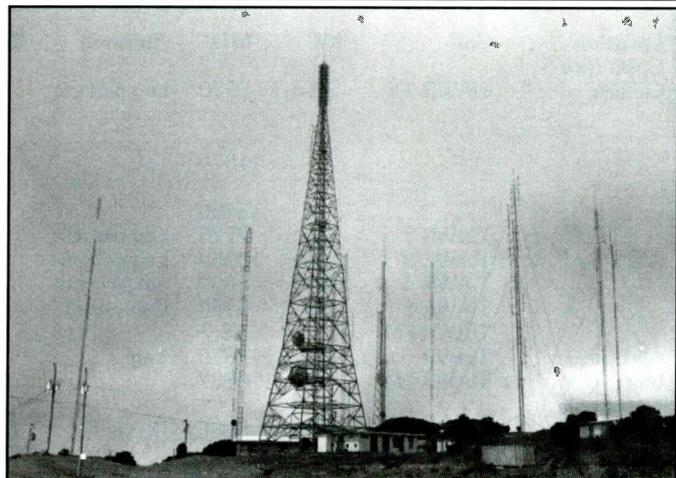
Currently their transmitter complement is as follows:

Location	Call	kHz	Band	kW	Transmitter
San Jose	TIFC	1000	AM	5	
		5055	60 meter	5	RCA
		6175	49 meter	2.5	CCA
		9645	31 meter	.5	Locally made
Irazu		97.1	FM	5	

The Gospel broadcaster, station TIFC, the "Lighthouse of the



The transmitter building seen on this grassy field in Cahuita is ex-Radio Impacto MW, now AWR SW.



This cluster of antenna towers is found on top of Vulcan Irazu.

Caribbean," is an excellent QSLer, from their city address; Apartado 2710, 1000 San Jose. Return postage appreciated.

## Radio Reloj

One of the AWR engineers, Norman, took me to the downtown area of San Jose for a visit to Radio Reloj. This station is located on the third floor of a multi-storied building on one of the main shopping streets. Here we met Francisco Barahona, brother of the later founder of the station, who showed us through their modest downtown facilities. Interestingly, Señor Francisco is the one who QSLs the listener reception reports. He showed us the list of reports they have received through the years from all over the world. I saw many names that I recognized from the United States, Canada, Germany, New Zealand, and Australia. I even saw my own name on a reception report dated 1987 that I sent from a University in Michigan.

Radio Reloj is inundated with reception reports. Over the years the novelty of receiving letters from far away places has worn off. Nevertheless, they will QSL for good reports with return postage, addressed to Apartado 341, 1000 San Jose.

The anniversary booklet that Señor Barahona gave me indicates that Radio Reloj began back in 1945 as Radio Crystal, TIHB with 3 kW on 690 kHz. The familiar shortwave outlet, 6006 kHz in the 49 meter band, was inaugurated as TIHBG with 1.5 kW in 1952. Six years later in 1958, the station changed its name to the now familiar Radio Reloj.

Today, this same station is on the air from four transmitters, three of which are located at nearby San Antonio de Desamparados. Incidentally, I did not hear the 6006 kHz outlet while I was in Central America. I asked Señor Francisco about this, but he said "yes," it is indeed on the air.

Currently their transmitter complement is as follows:

Location	Call	kHz	kW	Comment
San Antonio	TIHB	730	25	
		4832	3	
		6006	3	Unheard
Irazu	TIHB-FM	94.3		

## Radio Casino

A long journey from San Jose, passed the active Vulcan Irazu, through a large tunnel, and over the rain and fog drenched tropical forests brings you to the eastern plains and finally, as they call it, to the Atlantic coast. Here is Limon, the site for Radio Casino. A brief visit to station TIQ revealed this is also a small operation, with studios in town and a transmitter base a couple of miles away

on the southern edge of this port city. This station came in the air soon after World War II, with a 200-watt AM transmitter tuned to 555 kHz and 1 kW outlet in 5990 kHz.

Today, this station is still broadcasting in Tandem from two transmitters and two antennas, 1 kW each 1220 kHz and 5954 kHz. Radio Casino also receives many reception reports, and as they are able, they will QSL. Their address is Apartado 287, 7301 Puerto Limon.

## AWR-Coasta Rica

Adventist World Radio in Costa Rica has interesting connections with two well-known radio stations within the country. The first connection goes way back to the very beginning of radio broadcasting, not only in Costa Rica, but in the whole world; the second connection is with a somewhat legendary station of more recent date. Here is the story.

## Costa Rica's First Radio Station

The father of broadcasting in Costa Rica was Señor Amando Cespedes Marin. He established a small wireless receiver factory back in the 1920's, in his home town Heredia, near San Jose. He modified one of these receivers into a transmitter, and began broadcasting entertainment programs from his home. His station was licensed with an amateur call, T14NRH, and the first broadcast took place on May 4, 1928.

This small pioneer station was listed in radio journals at the time as being one of the first five broadcast stations anywhere in the world. It was also listed as being the smallest radio station in the world, with just 7.5 watts output!

At first, Señor Cespedes' station, at the time radiating 7.5 watts, was allocated the channel 30.30 metres, or as we would list it today, approximately 9900 kHz. These early broadcasts were heard on many occasions in many countries world wide. In acknowledgment of his pioneering activities, this station took the slogan, "La Voz Costa Rica."

Following World War II, Señor Cespedes transferred his station from Heredia to San Jose, where two new transmitters were established—7.5 kW on 710 kHz and 3 kW in 9692 kHz. The station slogan was modified to "La Voz de Costa Rica," and the official callsign became TINRH. Señor Cespedes died about 1957, and his station was taken over by Radio Columbia, TILX.

However, about the same time, Señor A. Cespedes A (who, we understand was his son), revived "La Voz de Costa Rica" as TIACA with 1 kW on 1600 kHz. Many years later in 1972, the slogan was again changed, this time to the now familiar, "Radio

Location	Call	kW	kHz	Antenna	Bearing	UTC
Costa Rica Cahuita	TIAWR 1	50	5970	Log periodic	120	1100 - 1500 and 2300 - 0500
						11870
						15460
	TIAWR 2	50	9725	Log periodic	340	(same)
	TIAWR 3	20	13750	Log periodic	65	(same)
	TIAWR 4	20	5030	Single quad	350	
Alajuela	TIAWR 5	20	6150	Cubic quad	105	
	TIAWR-FM		88.7		Omni	
	TIAWR 6	5	11870	Yagi	45	
Irazu	TIAWR-FM	1	8837		Omni	
	Guatemala Canalitos	TGMUA	3	5980	Dipole	N&S
TGMU		5	1330	Vertical	Omni	
Guatemala City	TGMUA-FM	.25	105.7	Vertical	Omni	

Figure A.

Lira," that is, the ancient musical instrument, the Lyre.

Some 11 years later, the station was bought by Seventh-Day Adventist Church and re-inaugurated on November 30, 1983. Studios were located at the Adventist University, in Alajuela, and the transmitter, 1 kW on 1540 kHz, was located at the school at Hatillo, in San Jose. The call sign was changed to TIASD, but the slogan, "Radio Lira," was retained.

In 1990, under an exchange arrangement with another station, an AM channel was swapped for an FM channel. Thus "Radio Lira" now became an FM station, and the old "Radio Lira" AM equipment became "Radio Mia." Unfortunately, the new owners put the American Collins transmitter through some modifications, and soon afterwards it burned out. The station is still off the air.

### Radio Impacto

At about the same time as the AM/FM

exchange with Radio Mia was happening, negotiations were under way for the purchase of the nefarious Radio Impacto. This station, dark at the time, has an interesting political background, the details of which to this date are not fully known. This station was at first projected as a VOA AM outlet, but later when it was activated, its identification was "Radio Impacto" on both AM and shortwave.

Broadcasting from this new Radio Impact began in 1984, and when it became fully operational, it was on the air from three widely separated locations in Costa Rica. At Alajuelita, near San Jose, three transmitters were in use; two on shortwave, one on medium wave. At La Cruz in the north, two medium wave transmitters were installed, both rated at 50 kW, and operating on the same channel, 980 kHz. Then, at Cahuita in the south, there were also two transmitters, again both rated at 50 kW and operating on the same channel—980 kHz.

This is the full complement of transmit-

ters, all made by Elcor, as operated by "Radio Impacto."

Location	kHz	kW
Notes Alajuelita	980	20
	5030	20
	6150	20
La Cruz	980	2 @ 50
Combined to give 100 kW.		
Cahuita	980	2 @ 50
Combined to give 100 kW.		

AWR has procured the Cahuita property and equipment, as well as the two shortwave transmitters from Alajuelita, and is now broadcasting as TIAWR.

Thus, AWR-Costa Rica has connections with Costa Rica's historic first radio station, TI4NRH, and also with the legendary but now defunct "Radio Impacto."

### AWR-Costa Rica

Currently, the last transmitter located at the University campus in Alajuela is due to soon be closed and transferred to a site in another country, Guatemala, to become the second shortwave transmitter for AWR-Guatemala. A date for the closure and transfer has not yet been announced.

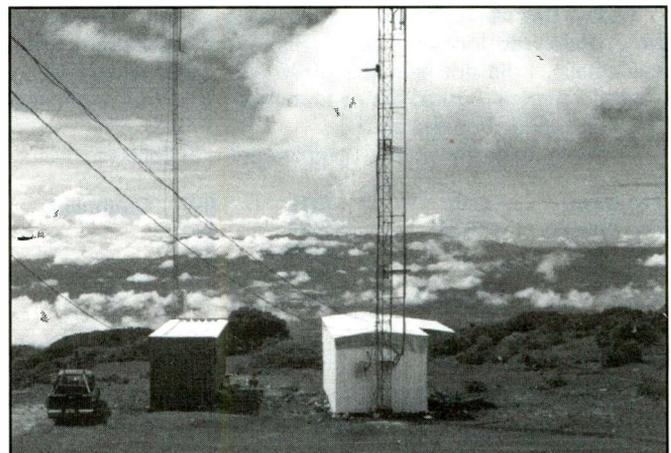
A new studio building has been procured at a beautiful location on top of a nearby hill. The FM station is now located atop Vulcan Irazu, and the Cahuita shortwave base is being refurbished. When it is fully operational, this station will operate seven transmitters; three at 20 kW, two at 50 kW, and two FM units on 88.7 MHz.

AWR-Costa Rica welcomes reception reports and return postage is appreciated. At present they are issuing a series of seven QSL cards, representing each of the provinces in the country. Their address is Apartado 1177, 4050 Alajuela.

The schedule for the full complement of AWR transmitters in both Costa Rica and Guatemala appears above in Figure A. ■



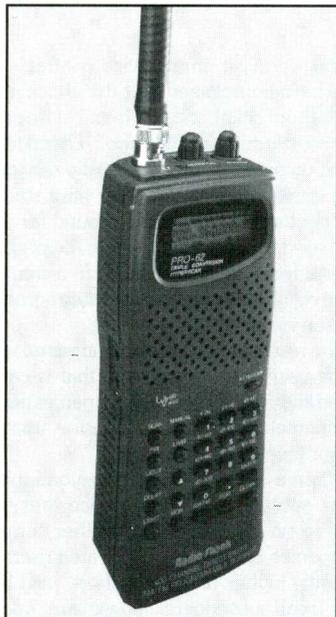
AWR Alajuela's dedication plaque.



Here are two of the many transmitter buildings found on top of Vulcan Irazu. It is estimated at least 80 transmitters are erected atop this active volcano.

# NEW PRODUCTS

## REVIEW OF NEW AND INTERESTING PRODUCTS



### Radio Shack's PRO-62 200-Channel Handheld Scanner

Radio Shack's new PRO-62 offers 200 memory channels in a handheld scanner providing coverage of the following bands: 30 to 54 MHz, 137 to 174 MHz, 380 to 512 MHz, as well as 806 to 960 MHz (less the cellular bands, which can't be user-retrieved). In addition, coverage of the 118 to 137 MHz aeroband is provided.

The memories are prepared in ten 20-channel banks, and there are another ten monitor channels for storing new frequencies found during search mode. The PRO-62 scans at 25 channels/sec., and searches at 50 channels/sec. Triple-conversion circuitry is used, making the PRO-62 virtually immune to interference. The IF frequencies used are 257.5 MHz, 21.4 MHz, and 455 kHz.

The LCD display indicates the channel bank(s) in use, the channel number and frequency being received, the mode in use (AM or FM), as well as the status of options such as lockout, priority, and delay.

Squelch and volume controls are on top of the unit, also with the BNC antenna connector. The PRO-62 requires six "AA" batteries, or AC/DC adapter. The unit's memory backup protects the stations stored in the PRO-62's memory up to one hour without the battery.

The PRO-62 is available at Radio Shack's many retail outlets.

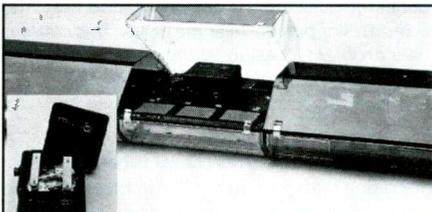
### Safety Alert for Emergency Road Situations

A new emergency vehicle/road hazard alert transmitter, for use by law enforcement

and emergency service personnel, is designed to warn motorists of oncoming emergency vehicles. Developed by Cobra Electronics Corp., the Cobra® STX-1000 Safety Alert gives police cars and other emergency vehicles an extra edge to avoid accidents while getting to an emergency site—especially at times when lights and sirens may not be enough.

The Cobra Safety Alert is a transmitter that triggers every radar detector up to a mile ahead, warning drivers of an oncoming emergency vehicle. It works in fog, snow, and other conditions where a vehicle or hazard can't be seen easily—even around curves. And when drivers with radar detectors slow down and start scanning the area looking for the patrol car, other drivers will slow down too.

Once an emergency vehicle reaches its destination, the Safety Alert continues to warn drivers. Motorists whose cars are equipped with sophisticated radar detectors simply alert drivers to the presence of a radar transmitting device. In each case, drivers



slow down, become more alert, and the signal increases the safety of roadside law enforcement and rescue activities.

The Cobra Safety Alert works automatically, making police work safer without any extra effort on the officers' part. A small box with a self-contained antenna, control cable, and control box is installed easily in the light bar behind the grille or on the dashboard of a law enforcement vehicle. It is linked to the emergency light control: when the emergency lights are on, the Safety Alert automatically sends out a low-power K-Band signal. With 17 million radar detectors on the road, the signal will be heard. When the emergency lights are turned off, the Safety Alert goes off too.

The FCC-approved Safety Alert transmits at two frequencies on the K-Band: 24.1-24.23 GHz for emergency vehicle warning and 24.07-24.23 GHz for roadside hazard warning. A third frequency, for railroad trains, will be announced soon. All radar detectors pick up these frequencies. Cobra's "intelligent" detector RDL-712SW can distinguish between radar gun and emergency alarms, and will display "Emergency Vehicle" or "Road Hazard" on its display screen when it registers transmissions on those frequencies.

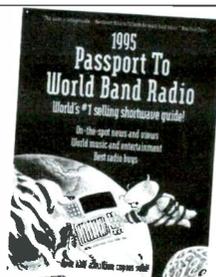
For more information, contact Cobra Electronics Corp., 6500 W. Cortland St., Chicago, IL 60635. Phone (312) 889-8870.

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## Online Update

You can now contact *Popular Communications* on two major online services, GENIE and America Online (AOL). Similar to contacting POP'COMM via AOL, here's how to find us on GENIE:

If you're already a GENIE member, move to the Radio & Electronics Roundtable (keyword RADIO, page 345), then access the Radio & Electronics Bulletin Board. You'll see a listing that says "Commercial vendors: Books, Magazines & Videos." Within that section is a topic listing for Popular Communications. As on AOL, your questions & comments will be forwarded to the appropriate columnist or staff member.

If you're not a GENIE member, you can join by having your computer call 1-800-638-8369. At the "U#=" prompt, type "JOINGENIE" (without the quotes). For a special introductory offer, when you see the "key/offer code" prompt, type "BWH528" (without quotes). E-mail to us on GENIE should be addressed to "CQ." E-mail via the Internet may be addressed to "CQ @genie.geis.com" or to "SCAN911@aol.com."

# TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

## WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

A cellular phone is an invaluable time/lifestyle management tool for people on the go. A recent Gallup poll shows that cellphone use saves up to one hour a day to user's lives, as well as improving their business careers. Furthermore, their personal lives are enhanced by stress reduction, improved communication, and increased personal safety. This, to say nothing of not having to look for a working public pay telephone when you need to make a call, waiting for it to be available, touching its sticky handset, or feeding quarters into it!

But buying a phone, subscribing to a cellular phone company, and selecting a service plan remains confusing to many people, according to Motorola. Even people who are into the tech areas of communications find that some of the most mundane aspects and terminology of the art can at first be more confusing than working with advanced electronics equipment.

So, in response to the standard questions that this column regularly receives from readers, let's do a nutshell crash-course in the important basics.

**Personal Phone.** Compact and lightweight 0.6-watt handheld personal phones offer the convenience of being pocket or purse friendly on-the-go-communications. Powered by a rechargeable battery that allows up to about two hours of time. These weigh approximately 6 oz.

**Portable Phone.** Sometimes called a *Bag Phone*, it offers up to four hours of talk time for maximum on-the-run. It has 3 watts, which is more output power than a handheld. It's powered by a rechargeable battery, and may be also be operated from a vehicle's cigarette lighter power cord.

**Mobile Phone.** Callers who do their talking while in the vehicle may choose this permanently installed 3-watt unit is powered by the car's battery. An outside antenna is required.

**Other choices you'll need to make:** In some cities, you may have the option of using *analog* or *digital* service. Analog is still the most commonly encountered on a national basis, although digital service isn't yet available in many areas. However, digital is very slowly being phased in and, in the distant future, will entirely replace analog. Dual-mode phones are available for those willing a higher price. Most people still buy analog phones.

Combinations of available features in various models such as hands-free operation, auto redial, call-holding, FAX compatibility, memory dialing, instant 9-1-1 dial-up, security lock, etc., will make the cellphone you select best suited to serving your own personal requirements.

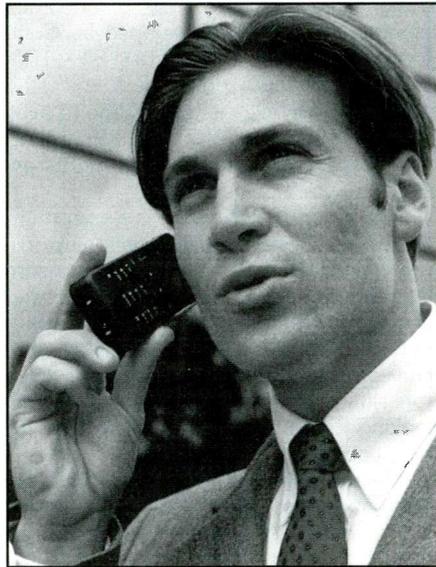
Six points to investigate when buying:

1. **Talk Time:** How long can you talk before having to recharge the battery?

2. **Sound Quality:** Make a call testing the speaker and earpiece to verify sound quality.

3. **Range:** Make certain that a personal phone will have enough power and an antenna to maintain contact and provide a clear connection with cell sites in your area.

4. **Comfort:** Is the phone comfortable and simple to use?



*Personal cellphones offer the maximum convenience in that they may be carried in the pocket for use almost anywhere, and they have 0.6-watts of power. In some areas, this could be a problem in establishing and maintaining contact with the closest cell site.*

5. **Special Features:** Does it have all of the operating features you require to meet your special needs?

6. **Price:** There are excellent values in cellphones, but remember that cockamamie brands nobody ever heard of can be difficult or even impossible to get serviced a year or two down the line.

A sales rep can show you several brands and models that meet your needs. Many sets also have available optional accessories, like extended-life batteries, and quick-chargers.

**Cellular Companies:** A cellular phone company sells "air time," or service. You use air time whenever you place or receive a call. A dealer in cellular phones is always a sales agent for one of the two cellular phone companies in a city, sometimes both. The dealer will need to register the newly purchased phone with the company. The dealer gets a percentage commission for every cellular service contract sold.

At the time of purchase, the new cellular owner must select a service plan. Most companies offer a variety of service plans, or air-time packages, tailored to meet different communications needs. Since the prices of the different plans can vary considerably from one another, before signing anything, the buyer should ask the dealer for details of all available plans.

Heavy users will moreso need the extensive service packages offering the frills. Limited use packages are less costly and may be entirely suitable to persons using cellphones only for safety reasons, or just on weekends.

Dealers frequently offer deluxe cellphones at very low prices, plus hours of free air-time, as promotional tie-ins to induce people to sign up

for long-term air-time service contracts. Some users have complained that the enticing apparent discount cellphone and hours of free air-time were merely an irresistible hook. Ultimately, they weren't worth the long and costly service package people later realized they were stuck with. Don't get snookered. Shop around for the best deal based on your needs. Then, be prepared to fill out a form and be subjected to a credit check by the cellular company before they agree to provide service.

The usual way cellphone charges go, the cellphone user pays for all calls, that is calls both placed and received. A few companies now allow arrangements whereby cellphone users don't pay for incoming calls.

When a cellphone is used beyond the edges of the subscriber's home service area, service must be provided by various other companies. Companies bill visiting out-of-area users at significantly higher rates than those paid by their own local subscribers. These are known as "Roamer Charges." As local companies continue to consolidate into regional suppliers, recently it has become possible for at least some cellphone users to travel in ever-expanding home service areas without being subjected to this highway robbery. Before traveling, check with your cellular company to find out the extent of its home service area.

Motorola has a Cellular Information Center that sometimes has brochures and other excellent free literature available about selecting and buying cellphones. Their number is 1-800-331-6456.

### RF Module

A couple of issues ago, this column discussed the Cellular Surveillance Interface (CSI) offered by Electronic Countermeasures, Inc. The company now advises me of the existence of the release of an optional Radio Frequency Module (RFM) for use with the CSI. It receives cellular frequencies only in the forward control channel mode (AMPS-only) and eliminates the need for a cellular-capable scanner. Think about this in conjunction with recently enacted federal regulations permanently locking-out cellular bands (without hope of restoration) in new scanners sold in the USA.

The CSI decodes the digital data transmitted on cellular control channels. It interprets the data as cellular commands, displays it on a PC screen, and changes the frequency on the radio or the optional AMPS-only RFM. The CSI will work on cellular systems in North America, Europe, the Middle East, Southeast Asia, Hong Kong, etc. Anywhere there's a cellular system using AMPS, TACS, or ETACS standards; including those international systems that use variable control channel starting points for different countries.

Basically, the CSI reads the control channel data in a cell and tunes your receiver, or optional RFM, to the specified voice channel when a cellular call is placed or received in that cell. This allows the call to be monitored for voice quality, etc. When the call switches to a new voice chan-

### CONTROL

NAC=15  
 555-4540 (312) Registration  
 555-4540 (312) GoTo 869.880  
 555-4540 (312) GoTo 869.880  
 555-3238 (312) Paging  
 555-0186 (312) Paging  
 555-8252 (312) Paging  
 555-0186 (312) GoTo 891.090  
 555-0186 (312) GoTo 891.090

The control channel data flow display of the CSI, as it looks on a PC's monitor screen.

### VOICE

Ring Phone  
 Stop Ringing  
 Disconnect  
  
 Ring Phone  
 Change Power to .25 W  
 Change Power to 1.6 W  
 GoTo 890.220

The CSI display of the activity status of an operating cellphone, as seen on a PC monitor screen.

nel within range of your location, your radio or RFM automatically and instantly switches as well. In essence, the CSI turns the radio or RFM into a receive-only extension of the cellphone being monitored. That means no more partial calls cut off mid-word or sentence, then lost until they can be relocated by slow and inefficient searching efforts. You get it all. Multi-cell software and law enforcement EZ-Track firmware/software options are now available, as are complete PC or cellphone based systems.

The ICOM R-7000 and R-9000; the AR-2500 and AR-3000A; the Radio Shack PRO-2004, PRO-2005, and PRO-2006, and the RFM can be connected directly to the CSI. The output from the CSI is plain English text (Spanish optional), which is displayed on the PC screen.

The RFI unit receives only the cellular frequencies, and no others. It will power an 8-ohm speaker via the CSI. It includes an antenna and 12 VDC power cord. A NiCd battery pack is

optional. When used with a small notebook computer, the entire system will fit into a briefcase and is suited to surveillance applications.

For prices, availability, additional specs or information on the CSI and/or RFM, check with Bill Fischer, at Electronic Countermeasures Inc., 65 31st Avenue South West, Calgary, Alberta, Canada T2S 2Y7. The phone number is (403) 233-0644, and the FAX is (403) 233-8849. Internet e-mail also gets to Bill.Fischer@t8000.cuc.ab.ca in the event you have those capabilities. Let Bill know we sent you. He's a good guy, and reports very enthusiastic support from our readers any time we mention his company's intriguing products.

Yes, I think springtime will definitely arrive this year. Soon enough, you should again be able to realize the wonderful pleasures of paying cellular roamer fees as you drive around burning up higher-priced oxygenated gasoline. Don't talk too long.

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- DELTA COMM™ I-7100 CYBERSCAN feature for monitoring systems employing cluster or frequency hopping techniques.
- Individually programmable database volume levels (by channel) while scanning.
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- Dual squelch detect electronics integrated with DELTA COMM™ I-7100 software guarantees optimum speed and performance during a frequency search or database scan.
- Programmable signal strength threshold limits with full 8-bit accuracy allow selective monitoring and logging. Only stations having signal strength less than or greater than or within upper/lower user defined signal strength window limits will be monitored and/or logged.
- Continuously updating activity information window displays the last 19 active channels.
- Channel activity status is displayed in real time with activity log function. To determine system loading when first 5 channels are simultaneously busy, "All Trunks Busy" message is logged to disk.
- Receiver characterization with DELTA COMM™ I-7100 birdie log function automatically locks any receiver birdies prior to a frequency search operation. Birdie channels are then locked out during a frequency search operation, thus eliminating false channel logging.
- Custom interface allows selective program control of relay contact. Possible uses include activating an operator alert, switching antennas via coax relay or turning on a tape recorder when user defined frequencies are found to be active.

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May 1995 / POPULAR COMMUNICATIONS / 37

## GETTING STARTED AS A RADIO AMATEUR

### *The NCDXF Worldwide 14 MHz Beacon Network— Part 2*

**L**ast month we looked at the description by Jack Troster, W6ISQ, and Bob Fabry, N6EK, of the 14.1 MHz worldwide beacon network, an extraordinary achievement that came about through the vision, technology, and cooperative energy of many people. This month, we'll conclude with more information on how the beacons work.

#### **Phase III: The W6WX/B Prototype**

A new control unit has been built that can key an HF transceiver on five bands. One is in operation at W6WX/B, but it's restricted to 14.100, 21.150, and 28.200 MHz because those are the frequencies for which it's licensed by the FCC.

W6WX/B transmits its regular one-minute message in its turn on the 14.1-MHz network at 0001Z and every 10 minutes thereafter, as it has for 15 years. When it's completed its 14.1 MHz one-minute message, it switches to 21.150 MHz and transmits for 10 seconds in the new format, "W6WX/B, dah-dah-dah-dah." It then immediately switches to 28.200 MHz and sends the new-format message. The 21 and 28 MHz message is repeated every two minutes. The other seven beacons will continue to transmit their one-minute message on 14.1 MHz only until they're replaced by multiband equipment.

When the new beacons are in place, each will transmit its call sign and four dashes on each of five bands. Ultimately, we hope all beacons will be licensed by their governments for five-band operation.

#### **Phase II vs. Phase III**

The three IARU Regional Executive Committees were solicited for funds to build and distribute the beacons in their respective Regions. Region 2 (North and South America) responded with a pledge to fund one beacon, at an estimated cost of \$2500 per beacon, plus \$1000 for continuing support. Region 1 (Europe, CIS and Africa) did the same. The ARRL Foundation generously contributed \$5000. We hope other major national amateur organizations will become sponsors. John Downing, K6YRU, of the Downing Foundation, which has funded NCDXF with several grants, provided funds for prototype Phase III beacon construction.

The Phase II network introduced two important innovations in beacons. First, by transmitting at four power levels, it allowed casual listeners to learn more about the robustness of the propagation path than had previously been possible. It's great fun to know you just heard a 0.1-watt signal from halfway around the world!

Second, by sharing a single frequency, it cut down on the spectrum needed by the beacons and simplified listening—you don't have to tune to a different frequency for each beacon. In the Phase II network, each beacon has a one-minute time slot once every 10 minutes to transmit. The downside of this arrangement is that it takes 10 minutes to listen for 10 beacons; some people find this too long.

The soon-to-be-operational Phase III network will improve on Phase II by allowing more beacons. It does this by shortening the transmissions to make listening for the beacons faster. It will allow the beacons to operate on five bands.

#### **Time Standard F**

For frequency-sharing to work, each beacon must know precisely when it's transmit time has come. Each Phase II beacon uses a 6 MHz temperature-compensated crystal oscillator (TCXO) for its time base. Each beacon transmits when it's first put on line and every 10 minutes thereafter. Each beacon is started manually and must be started within a fraction of a second of the correct time for its transmission.

The Phase II beacon's internal clock drifts one or two seconds per month. The transmission sequence allows three seconds of "guard time" between one beacon's transmission and the next; after a drift of three seconds, a beacon's transmission may overlap its neighbor. It's necessary to reset each beacon's internal clock every four to six weeks. This is the most demanding operational aspect of the Phase II beacon network. We thank hams and amateur organizations around the world that have undertaken the responsibility of faithfully operating the beacons for years.

A problem with the Phase II network is that no distinction is made between an intentional synchronizing power-up and a randomly timed power-up after a power failure. If you've heard a beacon transmitting at a wildly incorrect time, a random power-up that hasn't been yet discovered by the beacon operator is the cause.

#### **WWV Timing Solution**

A first attempt to solve the synchronization problem used the 0.8-second 1500-Hz tone broadcast by WWV and WWVH at the start of each hour to keep the internal clock synchronized. This scheme worked in tests in California, but it couldn't be depended on to work in every corner of the world and in every phase of the sunspot cycle.

#### **GPS Timing Solution**

The final synchronization scheme uses the Global Positioning System (GPS) satellites to provide a timing standard. Rather than do this from scratch, it's proven cost-effective to use a commercial unit, the Accutime GPS receiver made by Trimble Navigation. This unit combines the antenna and receiver in a small plastic housing, requires 2 watts at 12 V dc and provides two outputs: A pulse at the beginning of every second that's accurate within one microsecond (much better than we need!) and a serial-data line on which ASCII-character packets are sent.

The GPS receiver sends many types of packets over the serial data line. Normally, a GPS receiver is used to provide location. Unlike most GPS applications, we ignore the packets that tell us our latitude and longitude, and use only those that specify the time (in UTC). Art Lange, W6RXQ, who works for Trimble, has provided technical guidance in the use of GPS timing. Within Trimble, Art championed the marketing of a self-contained standalone timing product. (Art pushed internally to have the hand-held Scout unit display Maiden-head grid square locators, a feature whose only known application is ham radio!)

#### **Beacon Brains**

The component's each Phase III beacon are a controller, an HF transceiver, a GPS receiver and an RF detector. The controller receives and interprets ASCII timing packets from the GPS receiver, sends ASCII character strings to the transceiver to initiate frequency switching, controls the power level of the transmissions from the beacon, and keys the transceiver to send Morse code. It uses the Intel 8748 computer-on-a-chip, used for the Phase II beacon controller. This chip includes an eight-bit microprocessor equipped with a 1024-byte erasable programmable read-only memory (EPROM).

The once-a-second timing pulse from the GPS receiver interrupts the micro-processor to initiate a transmission when appropriate. The time packets from the GPS receiver are used to set or correct the clock's value. To set the frequency of the transceiver, the program sends it a string of ASCII characters. The output power level is controlled by adjusting the ALC input to the transceiver, using analog circuitry. Control circuits were designed for smooth keying at all power levels, and for accurate power output at all frequencies. Keying is accomplished with one section of a 7417 open-collector driver chip. The program for sending Morse code, written by Jack Curtis, K6KU, was carried over from the original beacon. The messages to be sent by the beacon are stored in the memory as a string of ASCII characters, rather than as a string of dots and dashes. Each is in a table that specifies the dot and dash representation of the character

## Further Ideas

You could imagine building a computer-controlled beacon-monitoring station and attaching it to packet networks used by DXers. It could include a computer-controlled transceiver for listening to the

bands and a GPS receiver for accurate timing. DXers could even call up the actual propagation history for the path from their locations to particular beacons for the past hour, day, month or year.

The value of knowing that you can hear a particular power level is more than the information provided by existing propagation prediction software because those programs don't fully account for atmospheric noise. A systematic history of actual propagation, such as might be available with automated monitoring stations, could provide raw data for refining these prediction programs so they could forecast signal-to-noise ratios, instead of merely signal levels.

Another interesting possibility arises from the extremely precise timing of the beacon transmissions. Because the GPS receivers provide synchronization to the nearest microsecond, you could calculate the travel time for the radio signal from the beacon to the monitoring station to within a few microseconds. Would this allow you to determine the actual pattern of ionospheric reflections that occurred? Could this information shed light on unusual propagation modes, such as skew paths? There are fascinating possibilities that need only be tested and developed by users!

## Conclusion

The present 14.1 MHz beacon network is for you, whether you're a DXer looking for general band-opening information, a contester looking for spot-opening information, a high school or college student working on your science project, a laboratory researcher, a shortwave listener or a ragchewer who'd like to find out what's new. Get the 14.1 MHz habit now. Flip in your CW filter and listen.

DXpeditions find the beacons useful. Bill Schmieder, KK6EK, in his recently published book *3Y0PI, Peter I Island Antarctica* remarked that conditions at one point were very poor. To assure conditions were as bad as they sounded, he listened on 14.1 for the beacons, but heard nothing.

When complete, the Phase III beacon network will allow you to check for band openings on any of the five bands from 20 to 10 meters) in three minutes. You'll be able to track the same beacon through five bands to determine what band has the best propagation to that area. We'll see interesting propagation experiences in the next several years as the sunspot count begins to move up from the approaching minimum, and we can hardly wait! ■

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# PIRATES DEN

BY EDWARD TEACH

## FOCUS ON FREE RADIO BROADCASTING

Let's begin with a logging from first-time reporter Robert I. Johnson, of Florida. Bob checks in with a reception of Vox America, which he says announced itself as "the real voice of America." This was on 7415 at 2300. The announcer said that the station doesn't have a mail drop "at this time" and played the rock song "Black Hole Sun," by Soundgarden. After ten minutes or so the signal was lost in interference. (Bob says this first catch got him hooked on pirates and he's looking forward to hearing more.)

Anarchy One was found by George Roberts, in Pennsylvania, using 6965 lower sideband at 2235. The program featured Captain Anarchy and talks, comments, and music on the drug scene. They closed at 2256 with the comment, "I'm outta here!"

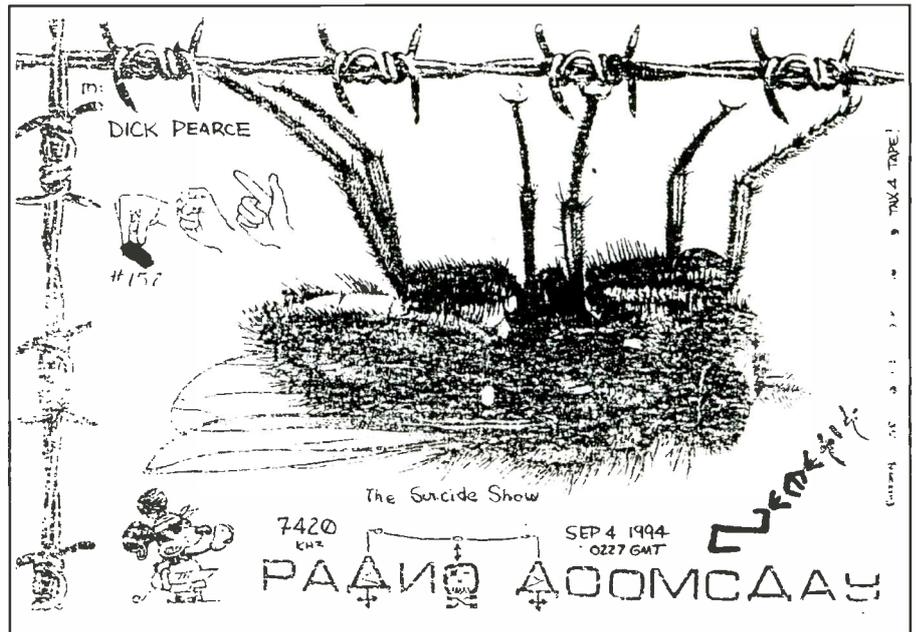
KTVI was found by Dick Pearce, in Vermont, on 7470 at 0149 featuring "Em-manual" with an English accent, a mix of music and commentary. He dedicated the program to the soldiers in Haiti. Announced an address in Faribault. Heard by Roberts at 2315 with Emmanuel Goldstein and a special test transmission for Europe.

North American Pirate Relay Station heard by Pearce on 7415 USB at 2249, with what Rick termed "terrible splatter from WEWN" which ruined reception. Heard by Roberts at 2110 on 6965 lower sideband, hosted by a Richard (something)-tick, with a mostly music test transmission.

In Michigan Jack Sheldon reports Jurassic Radio on 6967 (variable) at 0200, hosted by T. Rexx, who said they were broadcasting in "Jurassic sideband, broadcasting from the continent of Panges;" commenting that it was radio which was 30 million years in the making, and would be 30 million years till the next broadcast. Included music bits and talk about dinosaurs (what else?).

Pearce reports hearing Up Against the Wall Radio at 2243 on 7414 upper sideband featuring music, humor, and comments, including a spoof on Sam Kenison. The station used a very heavy reverb effect on their ID (Dick calls it "wicked"). Roberts picked this up on 7449.5 at 0020 with horns and guitar rock, and a comment that "a transmitter is a terrible thing to waste."

Radio Airplane, with Captain Eddy, was another Pearce log. This was caught on 6960 upper sideband at 0401 sign on—"engine start-up" is what Eddy called it. Lots of airplane, airline related songs, and a feigned bit of engine trouble near the



Dick Pearce of Vermont got this unusually designed pirate QSL recently.

close of the broadcast (landing, I guess that would be termed). Eddy said he would except nude girlfriend photos in lieu of the usual three stamps.

Harry Betts, in Illinois, picked up Radio USA on 7385 upper sideband at 2140. R.F. Watts and Joe King were hosts, playing music and tossing in comments.

Caribbean Sound System, on 6955 upper sideband was heard by Pearce at 1800 with a program centered around the theme of being on a cruise ship and discovering a NASWA (North American Shortwave Association) convention was being held on board! One rendition started out as the Love Boat and ended up a "Zeppelinated" "Whole Lot of Love Boat." They played lots of reggae-type music and gave their address as Box 146, Stoneham, MA 02180.

Sheldon reports the always popular WLIS (We Love Interval Signals) on 7445 at 0135 with Trans World Radio and Radio Bangladesh interval signals, as well as some regular musical selections. This one QSLs from the Blue Ridge Summit address.

The Voice of Bono was logged by Pearce on 6955 upper sideband at 0107 with a mix of music and comments, with songs by Elvis Costello, Peter Gabriel, and the Kinks. The address for this one is Box 6529, Baltimore, MD 21219.

Radio Azteca was another log by Pearce, also on 6955 upper sideband, heard at 2323. Featured old Radio Azteca bloopers, an "interview" with Ian McFarland, and an "explanation" of sunrise/sunset propagation which ended with the observation that "radio waves can be sucked but they cannot be pushed."

Another Roberts logging was Southern Music Radio. This New Zealand pirate was relayed by the NAPRS on 6958 at 0140. The program featured music by New Zealand artists.

Black Rider Radio was logged by Pearce on 7470 lower sideband at 2301. Dick says this station had a "very educated, professional sounding announcer who played the widest variety of music I've ever heard from a pirate—from opera to soul to Latino." But the station was heavily QRM'd by what Dick says might have been Hispanic or Portuguese merchantmen.

That covers things for this month. I'm sure you know how much I value and look forward to getting your pirate loggings every month. You and your reports make this column, not me, so please keep 'em coming! I need good clean copies of pirate QSLs to use as illustrations, too, so how about it?

Catch you next month!

# HOW I GOT STARTED

Popular Communications invites readers to submit, in approximately 150 words (more or less), how they got started in the communications hobby. They should preferably be typewritten, or otherwise easily readable. If possible, a photo of the submitter should be included.

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

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to Popular Communications.

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

## Our May Winner

This month our winner writes in from Newcomerstown, OH. Robert L. McKim, Sr., is a shortwave and CB fan:

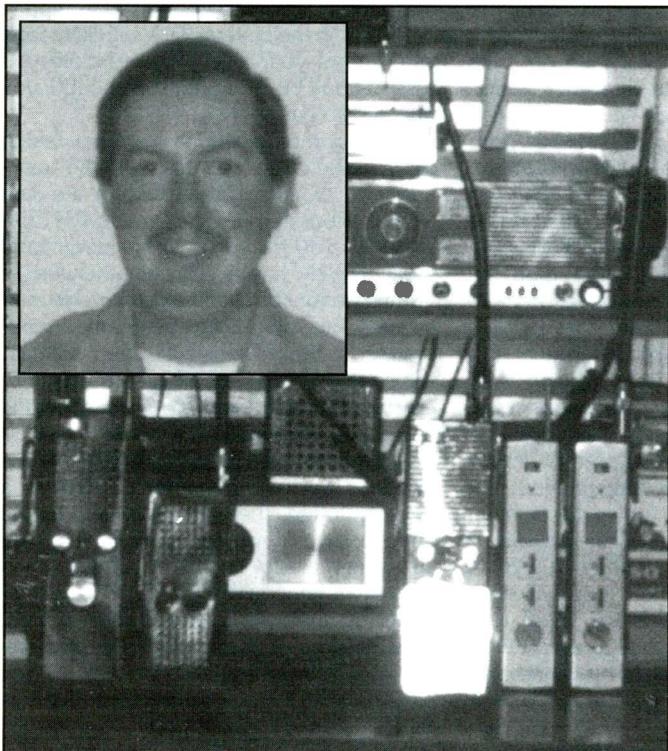
"My shortwave journey began a while back when my parents gave me a Realistic four-channel walkie-talkie, and a 23-channel Cobra base. After selling the walkie-talkie and base, I replaced them with a Midland 23-channel base, and a 23-channel Midland walkie-talkie.

"Being a member of a local REACT group, and the National CB Radio Patrol, I became very involved in the CB part of the hobby. When both groups later disbanded, my wife, some friends, and I started our own CB organization—the Newcomerstown National CB Radio Patrol. Eventually, we even went county-wide and called ourselves Tuscarawas County National CB Radio Patrol (this lasted until Florida's National CB Radio Patrol disbanded all of its charters in 1990).

"It was then that we all decided to continue our private county-wide organization. We are finally getting some more people to join our 'Tuscarawas County Emergency Radio Patrol.' It is a great organization to be a part of, especially since I love helping people, and scanning CB channel 9.

"In addition to the above equipment, I have other radios that I use on the road as well as for our organization, including a Uniden Bearcat ten-channel scanner.

"Well I got to run for now—there's an accident on the highway and I have to help with traffic control!"



Meet Robert L. McKim. As his shack shows, he is very dedicated to the shortwave and CB hobby!

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## Data Communications

If you are a scanner listener or shortwave hobbyist you've probably heard noises on your receiver and wondered what they were. More and more communications these days are becoming digital or data, and to the average listener these weird sounds are just noises. There is much more to it than just noise. There is a new and expanding radio world out there that holds much excitement for the hobby listener.

To receive a data signal, all you need is a radio. To print the data on your terminal screen or printer, you need a "TU" or terminal unit. As I begin this article, I am almost overwhelmed on how I am going to start to explain this subject in just a few pages. There are hundreds of different kinds of data, and just as many terminals are needed to decode and print out the signals carrying the information. Data communication is probably my favorite subject. There is so much out there to enjoy, and the thrill of being able to capture the information and read it can bring hours of enjoyment. My interest in amateur radio began when I started copying hams on 14.098.0 MHz as they sent RTTY (radio teletype signals at 45 baud on shortwave). This was my first exposure to a data signal, and it has been my favorite subject ever since.

With computers now handling much of the data communications traffic today, you can expect an even greater expansion of data communications over voice in the years ahead. With that in mind, let me just scratch the surface of data communications and what is waiting for you out there if you have the right equipment.

To get your initial exposure to data communication and what a small segment sounds like, tune your scanner to 145.010 MHz or your shortwave receiver to 14.100.0 MHz. The sounds you will be hearing are called "packet" data bursts. Hams have been using packet on both VHF and HF or shortwave for several years now. The packet terminal or TU, is a smart little box of computer chips which not only knows how to understand what is being sent and received, but also knows to check the frequency before transmitting. Hams have a nationwide network of VHF and HF packet stations in operation today. The VHF connection points are called NODES and often operate at a higher data speed than the individual ham stations in order to handle more messages in a given time. In most areas of the country, ham VHF packet operation can be heard on 145.010 MHz thru 145.090 MHz.

Packet is just one of the many kinds of data communication. I have already mentioned that RTTY, or radio teletype, caused

me to become interested in amateur radio. Besides these two types of data communications, there is a massive list of others. As interest expands and the markets for a universal data receiver become more apparent, hobby and commercial manufacturers are starting to produce terminal units with capability to receive and print the information being transmitted. One hobby unit currently available today allows you to connect the audio of your receiver to the input of the TU and read the data as it flows across the LCD screen or to a connected standard computer printer. This terminal unit automatically selects the type of data being received, and covers Baudot (RTTY), Sitor A/B, ASCII, Swed-ARQ, FEC-A, FAX, POCSAG, GOLAY, and ACARS. It also allows you to detect the CTCSS tones or DCS being used by many VHF and UHF communications systems.

POCSAG and GOLAY are the names of the two data communication modes used by pagers today. With a terminal unit that receives either or both data modes, you can easily read messages sent to pagers. When I first saw that POCSAG and GOLAY were available in a TU, I asked why would anyone want to look at phone numbers being transmitted? Something like this wouldn't be of interest to most hobby users, or would it? Other than law enforcement trying to breakdown the numbers being used by the mob or neighborhood drug dealers, why would pager reading be of interest? Like everything today, there is always something that you didn't think of. Pagers today not only receive phone numbers, but more and more are of the alphanumeric variety. With a POCSAG and GOLAY TU you can read those text messages that are being sent to those who have alphanumeric pagers! Some messages are better than the highest rated soap opera on afternoon TV.

This might be a good time to add this note. In addition to having a terminal unit built for the type of data method being used, you also must have one that can select the right baud or transmission data rate. To read a message, you not only have to know the method of the data transmission, but you also have to know the speed or baud that the data is being sent. When monitoring a pager frequency in either POCSAG or GOLAY data selection, you will miss some messages because the baud rate changes. Don't expect to read everything. When you miss a message, this is probably the cause, especially when using a universal type terminal reader.

One of the most asked questions is about the police and fire mobile data terminals? Can I buy anything that will allow me to

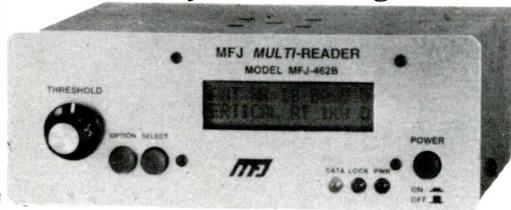
receive the information transmitted to police and fire mobile data terminals. The answer is yes and no. Here is why; the "no" part first. Most police and fire mobile data systems are made by one of the major commercial communication firms such as Motorola or GE. These systems, although they sound much like ham radio packet, have their own method or protocol for sending and receiving the data being sent and received. You must have a terminal unit programmed with the ability to understand the protocol of the system before a data transmission is readable. The protocols are patented and protected like top secret war plans by the companies making the systems. Their primary concern isn't your monitoring and reading of the traffic. They don't want the competitor to be able to come in and add their less costly mobile data terminals to the system. Protocol protects their system from lower cost additions as the system grows.

"Yes," you can receive police mobile data systems if you can find a similar MDT (mobile data terminal) that has been removed from service! Just use that terminal in your monitoring system. Motorola KDT480 mobile data terminals, for example, are seen frequently at hamfests and other electronic swap meets. Hooking up a used terminal to a receiver is not all that difficult and would, with proper programming, allow you to read every message sent to every MDT equipped patrol car in the system. Talk with someone who knows your local system before you rush out and buy the first surplus MDT you find, just to be on the safe side.

Data communications are also taking more of the voice away from aircraft transmissions. ACARS is the word for the data transmissions that you can hear on 131.550 MHz and 130.020 MHz VHF aircraft band today. ARINC has established a network of ground stations all over the country. No matter where you live, if you tune your aircraft scanner to these frequencies, you will hear the data known as ACARS. Modern airliners such as the 757 and 767 have automatic engine data reading units. About every 30 minutes the readings from the gages in the airplane are transmitted by ACARS to a ground station, then relayed to the airline maintenance computer. Just a few years ago, when a pilot called for his flight plan clearance, he would contact the FAA controller by voice and request the clearance. Most modern airports today offer an automatic PDC, or pre-departure clearance, just by typing "PDC" on the ACARS data terminal. The FAA clearance is programmed into a computer and is automatically sent by data link to the printer in the cockpit. Pencil and paper are no longer required!

# Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with this new MFJ MultiReader™



Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

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

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- from all over the world -- Australia, Russia, Hong Kong, Japan, Egypt, Norway, Israel, Africa.

### Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

### MFJ MessageSaver™

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

### High Performance Modem

MFJ's high performance phaselock loop modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly

improves copy on CW and other modes.

### Easy to use, tune and read

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

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

It's easy to read -- the 2 line 16 character LCD display with contrast adjustment is mounted on a sloped front panel for easy reading.

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

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, \$12.95. 5 1/4x2 1/2x5 1/4 inches.

### No Matter What Guarantee

You get MFJ's famous one year *No Matter What™* unconditional guarantee. That means we will repair or replace your MFJ MultiReader™ (at our option) *no matter what* for a full year.

### Try it for 30 Days

Order an MFJ-462B MultiReader™ from MFJ and try it in your own setup -- compare it to any other product on the market regardless of price.

Then if you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping).

Order today and try it -- you'll be glad you did.

MFJ-462B Plug this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack. **\$159<sup>95</sup>**

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

You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic . . . traffic your friends can't read -- unless they have a decoder.

### Eavesdrop on the World

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

### Super Active Antenna

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

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

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. remote has 54 inch whip, 50 ft. coax.



**\$129<sup>95</sup>** MFJ-1024 MFJ-1312, \$12.95. **Indoor Active Antenna**

MFJ-1020A **\$79<sup>95</sup>**



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

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as preselector with external antenna. Covers 0.3-30 MHz. Has Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

### Compact Active Antenna

MFJ-1022 **\$39<sup>95</sup>**



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

Also improves scanner radio reception on VHF high and low bands.

Detachable 20 in. telescoping antenna. 9 volt battery or 110 VAC with MFJ-1312B, \$12.95. 3 1/8x1 1/4x4 in.

### MFJ Antenna Matcher

MFJ-959B **\$89<sup>95</sup>**



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

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

### High-Gain Preselector

MFJ-1045C **\$69<sup>95</sup>**



High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Pushbuttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18VDC or 110 VAC with MFJ-1312, \$12.95.

### Dual Tunable Audio Filter

MFJ-752C **\$99<sup>95</sup>**



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

### Easy Up Antennas Book

How to build MFJ-38 **\$16<sup>95</sup>**

and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before.

Covers receiving antennas from 100 KHz to almost 1000 KHz. Includes antennas for long, medium and shortwave, utility, marine and VHF/UHF services.

### Receive Color News Photos, Weather Maps, RTTY, ASCII, Morse Code

MFJ-1214PC **\$149<sup>95</sup>**



Use your computer and radio to receive and display *brilliant full color* FAX news photos and incredible WeFAX weather maps with all 16 gray levels. Also RTTY, ASCII and Morse code.

Animate weather maps. Display 10 global pictures simultaneously. Zoom any part of picture or map. Frequency manager lists over 900 FAX stations. Automatic picture capture and save.

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

### Super Hi-Q Loop™ Antenna

The Super Hi-Q MFJ-1782 Loop™ is a **\$269<sup>95</sup>** professional quality remotely tuned 10-30 MHz high-Q antenna.

It's very quiet and has a very narrow bandwidth that reduces receiver overloading and out-of-band interference.

### High-Q Passive Preselector

MFJ-956 **\$39<sup>95</sup>**



The MFJ-956 is a high-Q passive LC preselector that lets you boost your favorite stations while rejecting images, intermod and other phantom signals. Covers 1.5-30 MHz. Has preselector bypass and receiver grounded position. 2x3x4 in.

### Mobile Scanner Ant.

Cellular MFJ-1824BB/BM **\$19<sup>95</sup>** look-a-like. Covers 25-1300 MHz. High - est gain on 406-512 and 108-174 MHz, 19 in. Magnet mount. MFJ-1824BB has BNC/UHF plug; MFJ-1824BM has Motorola plug.

### MFJ 12/24 Hour LCD Clocks

MFJ-107B **\$9<sup>95</sup>**



MFJ-108B, dual clock displays 24 UTC and 12 hour local time *simultaneously*. MFJ-107B, single clock shows you 24 hour UTC time. *3 star rated by Passport to World Band Radio!*

MFJ-105B, accurate 24 hour UTC quartz wall clock with large 10 inch face.

### MFJ Antenna Switches

MFJ-1704 **\$59<sup>95</sup>** MFJ-1702B **\$21<sup>95</sup>**

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

### World Band Radio Kit

MFJ-8100K **\$59<sup>95</sup> kit** MFJ-8100W **\$79<sup>95</sup> wired**

Build this *regenerative* shortwave receiver kit and listen to shortwave signals from all over the world with just a 10 foot wire antenna.

Has RF stage, vernier reduction drive, smooth regeneration, five bands.

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# POP'COMM's World Band Tuning Tips

## May—1995

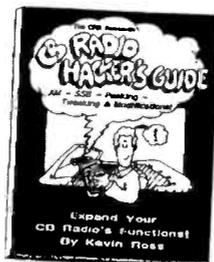
Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2390	LV de Atitlan, Guatemala	0030	SS	6085	Deutsche Welle, Germany, via Canada	0300	
2485	VL8K, Australia	1100		6090	R. Bandeirantes, Brazil	0800	
3200	TWR, Swaziland	0430		6095	Vatican Radio	0250	
3220	HCJB, Ecuador	0430		6117	La Voz del Llano, Colombia	1000	SS
3230	R. Orion, S. Africa	2300		6120	Deutsche Welle, Germany	0300	
3240	TWR, Swaziland	0300		6150	AWR, Costa Rica	0600	
3255	BBC Lesotho relay	0300		6155	R. Austria Int'l	0700	
3260	Estereo Carrizal, Ecuador	0100	SS	6155	R. Sweden	0230	
3290	Namibia Broadcasting Co.	0300		6165	R. Netherlands, Bonaire relay	0100	
3300	R. Cultural, Guatemala	0300		6165	Swiss Radio Int'l	0530	
3306	Zimbabwe Broadcasting Corp.	0300		6185	R. Educacion, Mexico	0600	SS
3310	Channel Africa, S. Africa	0357		6200	R. Metropolis, Czech Rep.	2300	Czech/EE
3325	R. Super/R. Mundial, Brazil	0200	PP	6205	HCJB, Ecuador	0200	RR
3360	La Voz de Nahuala, Guatemala	0300	SS	6245	Vatican Radio	0640	
3366	GBC, Ghana	0600		6280	King of Hope, Lebanon	0400	AA
3375	R. Clube Dourados, Brazil	0100	PP	6400	KCBS, No. Korea	1300	KK
3380	R. Chortis, Guatemala	0130	SS	6472	R. Luz y Sonido	0030	SS
3912	V of the People, Korean cland.	1400	KK	7125	RS Atlantika, Russia	0130	RR
3925	R. Tanpa, Japan	1200	JJ	7125	RTV Guineenne, Guinea	0530	FF
3975	R. Korea, S. Korea via England	0600	KK	7175	RS Tikhyy Okean, Russia	0830	RR
4549	R. Naylamp, Peru	0100	SS	7180	BBC relay, Hong Kong	1300	s/on
4747.5	R. Huanta 2000, Peru	0000	SS	7185	Channel Africa, S. Africa	0430	FF
4753	RRI Ujung Pandang, Indonesia	1200	II	7190	R. Moldova Int'l	0200	
4760	ELWA, Liberia	0600		7205	R. Bulgaria	0000	
4765	R. Rural, Brazil	0230	PP	7255	V of Nigeria	0500	
4770	Centinela del Sur, Ecuador	0200	SS	7270	R. Oranje, S. Africa	0500	
4779v	R. Cultural Coatan, Guatemala	0030	vern	7300	Voice of Russia (R. Moscow)	2300	
4780	Pyongyang, N. Korea	1200	KK	7305	Vatican Radio	0250	
4780	R. Ukraine	0530		7345	R. Prague, Czech Rep.	0700	
4785	Super Radio, Colombia	1030	SS	7365	KNLS, Alaska	1300	
4805	Rdf. do Amazonas, Brazil	0100	PP	7370	AWR, Costa Rica	0300	SS
4810	R. 2000, S. Africa	0230	EE/Afk	7465	Kol Israel	0500	
4820	LV Evangelica, Honduras	0200	SS	7475	RTT, Tunisia	0500	AA
4830	R. Tachira, Venezuela	0200	SS	7535	Monitor Radio, USA	0800	
4832	R. Reloj, Costa Rica	0100	SS	9022	VOIRI, Iran	1930	
4840	R. Valera, Venezuela	0300	SS	9200	R. Omdurman, Sudan	1800	
4845	ORTM, Mauritania	0630	FF	9255	V of Human Rights & Freedom Clandestine	0600	Farsi
4865	La Voz del Cinaruco, Colombia	0600	SS	9370	KSDA, Guam	1400	
4870	ORTB, Benin	0530	FF	9420	Voice of Greece	0130	GG/EE
4885	R. Clube do Para, Brazil	0000	PP	9445	Voice of Turkey	2330	TT
4885	Ondas del Meta, Colombia	1000	SS	9475	R. Cairo, Egypt	0200	
4890	R. France Int'l, via Gabon	0400	FF	9480	R. Intercontinental, Armenia	2200	GG
4904	Rdf. Tchadienne, Chad	0530	FF	9515	R. Romania Int'l	0400	
4915	R. Cora, Peru	1030	SS	9525	R. Marti, USA	0000	SS
4930	R. Internacional, Honduras	0130	SS	9530	R. Singapore Int'l	1300	
4950	V of Pujiang, China	1100	CC	9535	R. Japan	1400	
4960	R. HRET, Honduras	0230	SS	9535	Swiss R. Int'l	1000	
4960	R. HRET, Honduras	0230	SS	9540	R. Nacional Espana, Spain	0100	
4970	R. Rumbos, Venezuela	0300	SS	9560	R. Jordan	1600	
4980	Ecos del Torbes, Venezuela	0300	SS	9570	R. Portugal	0230	
4990	R. Nigeria	0500		9570	R. Romania Int'l	0230	
5025	R. Rebelde, Peru	0200	SS	9575	Radio Medi Un, Morocco	0730	FF
5030	AWR, Costa Rica	0330	SS	9580	R. Tirana, Albania	0330	
5035	R. Aparecida, Brazil	0100	PP	9580	Africa No. One, Gabon	2200	FF
5047	R. Togolaise, Togo	0500	FF	9580	R. Yugoslavia	0000	
5055	TIFC, Costa Rica	0400		9600	HCJB, Ecuador	0730	
5056	RFO, Fr. Guiana	0400	FF	9605	V of UAE	2200	
5075	Caracol, Colombia	0300	SS	9605	Vatican Radio	0330	SS
5240	Xizang PBS, China (Tibet)	1200	CC	9615	R. Cultural, Brazil	0900	PP
5700	R. Frecuencia San Ignacio, Peru	0200	SS	9620	R. Dnestr Intl, Moldova	2130	
5910	R. Vlanderen Int'l, Belgium	2200		9645v	Faro del Caribe, Costa Rica	0300	
5960	R. Japan via Canada	0100		9650	R. Korea, S. Korea, via Canada	1130	
5975	BBC via Antigua	0100		9650	AWR, Guam	1330	JJ
5980	AWR, Guatemala	0000	SS	9655	R. New Zealand Int'l	1300	
6005	CFCX, Canada, relay CKOI	1100	FF	9665	R. Nacional, Colombia	1600	SS
6010	R. Havana Cuba	0030		9690	R. Nacional, Argentina	2300	
6010	R. Mil, Mexico	0700	SS	9690	China Radio Int'l, via Spain	0300	
6015	R. Austria Int'l, via Canada	0530		9695	R. Rio Mar, Brazil	1100	PP
6020	R. Netherlands	0100	DD	9700	R. Bulgaria	0000	
6030	R. Marti, USA	0600	SS				
6060	RAI, Italy	0500	II				
6070	CFRX/CFRB, Canada	1200					

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9700	R. New Zealand Int'l	0800		13660	R. Havana Cuba	0200	USB
9705	R. Portugal	0230		13670v	R. Iraq Int'l	2130	AA
9720	SLBC, Sri Lanka	1530		13675	UAE Radio, Dubai	1630	
9725	RAI, Italy	0100		13690	R. Sweden	1830	
9735	R. Nacional, Paraguay	0100	SS	13730	R. Austria Int'l	1230	
9745	HCJB, Ecuador	0730		13750	AWR, Costa Rica	1200	s/on
9755	Radio Canada Int'l	0000		13770	Monitor Radio	2000	
9770	R. Australia	1400		13785	R. Tashkent, Uzbekistan	1200	
9770	V of UAE, Abu Dhabi	2300		13860	INBS, Iceland	1215	Icelndc
9805	R. France Int'l	1230		15020	All India Radio	1400	
9810	FEBA, Seychelles	1530		15030	RFPI, Costa Rica	2300	
9815	Radio Havana Cuba	0200	USB	15084	VOIRI, Iran	2200	Farsi
9830	R. Jordan	2100	AA	15095	R. Damascus, Syria	2030	
9835	R. Budapest, Hungary	0100		15105	R. Moscow, Russia	1500	
9840	V of Vietnam	1330		15120	AIR, India	1300	
9860	Swiss R. Int'l, via Fr. Guiana	0400		15139	R. Nacional, Chile	2200	SS
9860	R. Sweden	1100	Swed	15140	R. Veritas, Philippines	1530	
9885	Voice of America, Botswana relay	0300		15160	VOA, Philippines	1400	
9900	R. Cairo, Egypt	2230		15168	R. Tahiti	0300	FF/TT
9950	All India Radio	2300		15175	FEBA, Seychelles	1100	AA
9955	WRMI, Miami	0100		15180	R. Ukraine	0130	
9977	R. Pyongyang, N. Korea	1100		15200	R. Nacional Amazonas, Brazil	2300	PP
10058	V of Vietnam	0000	VV	15235	V of Great Homeland, Libya	2000	AA
10621	Australian Defense Forces Radio	1530	USB	15240	Channel Afrca, S. Africa	1600	
11402	INBS, Iceland	1900	Ice	15240	R. Sweden	1330	
11550	RTV Tunisienne, Tunisia	1600	AA	15265	Radiobras, Brazil	1800	
11570	R. Pakistan	1700		15270	HCJB, Ecuador	1930	
11603	Kol Israel	0400		15315	R. Moldova Int'l	1430	
11615	R. France Int'l	1600		15325	R. Canada Int'l	2100	
11620	All India Radio	1100		15340	R. Rwanda	1400	FF
11625	Vatican Radio	2000		15345	RTV Moroccan, Morocco	1800	AA
11650	Swiss Radio Int'l, via Fr. Guiana	2230		15345	RAE, Argentina	0200	SS
11665	R. Cairo, Egypt	1800	AA	15390	RAI, Italy, via Ascension Is.	0200	
11670	R. France Int'l, via Fr. Guiana	0130	SS	15395	UAE Radio, Dubai	1330	
11690	FEBC, Philippines	1200	VV	15400	R. Finland Int'l	1330	
11700	R. France Int'l	1600		15415	Libyan Jamahiriya Broadcasting	1430	AA
11705	R. Nova Visao, Brazil	2100	PP	15430	Radio Japan	2300	
11710	RAE, Argentina	0200		15445	Radiobras, Brazil	1200	
11715	China R. Int'l, via Mali	0300		15445	R. Vlanderen Int'l	1300	
11715	R. Korea, S. Korea, via Canada	1030		15475	R. Atlantika, Russia	1300	RR, Tu-Fr
11720	R. Bulgaria	2100		15475	Africa Number One, Gabon	2100	FF
11740	All India Radio	1530	s/on	15490	HCJB, Ecuador	1700	
11750	Qatar Broadcasting Service	1330	AA	15510	R. Australia	0500	
11765	RAI, Italy, via Ascension Is.	0200	II	15530	R. Australia	2200	II
11775	R. Espana Exterior, Spain	1900		15555	R. Pakistan	1600	
11780	BSKSA, Saudi Arabia	1730	AA	15565	R. Australia	1200	
11790	VOIRI, Iran	0030		15570	All India Radio	1200	
11790	R. Intercontinental, Armenia	2100		15575	R. Korea, S. Korea	0030	
11800	R. Australia	1300		15590	Vatican Radio	1345	
11805	VOA relay, Thailand	1230		15615	Reshet Bet, Israel	2300	HH
11805	R. Globo, Brazil	2300	PP	15630	V of Greece	1430	GG/EE
11815	Spanish Ntl Radio, via Costa Rica	0100	SS	15640	Kol Israel	1415	
11825	R. Tirana, Albania	2200		15675	R. Pakistan	1430	Urdu
11830	Vatican Radio	2250		15675	R. Copan Int'l, Honduras	2300	SS
11830	R. Romania Int'l	0400		15770	ISBS, Iceland	1410	Icelndc
11835	R. Thailand	2000		17490	HCJB, Ecuador	1000	USB
11845	R. Canada Int'l	2200		17500	RTT, Tunisia	1330	AA
11850	R. Norway Int'l	1200	Sun	17520	V of Greece	1430	GG/EE
11870	FEBA, Seychelles	1500		17590	R. Finland	1430	
11870	Bosnian-Serb Radio, via R. Yugoslavia	0100		17595	RTM, Morocco	1430	AA
11880	R. Japan via Fr. Guiana	0300		17620	R. France Int'l	1600	
11885	UAE Radio, Abu Dhabi	2300		17630	Africa No. One, Gabon	1430	FF
11905	R. Thailand	0030		17655	R. Netherlands via Bonaire	1830	
11905	R. Universo, Brazil	2330	PP	17670	Swiss Radio Int'l	1500	
11910	R. Georgia, Georgia Rep.	0530		17740	R. Finland Int'l	1430	
11925	R. Mediterranean, Malta	1400		17745	R. Algiers, Algeria	1930	
11925	HCJB, Ecuador	0600		17745	R. Tashkent, Uzbekistan	1200	
11937	R. Encarnacion, Paraguay	0000	SS	17750	R. Nacional, Brazil	1800	PP
11990	R. Kuwait	1800		17775	R. Romania Int'l	1300	
12015	R. Ulaanbaator, Mongolia	1200	Mon/We	17810	R. Japan	2300	
12050	R. Cairo, Egypt	2100	AA	17820	R. Canada Int'l	1300	
12085	R. Damascus, Syria	2030		17845	Spanish National Radio	1500	SS
12095	BBC, England	1300		17870	R. Sweden	1500	
13590	R. Pakistan	1600		17870	RAI, Italy	1730	II
13605	R. Australia	1100		17895	Qatar Broadcasting Service	1400	AA
13615	R. Bangladesh	1230		17900	R. Portugal	2000	PP
13635	Swiss R. Int'l, via Fr. Guiana	0030		17905	RFPI, Costa Rica	1900	USB
				21455	HCJB, Ecuador	1330	

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Hobby terminal unit ACARS receiver ads are found in most hobby publications today. ACARS is easy to receive, and with a hobby produced handbook or some common sense, most data buffs are quick to understand the information copied on their screens or printers. ACARS is one of the most interesting data systems in use today. It is easy to receive and understand. The messages relate to everything from engine gage readings to weather and passenger reports. The text can make for very interesting reading even if you are far from the responding ground station. The major airlines are currently working on satellite links for HF ACARS as we go to press.

Data is everywhere today. We have just scratched the surface of what you will find on VHF and shortwave. There are massive amounts of data being carried on the sub-carrier of your local FM station and on the subcarriers of the satellite signals that cover your area. In future articles we will tell you more about the stock quote services, weather reporting systems, and other data available for capture. You can't escape data communication transmissions and as a radio hobbyist, it is fun and exciting to understand and receive what is "out there!"

If any hobby manufacturer can ever break through the protocol barrier and produce a terminal unit that will receive and display the transmissions of public safety mobile data terminals, he won't be able to keep up with the hobbyist demand. ■



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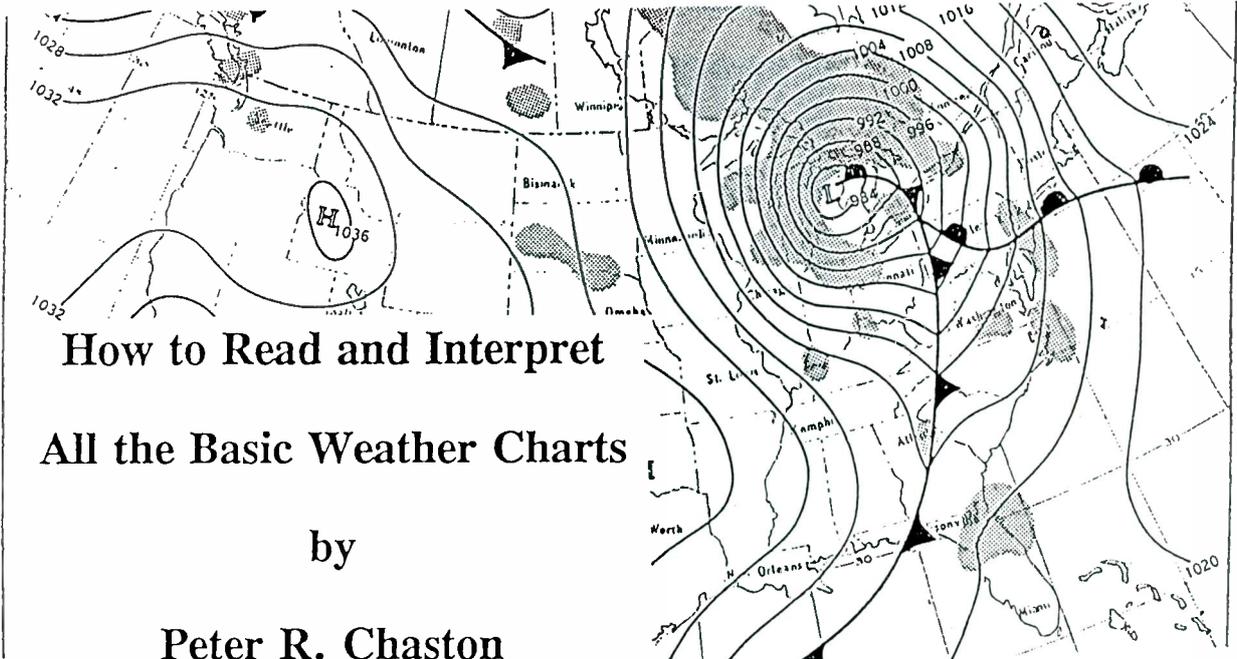
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# LISTENING POST

BY GERRY L. DEXTER

## WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

**T**he collection of shortwave broadcast news this month is, for a change, virtually all on the bright side.

It is now a near certainty that Asuncion, Paraguay will be the site of a new Adventist World Radio broadcast center in South America. The new station will include two-50 kW shortwave transmitters, plus medium wave and FM outlets for local coverage and satellite uplink and downlink facilities. It's estimated that the new station—to be called AWR Paraguay—will cost \$1.6 million. The entire cost is being funded by Dr. Milton Alfonso, national president of a Brazilian organization called The Golden Cross. Construction of the station will begin as soon as licenses have been issued by the Paraguayan government.

The Czech government was talking about discontinuing funding for Radio Prague, which would have meant the death of that station. But that didn't happen. Instead, the government will go on providing money so the station will continue. Ironically, the Czech Republic is now home to an independent shortwave broadcaster, Radio Metropolis, which came on the air a few months ago. Details on this new station (which uses Radio Prague transmitting facilities) are in the loggings section.

The first loggings of the Zimbabwe Broadcasting Corporation are included this month, following that station's return to shortwave after a considerable absence. The Radio Two program is running on 3306 and features a lot of African rhythms. Radio Three on 3396 and 4828 has a more commercial sound, playing a lot of modern pop. Sign on time for all three frequencies is around 0300, sometimes 0315 or a few minutes later. The transmitters are apparently 100 kW, not 50 as earlier thought.

Keep your ears (both of them) on 9820 and 9830. It seems that Radio Havana Cuba is planning some shortwave stereo test broadcasts using these frequencies.

There aren't many shortwave stations active in the Dominican Republic, and very often when a new one does come on it doesn't stay with us for very long. Such was the case with Radio Quisqueya in Santo Domingo—it was active for a few months and then it wasn't. Now it is reported to be on shortwave again. Check for this one in the evenings on 6235. The address for reports is Apartado 135-2, Santo Domingo.

The regular English program from Radio Algeria has apparently been reduced to only 15 minutes in length, from 1845 to 1900, even though the station still announces it airing from 1800 to 1900. Like-



*The control room at the main transmitter center of China Radio International. A computer distributes the 158 and a half daily broadcast hours in 38 foreign languages to the proper transmitter at the proper time.*

wise, the station recites about eight frequencies where this can be heard but it seems that, in reality, only one or two are actually used for English. Try tuning in 11715 and 17745.

Last month we mentioned the good news/bad news situation with Radio Canada International—that a government committee had, on the one hand, recommended restoration of RCI's funding even as the budget cutters were busy slicing the CBC's budget (of which RCI is a part). For now, anyway, the scissor swingers have won out and the CBC is going to have to cut 1,000 job positions over the next four

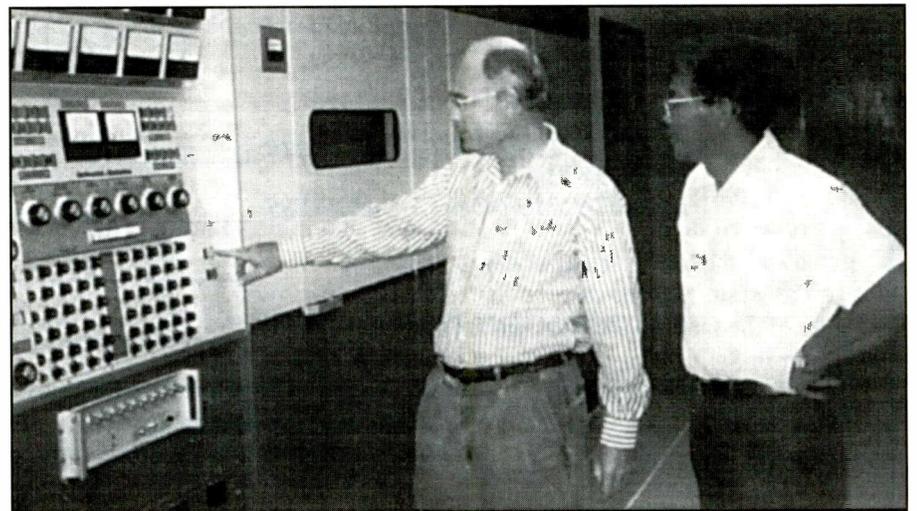
years. RCI expects to have to air even more CBC programming in the future since it will be able to produce even less of its own programming than it does now.

We don't see logs of Radio UlaanBaatar, Mongolia in this column very often. Here's their recently juggled schedule in case you want to give them a try:

Daily to Australia at 0910-0940 on 7290 and 12000.

Mon/Wed to the Pacific at 1200-1230 on 7290 and 12015.

Thur/Sat to Pacific at 1200-1230 on 7290 and 12000.



*AWR put a third transmitter on the air at KSDA, Guam.*

Daily to South Asia at 1445-1515 on 7290 and 12000.

Daily to Europe at 1930-2000 on 7290 and 13650.

Tue/Wed to North America at 0300-0330 on 7290 and 12015.

Fri/Sat/Sun to North America at 0330-0400 on 7290 and 12000.

Despite the North American transmissions at 0300 most listeners on this continent should find reception best during the 1200 broadcast.

Here's a strange one: Something calling itself the Kenya Forward Party says it is planning to put a station on the air from a ship in the Indian Ocean. "Radio Free Kenya" would apparently broadcast political programming to Kenya. No other details yet but it does have the same flavor as many another wild shortwave story we've seen over the years. Most of them remain just that—wild stories.

Look for Deutsche Welle to upgrade their big transmitting facilities at Nauen and Werchtal with 500 kW powerhouses in the coming years. The older sites at Julich and Konigs Wusterhausen apparently are going to receive little if any much attention and could eventually be "Bethanied."

Your loggings are always welcome! Please, though, list them individually, by country and double space in between each log. We must have your last name and state abbreviation included after each item or we cannot use the material. Also needed are spare QSLs you don't need returned, shack and station photos, information received from stations and general news about shortwave stations.

## Loggings

Here are this month's logs. All times are UTC which is five hours ahead of EST, i.e. 0000 UTC=7pm EST, 6pm CST, etc. Broadcast language is assumed to be English (EE) unless otherwise indicated (FF=French, RR=Russian, SS=Spanish, etc.).

**ALBANIA**—Radio Tirana, 9760 at 0347 with music, woman in Albanian. (Williams, TX)

**ANGOLA**—Radio Nacional, 9535 at 2002 with Arrowsmith, mentions of Angola, African music. (Lamb, NY)

**ANTIGUA**—Deutsche Welle relay, 6075 in GG at 0228; 15275 at 1354 in GG; 17715 at 1640 in GG. (Williams, TX) 17715 in GG at 1552. (Pappas, SD)

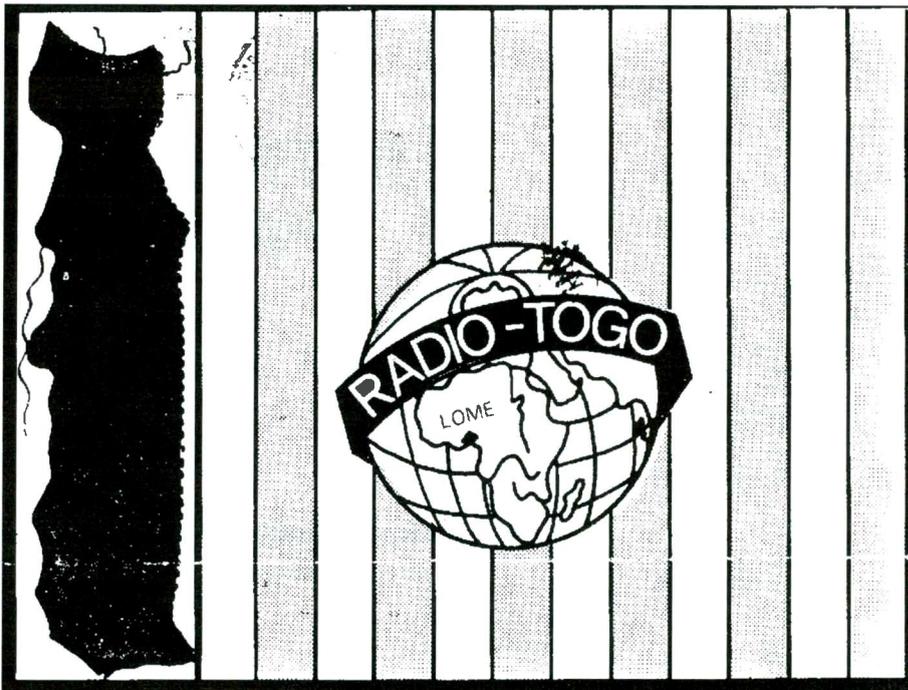
BBC relay, 5975 at 0230. (Jeffery, NY) 6110 at 0317; 6195 at 1305 and 15220 at 1348. (Williams, TX)

**ARMENIA**—Araks Information Radio Agency, 9480 at 2300 with ID, opera and explanation, ID, schedule and into FF. (Paszkievicz, WI) 2300 with Armenian news, into FF at 2310. (Hecht, PA)

**ASCENSION ISLAND**—BBC relay, 6005 at 0406 and 15400 at 2030. (Jeffery, NY) 15260 at 1525; 17830//17840//21660 at 1428. (Williams, TX)

VOA relay, 7105 at 0322. (Lamb, NY)

**AUSTRALIA**—Radio Australia, 5995 at 1300. (Pappas, SD) 5995 at 1320 and 6050 at 1350. (North-



*A reception report written in French will help get you this QSL from Radio Togo.*

rup, MO) 6060//6080 at 1241. (Williams, TX) 9860 at 0910 with cricket. (Turner, IL) 2005. (Rausch, NJ) 11695 at 2140 with science program. (Johnston, FL) VNG time station, 8638//12984 at 1330. (Pappas, SD)

**AUSTRIA**—Radio Austria Int'l, via Canada, 6015 at 0523 in GG, into EE at 0530. (Pappas, SD)

**BELGIUM**—R. Vlaanderen Int'l, 13675 at 1358 with music, ID, "Brussels Calling" (Jeffery, NY)

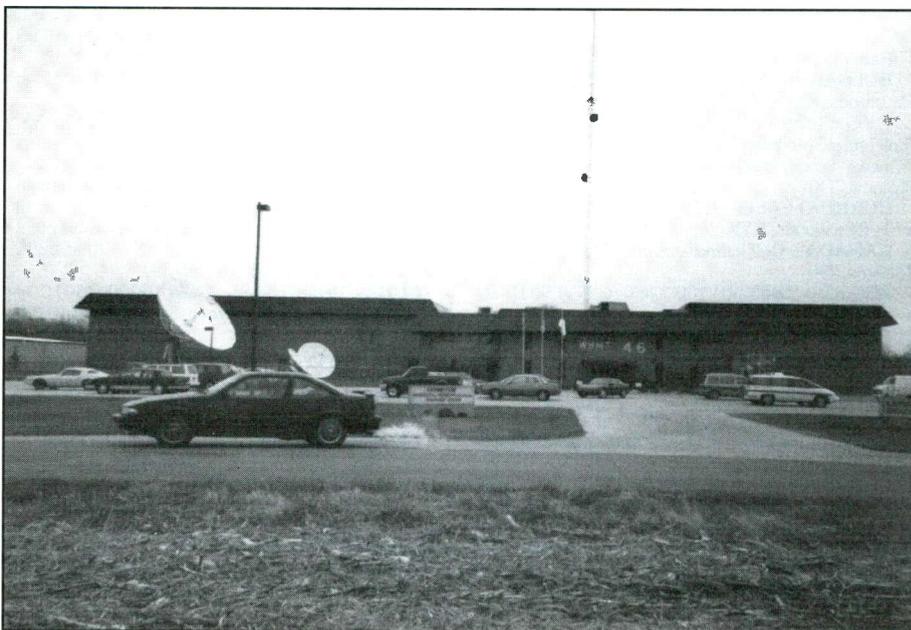
**BENIN**—Radiodiffusion du Benin, 4870 at 2210 in FF with "narration-type" song in FF. (Maywoods, KY)

**BOLIVIA**—Radio Fides, 9625 at 1113 with SS talk, commercial for Banco de Bolivia, music. (Maywoods, KY)

**BOTSWANA**—VOA relay, 6035 at 0311 with African news; 7280 at 0306 and 7340 at 0311. (Williams, TX) 7340 at 0333 with news in Special English. (Lamb, NY) 13710 at 1830. (Jeffery, NY)

Radio Bostwana, 4830 at 2108 and again at 0320. (Maywoods, KY)

**BRAZIL**—Super Radio Tupi, 4974.9 at 0538 with drama in PP, mentions of Brazil, applause, IDs. (Paszkievicz, WI)



*WHRI shortwave operates from this building in South Bend, Indiana, headquarters for LeSea Broadcasting. LeSea's WHME -FM and TV-46 are also in this building. LeSea also operates KWHR shortwave from Hawaii and 11 other TV stations in the US. This site also has the World Harvest Television Network uplink on the Galaxy 4 satellite.*

Abbreviations Used in Listening Post

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

# BETHANY RELAY STATION VOICE OF AMERICA

September 23, 1944  
November 14, 1994

*This black border QSL was issued to listeners who reported VOA's Bethany, Ohio station during its last days on the air.*

Radio Nacional, 15448.3 at 1219, nominal 15445. (Hecht, PA)

Swiss Radio Int'l relay, 5885 at 0222 music and SS talks. (Williams, TX)

Deutsche Welle relay, 6075 at 0225 in GG. (Williams, PA)

Radio Cultura do Para at Belem, 5045 in PP at 0147. (Williams, PA)

Radio Globo, 11805 at 0900 with news in PP. (Rausch, NJ)

Radio Sociedade, presumed, 4865 at 0417 with phone talks, mentions of Brazil and Sociedade, into Radio Nacional program. (Paszkiwicz, WI)

Radiodifusora Acreana, 4880 at 0924 in PP with religious talk, pops, canned ID. Maybe a move down from nominal 4885. (Lamb, NY)

Radio Universo, 9565 at 0528 in PP with talks, commercials, jingle. ID. (Lamb, NY)

Radio Cancao Nova, 4825//6105//9675 at 0531 in PP with religious music and talk, prayers, ID, frequencies. (Lamb, NY)

Radio Bandeirantes, 6090//9645 at 0519 in PP with talks, IDs, echo effects, news, accordion. (Lamb, NY)

Radio Rural, 4765 at 0245 in PP. (Johnston, FL)

**BULGARIA**—Radio Bulgaria, 7205 at 0225. (Maywoods, KY)

7305 at 1859 with IS, ID, schedule, news, "Rocking Chair" music program. (Lamb, NY) 7900 at 2200 with ID, news, music, mailbag show. (Jeffery, NY) 0457. (Williams, TX)

**BURKINO FASO**—RTV Burkina, 4815 at 2205 in FF. (Williams, KY)

**CANADA**—CHU time station, 7335 at 0316. (Williams, TX)

BBC relay, 5965 at 1100. (Jeffery, NY) 9515 at 1509 at 6175 at 0306. (Williams, TX)

Deutsche Welle via Canada, 6085 at 0300 with news. (Jeffery, NY)

CFRX relay of CFRB, 6070 at 2200 with local news. (Wilden, IN)

Radio Japan via Canada, 5960 at 0230 in JJ. (Williams, TX) 11705 at 1425 with media show. (Jeffery, NY)

CHNX, 6130 at 0237. (Williams, TX)

CKZN relay CBN on 6160 at 2228. (Jeffery, NY)

Radio Canada Int'l, 6120 at 0236 and 1300, 9755 to 0205 close. 11855 at 1324; 17820 at 0445. (Williams, TX) 9755 at 0032 with "Air Farce" program. (Pappas, SD) 13650//13690 at 2104. (Turner, IL)

CHAD Radiodifusion Nationale, 4904.5 at 0539 in FF. (Maywoods, KY)

**CHINA**—China Radio International, 7405 at 1520 with "Profile's" and "Let's Learn Chinese." (Pappas, SD) 9730 at 0410. (Turner, IL) 11715 (via Mali) at 0031. (Wilden, IN)

**COLOMBIA**—Ondas del Meta, 4885 at 0208 and 1215 in SS. (Williams, TX)

Caracol Colombia, 5075 at 0216 and 6150 at 1303 in SS. (Williams, TX)

Radio Super, 6065, 1253 in SS. (Williams, TX)

La Voz del Cinaruco, presumed, 4865 at 1209 in SS. (Williams, TX)

La Voz de Yopal 5040, presumed, at 0140 in SS with music and mention of Colombia. (Johnston, FL)

La Voz de Llano, presumed, 6116 at 0210 in SS with commercials, jingles, mentions of "Super" and "Colombia." (Johnston, FL)

Ecos del Combiema, 4785.6 at 2310 in SS with fast talking dj, mention of "Radio Super..." (the network, editor). (Maywoods, KY)

Radio Nacional, 9655 at 1220 in SS with religious talk and hymns, ID, news, Distorted audio. (Rausch, NJ)

**CONGO**—Radio TV Congolaise, 4765 at 0433 in FF with music. (Jeffery, NY)

**COSTA RICA**—RFPI, 7385 at 0623 with environmental program. (Foss, AK) 9401 LSB at 0214. (Wilden, IN)

Adventist World Radio, 5030 at 0413 with religious music. (Williams, TX) 9725 at 1231 with ID, religious music. (Jeffery, NY)

Radio Exterior de Espana relay, 5970 in SS at 0232. (Williams, TX)

Faro del Caribe, 5055 at 1215 with ID in SS, marimba music. (Williams, TX) 9644.7 at 1645, news and music. Fading out. (Maywoods, KY)

**CROATIA**—Croatian Radio, 5895v at 0420 with two men in Slavic language. (Williams, TX) 0536 in Croatian with pops, easy listening music, possible commercial for Croatia Banca. (Lamb, NY) 7370 at 2205 with national news in EE. (Rausch, NJ)

**CUBA**—Radio Havana Cuba, 6000//6010 at 0412; 11720 at 2105. (Turner, IL) 11720 at 2132. (Jeffery, NY)

Radio Rebelde, 5025v at 0213 with news in SS. (Williams, TX)

**CYPRUS**—BBC relay, 15575 at 1411 and 15590 at 1413. (Williams, TX)

**CZECH REPUBLIC**—Radio Prague, 5930 at 2200 with schedule announcement, IS, news. (Wilden, IN) 7345 at 0439. (Williams, TX)

Radio Metropolis, 6200 with test broadcast at 0005 with 4-note IS, IDs in EE, RR, Czech. (Paszkiwicz, WI) 7305 at 2150; 2230 with tests. (Hecht, PA; Rausch, NJ) This is a private station. Reception reports are welcome and will be entered into the Metropolis Lottery for CDs and Czech souvenirs. Address is: Radio Metropolis Prague, Yseninova 38, 13000 Prague 3, Czech Republic. Schedule is: 0700-0755 to NE Europe on 9455; 0800-0855 to SE Europe on 5905; 0900-1055 to W Europe on 9470; 1100-1255 to W Europe on 5905; 1300-1400 to N Europe on 5905, 1600-1755 to SE Europe on 5940; 1800-1955 to Mideast and North Africa on 7250; 2000-2255 to North America on 7305;

2300-0100 to North America on 7200. (Rausch, NJ)

**DENMARK**—Radio Denmark via Norway, 5910 at 0230 15335 with IS, ID in EE and Danish. (Rausch, NJ) Ending at 1359 with instrumental guitar. Into Radio Norway at 1400. (Williams, TX)

**DOMINICAN REPUBLIC**—Onda Musical, 4779.8 at 0154 with ID in SS, music. (Maywoods, KY)

Radio Quisqueya, 6235 in SS at 0310 with two men in SS. (Williams, TX)

**ECUADOR**—HCJB, 9745 at 0120 with "Saludos Amigos" program. (Wilden, IN) 12005//151215//17490 SSB at 1220. (Pappas, SD)

Radio Popular, 4800 at 0213 with news and music in SS. (Williams, TX)

La Voz de Upano, 3360v//5020 at 0136. (Williams, TX)

La Voz del Napo, 3280 at 0255, SDS ID and sign off at 0300. (Johnston, FL) 0302. (Maywoods, KY)

**EGYPT**—Radio Cairo, 9900 at 2127 with music, poetry, ID, anthem, news. (Lamb, NY) 11665 at 1308 in AA. (Williams, KY)

**ENGLAND**—BBC, 6190 at 0249 with EE lesson. (Williams, TX)

**EQUATORIAL GUINEA**—Radio Nacional, Bata, 4925 at 2134 in SS with African music, ID, news, anthem and off at 2156. (Lamb, NY)

**ETHIOPIA**—Radio Voice of Peace for Rwanda via Radio Amahoro, 9560 at 0355 with ID in EE and FF, into program in Rwandan language. (Rausch, NJ)

**FINLAND**—Radio Finland, 15400 at 1409 with news in Finnish. (Williams, TX)

**FRANCE**—Radio France Int'l, in FF at 0219; 17575 at 1450. (Williams, TX) 11615//13625 (Fr. Guiana) and 15365 with news at 1201. (Hecht, PA) 12035 at 1427 and 15530 at 1619. (Jeffery, NY)

**FRENCH GUIANA**—RFO Guyane, 5055 at 0149 with two men in FF. (Williams, TX)

Radio France Int'l relay, 9800 at 0350 in FF; 21645 at 1453 in FF. (Williams, TX)

Radio Japan relay, 11895 at 0338 in SS. (Williams, TX)

**GABON**—Africa Number One, 9580 at 0538 in FF with remote report, ID, African news and music. (Lamb, NY) 17630 at 1435 in FF. (Williams, TX)

Radio Japan relay, 11785 at 0525, news in RR. (Williams, TX) 11925 at 2101 with news. (Jeffery, NY)

Radio France Int'l relay, 4890 at 0516 in FF with "RFI Plus Afrique" service, time check, IDs, promo, news, African music. (Lamb, NY) 12015 at 0938 in FF. (Pappas, SD)

**GERMANY**—Deutsche Welle, 6100 at 0259 in GG; 13610 at 1334 in unidentified language. (Williams, TX) 6160 (via Antigua, editor) at 0945 and 15270 at 2105. (Turner, IL)

**GHANA**—GBC, 4915 at 0010 with music and talk. (Maywoods, KY)

**GREECE**—Voice of Greece, 5970 at 0224 in Greek, 9420 in EE at 0135. (Williams, TX)

**GUAM**—KSDA, 9370 at 1619 with ID and "Your Story Hour." (Pappas, SD)

**GUATEMALA**—Radio Coatan, 4780 at 1100 in SS with IS, ID, frequencies and into religious program in Mayan. (Rausch, NJ)

AWR Union Radio, 5980v at 2340 with SS Bible reading, ID at 2357 "Union Radio, La Voz de la Iglesia Adventista en Guatemala." (Rausch, NJ)

Radio Cultural, 3300 at 1209 in SS. (Williams, TX)  
Radio Maya de Barillas, 3325v at 1213 in Mayan and SS. (Williams, TX)

Radio Chortis, 2280 at 0120 with folk music, ID, time check, marimbas. (Paszkievicz, WI)

Radio Buenas Nuevas, 4800 at 0150 in SS and local dialect with folk-style religious music. (Johnston, FL)

Radio K'ekchi, 4845 at 0050 in SS and local dialect with chants, ID. (Johnston, FL)

La Voz de Atitlan, 2390 at 0250 with marimbas. (Maywoods, KY)

Radio Tezulutlan, 4835 at 0224 in SS, mentions of Coban. (Maywoods, KY) 0140 in local language with marimba, choir, talks, ID. Also 3370 at 0147 with similar but not parallel programming. (Lamb, NY)

**HAWAII**—KWHR, 9930 at 0950 with religious programming. (Turner, IL) 17510 at 0249 with pleas for donations. (Williams, TX)

**HONDURAS**—La Voz Evangelica, 4820 at 1205 and 0203. (Williams, TX)

Radio Internacional, 4930 at 1248 and 0345 in SS with ID, IS. (Williams, TX)

Radio Luz y Vida, 3250v at 1207; 0200. (Williams, TX; Maywoods, KY)

Radio HRET, 4960v at 0130 with religious programming in SS. (Williams, TX)

**HONG KONG**—BBC relay on 5990 at 1302. (Williams, TX)

**INDIA**—All India Radio, Delhi, 4860 at 1232, woman in EE. (Maywoods, KY) 7412 at 1745 in EE with IS, ID, schedule, subcontinental music. (Rausch, NJ)

AIR, Madras, 4920, 1227 with news at 1230. (Maywoods, KY)

AIR, Port Blair (Andaman Islands) 1215 with subcontinental music, pips. Parallel to 4860 and 4920. (Maywoods, KY)

**INDONESIA**—Radio Republik Indonesia, Yogyakarta, 7098.6 at 1243 in II with talk. CW QRM. (Maywoods, KY)

**IRAN**—VOIRI, 9575 at 1534 in AA with recitations. (Pappas, SD) 11790 at 1220 with commentary, news review, ID, schedule and address. (Rausch, NJ) 15084 at 1342 in Farsi with recitations. (Williams, TX)

**IRAQ**—Radio Iraq Int'l, 13680 at 1050 in EE with mideast music, ID, news. (Rausch, NJ)

**ISRAEL**—Kol Israel, 15640//15650 at 1415 in RR. (Williams, TX)

**ITALY**—RAI, 9725 at 0202 with music program to North America, songs in II. (Williams, TX)

**JAPAN**—Radio Tampa, presumed, 3925 in JJ at 1125. (Hecht, PA) 6055 at 1323 in JJ. (Williams, TX)

Radio Japan, 6030 and 6055 at 1345 in JJ. (Northrup, MO) 0535 in JJ at 1359, into EE at 1400, //11705 via Canada. (Pappas, SD) 11705 at 1435. (Turner, IL) 11885 at 0536, into JJ at 0600. (Rausch, NJ) 11895 at 0349 in SS. (Williams, TX)

**JORDAN**—11855 at 1324 with AA music. (Williams, TX)

**KAZAHKSTAN**—Kazakh Radio, 9780 at 1315 in RR with folk ballads, ID and mention of Alma Ata. (Rausch, NJ)

Radio Netherlands relay, 7305 at 0219. (Foss, AK)

**KENYA**—Kenya Broadcasting Corp., 6150 at 2028 with local vocals and mentions of VOA and Nairobi. Wiped out by Vatican Radio. (Maywoods, KY)

**KUWAIT**—Radio Kuwait, 9840 at 1814 in AA. (Pappas, SD)

**LIBERIA**—ELWA, presumed, 4760 at 2115 with "African Spotlight," African and Christian music, talks, listener's letters. (Lamb, NY)

**LIBYA**—Radio Jamahiriya, 15235 at 1351 in AA. (Williams, TX) 15415 at 1551 in AA. (Pappas, SD)

**LITHUANIA**—Radio Vilnius, 7150 at 0000. (Turner, IL)

**MADAGASCAR**—Radio Netherlands relay, 11655 at 0253 in EE and Dutch. (Williams, TX)

**MALI**—China Radio Int'l relay, 11715 at 0255 in CC, 0333 in EE. Back to CC at 0400. (Williams, TX)

RTV Malienne, 4783v at 2219 with chorus and native instruments and log drums. (Maywoods, KY)

**MALTA**—Deutsche Welle relay at 0232 in SS. (Williams, TX)

**MEXICO**—Radio Universidad, San Luis Potosi, 6055 at 0243 with news in SS. (Williams, TX)

Radio Educacion, 6185 in SS at 0253. (Williams, TX) 0852 in SS with EE ID at 0900. (Foss, AK)

XEQM, Merida, 6105 at 0428 with ballads and SS talk. (Williams, TX)

Radio Mil, 6010 at 0235 in SS with ID. (Williams, TX)

Radio XEUJ, 5983, 1235 in SS with talk show on women's issues. (Williams, TX) (Ed note—many of the listed Mexican shortwave stations operate on an irregular basis)

**MOLDOVA**—Radio Moldova Int'l, 7190 at 0200 in EE with international news, ID, schedule, talk on local economy. (Rausch, NJ)

Radio Dniester Int'l, Pridnestrovye on 9620 at

2130 with historical notes on Pridnestrovye (the region breaking away from Moldova, editor) (Hecht, PA)

Golos Rossii, via Moldova, 16760 at 1438 with male chorus, fast balalaika music, RR lyrics. (Williams, TX)

**MONACO**—Trans World Radio, 7120 at 0741 with religious program. (Turner, IL)

**MOROCCO**—RTV Marocaine, 15345 at 1402 in AA with chorus and ballads. (Williams, TX)

Radio Medi Un, 9575 at 1958 with pops, ID in FF, news in AA. (Lamb, NY)

VOA relay, 17895 at 1654 with "Africa World Tonight," news. (Jeffery, NY)

**MYANMAR (BURMA)**—Defense Forces Broadcasting Station, 6570 at 1247 in Burmese, local music and talk. (Maywoods, KY)

Radio Myanmar, 5990 at 1210 with language lesson, announcements, mention of Myanmar. (Maywoods, KY)

**NETHERLANDS**—Radio Netherlands, 6020//6165 (Bonaire) at 2350. 6015//6165 (Bonaire) at

# BRAIN POWER

The SG-500 SmartPowerCube produces tremendous power—nearly as much as a 1 kW amplifier. Yet it requires less than one cubic foot of space. Electronic brain power makes this possible. The SG-500 is an intelligent—microprocessor controlled—high powered linear amplifier, designed with high efficiency transistors. Its electronic brain constantly monitors your HF-SSB's activities, power needs and antenna condition, and automatically—in less than 15 milliseconds—selects the right broadband filter. And it's designed to reliably produce, essentially unattended, in the most demanding conditions. For maximum power—intelligent power—at low cost, the SG-500 SmartPowerCube is just the amplifier you need. Call us for details.

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May 1995 / POPULAR COMMUNICATIONS / 51

0350. (Turner, IL) 6020 at 0243. (Williams, TX)

**NETHERLANDS ANTILLES**—Radio Netherlands via Bonaire 6165 at 0302 in SS. (Williams, TX) 17605//21515 in Dutch at 1759, off at 1824. (Lamb, NY)

**NEW ZEALAND**—Radio New Zealand Int'l, 9700 at 1035 with "Pacific Beat." (Turner, IL) National network relay at 1130. (Pappas, SD) 15115 at 0027 with feature and classical music. (Jeffery, NY)

**NIGERIA**—Radio Nigeria, Lagos, 4990 at 0509 with African music, US pops, "Radio One" ID, program line up. (Lamb, NY)

Radio Nigeria, Kaduna, 4770 at 0449 with rock, time check, ID, drums, news. (Lamb, NY)

**NORTH KOREA**—Korean Central Broadcasting Station, 2850 at 1214 with man and woman in KK. (Foss, AK)

**OMAN**—BBC relay, 11760 at 0312 with news. (Foss, AK)

**PAPUA NEW GUINEA**—NBC Port Moresby,

4890 at 1140 with US pops. (Hecht, PA)

Radio Manaus, Lorengau says they "don't employ a QSL card service" but did QSL via letter. Address is P.O. Box 505, Lorengau, Manus Province. (Rausch, NJ)

**PERU**—Radio Melodia, 5997 at 0425 in SS with ballads and SS "rap." (Williams, TX)

Radio Cora, 4915v at 0126 in SS. (Williams, TX)

Radio Santa Rosa, 6045 in SS at 0245 sign off with "Gracias por su atencion", ID and off at 0250. (Williams, TX)

Radio Frecuencia San Ignacio, 5700 at 0220 ion SS with dance music, disco, ID 0241. (Maywoods, KY)

Radio Huanta 2000, 4752v, 1029 in SS and local language with Peruvian music, talks, possible IDs. (Lamb, NY) 1033 with huaynos, time check, mention of Huanta, talk in Quechua, ID. Thanks Lamb for tip. (Paskiewicz, WI)

Radio Cultural Amuata, 4955 at 1040 in SS with vocals, IDs, huaynos, announcements in Quechua. (Paskiewicz, WI)

Radio San Martin, 4810 at 0022 with music. (Jeffery, NY)

Radio Ilucan, 5621v at 0205 in SS with comunicadoes, time check, huaynos, ID 0228. (Rausch, NJ)

**PHILIPPINES**—Radio Veritas Asia, 6020 at 1459 in CC with IS and possible ID. (Williams, TX)

VOA relay, 6110 at 1125. New Horizons program. (Rausch, NJ) 6160 at 1334 in CC. QRM'd. (Williams, TX)

**POLAND**—Polish radio, 7145 at 1215, ID by man and woman. In Polish. (Northrup, MO)

**PORTUGAL**—Radio Portugal, 9570//9705 at 0005 in PP. (Turner, IL) 15200 at 1347 in PP with music. (Williams, TX)

Radio Free Europe/Radio Liberty via Portugal, 7255 at 0317 in RR. (Williams, TX)

**ROMANIA**—Radio Romania, 9570 in Romanian at 0143. (Williams, TX)

**RII**—Ujung Pandang, 4753 at 2128 with II, rock, talks, mention of Ujung Pandang, discussion program, "Song of the Coconut Islands" and news. (Lamb, NY)

**RUSSIA**—Voice of Russia (ex Radio Moscow) at 2200 on 5905//5920//5965//7135//7150//7205//7300//7380//7400//9550//9620. Also at 0100 on 7105//7125. (Hecht, PA) 6030 at 2139. (Jeffery, NY) 7105 at 0043 and 9550 at 2020. (Turner, IL) 7230 at 0303 in SS; 7270 at 0335 and 7400 at 0343 in RR. (Williams, TX)

Yakut Radio, Yakutsk, 4800 at 1238 in local language. (Foss, AK)

Radiostansiya Atlantika, 7125 at 0157 in RR with IS, ID, news, address, phone and fax numbers. (Rausch, NJ)

Krasnoyarsk Radio, 5290 at 0351 with two men in RR. (Williams, TX)

Trans World Radio, Irkutsk, 11655 at 1311 in unidentified language. (Williams, TX)

Radio Rossii, 7220 at 0300 in RR and 7370 in RR at 0313. (Williams, TX)

**SEYCHELLES**—BBC relay, 9630 in EE at 1933. (Hecht, PA)

**SINGAPORE**—BBC relay, 9740 at 1517. (Williams, TX) 11750 at 1647. (Jeffery, NY)

**SLOVAKIA**—Adventist World Radio relay, 6055 at 2059 in EE with IS, ID, "Lifestyle Magazine." (Jeffery, NY)

Radio Slovakia, 5930 at 0226, talks in FF, IS, ID. (Williams, TX)

**SOLOMON ISLANDS**—SIBC, 5020 at 0510 in Pidgin with drums and chanting. (Maywoods, KY)

**SOUTH AFRICA**—Channel Africa, 9520 at 0323 in FF and 11725 in FF at 0522. (Williams, TX)

Radio Oranje, 3230 at 2201 in Afrikaans, ID, music. (Lamb, NY)

Radio 2000 at 0202 on 4810 with news in EE. (Williams, TX)

**SOUTH KOREA**—Radio Korea, 6135 at 1325 in CC. (Williams, TX) 6145 at 1345 in KK. (Northrup, MO) 13670 at 0325 in KK. Heavy QRM. (Foss, AK)

**SPAIN**—Radio Exterior de Espana, 6055 at 0226 and 9620 at 0146 in SS. (Williams, TX) 9540 at 0018 with "Panorama." (Jeffery, NY)

**SRI LANKA**—VOA relay, 9645 at 1330 with news in special English. (Rausch, NJ)

**SUDAN**—Republic of Sudan Radio, 7200 at 0328 in AA. (Williams, TX)

National Unity Radio, 9730 at 1515. ID in EE and AA, into AA music. (Williams, TX)

**SWAZILAND**—Trans World Radio, 9500 at 0335 with chimes, ID in EE and local dialect, then African music. (Williams, TX)

**SWEDEN**—Radio Sweden, 6195 at 0407 in EE and Swedish. (Williams, TX) 11650 at 1429 with IS, ID, news, "Mediascan." (Jeffery, NY) 1544 to 1600 sign off in Swedish. (Pappas, SD)

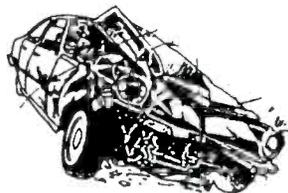
**SWITZERLAND**—Swiss Radio Int'l, 6135 at 0301 with news in Italian. (Williams, TX) 9905 at 0100-0200. (Turner, IL)

9905 at 0221 with EE to 0230, into FF. (Wilden, IN) 9885 at 0918. (Turner, IL)

**TAIWAN**—Voice of Free China, via WYFR, 5810//9850 at 2210. (Turner, IL) 5950//9680 at 0303. (Pappas, SD)

**THAILAND**—Bangkok Meteorological Station, 6765v at 1155. Reception in USB; music box interval signal. (Maywoods, KY)

VOA relay, Udorn Thani, 7190 at 2321 in CC with talks and CC orchestra. (Lamb, NY)



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**TOGO**—RTT Togolaise: QSL gives frequencies as 5047 from 0500-0900 and 1600-0000 and 7265, 0900-1600. Reports in FF to Radiodiffusion Togolaise, B.P. 434, Lome, Togo. Please enclose two IRCs or two dollar bills. Recordings accepted. (Rausch, NJ)

**TURKEY**—Voice of Turkey, 9445 at 0224 in Turkish. (Pappas, SD) 0319 in TT. (Williams, TX)

**UKRAINE**—Radio Ukraine Int'l, 7195 at 0419 in Ukrainian. 9860 at 0337 in Ukrainian. (Williams, TX) 7405 at 2220 with "Hello From Kiev." (Rausch, NJ) 7405//9810 at 2200 with news. (Hecht, PA)

Voice of Russia, via Kiev, 5940 at 0555 with guitar, ID, frequencies, "Moscow Nights" IS, abrupt switch to Kazakh Radio at 0559 in Kazakh with IS, ID, instrumental music, interview and off at 0630. Have good authority on site info. (Lamb, NY)

**UNITED ARAB EMIRATES**—UAE Radio, Dubai. 15395 at 1407 with man and woman in AA. (Williams, TX)

**UNITED STATES**—Voice of the OAS, 9670 at 2245-2300 daily in EE. (Turner, IL)

**URUGUAY**—Radio Monte Carlo, 9595 at 0035 in SS with music variety program. "Aplauso Aplauso" listener call-ins. ID. QTH at 0100. (Rausch, NJ)

**UZBEKISTAN**—Radio Tashkent, 13785 at 1200 in EE with IS, ID, short news. (Rausch, NJ) Also here at 1300. (Hecht, PA) New addresses announced: S13/1 Raknan KOA 15, Karachi, Pakistan; Room 20, Numpoc Hotel, New Delhi 110001 India; 848-850 Ramapur Rd., Bangkok 10050, Thailand and 72 Weedmore St., London W1H 9L, England. (Rausch, NJ)

Radio Moscow via Uzbekistan, 11695 at 1316, two men talking. (Williams, TX)

**VATICAN**—Vatican Radio, 5865 at 0318; 6095//7305 at 0246 in FF. EE. SS. (Pappas, SD) 6095 at 0250. Off at 0310, then IS at 0313 and into SS. (Wilden, IN)

**VENEZUELA**—Radio Valera, 4840 at 0100 in SS. (Johnston, FL)

Radio Rumbos, 9659v, 0351 in SS but with ID, address and frequencies in an EE announcement. (Maywoods, KY)

Ecos del Torbes, 4980 at 0210 with salsa/mariachi music. "Peanut Vendor." (Maywoods, KY) (Peanut Vendor? Always did like this station! Editor) 0329 in SS. (Jeffery, NY)

**ZAMBIA**—New station, Christian Voice Radio, tentative, 6065 at 2005 with contemporary Christian music. Only talk was to ID the songs. Scheduled 1400-2030 using Continental 100 kw transmitter. Will use 4968 and 7250 in future. Address: Radio Christian Voice, Private Bag E-606, Lusaka, Zambia. (Rausch, NJ)

**ZIMBABWE**—Zimbabwe Broadcasting Corporation (reactivated) on 3396 at 0330 with US pop, African music, ID. TC, "Welcome to Zimbabwe." (Lamb, NY) 3306 at 0300, children's chorus that went on forever, lots of drums, ID at 0301. (Maywoods, KY) 3306 Radio Two at 0300 variable sign on in local language. ZBC Radio Three in EE on 4828 with ID "Good Morning—Radio Zimbabwe International" and news, sports. (Rausch, NJ)

That wraps it for this month. Tap your walking stick and tip your hat to the following kind folks who did the work this month:

Sheryl Paszkiewicz, Manitowoc, WI; Marie Lamb, Brewerton, NY; Robert L. Johnson, Panama City, FL; Ed Rausch, Cedar Grove, NJ; Marty Foss, Wasilia, AK; Dave Jeffery, Niagara Falls, NY; Steve Williams, Corpus Christi, TX; Susan J. Wilden, Columbus, IN; Marina Pappas, Huron, SD; Kevin Hecht, Devon, PA; Claude Turner, Chicago, IL; Mark Northrup, Gladstone, MO; and the Maywoods (KY) DX Group Expedition (Edward C. Shaw, Eric Petty, John Hofendorfer, Jim McClure, Dr. Joel Roitman, Jerry Johnston, Chuck Everman, Wayne Gregory and ol' buddy Loy Lee). Much appreciation goes to each of you!

Until next month, good listening! ■

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In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

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The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

### Why Wilson 1000 Performs Better

Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

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Aug. 21, 1987

Wilson Antenna Company Inc.  
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 Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas  
 Ref. Rye Canyon Antenna Lab File #870529

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FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.80	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

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# BROADCAST DX'ING

BY TIM KRIDEL

## DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

**Redefining Radio:** Radio entered a new era in December, 1994 when the campus radio station of the University of North Carolina at Chapel Hill became the first station to broadcast full-time simultaneously on both its assigned frequency of 89.3 MHz and the computer network Internet.

The Associated Press reports that WXYC is offering its format of alternative music to computer users who have the hardware to access the World Wide Web portion of the Internet. The station joins KJHK-FM, its counterpart at the University of Kansas, as well as bands such as Aerosmith and the Rolling Stones, in offering music on what was until only recently thought of as primarily a visual medium. But as the pioneering broadcasters are quick to admit, wiring a wireless medium has its drawbacks, at least for now.

Although the Internet allows the 400-watt WXYC to reach well outside its Raleigh-Durham-Chapel Hill market, the biggest hurdle is the lack of fidelity afforded by conventional telephone lines, which require the signal to be compressed, thereby creating a hollow sound. "The stage we're at now is, wow, this is kind of cool, but the sound quality is not so great," said graduate student and WYXC staffer David McConville. For those who want to experience the ultimate in clear-channel broadcasting, WXYC's Internet address is <http://sunsite.unc.edu/wxyc/>. DXing was never so easy.

*The Domino Effect?:* In a move that may signal the end of WOWO-AM as it has been known for 70 years, Inner City Broadcasting has filed a petition before the FCC to lower to 9.8 kW the nighttime power of its most recent acquisition, reports the industry newspaper *Radio World*. Under the proposal, the Fort Wayne, Indiana broadcaster would remain at its present daytime power of 50 kW, but the directional night-



Los Alamos, New Mexico, is the city of license for KBOM, but their oldies format makes them quite popular among the residents of Santa Fe, including POP'COMM reader Alan Hill, N5BGC.

time antenna pattern would be altered, and the station's class would be changed from A to B. A separate petition seeks to establish a nighttime power of 30 kW for WLIB, which is currently restricted to a daytime-only power of 10 kW on 1190 kHz. If the FCC approves the changes, Inner City will then sell the modified WOWO to Pathfinder Communications, for \$1.6 million.

Among those formally protesting Inner City's applications is Fort Wayne mayor, Paul Helmke, who argued in a letter to the FCC that the proposed changes, if approved, "would make WOWO just another local radio station at night," as well as inhibit its role in both the regional agricultural market and the general community.

Peter George, a radio activist from Randolph, Massachusetts, is also unhappy with the turn of events over the past few months. George originally formed the WOWO Listeners Guild in an unsuccessful effort to stave off Inner City's inroads to purchase the station, and now seeks to have the guild represented before the FCC to argue against Inner City's applications. "I don't think it's right to destroy an American icon just for the sake of giving New York City another full-time station," he told *Radio World*. Worse, George argues, allowing Inner City to power up WLIB at the expense of WOWO may set a dangerous precedent, whereby other class-A stations would lose their protected status, and eventually lead

to the demise of clear-channel broadcasting altogether. As he explained to *Radio World*, "Could you imagine the AM band without clear-channel stations like WBZ or WHAS?"

Unfortunately, aside from hobbyists, expatriate Indianans, and those in the industry, the majority of the general public probably can. John Dille, president of Federated Media, the parent company of Pathfinder Communications, said as much in *The (Fort Wayne) Journal Gazette*, in which he maintained that only listeners east of Ohio would be affected by the proposed changes, adding, "Listenership [sic] of WOWO in the '20s and '30s is not the listenership [sic] today" because the audience of the '90s has more choices. Inner City officials agreed, contending in *The (Fort Wayne) News-Sentinel* that WOWO would lose only 268,000 listeners (the article gives no explanation as to how this figure was reached), while powering up WLIB at night would provide its black-ethnic programming to 9.7 million underserved residents of the New York City and northern New Jersey area. Furthermore, they argued, powering down WOWO to 9.8 kW would allow five other stations on or adjacent to 1190 kHz to expand their coverage.

POP'COMM reader and reporter James R. Weiler, who supplied much of the above information from the two Fort Wayne newspapers, voices another concern: "Will

### Newly Issued FM Call Letters

KAJI	Point Comfort, TX
KAJJ	New London, MO
KAJL	Winters, TX
KAJP	Firebaugh, CA
KAJQ	Sibley, LA
KCOZ	Point Lookout, MO
KDCQ	Coos Bay, OR
KLNO	Thibodaux, LA
KXGA	Glenallen, AK
KXKM	McCarthy, AK
KXPK	Stillwater, OK
KZZE	Eagle Point, OR
WAJS	Tupelo, MS
WAJT	Mount Vernon, IL
WAJU	Flagler Beach, FL
WAJV	Brooksville, MS
WHHK	Galva, IL
WXPW	Wausau, WI



Kentville, Nova Scotia, is home to CKWM. Its sister station is CKEN, 1490 kHz.  
(Courtesy Charles C. Scott, Glasgow)

## Changed AM Call Letters

New	Was	
KBBL	KYXZ	Cabot, AR
KBBX	KESY	Omaha, NE
KBZO	KTNP	Lubbock, TX
KHFN	KJBO	Albuquerque, NM
KHTX	KRQC	Salinas, CA
KJAZ	KSUV	McFarland, CA
KQHK	KQWB	Fargo, ND
KQYN	KDHI	Twentynine Palms, CA
KRTA	KYJC	Medford, OR
KSZZ	KHTX	San Bernardino, CA
KYGO	KWMX	Lakewood, CO
WDOZ	WMTG	Dearborn, MI
WEJM	WJPC	Chicago, IL
WFHX	WHHR	Hilton Head Island, SC
WLMR	WMOC	Chattanooga, TN
WMYM	WWHL	Cocoa, FL
WPRD	WWZN	Winter Park, FL
WPVO	WAEY	Betap, WV
WTLA	WKRL	North Syracuse, NY
WWPR	WJRB	Bradenton, FL
WZER	WYLO	Jackson, WI

## Granted Permits to Construct New FM Stations

MN	Perham	99.5 MHz	6 kW
PR		92.9 MHz	3.9 kW (WTPM Booster)
TX	Eagle Pass	88.7 MHz	1 kW

## Granted Permit to Construct New AM Stations

WA	Colfax	840 kHz	280 watts
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## Pending FM Call Letter Changes

Old	Pending	
KCOE	KNCY-FM	Auburn, NE
KHTX-FM	KVAR	Riverside, CA
WAHU	WMXE	Hudson, MI
WBBO-FM	WFNQ	Forest City, NC
WEOZ	WMDE	Saegertown, PA
WKGK	WELS-FM	Kinston, NC
WZZW	WFXN	Milton, WV

## Applied to Construct New FM Stations

AR	Harrisburg	95.9 MHz	11 kW
AZ	Dreamland	89.1 MHz	1 kW
AZ	Payson	101.1 MHz	88 kW
FL	Miami	93.5 MHz	1.4 kW (Exp. TV)
FL	Sebastian	95.9 MHz	25 kW
GA	Warrenton	93.1 MHz	25 kW
GU	Agana	102.9 MHz	25 kW
GU	Barrigada	88.1 MHz	8 kW
HI	Lihue	98.1 MHz	100 kW
IA	Ottumwa	89.7 MHz	2.3 kW
IL	Galatia	98.9 MHz	6 kW
IN	Evansville	107.5 MHz	3.2 kW
KS	Hutchinson	97.1 MHz	13.4 kW
KY	Beaver Dam	100.7 MHz	6 kW
KY	Stanford	96.3 MHz	12.7 kW
LA	Jackson	104.5 MHz	6 kW
ME	Winslow	95.3 MHz	5.3 kW
MI	Tawas City	103.3 MHz	6 kW
MN	Nisswa	93.3 MHz	6 kW
MN	Pillager	95.9 MHz	6 kW
MN	Rouseau	103.5 MHz	50 kW
MO	Jefferson City	104.1 MHz	6 kW
MT	Bozeman	103.5 MHz	100 kW
MT	Kalispell	90.9 MHz	250 watts
OK	Pawhuska	104.9 MHz	3 kW
OR	The Dalles	92.7 MHz	
PA	Lewiston	90.9 MHz	100 watts
PA	Reading	105.1 MHz	5 kW (WIOV-FM Booster)
SC	Kingstree	94.1 MHz	6 kW
SD	Sisseton	99.5 MHz	50 kW
TX	Denver City	97.5 MHz	50 kW

## Pending AM Call Letter Changes

Old	Pending	
KLDY	KBRD	Lacey, WA
KNNT	KBOA	Kennett, MO
WBRJ	WYLI	Marietta, OH
WGTO	WWZN	Pine Hills, FL
WNOE	WLNO	New Orleans, LA
WSSH	WNRB	Boston, MA

## Cancelled

WVSZ	Colfax, WA	107.3 MHz	3 kW
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corporate broadcasters buy powerful stations in small markets to move the big signal to the big market?" Another question that springs to mind is, why does WLIB need 30 kW to cover the New York City and northern New Jersey market? The station apparently suffers from its being located in such a sprawling, metropolitan area, and while its daytime power of 10 kW may seem sufficient, that signal may not make it, even at night.

In order to effectively cover a major metropolitan market, a station must not only blanket the city, but also reach the surrounding suburbs and bedroom communities. In a sprawling megalopolis like the New York-New Jersey market, this often requires a substantial amount of power. Ironically, this situation can also mean that AM has an advantage over FM, which is often prone to dead spots and fade-outs in the concrete canyons. For an AM broadcaster, powering up, even if only during the daytime, can mean having its audience

being able to listen to at home, at work, and all points in between—more precisely, it can be the difference between financial success and going dark.

*EBS, R.I.P.:* In an effort to at once simplify and increase the effectiveness of the national emergency system, the FCC in December 1994 established the Emergency

Alert System (EAS) to replace the current Emergency Broadcast System (EBS). The digital design of the new system allows for many improvements over the analogue EBS, among them the ability to monitor multiple sources for emergency alerts. What this capability permits is the simultaneous monitoring not only of a weather ser-

**KDLX 94.3 FM**

*You're in Maui Country*

KDLX is the source for country music in the American West—the Hawaiian Islands, that is. Makawao, Kahului is their city of license. (Courtesy Charles C. Scott, Glasgow)

## Changed FM Call Letters

New	Was						
KBBL-FM	KLPQ	Cabot, AR	KXDC	KMXZ	Hollister, CA		
KBZT	KBZS	San Diego, CA	KZBA	KKBB	Shafter, CA		
KCHT	KPSN	Phoenix, AZ	WAAU	WEMI	Neenah-Menasha, WI		
KDHI	KQYN	Twentynine Palms, CA	WAZX-FM	WCGX	Cleveland, GA		
KERC	KXHW	Marked Tree, AR	WBKK	WKOL-FM	Amsterdam, NY		
KFNV-FM	KSTH	Ferriday, LA	WBVB	WKVK	Coal Grove, OH		
KGTM	KRXK-FM	Rexburg, ID	WCAK	WWLW	Carlisle, KY		
KHTO	KELE	Mount Vernon, MO	WDJX	WDJX-FM	Louisville, KY		
KJAZ-FM	KJAZ	McFarland, CA	WEJM-FM	WJPC-FM	Lansing, IL		
KJMM	KPMP	Bixby, OK	WEMI	WAAU	Appleton, WI		
KKBB	KOQQ	Bakersfield, CA	WEXI	WOWO-FM	Huntington, IN		
KLPQ	KOUN	Sherwood, AR	WFHE	WAAE	Hickory, NC		
KMXC	KPAT	Sioux Falls, SD	WFXH-FM	WFHX	Hilton Head Island, SC		
KNBQ	KNCY-FM	Nebraska City, NE	WGRY-FM	WQON	Grayling, MI		
KNKT	KUCU	Armijo, NM	WICT	WRKU-FM	Grove City, PA		
KOWZ	KJST	Blooming Prairie, MN	WLRO	WCKU	Nicholasville, KY		
KSMS-FM	NCOZ	Point Lookout, MO	WPSB	WAIO	Kane, PA		
KSTY	KRLN-FM	Canon City, CO	WQON	WGRY-FM	Roscommon, MI		
KSUU	KGSU-FM	Cedar City, UT	WRKU	WHTX	Sharpville, PA		
KTTR-FM	KZYQ	St. James, MO	WUSK	WZFR	Tomah, WI		
KUCD	KUPU	Pearl City, HI	WUVR	WNBX	Lebanon, NH		
			WVRV	WFXB	East St. Louis, IL		
			WXWX	WLWZ-FM	Easley, SC		
			WZBR	WQDW-FM	Kinston, NC		

vice, but also, for example, a state highway patrol, which would be particularly useful if the threat was not from a tornado or flash flood, but, say, a chemical spill. Going digital will also allow stations to issue alerts in languages other than English.

EAS apparently will also be more listener-friendly. The digital architecture allows broadcasters to conduct discreet weekly tests without the usual obtrusive alerting tone, and necessitates on-air tests only once a month, rather than on a weekly basis, as is the case with EBS. And although being digital technically should eliminate the need for the audible—and annoying—alerting tone that was necessary with the analogue EBS, the new system will retain

the familiar alerting tone, at least for the monthly on-air tests. However, as a concession, the tone has been shortened to eight seconds from its present span of 20 to 25 seconds. A 25-second tone would be used during actual emergencies for its attention-getting nature.

Under the implementation schedule, stations have until July 1, 1996 to bring their facilities into compliance with the new EAS guidelines, but are required by July 1, 1995 at least to have their present EBS equipment capable of decoding the new, eight-second alerting signal.

R.S.V.P.: With its release late last year of the 79 expanded AM band allotments, the FCC had expected the action to revi-

talize the entire ailing band by reducing crowding and interference. Only time will tell whether the expansion will be a success. On the one hand, a move to the new spectrum offers the opportunity to increase power and employ non-directional antenna patterns, as well as an escape from the cheek-to-jowl environment of the original band. On the other hand, how many listeners can or will follow a station to its new dial position? An article in the Tucson, *Arizona Daily Star*, supplied by Paul vanBeverhoudt, describes just such a dilemma. At its present home of 940 kHz, Tucson's KCEE runs with a daytime power of one kW, and 250 watts at night, both with separate directional antenna patterns. But, having received an allotment to move to 1700 kHz, KCEE has the potential to upgrade on the new channel to 10 kW during the day, and one kW at night, both non-directional.

So why is the station's owner, Prism Radio Partners, hesitant to move KCEE to 1700 kHz? Prism is concerned that not all of the KCEE audience will be able to follow the station to the top-end frequency, since their radios may not be able to tune above 1600 kHz. As a result, Prism may shift another of its holdings, KNST, to 1700 kHz, thereby freeing up 790 kHz as the new home for KCEE, which would then be able to power up to five kW, days, and 500 watts, nights. But again, the question of whether listeners will be able to follow that station to 1700 kHz is still a sticking point, and especially so since KNST carries University of Arizona football and basketball. If it becomes apparent—through, a drop in audience share or complaints from Wildcats fans—that the new dial position is preventing a significant portion of the audience from being able to listen to the games, the University may take that into consideration—thereby placing KNST

## Seeking Changed AM Facilities

WKVN	Quebradillas, PR	960 kHz	Seeks increase to 1 kW/ 700 watts.
WQLS	Ozark, AL	1200 kHz	Seeks move to 1210 kHz; 5 kW critical hours; night service with 3.5 watts.

## Changed AM Facilities

KFIR	Sweet Home, OR	1370 kHz	Moved to 720 kHz, added 250 watts at night.
KFNW	Weat Fargo, ND	1200 kHz	Reduced nights to 700 watts.
KMPS	Seattle, WA	1300 kHz	Increased to 35/16 kW.
KSIR	Brush, CO	1010 kHz	Increased days to 25 kW; ass nights 280 w.
WHND	Monroe, MI	560 kHz	Operate with 500/13.9 watts.

## Changed FM Frequencies

KARP	Glencoe, MD	96.1 MHz	Moved to 96.3 MHz.
KSCQ	Silver City, NM	92.1 MHz	Moved to 100.7 MHz, 50 kW.
KZNM	Grants, NM	97.9 MHz	Moved to 100.7 MHz, 50 kW.
WKCA	Owingsville, KY	107.1 MHz	Moved to 107.7 MHz, 3.5 kW.

## Seeking Changed FM Frequencies

KDAY	Independence, CA	106.3 MHz	Seeks 92.5 MHz, 870 watts.
KHRN	Hearne, TX	94.3 MHz	Seeks 103.1 MHz.
KYOO-FM	Halfway, MO	93.1 MHz	Seeks 99.1 MHz, 25 kW.
WAAI	Hurlock, MD	100.9 MHz	Seeks 100.5 MHz, 6 kW.
WDTL-FM	Cleveland, MS	92.9 MHz	Seeks 93.1 MHz, 50 kW.



Trevor Fletcher snapped this photo of CHMG DJ Gord Baily at an October 1994 grand opening of a Willy's hamburger restaurant in Edmonton, Alberta. When he asked to take this photograph, Trevor found that Baily is a scanner buff and POP'COMM subscriber.

at a disadvantage—when it comes time to put lucrative rights to the games up for bid.

The article goes on to speculate about the importance of the availability of expanded-band radios. Although such receivers have been on the market since the late '80s, especially in new cars, a broadcaster simply cannot afford to ignore those audience members who do not have such radios. Even in spite of the fact that stations moving to their new homes will be permitted to simulcast on both their present and new frequencies for five years before deciding which channel to call home, are 79 stations, scattered across the country, enough to prompt a substantial portion of the U.S. radio audience to purchase top end-capable receivers?

The situation mirrors somewhat that of AM stereo a decade earlier, when broadcasters and receiver manufacturers seemed to be waiting for each other to make the first move. Indeed, the operations director for Phoenix's KIDR, which received an allocation to move to 1630 kHz from 740 kHz, told the *Daily Star* that he simply will not consider investing in equipment to broadcast a stereo signal unless there are more radios on the market capable of receiving stereo. Ten years ago, AM stereo was all the rage, touted as being at once the miracle drug to raise AM from its deathbed, and as the means by which to level the play-

ing field between AM and FM. Ironically, it was programming, not technology, that rescued the medium. Consciously or unconsciously, AMers went where their strengths lay—talk. After all, the spoken word doesn't require the same fidelity as does music. From Rush Limbaugh and Howard Stern to Pete Rose and David Brenner, the spoken word—news, business and finance, sporting events, listener call-ins, religion, and so on—is the new foundation for AM. According to the 1995 edition of *The M Street Radio Directory*, "News/Talk" was the number-three format as of September 1994, with 1,168 stations, 77% of them AM. Talk may be cheap—especially for those who buy syndicated programming—but it is paying off for those who program with the format.

*In Brief:* According to the Bangor, Maine *Daily News*, Rockland's WRKD-AM will retain its present format of adult standards, following a flurry of protests by listeners who had learned that the 1-kW station's parent company was considering a change to all-news programming. The article, supplied by Don Hallenbeck, notes that CNN news will be carried at the top of

the hour, and that there will be a greater emphasis on music from the '60s and '70s.

Radiomutel has pulled the plug on Montreal, Quebec AMer CJMS, after a 40-year run. According to an article in the *Montreal Gazette*, courtesy of Trevor Fletcher, the closing was part of a deal between Radiomutel and its rival network, Telemedia, to salvage their declining AM holdings by throwing all their weight behind Telemedia's CKAC and CHRC. A Telemedia executive said that collectively the two networks have suffered \$30-million in AM losses over the past five years, with the goal of the agreement being to salvage AM radio in Quebec. Also shuttered as part of the agreement are Quebec City's CJRP, Sherbrooke's CJRS, Trois Rivières' CJTR, Chicoutimi's CJMT, and Hull's CKCH, all in the province of Quebec.

As of November 30, 1994, there were 4,912 AM and 5,104 FM stations, in addition to 1,723 FM Educational and 2,252 FM translators and boosters.

Thanks: Keep sending along any information you may come across pertaining to AM and FM broadcasting, in care of POP'COMM. Until then, 73s. ■



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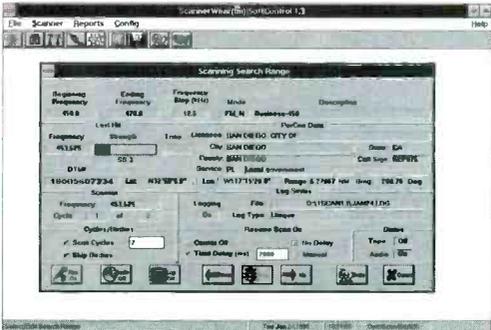
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## 27 MHz COMMUNICATIONS ACTIVITIES

I recently received several interesting communications all in one week. First, I saw a letter to the editor in the Troy, NY, newspaper. It said, in part:

*Everybody knows about the deadly airplane crash in the Kmart parking lot. (A commuter plane had crashed.)*

*A Niskayuna man said he was the first person at the accident scene and called for help on his citizen's band radio three times. But no one responded to his calls.*

*I say to citizens who have CB radio in your cars or trucks that it is time to take action on this matter as soon as possible. This could happen to anyone ... As you all know, no one person can fight for our rights. We all have to stand up for our rights as CBers on Channel 9 ...*

A day or two after that, I received letters from several CBers who are fans of the column but say they are no longer active because of troublemakers on the band. Then I found out there is a REACT team in Chicago that no longer uses CB at all because of reception problems on Ch. 9.

And then, *I got MAD!* Just like our founding fathers, I'd like to hold a few truths to be self-evident:

- CB is a great radio service originally designed to help people with personal and business communications. It is available to anyone with as little as \$50-60 to purchase a CB rig.

- Ch. 9 is the only—I repeat, *only*—emergency frequency readily available to the ordinary citizen traveling around. (Yes, I know you can dial 911 from a cellular phone, but you have to be able to pay for the cellular phone and service, and there are still many places where 911 either

doesn't work at all or at least properly).

- Just like the folks who use Neighborhood Watch to clean up their streets, it is *time for you and I to take back Ch. 9 and put it to good use.*

There are a number of ways that we can do that.

### Complain to the FCC

First, we have to fight folks who are causing intentional interference to Ch. 9 by reporting them to the Federal Communications Commission. (I am assuming that by asking nicely, you have already tried to get the offender to voluntarily clean up his or her act.) Leonard Langley of the FCC's Enforcement Division, Investigations Branch, says the complaint must be submitted in writing to the local FCC office that covers the area in question. Your local FCC office can be found in the blue pages of your phone book or ask directory assistance.

The complaint must contain the following information:

- The nature of the problem (intentional interference, excessive bleed from someone running high power on an adjacent channel, etc.),

- As much detail as possible on the operating habits of the CBER in question—does he or she skip around channels, or stay in one place? What are the typical hours of operation? Have other CBers also noticed the problem?

- If at all possible, include the name (not handle) and address of the problem CBER.

This last point really surprised me, but Langley went on to explain that in-the-field monitoring is time-consuming and expensive; and that a complaint that includes the name and address of the person who is alleged to be causing the problem is much

more likely to get some action than one that does not.

### Monitor as Often as You Can

Second, we can monitor Ch. 9 ourselves whenever possible. My CB is tuned to Ch. 9 constantly when I am in the car so I can take calls and report problems on the highways. I also monitor Ch. 9 every morning while the family is getting ready for the day. I just squelch out the noise, or skip, and go about my morning chores. When I hear a call that breaks through the squelch, I respond.

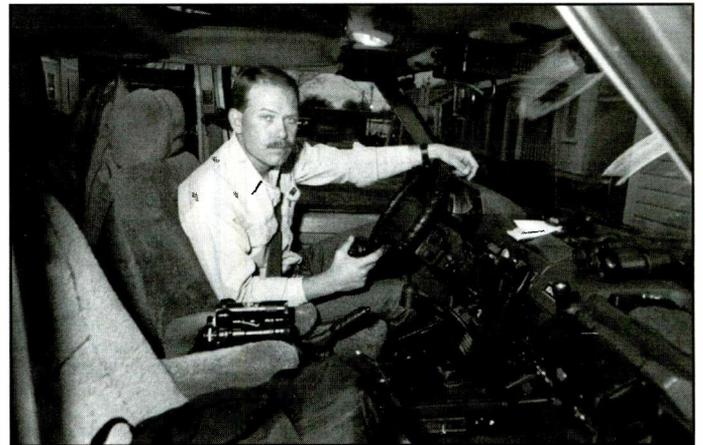
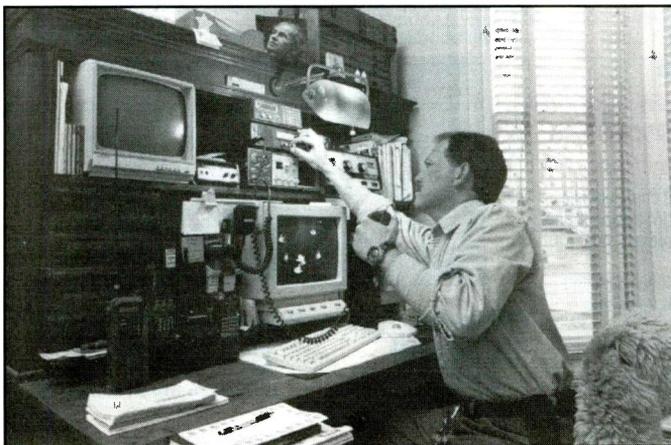
If lots of us monitor Ch. 9, we can provide help to others even under the lousiest conditions. With base stations 3 to 5 miles apart, we can provide emergency communications and assistance to others even when the skip is strong—even with bleed.

### Ch. 9 is for More than just "Emergencies"

Incidentally, you don't have to be a member of REACT or any formal monitoring organization to listen to Ch. 9 and provide help. Contrary to the misinformation that is spread in some quarters, Ch. 9 is not just the emergency channel. Surprised? The rules published by the FCC state clearly that:

*95.407(b) Channel 9 may be used only for emergency communications or for traveler assistance.*

Notice that the rule also includes traveler assistance—a disabled vehicle, somebody out of gas, a person who needs directions or even a place to stay for the night. All that and more might be included in



Rick Crider takes a CB Ch. 9 call in his well-equipped office/  
listening post.

For mobile operations, Crider's Land Rover is nearly as well  
equipped as his base station.

"traveler assistance," according to William Cross of the FCC's Personal Radio Branch. He pointed out that rule 95.418(c) says:

*You may use your CB station for communications necessary to assist a traveler to reach a destination or to receive necessary services ...*

It's a "very broad" definition, Cross says. Don't let someone else chase you off the channel just because they think Ch. 9 is for "emergencies only." Remember, even an apparently abandoned vehicle may contain someone who is having a medical problem, but is hidden from view! An actual case like that happened in my area not long ago.

On the other hand, don't tie up Ch. 9 forever discussing the virtues of various campgrounds just because the traveler you are assisting needs to find a place to pitch a tent! As efficiently as possible, try to find out what the person needs, where they are, and whether the accident, disabled vehicle, road debris, or what-have-you, poses a threat to other travelers. If it looks like the request for assistance could be long and involved, try to move the communication to another channel.

Keep a list of local police, fire, and other emergency responders near your phone so when you take a Ch. 9 call that demands their attention, you can get help quickly. When you call local authorities, give your real name, identify yourself as a CB Ch. 9 monitor, and give them the information they need: where it is, what it is, and what assistance is required.

## Support Other Monitors

Finally, we can all help to take back Ch. 9 by supporting those in your local area who monitor and provide assistance. Every year our local team, Tri-County Assistance, presents "The Golden Microphone" award (an inscribed plaque) to a local law enforcement officer or unit that regularly monitors Ch. 9—they really seem to get a kick out of it.

If there is a Ch. 9 team in your locale and you like the way they operate, join 'em! Help them to monitor, and help to get the word out so the general public becomes more aware of Ch. 9.

Now, I can almost guess what you are thinking: "Yeah, but what can just one person do?" Here's one man's answer.

## What One Person Can Do

Rick Crider came to Monroe NC, (Pop. approx. 20,000) in 1977 as a news photographer for the local newspaper, *The Enquirer-Journal*, and was promptly assigned a scanner so that he could run fire, wreck, and crime calls for the paper. In doing so, he got to know many of the local law enforcement personnel. The current chief of police was a patrol officer when he started in 1977.

In 1983, Crider left the newspaper to pursue a career in private real-estate investing which has become quite successful. Over the years he has become increasingly interested in monitoring and 'gadgets' in general. He has monitored channel 9 for years, both base and mobile.

In addition, practically all the local police have CBs and monitor channel 9. They use it also as sort of a 'side channel' for close distance communications and sometimes just as a chat channel when things are slow "on the street," Crider says, "Hard core FCC types would consider it improper, but, in my opinion, at least they are there when needed by the motoring public." Crider communicates with the police regularly, almost daily, on channel 9. Even though he has permission to use their main UHF frequency (453.925) he doesn't abuse the privilege. (Remember, this is a small town—not a lot of police departments would even think of allowing a civilian to transmit on their public safety frequencies.)

Crider adds, "Now, while monitoring channel 9, if I hear a call concerning a traffic accident, stranded motorist, DWI, etc., I can relay it to the zone officer or to the dispatch console via my UHF radios on their main channel. (I was assigned a 'unit number' to use so that the dispatcher would know who was calling.)

He adds, "Even though I am a REACT member I don't know of another soul around here that participates—I'm pretty much the 'lone wolf' in the area. There are no formal groups or organizations for emergency monitoring (except for local 2-meter ham, which really only cranks up during impending storms, etc.)" Crider got his own ham license in 1991.

Crider has never really considered himself a 'CBer'—his channel selector rarely ventures off channel 9, and he has never been fluent in CB lingo that was so prevalent in the earlier days of CB. When communicating with his police buddies, whether channel 9 or their UHF channel, he uses the standard public safety '10-Codes' which he knows by memory as well as any cop on the street.

Finally, he notes, "As far as my 'lone wolf' status of channel 9 monitoring, I've personally gone out many times to help a stranded motorist with a jump start, get gas, give directions, etc. I also carry a portable cellular Motorola flip phone and can call for a wrecker or AAA service for the motorist without having to use the police radio or getting the police involved."

That's what one person can do. Crider's story is a real inspiration to me, and I hope it is to you. After all, Ch. 9 is supposed to be for *all* of us.

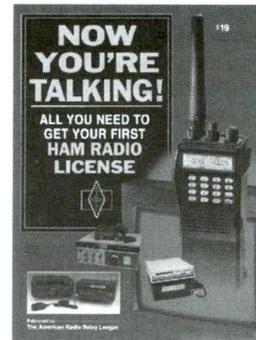
Next time I'll have some interesting equipment news, and we'll dip into the Reader's Mailbag. Please write to me here at *Popular Communications*. ■

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# SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

## MONITORING THE 30 TO 900 MHz "ACTION" BANDS

**G**one fishing lately? No, not in a stream or a lake, but in the ocean of frequencies? Does your scanner have the same frequencies programmed in day in and day out? You are possibly scanning frequencies that no longer are in use in your area.

It's a good idea to search or tune through the scanner bands periodically. You never know what new frequencies pop up unless you go searching for them. For instance, your local police department could add a chatter channel, the fire department could start using a fireground channel and a taxi service in town may have a new radio system. Using a frequency guide, you can check to see what frequencies already are in use in your area. Search around those same frequencies for new ones. For instance, if your police department uses 460.350, and it adds a chatter or car-to-car channel, there's a good chance it will be in the 460 MHz range, i.e., 460.025 to 460.550. There's always the possibility it might show up similarly in the mobile-only 465 MHz range from 465.025 to 465.550. But if you don't go searching, you won't find them.

It should be noted that these new car-to-car channels can appear right under your nose without you knowing they are in use. With the scanning two-way radios that many agencies use, there is no need for an officer to tell another to switch to an alternate frequency. He or she simply places the call on another frequency, stating while calling that they are on the alternate channel, i.e., "Car 303 to 304 on F2." When the other two-way radios in the system are scanning, the message isn't missed and there is no need to tell the unit to switch to the other channel. Unless you are fishing, you won't ever find that new channel.

As the weather starts to warm up around the nation, go fishing for new frequencies and let us know what you find.

### Why in Wyoming

A reader from Greybull, Wyoming, who prefers to remain anonymous sends along a few frequencies of interest: 155.445, Wyoming Highway Patrol statewide; 156.105, Wyoming roads; 154.800, used by many towns for city police; 154.725, Big Horn County sheriff; 155.415, Washakie County sheriff; 155.790, Park County sheriff; 155.565, Hot Springs County sheriff. Sam Reed of Cherokee, North Carolina, says he's a police officer on the Cherokee Indian Reservation. A lot of tips here in Scanning VHF/UHF have helped him on the job. He uses a Uniden Bearcat 700A and a Realistic Pro-2032.

For starters, Sam asks how he can increase his VHF low band receive capabili-

ty. He uses a Radio Shack magnetic-mount mobile antenna for his BC700A. He also wants to know if he can rectify the situation for under \$50.

There are two approaches to finding a remedy, however, I don't know what your listening habits are. What segment of the VHF low band are you primarily interested in? If you are interested in the lower end—such as 30-40 MHz, a 10-meter ham antenna or VHF low band antenna such as a professional two-way antenna, would help your reception. If your interest is in the higher part of the band, say 40-50 MHz, a 6-meter ham antenna or a two-way antenna designed for that segment would help. Keep in mind that amateur antennas usually cost less than two-way professional versions and often are of the same quality. The amateur versions may need minor cutting or adjusting for the frequency you are interested in.

However, if you want to be able to monitor other bands, having the VHF low band antenna won't help on VHF high band or UHF. What you need is a good antenna, regardless of what you buy. Check the gain on the antenna. See how the gain compares to other models. Go with the antenna that offers the better gain factor.

Sam also offers some frequencies used on the Cherokee reservation: 155.115, police car to car; 156.150, police repeater; 154.785 and 154.875, police mutual aid; 155.280, ambulance; 155.055, paramedics; 155.340, regional hospital; 154.400, fire base; 153.890, fire talkaround; 153.835, fire backup and tribal operations; and 164.625, Cherokee Boys Club Inc.

Here are some other frequencies Sam sends along for his area: 167.150, Great Smoky Mountains National Park rangers (North Carolina and Tennessee); 163.200, U.S. Marshal Service; 163.375, 163.9625 and 167.5625, FBI operations; 453.625 and 154.785, Jackson County sheriff; 453.400, Jackson County fire; 453.725, 458.775, Jackson County rescue; 453.975, Sylva police; and 453.250, Western Carolina University police.

### Highway Snoops

Rick Crady, of Conneaut Lake, Pennsylvania, says he's been reading *POP'COMM* for more than 10 years and looks forward to each issue. Rick was recently monitoring aircraft-to-ground traffic radar operations conducted by the Pennsylvania State Police on their tactical channel of 155.460. He says that the troopers' aircraft started reporting to the chase cars which target vehicles were using CB radios and radar detectors. Rick says he hasn't heard of devices that can detect this, and wondered



*"YSL" sent along these photos of his listening post in the country of Belgium. On the bottom shelf is an AOR AR1000 scanner with a cassette recorder and antenna selector. Also on the shelves is an Icom R7000 with an HF converter inside and several other modifications, including 3,200 additional memory channels.*

how the troopers knew of the speeders' electronic gadgets short of using binoculars or monitoring Channel 19.

Actually, there are devices that can pick up radar detectors, and some state highway patrols are using these devices mostly in states where radar detectors are prohibited. However, it only takes a little simple police work to find out who is using radar detectors from the sky. If the helicopter or airplane turns on the radar gun and he or she sees brake lights almost instantly—what would that imply to you? As to finding out who is using CB radios, it's probably either by the "bear in the air" monitoring Channel 19, or using binoculars, as you said, to spot vehicles with whips.

Here are some Pennsylvania frequencies of interest Rick sent along with his question: 33.980, Crawford and Erie counties fire and rescue dispatch Tac-1; 33.96, Crawford and Erie counties fireground Tac-2; 33.60, Crawford County fireground Tac-3; 33.52, Crawford County fireground Tac-4;

33.88, Erie County fireground Tac-3 and Mercer and Venango counties fireground Tac-2; 33.94, Erie County fireground Tac-4; 33.82, Mercer and Venango counties fire-rescue dispatch Tac-1; 33.80, Venango County fireground Tac-3; 33.62, Mercer County fireground Tac-3; 33.44, Mercer and Venango counties fireground Tac-4; 151.835, Conneaut Lake Park; 158.850, Presque Isle State Park police; 151.445, Presque Isle State Park beach patrol; 155.220 and 155.400, Lifeflight Erie; 151.775, Lifestar Pittsburgh; and 155.205, Lifestat Butler.

### More Freqs

Twelve-year-old Peter Strank writes from Eaton Rapids, Michigan, with some frequencies for his area: 460.425, Eaton County sheriff; 460.625, Eaton County fire and medic; 453.775, Eaton County mutual aid; 460.550, Eaton Rapids police; 155.895, Eaton Rapids city services; 464.850 and 464.375, Eaton Rapids buses; 453.700, Eaton County roads.

### Tone Tip

Here's a tip I'd like to pass along. If you like to monitor a local, state, or federal agency that also uses digital encryption, you don't have to go nuts listening to all the static every time they encrypt their calls.

If you have a scanner capable of CTCSS tones, try the following. By programming

in the correct CTCSS tone the agency uses, you will be able to hear any clear voice communications. However, if the agency transmits digital encryption, the receiver will not open and you won't be bothered by static.

For those who monitor federal agencies, here are some nationwide CTCSS tones used by federal agencies: FBI, 167.9 hertz; Drug Enforcement Agency, 156.7 hertz; Secret Service, 103.5 hertz; Federal Communications Commission, 173.8 hertz. (Note, these aren't scanner frequencies; they are the pitch of subaudible tones measured in hertz and are used to unmute receivers in two-way radio systems.)

Only certain scanners come with optional CTCSS decoders. In addition, some computer-based add-on products are available for scanners such as the Realistic Pro-2006. Check the ads in POP'COMM for those who sell these devices, such as Opto-electronics and Motron.

### Write!

What are your favorite frequencies? Do you have any scanner-related questions? Do you have any listening tips worth passing along to your fellow readers? How about sending in a photo of your listening post or antenna farm? Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, N.Y. 11801-2909, or e-mail to scan911@aol.com via the Internet. ■

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# COMMUNICATIONS CONFIDENTIAL

## YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

**S**imon Mason, England, informs us that he discovered some new stations. At 1400 daily, on 14000 kHz FRANK YOUNG SUSAN which is the same type as the 2000 sked on 5530 kHz of NANCY ADAM SUSAN, and the 2100 sked on 4130 kHz of MARY SUSAN ADAM.

Rick Baker, OH, reports the USCG has changed 3123 to 3122, 8984 is now 8983, and 11201 is now 11202. All in kHz. "Have also noted quite a few of the Canadian Forces air frequencies have changed: 5718 is now 5717; 6683 is now 6684; 9006 is now 9007, and 11233 is now 11232. All in kHz.

"I received the 'last' (maybe only!) QSL letter from the HMCS Fraser (DDH-233) advising the ship would be (now is) decommissioned, so scratch callsign CZFG and CFARS CIW8103 off the list. Two new Canadian callsigns I haven't seen before are for the HMCS Moresby (MCS-11) using 'CGAB' and sister ship HMCS Anticosta (MCS-110) using 'CGAA' as its call.

"Last Fall, Hurricane Gordon provided some dramatic USCG listening with lots of 'hoists' heard. Most notable were the



### USCG AIRCRAFT "RESCUE 2130"

To: Amateur Radio AA4JN

This confirms reception of USCG radio transmissions

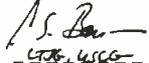
Date: 6/12/93 Time: 2024 Z Mode: HF USB

Approx. Location: \_\_\_\_\_

Unit/"Home" Re: CG Air Station Cape Cod

Freq: 8984 kHz Type: A-25A "Guardian" FANJET

Remarks: \_\_\_\_\_

  
USCG-USB  
 signature/title

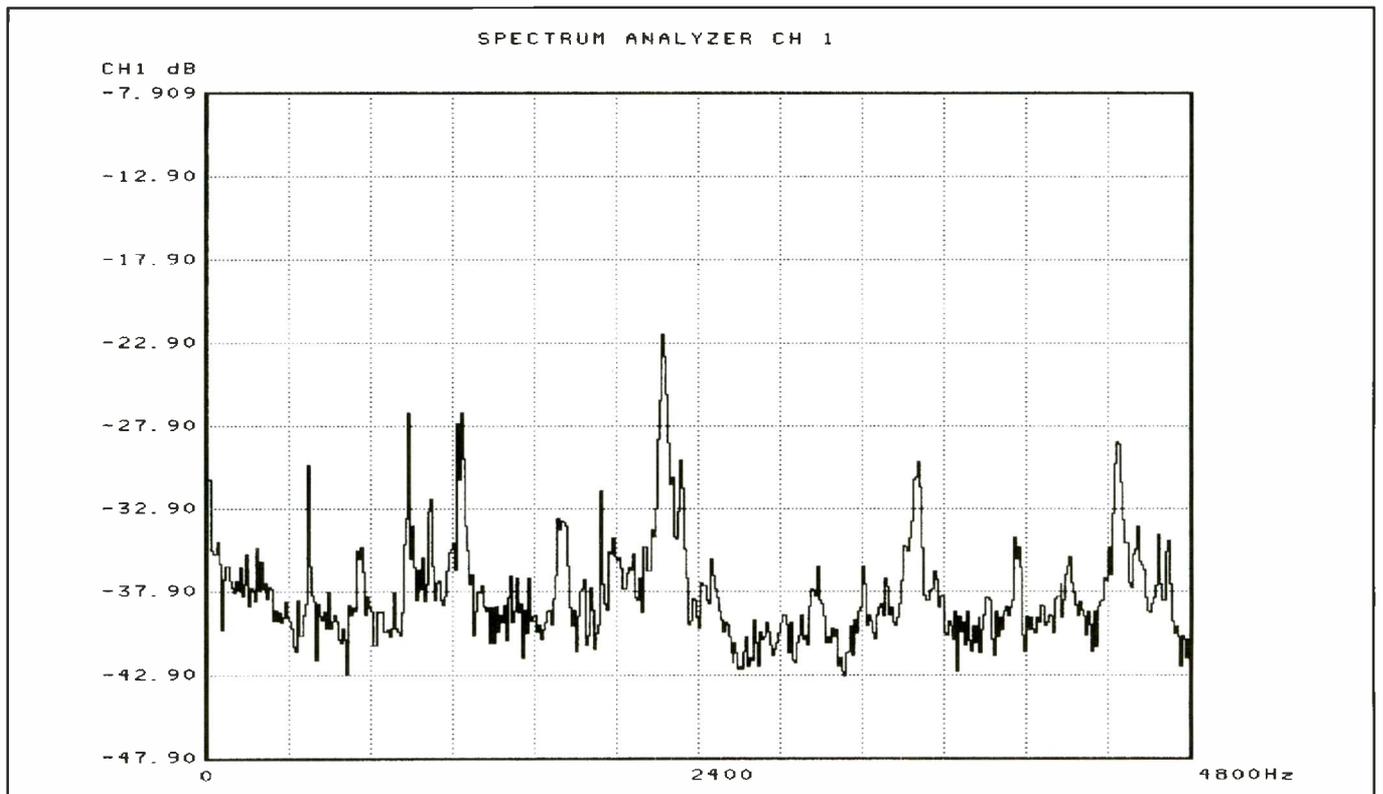
*This PFC was prepared by Jim Navary, VA.*

Marine Flower 2 (shown on CBS news as owner and family were hoisted by CG helo) and the S/V Pilgrim, a \$400,000 yacht lost at sea."

Regarding the list of Navy MARS callsigns, Rick comments, "I'm not sure how long they will be valid, lots of talk right now

of combining the three MARS services into one DoD MARS as a cost-saving measure."

First-time contributor James Rankin, VA, writes, "I have been listening to shortwave for about one year. My receiver is a Radio Shack DX-390, and I use its built-in whip antenna."



*This signal was monitored on 27466 kHz USB by David Reif, MO, who also heard identical type signals on 27419, 27485, and 27520 kHz. Signal analysis was performed by Kevin Tubbs, VT, who stated the signals all appeared to be PSK VFT.*

# 高頻船舶無線電話使用頻率表

電台名稱：台北海岸電台(TAIPEI RADIO/BVA)

4 MHZ BAND			6 MHZ BAND			8 MHZ BAND		
CHANNEL NUMBER	COAST STATION	SHIP STATION	CHANNEL NUMBER	COAST STATION	SHIP STATION	CHANNEL NUMBER	COAST STATION	SHIP STATION
* 421 409 426	* 4 417 4 381 4 432	* 4 125 4 089 4 140	* 606 601	* 6 516 6 501	* 6 215 6 200	* 821 802 812 813 818 822 824 829 831	* 8 779 8 722 8 752 8 755 8 770 8 782 8 788 8 803 8 809	* 8 255 8 198 8 228 8 231 8 246 8 258 8 264 8 279 8 285
12 MHZ BAND			16 MHZ BAND			22 MHZ BAND		
CHANNEL NUMBER	COAST STATION	SHIP STATION	CHANNEL NUMBER	COAST STATION	SHIP STATION	CHANNEL NUMBER	COAST STATION	SHIP STATION
* 1221 1201 1207 1208 1213 1216 1228	* 13 137 13 077 13 095 13 098 13 113 13 122 13 158	* 12 290 12 230 12 248 12 251 12 266 12 275 12 311	* 1621 1603 1608 1610 1614 1623 1631 1633	* 17 302 17 248 17 263 17 269 17 281 17 308 17 332 17 338	* 16 420 16 366 16 381 16 387 16 399 16 426 16 450 16 456	* 2221 2201 2207 2214 2219 2226	* 22 756 22 696 22 714 22 735 22 750 22 771	* 22 060 22 000 22 018 22 039 22 054 22 075

註：(1)有\*之頻率為共同呼叫頻率。參閱無線電規則第4376款。  
 (2)參交通部80年5月7日郵發字第05813號函核准修正。  
 (3)所列頻率均為載波頻率。

David Sabo, South Korea, received this chart as a part of his QSL from Taipei station BVA. He obtained the QSL through the BVA address provided by Ed Rausch, NJ. Thanks, Ed!

We were also joined this month by Floyd Hutson, CA, who uses a Radio Shack DX-390 receiver; a 50-foot random wire is strung along the North and West walls of his apartment. For demodulation, he uses both AEA FAX Cable and S software, in conjunction with his Laser 286 AT computer, and a Canon BJ-200 printer. Floyd also uses an MFJ 1270B filter set on SSB, peaking it to reduce QRN. Later on we feature the terrific WEFAX photo Floyd sent in of Hurricane Rosa.

Sue Wilden, IN, explains she uses a Sangean ATS-803A receiver, an MFJ multi-reader, and either a longwire or dipole antenna, depending on which gave the best reception.

Dave Marshall, OH, who provides the map and photos of the NMN installation this month, included these remarks in his letter. "The NMN antenna farm can be easily viewed from Flanagans Lane, just off Princess Anne Road. The NMN transmitter site is located on the abandoned Pungo Field, which was probably an airport of some military significance at some time. At one place, Flanagans Lane is actually part of one of the old runways."

Perry Crabill, Jr., VA, was pleased with some great DX on several beacon loggings. He heard two in Colombia, South America, one in the Caribbean's Dominican Republic, and one in Manitoba, Canada. He was also pleased to hear TAD in Colorado, and LWT in Montana; these latter two are his first catches in those western states.

Tom Sevart, KS, says, "Noted a strong AM carrier with SS broadcast programming on both two separate occasions and frequencies. At the top of the hour a YL/SS number message appeared. I was immediately suspicious of the activity when I heard

the programming because it was not on a shortwave broadcast frequency. I think this is another indication that some of the numbers traffic is originating in Cuba."

Tom also mentions he had been hearing a station on 5125 kHz using different

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CIRCLE 84 ON READER SERVICE CARD



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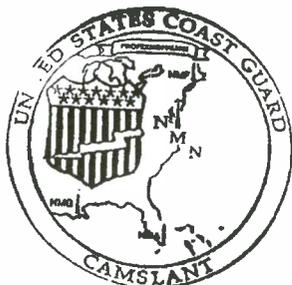
DATE/TIME: 04 Oct 92 / 0820Z

FREQ/MODE: 8471 kHz / CW

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COAST GUARD  
COMMUNICATION AREA  
MASTER STATION  
ATLANTIC

NMN

Hiroshi Saito, Japan, sent in this copy of his QSL from CG station NMN.

- 301: Beacon X, u/i at 0311. (JO)
- 311: Beacon MVI, Monte Vista Municipal, CO at 0637. (BV)
- 318: Beacon SSB, San Sebastian, Venezuela at 0547. 2198 miles. (AH)
- 319: Beacon CH, Chicago Harbor light, IL at 0710. Listed power = 5watts. (PC)
- 323: Beacon UWP, Argentina. Nfld, Canada at 0824. (JO)
- 329: Beacon TAD, Trinidad, CO at 0448. DSB, 1422 miles. (PC)
- 339: Beacon OP, Thomaston, GA at 0737. DSB, new. (PC)
- 344: Beacon GNC, Seminole Gaines County, TX at 0650. (BV)
- 345: Beacon BGI, Georgetown, Barbados at 0836. 2096 miles. (AH)
- 347: Beacon YG, Charlottetown, PEI, Canada at 1021. (JO)
- 353: Beacon LWT, Lewiston, MT at 0448. 1661 miles. (AH)
- 356: Beacon TIM, Georgetown, Guyana at 0603. 2550 miles. (AH)
- 369: Beacon ZDX, St. John's, Grenada at 0713. 1776 miles. (AH)
- 370: Beacon VVC, Villavicencio, Colombia at 0617. 2592 miles. (AH)
- 375: Beacon BUN, Buenaventura, Colombia at 0215. 2442 miles. (PC)
- 382: Beacon DER, Alexander City, AL at 0318. New ID; ex-ALX. (PC)
- 385: Beacon HXX, Saginaw, MI at 0945; Beacon NA, Natashquan, PQ, Canada at 0727; Beacon UR, New York (LaGuardia), NY at 1232. (AH)
- 386: Beacon SYF, Saint Francis Cheyenne Country, KS at 0750. (BV)

- 387: Beacon PV, Turks and Caicos, BWI at 0804. 1366 miles. (AH)
- 388: Beacon AM, Tampa Peter Knight, FL at 0745. Second best DX this month, 2161 miles. New. (BV)
- 390: Beacon UCA, Ciego de Avula, Cuba at 0626. 1421 miles. (AH)
- 391: Beacon UFE, u/i at 0520. 1000 Hz DSB, dash after ID, came & went. (PC); Beacon EBY, Neah Bay, WA at 0752. (BV)
- 392: Beacon AGZ, Wagner, SD at 0538. (PC); Beacon PNA, Pinedale Wenz Field, WY at 0758. (BV)
- 396: Beacon ZBB, South Bimini, Bahamas at 0800. My best DX this month. 2404 miles thanks to its 2000 watts of power. (BV)
- 396: Beacon JC, Rigolet, Nfld, Canada at 0734; Beacon NEL, Lakehurst, NJ at 1743; Beacon PH, Martinsville, VA at 0926. (AH)
- 397: beacon LLJ, Challis. ID at 0809, weak. (BV)
- 400: Beacon MDS, Madison, SD at 0615; Beacon BOA, u/i, at 0603. 600 Hz??, DSB, Peaks N/S; Beacon HIV, Santo Domingo, Dominican Republic at 0410. 1000 Hz, DSB, SSB in Guide. 1518 miles. (PC)
- 401: Beacon AZC, u/i, moderate sig, new. Hrd at 0815. (BV)
- 402: Beacon C, Camaguey, Cuba at 0654; Beacon LW, Lawrence, MA at 1510. (AH)
- 403: Beacon PAA, u/i. 1000 Hz, peaks E/W. Hrd at 0635. (PC)
- 404: Beacon MOG, u/i, may be Montague Siskiyou County, with freq change from 382 kHz. New. hrd at 0820. (BV)
- 408: Beacon MW, Moses Lake, Grant County, WA at 0825. (BV)
- 411: Beacon RD, Redmond Roberts Field, OR at 0828. (BV)

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**Abbreviations Used For Intercepts**

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

**417:** Beacon HHG, Huntington, IN at 0903; Beacon HQT, Coats, NC at 0739. (AH)

**420:** Beacon CFY, Lake City, SC at 2349. (JO)

**426:** Beacon IZS, Montezuma, GA at 0747. (JO)

**500:** WZDJ, SS Sea-Land Discovery, American Flag container ship calls WLO, Mobile, AL for tfc ck. WLO answers QRU at 2350. (RM)

**518:** VBA, Canadian CG, Thunder Bay, Ontario, w/Sitor-B code "P" NAVTEX best w/wx for Great Lakes at 1030. At 1310, VBC, CCG, Wiarton, Ontario w/Sitor-B code "H" NAVTEX best w/NOTSHIP's for Detroit/St. Clair Rivers. (RB)

**523:** Beacon THB, u/i at 0716. (JO)

**2031.5:** Cruise ship M/S Celebration, ELFT8, at 0542 in USB w/kg QT&T sta WOM, Pennsuco, FL for R/T tfc. WOM on 2490 kHz. (RB)

**2598:** VOJ, Stephenville, Canadian CG, Nfld, at 0603 w/PAN-PAN re man missing fm overturned vsl. At 0605, VCM, St. Anthony's CG w/gale wrng issued by Newfoundland wx center. At 0608, VCP, St. Lawrence CG also w/gale wrng. All in USB mode. (RB)

**3231:** HAWN wx forecasts in RTTY 75/170 at 0314. (SW)

**3487:** New York Radio in LSB at 0232. Aviation wx. (SW)

**4008.5:** NNNOKMC, NAVMARCORMARS NCS sta w/FEC Region 1 IJ7B net best. (RB)

**4028:** YL/SS in AM at 0600 rptng "atencion 51391" and 5F grps. Extremely strong sig, but YL was very quiet. Later became louder, but went quiet again. (TS)

**4029:** 5L MCW grps after 0200 on SUN; "Atencion 510 57 at 0600 SUN. 5F SS grps, ended w/3 "Finals." (TM)

**4134:** NRQW, USCGC Sweetgum (WLB-309) at 0108 w/kg NMG, CommSta New Orleans re HF DL freq. NHKW, USCGC Confidence (WMEC-619) at 0344 w/kg NMN, CAMSLANT Chesapeake, VA, pp GANTSEC OP's, re-made contact w/vsl Natali Kovshova. Man went overboard from vsl. Gives lat/lon, course & speed. GANTSEC has helo enroute to assist, may have to land in Dominican Republic first to refuel. WCE5063, Univ of Rhode Island R/V Endeavor at 0619 w/kg NMF, CommSta Boston for BBXX wx obs. All in USB mode. (RB)

**4335:** WCC, Chatham, MA in CW at 0337 clg CQ. QRM interfered w/reception. (SW)

**4372:** 5EM w/kg "Giant Killer" in USB at 0240 trying to set up data link. Giant Killer is USN fleet area control and surveillance facility. (TS)

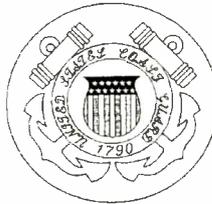
**4426:** Distressed 64-foot Ketch Marine Flower 2 on 4134 kHz w/kg M/V Northern Progress on 4426 at 0647 in USB re Ketch req assistance. Northern Progress was located via AMVER system. Later, man & family on board were rescued by CG helo. Film footage seen on CBS. (RB)

**4470:** YL/EE with 3/2F grps in AM at 0121. (TS)

**4485:** After 1400 'Bulgarian Betty' best sent 61029; CW station AM8Z came on the air w/short mssgs. (SM)

**4601:** CW stn sending 5F grps at 0709. Rptd mssg & signed down w/AR BT 939 939 939. (TS)

**4625:** At 2257 in background of 24 hours a day 'buzzer' is CW stn rptng 0043. (SM)



U.S. COAST GUARD  
GROUP LA/LB  
LONG BEACH CA  
OPERATIONS/COMMUNICATIONS



DATE/TIME OF TRANSMISSION: 211304UTC Feb 1993

SUBJECT OF TRANSMISSION: U.S. Coast Guard Marine

Information Broadcast, (Weather and Local Notice to Mariners)

TYPE OF TRANSMITTER: SUNAIR GSB-900 SC/R

POWER: Max 100Watts output

ANTENNA: Shakespeare 35ft Whip HEIGHT: 50ft Tower

ANTENNA LOCATION: 33-42N 118-22.5W

REMARKS: This broadcast is done daily at this time.

*Thomas A. Petit*  
Thomas A. Petit, RMC U.S.C.G.  
RADIOMAN-IN-CHARGE  
USCG GROUP LOS ANGELES/LONG BEACH  
165 N. PICO AVE  
LONG BEACH, CA 90802  
(310) 980-4443

*Steve McDonald, BC, Canada, shares his QSL with readers.*

**4740:** At 0500 on SAT 2 dot-1 dash rasper. (TM)

**4753:** AJE, USAF Croughton, England w/wx. RTTY 106 baud at 1322. (AB)

**4785:** DHJ51, Gregel Air, Germany w/wx. RTTY 106 baud at 1320. (AB)

**5000:** At 1500 Charlie India Oscar 2 w/time signal in background. Mossad stn. (SM)

**5027:** Everyday, so-called 'Bulgarian Betty' in Czech at 1355 w/call up 313 313 313 555 555 555 05. At 1400 says 'Hothor Hothor' then says a single 5F grp which always has a zero as the third digit. today or was 70025. Also on 4485 kHz in parallel. (SM)

**5125:** E9I sending 5FL mssgs at 0418. Next night used callsign K3C. Sends mssgs around the clock. all 120 grps long. Alternates w/data xmsns. (TS)

**5300:** At 0900 CW station sending 555 555 555 408 408 408 10 until off at 0905. (SM)

**5314:** DFGZ, Belgrade, Serbia at 0731 in RTTY 75/400 w/TANJUG news items in Serbo Croatian. (PS)

**5400:** USCG San Juan (GANTSEC—Greater Antilles Section, San Juan PR) w/kg O3A re receipt of mssg at 0046. At 0301, USCGC Confidence (WMEC-619), NHKW, w/kg GANTSEC re loc of vessel. Poss related to 'Man Overboard' SAR that cutter had been on. Both in USB mode. Note this appears be GANTSEC 'section' freq. (RB)

**5437:** Poss Mossad best. YL/EE w/phonetic grps. Barely audible. (PS)

**5696:** CAMSLANT Chesapeake in USB at 0005 w/pp to CG 1714, a/c transporting injured crew member from M/V North Florida to Tampa General hospital. (TS)

**5715:** YL rptng Zulu Whisky Lima 1 at 2300. Prob Mossad Best. (SM)

**5738:** CW stn at 0747 w/5F grps. Signed down w/BT BT 249 249 165 165 00000. (TS)

**5738.5:** 5T4, CW stn at 0748 w/5F grps, zero was cut as letter T. Off w/5T5 167. (PS)

**5770:** OM/RR at 2100 w/724 until 2105 when it sent 195 195 195 42 42 and into 5F grps. (SM)

**5882.5:** PROVENCE, Provence, France. French forces station w/"Controle De Voie." Stn not listed in Klingenfuss 12th edition. Also, it does not id very often. (PS)

**6263:** TK General Merkilvadze, ENZZ, at 0827 w/ARQASU DISP-1 report to Batumi Radio. At 0850, M/V CPC Holandia, Y2EF, w/ARQ Telex for ETA. (RB)

**6304:** Ukrainian ocean-going tug SS Bars, ENOT, in 50/170 RTTY w/crew Telegrams home to Vladivostok rdo. (RB)

**6415.4:** 7TF4, Skida, Algeria at 0645 w/CQ mkr & freq info. (PS)

**6435:** British Navy, London at 1325 in RTTY 100 baud w/coded fleet mssgs. (AB)

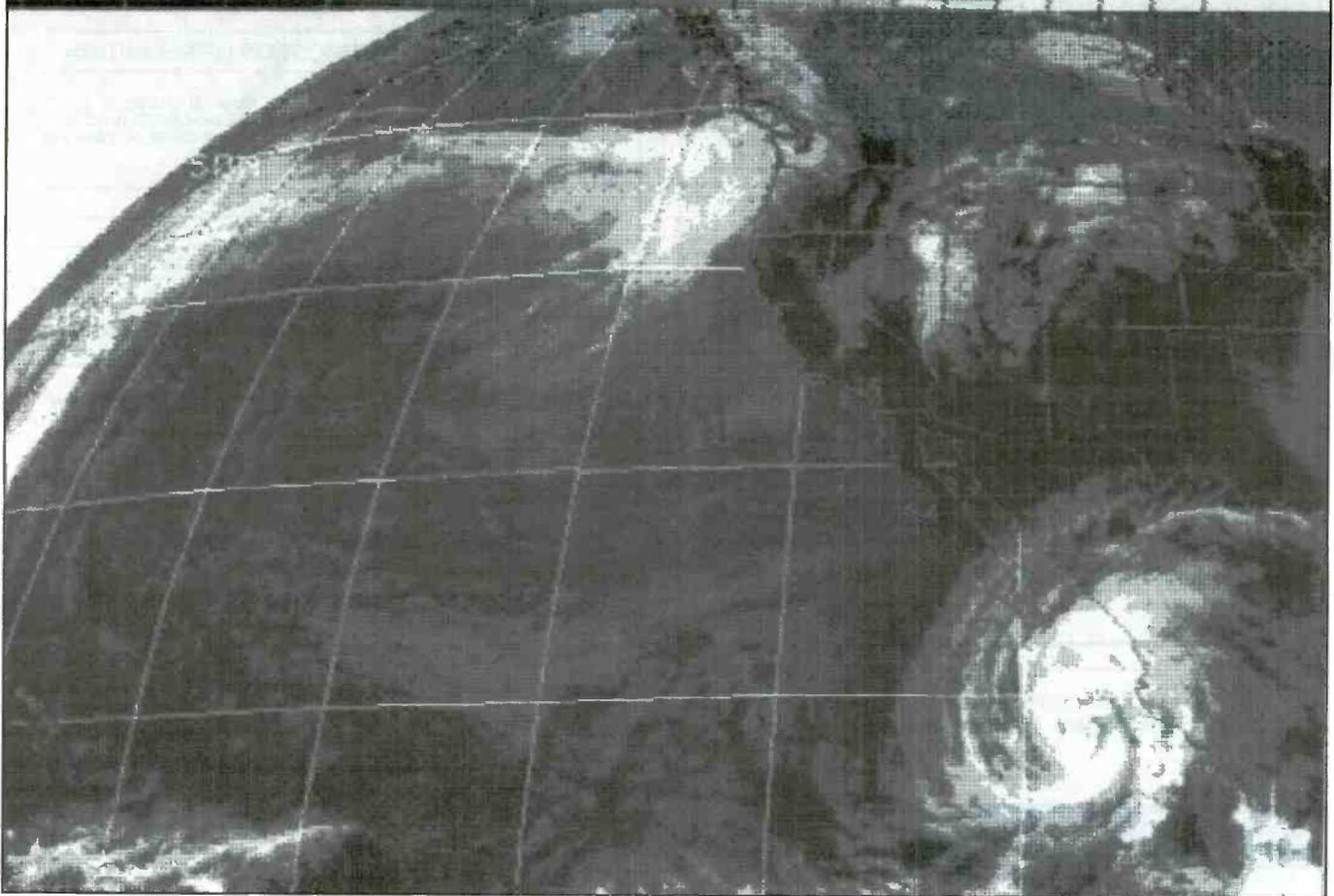
**6474:** Tokyo Naval in CW mode at 1301 sends "CP CP JF JF" a few times, then down. Weak sig. (DS)

**6493:** Halifax CG Rdo clg CQ QX5 4/6/10 MHz and CH 3/4/7/8. CW at 0051. (SW)

**6501:** NMO, CommSta Honolulu at 0130 w/kg USCGC Firebush (WLB-393) re HF DL freq. At 1840 NMD47, USCG Group Buffalo, w/rare HF visit w/kg Great Lakes assigned USCGC Acacia (WLB-406). QSL ltr advised was part of HF rdo test for Great Lakes

1830 130C94 19E-42A 01033 14351 CC2

G



Floyd Hutson, CA, sent in this WEFAX photo of Hurricane Rosa. The photo was copied on 8682 kHz USB, 120/576. Transmit station—Point Reyes, CA.

Groups. Also used 2638, 5320, and 8125 kHz. All in USB.

**6516:** NRDC, USCGC Campbell (WMEC-909) at 0058 wkg Grp Woods Hole re is on scene commander for fire involving coal carrier M/V Poly Doros. Ltr wrks M/T Irving Canada who is in area assisting. At 1923, USCGC Adak (WPB-1333) wkg SKATE 06 re he go Uniform (UHF). At 1946, AirSta Brooklyn "Brooklyn Air," wkg SKATE 06 re ETA. All in USB. (RB)

**6631:** New York wrkg u/i a/c in LSB at 0218. A/c diverted by 20 miles due bad wx. (SW)

**6779:** Foll German Navy ships hrd wkg Wilhelmshaven Naval, DHJ59, in EE/GG RTTY/USB comms: at 0021 masted training sailing barque FGS Gorch Fock (A-60)m DRAX (sister ship of USCGC Eagle); At 0145 type F-12 frigate FGS Augsburg (F-213), DRAN, "The Wild 13," at 0622, DRAV, frigate FGS Karlsruhe, (F-212); at 2052 frigate FGS Koln (F-211), DRAU; at 2218, attack sub FGS U-30 (S-179), DRDX. All ships start w/"DR" and often use just the last 2 letters of the call. (RB)

**6825:** YL/SS at 0300 w/5F grps. (SW)

**6860:** Very loud sig. Atencion 87176, then SS-5F grps. After few mins, voice stopped but carrier continued. Few mins later mssg resumed. Hrd 0800 SAT. (TM)

**6867:** Strong AM carrier at 0256 w/distorted Latino music. At 0300, distorted YL/SS rptng "Atencion 52610" and 5F grps. Distorted bcst programming continued after mssg completed. (TS)

**6933:** AM carrier here at 0445 w/SS language programming. At 0500, YL/SS rptng "Atencion 84328" & 5F grps. At same time on 6797 kHz, YL/SS w/"atencion 57200" and 5F grps. (TS)

**6949:** At 0700 on MON. 5 dot—1 dash rasper. (TM)

**7325:** AFA1TS in New York send mssg in LSB at 1559 re request for welcome info packets from addressees installations. Gives forwarding address.

AFA1GT replied but QRM causing AFA1TS reception problems. Conversation between these two stations ends at 1608. More station began xmtrng a minute later. (JR)

**7410:** Every Monday YL/EE w/1-0 count and '867' between 2100-2110. After 10 tones 'Count 112' and into 3/2F grps. (SM)

**7481:** YL/SS at 0306 passing 5F grps. Lots of QRN and pouring water QRM. (SW)

**7535:** Foll ships hrd wkg SESEF Norfolk during month: At 1620, NNLG, USNS Leroy Grumman (T-AO-195) w/xmtr tests; At 1700, NDIB, USS Brisco (DD-977) w/rdo ck, SESEF advises QSY 12315 kHz due QRM on 7535; At 1705, NRWY, USCGC Morro Bay (WTGB 106) w/rdo ck; At 1800, NRLC, USS Conolly (DD-979) re xmtr test. At 1814, unk callsign, USS LaBoon (DDG-58) w/test of xmtr #4; At 2007, USS Emory S. Land (AS-39) w/xmtr tests. Primary mode is USB for all. (RB)

**7643:** Atencion 32707 at 1000 SAT. Voice lower pitched than usual. Then 07 110 and into grps. At 1012 she said "Final" twice but immediately continued/5F SS grps. (TM)

**7667.9:** Auto CW stn at 0254 w/VVV VVV VVV 8BY 8BY 8BY 012/326/095/097/246/058/532/967. Mssg rptd over and over. (Ed.)

**7800.7:** MFA Cairo, Egypt at 2345 w/ARQ mssg of 3, 4, & 5 letter groups. (RB)

**7874.8:** Callsign poss KNY29, British Emb, Wash., DC at 2250, SITOR-A mode. Illegible tfc then "Whitewater" came up. No sign off. (PS)

**7863:** Faint 5F grps in SS at 0400 SUN. (TM)

**7946.5:** RFVI, French Forces le Fort, Reunion Island, at 2249 in ARQ-E/96 idling. (RB)

**8001:** RFHJ & RFLI, France & Tahiti in ARQ-E3/96 at 0549. Both w/"Controle de Voie" on this circuit. (PS)

**8088:** Atencion 814 42 then SS-5F grps. At 0709

SUN (middle of mssg) two "Finals" and more gaps. At 0713 went off air. (TM)

**8095:** Silvair LDOC at 2244 in USB wkg—? West 900 flying Georgetown to Ghana w/5POB. (RB) Airline is Silvair Inc., Miami Springs, FL. Their three letter ICAO designator is IJS. (Ed.)

**8136:** TCY1, Ankara, Turkey at 1510 in RTTY 50 baud w/Anadolu Ajansi news agency press item in EE. (AB) SAT 0400 SS-5F numbers station. At 0900 Atencion 89376 92 then more 5F SS grps. (TM)

**8161.5:** RIG51, u/i, in CW at 0614 w/kg u/i stn. Had other end QSY to 17520, 18920, & 15640 kHz, but I didn't hear stn on any of those freqs. RIG51 QSY's to 6788, then to 5072 kHz. Sent "RIG51" after each QSY. (TS)

**8188:** 0800 SUN. Atencion 11455 & ended w/3 Finals after SS-5F grps. (TM)

**8294:** WHU959, Maricom Services, Foley, AL, clg M/V Stephanie, no joy at 0538. USB mode. (RB)

**8367.5:** French Navy Patrol Boat Navy Fort de France, Martinique w/position report. (RB)

**8398:** UUXS, TH Volkhov at 2234 in RTTY 50/170 w/RV's to UGC, St. Petersburg Radio & ASU/DISP-1 report to same showing vessel at Cuba. Later on 12565 & 8404 kHz, trying send same, also in CW on 12553 kHz clg UGC. (RB)

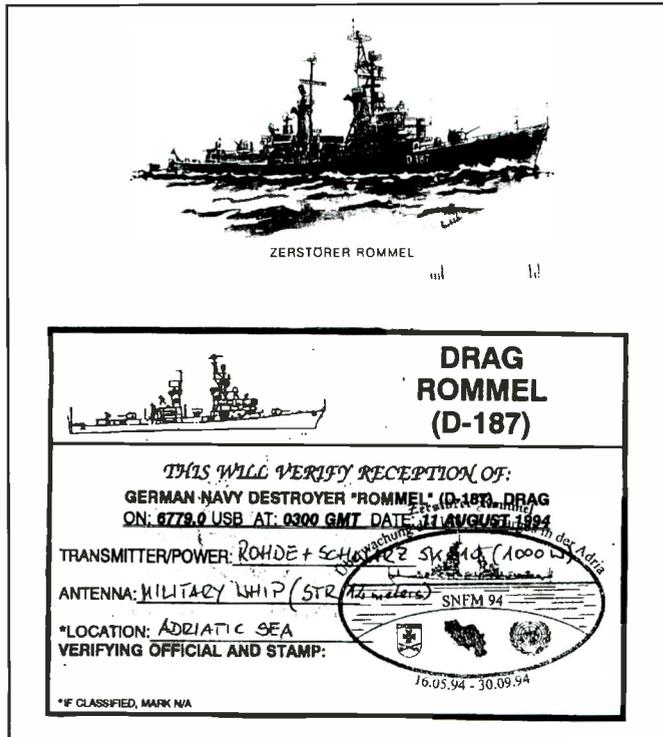
**8422:** VCT, Grand Banks Radio, NS Canada at 0006 w/FEC tfc list (new stn). (RB)

**8632:** Kaohsiung Radio, Taiwan, in CW at 1353 w/CQ mkr. (DS)

**9325:** YL/GG rptng Sierra Bravo w/tones at 0300 every SUN. Then into 5F grps for 174 and 613. At 0330 on 10177 kHz Charlie November operates and at 0400 on 5732 kHz Whisky Lima broadcast takes place. (SM)

**10281:** SNN299, MFA Warsaw w/Polish nx in POL-ARQ, 100 bd at 1450. (AB)

**10325:** YL/SS at 1031 w/4F grps. (PS)



The envelope returning this RFC to Richard Baker, OH, carried a sketch of the German destroyer, "Rommel."

LIMA AVIATION RADIO

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**VERIFICATION OF RECEPTION**

**TO: EDWARD RAUSCH III  
17 VANDERBERG PLACE  
CEDAR GROVE, NJ 07009 USA**

DATE: 10/2/94 FREQ: 11306khz MODE: USB

XMTR: \_\_\_\_\_ ANTNA: \_\_\_\_\_

POWER: \_\_\_\_\_ WATTS LOCATION: \_\_\_\_\_

REMARKS: *ES CORRECTO, EL DIA Y HORA DE DICHO VUELO, PERO NUESTRAS FREQ SON 126.9/128.8/128.1 MHz LA FREQ 11306 KHZ CORRESPONDE A LA ESTACION DE AMERICAN AIRLINES. CORPORACION PERUANA DE AEROPUERTOS Y AVIACION COMERCIAL S.A.*

(Station Seal) \_\_\_\_\_

HUGO MARTINEZ GUTIERREZ  
Jefe División de Información Aeronáutica

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This PFC sent to Ed Rausch, NJ, indicates Lima Aero Radio frequencies are VHF, and the monitored frequency 11306 kHz is of American Airlines. Lima did verify the flight day and time.

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- 10539:** CFH, Halifax Radio w/wx in RTTY 75/850 at 1645  
Ended at 1700 w/VVV mkr. (SW)
- 10584:** KUL, Prob RR Diplo in RTTY 75/500 at 1435. Header of mssg was: 11177 00142 00000 15679 01791. (AB) This best appears be heard better in Europe than in North America.
- 10827:** First observed on 11171 kHz but immediately QSY'd to this freq. RTTY 75/500 at 1915. u/i Diplo t/c. After grp cont sent series of "D's" and into an encrypted mode. Did note that 11171 kHz was assigned to RCF, MFA, Moscow according to CFL, 8th edition. (Ed.)
- 10841.6:** WFO, suspected RR Legation to UN, sends CW mssg at approx 2118 to MIG, suspected RR comms site in Cuba. T/c believed be RR Diplo. Header & mssg follow: 11177 00125 67252 23590 00023 BT MLOMX K. MIG is on 14736 kHz. (Ed.)
- 10871.4:** RFQP, Djibouti in ARQ-E3 100 at 1837 w/aero wx via RFVI circuit. (PS)
- 10875.9:** RFVI, Le Port, Reunion Island in ARQ-E3 100 at 1900. Circuit was carrying t/c fm Paris & RFFL. (PS)
- 11018:** GXQ, Stanbridge, England, British Army, at 1928 w/RY's. VFT CH B1, 75bd. (PS)
- 11208:** 5 dots, 1 dash rasper. Hrd at 1831. (Ed.)
- 11255:** P10, OM/EE, weak & fading w/Fox t/c. USB at 2353 and //18009 kHz. USN channel. (DS)
- 11307:** YL/EE ATC wrking American 69 at 1658. ATC gave wx & requested obs fm flight. (SW)
- 11450:** RDD77, Moscow Meteo w/wx at 1445 in RTTY 50 bd. (AB)
- 11478:** HMF52, Pyong Yang, N. Korea at 2129 in RTTY 50/120. KCNA w/RY's & ID before nx. (PS)
- 11565:** YL/EE at 1747 in AM w/phonetics. Off w/"End of Message." (PS)
- 11617:** Every SUN new EE language stn 'Bravo November' at 0530. YL rpts 'BN' w/electronic tones until 0535. Sig too faint to hear mssg. (SM)
- 12101.9:** SAM, MFA Stockholm in SWED-ARQ 100 bd at 0952 w/mssg to Zagreb. 5L grps. (AB)
- 12186:** JANA news agency, Tripoli w/nx in FF in RTTY 50 bd, hrd at 1520. (AB)

- 12193:** KUL, prob RR Diplo, unlocated Embassy. RTTY 75/500 at 1415. Header 11177 00142 00000 15679 01791. (AB)
- 12210:** YL w/Juliet Whisky fm 2100-2105 every THU. At 2105 YL/GG w/5F grps for 521. (SM)
- 12225:** Bulgarian Diplo in RTTY 75/530 at 1955 w/ZFO ZFO ZFO foll by RY's then into 5L grps and that foll by nx. (PS)
- 12280:** 8BY, u/i stn hrd at 1159. (LD)
- 12472:** SXCY, M/T Prosperventure at 2218 clg/wkg CBV, Valparaiso Radio, Chile in CW w/QSY for TG. (RB)
- 12830:** WNU34, Slidell, LA in CW at 2026 clg CQ w/QSX. (SW)
- 13027:** WLO, Mobile, AL clg CQ on CW at 2030. (SW)
- 13044:** Cape d'Aguilar Radio, Hong Kong, in CW at 1116 w/CQ mkr & QSX. (DS)
- 13285:** Beijing VOLMET (YL/EE, strong sig) in USB mode at 1157. (DS)
- 13421:** CMB, u/i prob RR Diplo in RTTY 75/500 at 0855. Header 11177 80061 1.... (remainder garbled) (AB)
- 13989:** RFFA, MOD Paris, France in ARQ-E3 192 at 1615, carrying t/c fm RFAAK to RFLIG.
- 14000:** Everyday at 1400 YL rptng 'Frank Young Susan.' If no mssg is to follow then she says 'Queen Robert Union' or else 'Queen Thomas Charlie' and then 'Nancy Robert 66' 'George Robert 11' and into 5L grps comprised of old ARRL alphabet. Same stn as 2000/4130 kHz 'Mary Susan Adam.' Ends mssgs w/'Robert Adam.' (AR backwards). (SM)
- 14441.5:** NNN0CYC, USS Shennandoah (AD-44) at 1848 wkg NNN01BMV, advises beam heading is E/SE. QSY 14383.5 pp t/c. At 1849, USS Pudget Sound (AD-38) clg ASSMS, w/beam heading E., then wrks NNN0BMV req got to 14383.5 in rotation w/CYC. At 2239 NNN0COG, USS Enterprise (CVN-65) wkg NNN0UTO re QSY to 14470 for pp t/c. At 2258. NNN0COY, USS Austin (LPD-4) clg AMSSS, routine pp t/c. NAVMARCORPMARS Calling, all in USB. (RB)
- 14605:** At 1100 RTTY best 75/500 to VKX, prob RR Diplo. Poor to uncop reception. TFC rptd on sec-

NNNOBLU NEW CALLSIGN NNNOCQN (USS BLUERIDGE)  
 NNNONHJ HSL-48, DET 9, NAVAL STATION, MAYPORT FL 32228  
 NNNOCWA NAVAL SPECIAL WARFARE GROUP TWO, 1430 HELICOPTER ROAD,  
 SUITE 200, NORFOLK, VA. 23521, OPERATES ABOARD VARIOUS  
 SHIPS.  
 NNNOCWF USCGC ESCAPE (WMEC 6), C/O CHARLESTON NAVAL STATION,  
 CHARLESTON SC 29402  
 NNNONNA MILITARY TRAFFIC MANAGEMENT COMMAND, COMMANDER MTMCEA,  
 MTIME-N-HF, BLDG. 42 ROOM 5302, BAYONNE NJ 07002-5302,  
 TEMPORARY USED BY A U.S. ARMY CONTRACT SHIP.  
 NNNOCSD USS SHILOH (CG-67) FPO AP N/A  
 NNNONPT PATROL SQUADRON 40 (VP-40) FPO AP N/A  
 NNNOCPX USS VANDERGRIFT (FFG 48), FPO AP 96682-1502  
 NNNOCVU NNNOCVO, NNNOCXV, NNNOCYD: DECOMMISSIONED  
 NNNONUH UN FORCES AGHUEIT, WESTERN SAHARA  
 NNNONUJ UN FORCES AWSARD, WESTERN SAHARA  
 NNNONUJ UN FORCES BIR LAHLOU, WESTERN SAHARA  
 NNNONUJ UN FORCES DAHKLIA, WESTERN SAHARA  
 NNNONUL UN FORCES LAAYOUNE, WESTERN SAHARA  
 NNNONUM UN FORCES MAHBAU, WESTERN SAHARA  
 NNNONUN UN FORCES MEHARIEZ, WESTERN SAHARA  
 NNNONUO UN FORCES MIJEK, WESTERN SAHARA  
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 NNNONUQ UN FORCES SMARA, WESTERN SAHARA  
 NNNONUR UN FORCES TIFARITY, WESTERN SAHARA  
 NNNONUS UN FORCES TINDOUF, WESTERN SAHARA  
 NNNONUT UN FORCES ZIUG, WESTERN SAHARA  
 NNNOCBV USS CANOPUS (AS-34)  
 NNNONRJ TERMINATED - BASE CLOSURE  
 NNNOMFC 2ND MARINE EXPEDITIONARY FORCE CARIBBEAN  
 NNNOCXS USCGC DALLAS  
 NNNOCRR USS CROMMELIN (FFG-37)  
 NNNONIA FAMILY SERVICES CENTER BOX 184, NAS CECIL FIELD, FL  
 32215-0184  
 NNNOMJF CAMP FUJI JA  
 NNNOHLG CW BEACON, USN SHIP, KOREAN AREA TO ASSESS PROPAGATION,  
 12935.3  
 NNNOHLJ CW BEACON, USN SHIP, KOREAN AREA TO ASSESS PROPAGATION,  
 16909.2  
 NNNOHL0 CW BEACON, USN SHIP, KOREAN AREA TO ASSESS PROPAGATION,  
 16989.2  
 NNNOCQZ REASSIGNED USS CURTIS WILBUR DDG- 54 FPO AP 96683-1272  
 NNNOCAH, NNNOCRS, NNNOCBL: DECOMMISSIONED OR NO LONGER ASSIGNED

Here is a NAVMARCORMARS update provided by Richard Baker, OH.

onday freq 12179.2 kHz where possible obtain good copy. Four mssgs w/total of 252 grps. Also sent "TIKAS" which was mssg regarding Holiday skeds. (Ed.)  
**14639.6:** U/i CW stn at 1306 w/cut nbrs in 5F grps. Used cut nbr system 1-0=ANDUWRGMT. Down at 1313 w/AR AR AR SK SK SK. (Ed.)  
**14724.5:** At 1515 RTTY 75/500 best to BPA, prob RR Diplo. TFC was rptd on 10421.5 kHz. (Ed.)  
**14931:** 8BY, u/i stn hrd at 1352. (LD)  
**16036:** DOR2, MFA Sofia in RTTY 150 bd at 0930 w/nx. (AB)  
**16127.6:** RFQP, Digibouti in ARQ-M2 200 at 1630. "Controle De Voie." (PS)  
**16226.7:** Xmtr tuning at 1337. At 1400 best callup to YBU w/QRU. RTTY 75/500. I did not locate the secondary freq. This is prob RR Diplo. (Ed.)  
**16244:** Bcst to u/i, RTTY 75/500 at 0838. Prob RR Diplo. Header: 11177 90051 00000 16860 01101. (AB)  
**16281.2:** Xmtr tuning up at 2049 foll by RTTY best, 75/500, KAC w/5 mssgs, 739 grps. Prob RR Diplo. Secondary is 14235.2 kHz.  
**16414:** YL rptng Mike Delta on TUE 0900 w/random tones. At 0905 'message for 241 241 81 groups' 'Atencion' and into 5F EE grps. (SM)  
**16446.5:** At 1742 RTTY 75/500 best to KRN, prob RR Diplo. Did not hear primary freq at normal sked start time of 12735. (Ed.)  
**16686:** UEWE, TR Gamal Abdel Nasser, at 1436 w/ARQ Telex for ETA Port Cartier. (RB)  
**16841.1:** At 2230 RTTY 75/500 best to JMS, prob RR Diplo. Mssg rptd on 13625.2 kHz. (Ed.)  
**17053:** Keelung, Taiwan in CW at 0404 w/CQ mkr & QSX. (DS)  
**17574.4:** U/i CW stn at 1742 w/very chirpy sig. He tells unheard stn to QSY 18626 kHz & send V's. Hrd u/i stn sending V's on 18625.9 kHz. Bad local QRM prevents copy, dropped. (Ed.)  
**18126.2:** Could not heat primary req of 20731.3 kHz. This freq is secondary and repeat of t/c going on. 5 mssgs, many grps. One mssg had 1660 grps. RTTY

75/500 at approx 1742, prb RR Diplo. This best is to GMN. (Ed.)  
**18415:** 8BY, u/i. Hrd at 1650. (LD)  
**18826.1:** At 2000 RTTY best 50/500 to HZW, prob RR Diplo. Four mssgs, 432 grps. T/c rptd on secondary 16880.2 kHz. (Ed.)  
**18881:** 1700 SAT nbrs sked in EE. "428" rptd, then "401 401 33 33" and sends each text grp twice. At end of mssg sent 00000. (TM)  
**20138.4:** At 2200 RTTY 75/500 best to YBU, prob RR Diplo. Did not heat secondary freq but on another day found it on 17478.2 kHz. (Ed.)  
**20240:** YL rptng Whisky Lima at 1000 foll by GG 5F grps for 026. (SM)  
**20456.2:** CLP1, Havana, Cuba in RTTY 75/930 at 1810. Cuban MFA t/c of 5F grps and Diplo circulars for Hanoi. (PS)  
**20586.1:** At 1900 RTTY best 75/500 to WNY, prob RR Diplo. 3 mssgs, 403 grps. Secondary freq is 16446.1 kHz. (Ed.)  
**20731.3:** At 1645 RTTY 75/500 best to GMN, prob RR Diplo. T/c rptd on secondary 18126.2 kHz. (Ed.)  
**20946:** 8BY, u/i. Hrd at 1446. (LD)  
**21865.2:** At 1600 RTTY 50/500 best to SPK, prob RR Diplo. T/c rptd on secondary 18844.6 kHz. (ed.)  
**29100:** Vy weak sig w/lots of fade. Able to copy discussion of shipwreck off coast of Labrador. Hrd at 2315. (SW)  
 This month's reporting monitors: James Rankin, VA; Sue Wilden, IN; Perry Crabill, Jr., VA; Floyd Hutson, CA; David Sabo, S. Korea; Dave Marshall, OH; Simon Mason, England; Ary Boender, Netherlands; Tom Sevart, KS; Richard Baker, OS; Tom Mazanec, OH; Leif Dehio, Germany; Paul Scalzo, Quebec, Canada; A. Hemmalin, RI; Bjorn Vaage, CA; Jim Osborn, VA; Richard Monjure, LA; and Don Schimmel (Ed.), WV.

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## INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

### Radio Sputnik 15

The Russians launched the long-awaited satellite, RS-15 on December 26, 1994. This was the first launch of an Amateur Radio Satellite since the August Coup of 1991. It was in October 1994 that I first mentioned the newly proposed spacecraft, its launch, and operational perimeters (see the February, 1992 Satellite View).

In spite of continuing difficulties in Russia since the August Coup of 1991, it is promising to see the Russians were able to not only complete construction on a new spacecraft for hobbyists, but also find a launch vehicle for it—especially during difficult political and economic times. This success should not surprise us as the Russians have always had an aggressive, productive, and successful Amateur Satellite program.

RS-15 was built by a group of Amateur Radio operators in the city of Kaluga, 100 miles southwest of Moscow. Aleksander Papkov supervised the work under the direction of the Nilakt Posto (Aero-Coamic Laboratory) of Moscow. Valentin Yamnikov is director of the facility.

The launch of RS-15 from Baykonur cosmodrome at 0300 hours UTC in December 26, 1994 brings the number of Russian operational Amateur radio satellites in orbit to four. RS-10/11 and RS-12/13 are multi-mode satellites carried as secondary electronic packages on two separate Russian navigation satellites. RS-14 is Russia's first data-only spacecraft.

This new addition to the Russian fleet is unlike the others; somewhat reminiscent of the original Sputnik of 1957. A simple spherical-shaped package one meter (3.2 feet) in diameter, weighing 70 kg (150 lbs.); is not a secondary package on a host spacecraft as RS-10-13 are. It is a self-contained, spin-stabilized spacecraft with 1/4-wavelength monopole antennas.

The electronic package is somewhat simpler, too. It has the same base system as the other spacecraft. The BRTK-11 package carries only one transponder, an A-mode, 2 meter (145 MHz) uplink, and 10 meter (29 MHz) downlink. RS-15's A-mode transponder radiates 5 watts of RF. Each of the two beacons can operate with .4 or 1.2 watts of RF.

The group of builders and designers from Nilakt Posto, associated with the Tziolkowskii Museum of Cosmonitics, saw to it that RD-15 carried 2kb of bulletin board memory. Ground control can send 64 parameters of telemetry at high data rates, and TLM consists of groups of data made up of three letters and two numbers each.

RS-15 is in a circular orbit with an

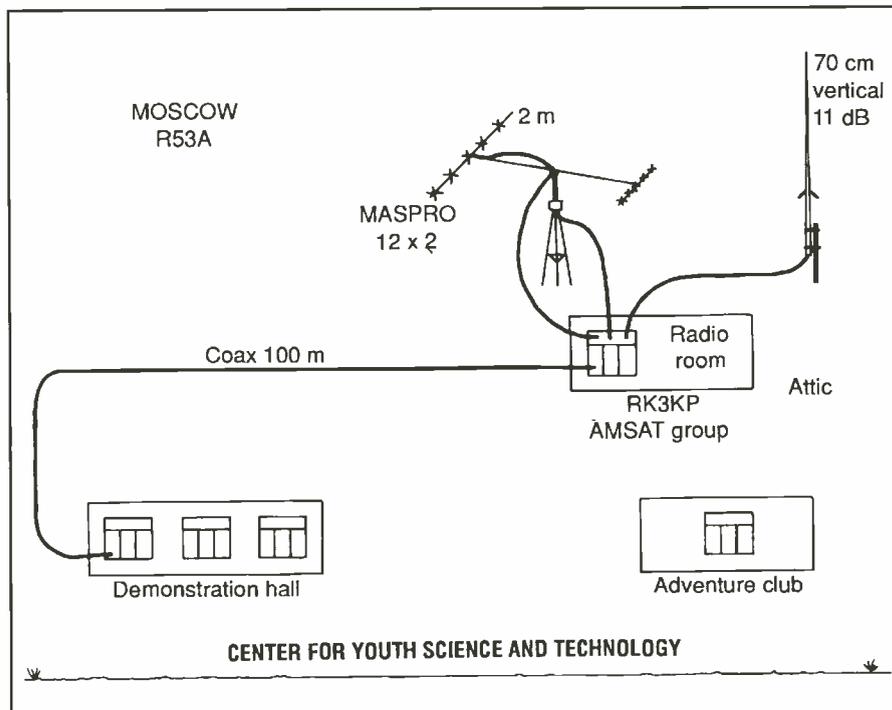


Figure 1. The Center for Youth Science and Technology.

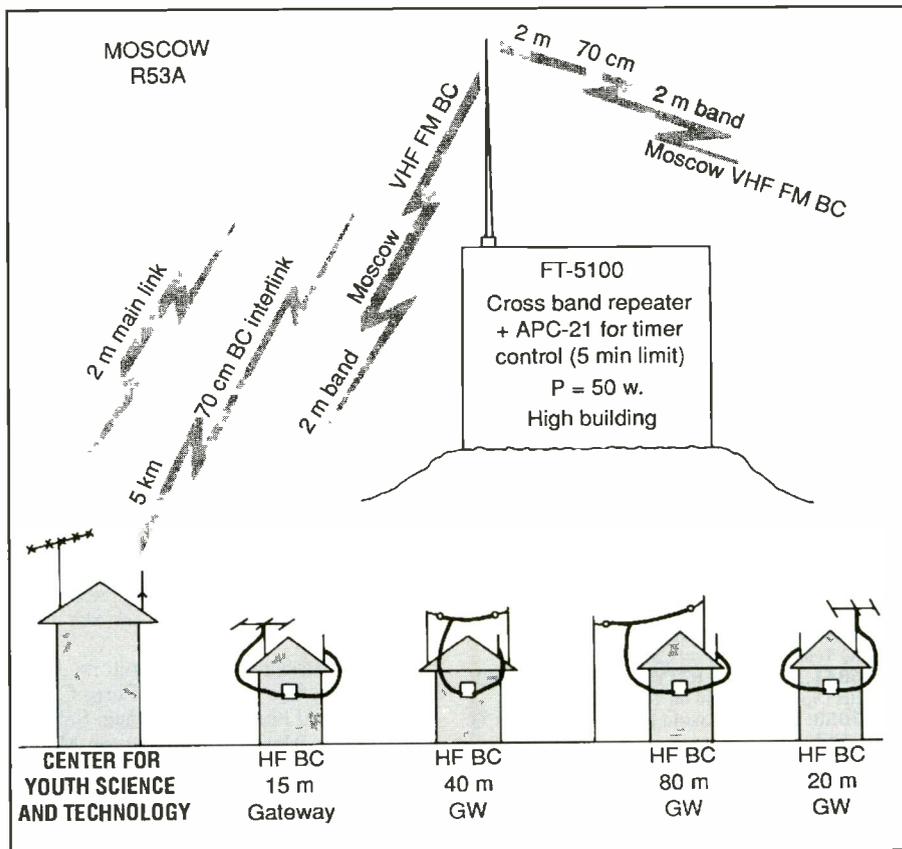


Figure 2.



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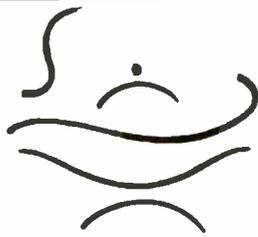
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RB5IRF 84 145	RB5IRF 85 145	RB5IRF 86 145	RB5IRF 87 145
RB5IRF 88 145	RB5IRF 89 145	RS3A 90 145	RB5IRF 91 145
UM8MU 92 145	W8VXJ 93 145	W8VXJ 94 145	UA3XAV 95 21
UA3XAV 96 21	UA3XAV 97 21	UA3DXAV 98 21	UA3XAV 99 21
UA3XAV 00 21	UA3XAV 01 21	UA3XAV 02 21	RS3A 03 145
RS3A 04 145	UA9CG 05 145	RS3A 06 145	RS3A 07 145
OV			

Contents of RS-11 memory.

apogee of 2165 km (1300 miles) and a perigee of 1885 km (1200 miles). Orbital period—the time it takes to complete an orbit—is 127 minutes. The orbit maintains an inclination of 64.59 degrees.

The 15th satellite in the amateur series from Moscow will be under the control of the RS3A ground station in the Center for Youth Science and Technology, in Moscow. Before the collapse of Communism, the Center was connected with the Voluntary Society for Assistance to the Soviet Army (DOSAAF) (see the November 1991 Satellite View).

The Center's role as a satellite control station for the RS series of spacecraft continues under the supervision of Leonid Maksakov and control station operator Andrey Mironov. The day of the launch Andrey could be heard calling CQ using the RS3A callsign near 29.358 MHz in CW.

According to AMSAT-NA, the first American QSO through the new spacecraft was completed by N2NRD who contacted K6GZ at 2225 UTC on December 26, 1994. The first European contact was made by DJ0MY, of Germany. He contacted EB8CHG, in the Canary Islands, at approximately 1607 UTC.

Along with a couple of photos you will find a sketch of the Moscow Control Center, RS3A (Figure 1). According to the staff, they now have a new IBM computer on hand. Most of the other control equipment is hand-made. RS3A uses a pair of 2M and 70CM twists, a 70CM vertical, and a three-element 10M beam.

Figure 2 illustrates the network configuration used in Moscow during STS-60, the U.S. shuttle flight of February 1994. Moscow's contact with the shuttle crew was simulcast throughout Russia using Gateway stations on each of the ham bands. These graphics, originally done by Leo Labutin (UA3CR), were first published in *Oscar News*. AMSAT-UK's official publication and one of the best dedicated to space news and information. I would like to thank AMSAT-UK, Secretary RJC Broadbent, G3AAJ (*Oscar News* Editor) and Leo Labutin for use of these graphics. For info on *Oscar News* or AMSAT-UK, contact

RJC Broadbent by phone, 081-989-6741; FAX 081 989 3430; Compuserve ID 100024,614 Broadbent, or on Internet at R Broadbent@EE.SURRY.AC.UK.

Economic difficulties are still hounding the Russians in spite of the launch of RS-15. Informator-1, the experimental Russian spacecraft and host spacecraft for RS-14, is no more. According to an article in *Oscar News*, by Leo Labutin, the Russian military, which has control of the host spacecraft, has decided to turn it off. This included the RS-14 equipment package. Farewell, RS-14.

### One Final Note

In our series on weather satellites we gave the phone numbers and addresses of several equipment and service suppliers we thought you might find helpful in your search for weather satellite information, including one called Fisher Scientific. I recently got a letter from Bruce Sanders, Engineer and Product Specialist with Fisher Scientific. He reports its new address and phone numbers are as follows: Fisher Scientific Educational Materials Division, 485 South Frontage Road, Burr Ridge, IL 60521; phone 1-800-955-1126, or 1-800-955-7999.

Bruce also mentions that GOES-8 was repositioned from its location at 90°W to 75°W, its permanent position. Thanks for sending along the update, Bruce. See you next month. ■

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### Beyond the Rubber Duck

The little rubber antenna on handheld transceivers is perfectly adequate for emergency communicators in urban areas where communication is less than two miles range to a base station or remote base system. The little "rubber duckie" handheld antenna has typically 1/10 the field strength on VHF high band (-10 dB loss) as a comparable 18-inch, high-band, 154 MHz telescopic whip. On UHF frequencies, the rubber duck antenna performs better because 1/4 wavelength requirements are smaller. Handhelds on UHF also work quite well in the city because of the reflections that may ultimately make it out of a building and over to a distant building-top, remote-base system. The typical UHF rubber antenna has half power loss, or -3 dB gain over a 1/4 wavelength telescopic whip.

Anytime you make an antenna physically smaller than its natural 1/4 wavelength, you incur signal loss on both transmit and receive. Nothing can be done to a flexible rubber antenna to make it dramatically more powerful—or comparably as powerful as a longer telescopic whip.

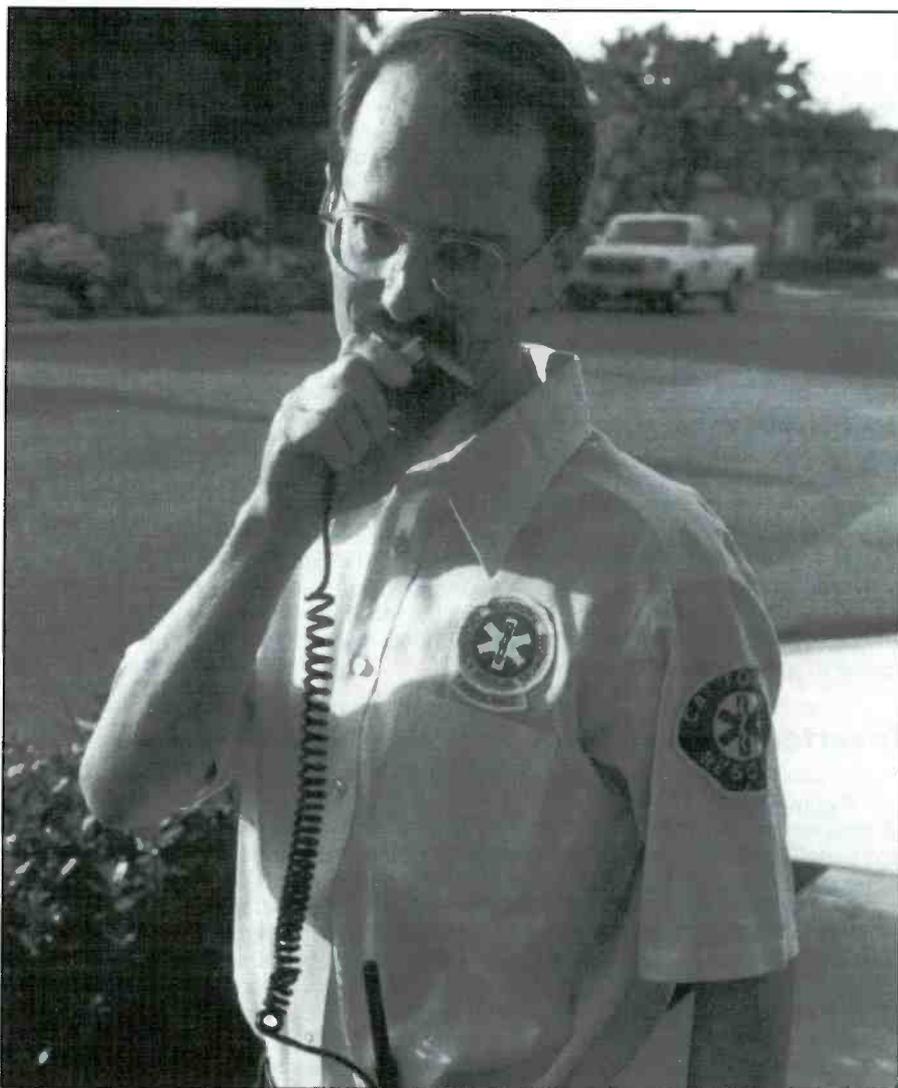
Run your handheld off an external microphone? If you transmit and receive on a handheld worn on your belt, you could be losing as much as -30 dB, a 1,000 times power loss due to the antenna being up against your body while sitting inside a vehicle. The combined effects of the vehicle enclosure not letting the signal get out, plus the absorption effects of the RF right next to your body, may dramatically decrease how far away you can communicate.

Even outside your vehicle, an antenna up against your belly costs you dearly in dB, and let's face it, subjecting ourselves to any amount of electromagnetic radiation isn't that healthy anyway.

If you need extended range from a handheld and you still require portability, consider the telescopic single-band whip. Dual-band whips are available for ham operators on 2 meters and 440 MHz. For emergency communicators, chances are your pack set only has a single band. The single-band whip is 1/4 wavelength long.

High-band VHF	18 inches
UHF	6 inches

The most dramatic increase in handheld performance occurs on VHF high-band when you are in a remote area and need to get back to your base station 30 or 40 miles away. Switching from the little rubber antenna over to an 18-inch long whip usually gives you the necessary gain to complete the com-



*Do not operate your handheld from your belt—your range will be very limited.*

munications. You can also pick up an additional 2 dB of gain by attaching an 18-inch counterpoise radial to the metal clip of your handheld. This solution gives you good solid halfwave performance ("Tiger Tail," from Antennas West; 801/373-8425). The telescopic whip should be constructed with a flexible coil on the BNC connector.

If the telescopic whip has a solid connection to the BNC connector, you risk the chance of breaking the delicate connection inside of your handheld transceiver where the BNC jack connects with the hard wire to the circuitboard. I have repaired numerous board connections to the jack, and replaced the hard wire with "solder wick"

in order to prevent this problem from occurring again. Be careful that you don't break that BNC connector on the top of your handheld radio loose.

And you know, even with a rubber duck antenna on your handheld transceiver, that BNC connector sometimes wiggles loose. Have you checked yours lately? If it is loose, you are very close to ruining the inside circuitboard of your handheld. Tighten up the collar from the outside, or delicately get into the inside and tighten up the collar there.

With a longer telescopic whip on your handheld, you can now establish communications over a path that a rubber duck antenna just won't quite make. ■

## SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

### Cramped Space? Then Go to "L"

For most of my life, at least my radio life, tight city lots have been "my lot" (no pun intended). You can imagine how jealous I was of my friend (we got our ham licenses together many years ago), the late Johnnie Harper Thorne (K4NFU/5), inventor of the Thorne Array antenna, when he bought 43 acres of flat Texas farmland south of Austin...in an area with very good soil conductivity. Thorne was an antenna freak, and he taught me and a lot of others some real smoke about the subject.

One of Thorne's antennas, which the vast majority of us can only dream about, was a 1,200-foot (later lengthened to 1,400 feet) long wire about thirty feet off the ground. That antler was so long that thunder storms many miles away induced enough signal to create receiving damaging voltages on the antenna. He had to connect ten, one-megohm, two-watt carbon resistors from the antenna wire to ground at the receiver end of the antenna just to drain off those terrific static charges.

What should the rest of us do? Most of my homes have been quarter acre city or suburban lots, apartments, or, in one case, owned by a landlady who was nice enough, but highly skeptical of my ham and SWL activities ("lightning hazard," she believed).

The landlady problem often doesn't succumb to antenna technology (credibility and charm helps, though), but the limited space problem has antenna solutions. When faced with tight lots, try "going to L."

#### Inverted-L Antennas

The inverted-L antenna consists of two sections, one vertical and one horizontal, each a quarter wavelength long. The length of each segment of the antenna can be calculated from the equation Length (in feet) equals  $234/\text{Frequency (in megahertz)}$ . In other words, each leg of the antenna has the same length as each of the two wires in a half wavelength dipole antenna cut for the same frequency. When operated at its resonant frequency, the inverted-L has characteristics of both vertical and horizontal polarization, so some people believe that it is an "ideal" shortwave antenna. It is said to combine a kind of polarity diversity in one package (I disagree with that analysis, but others demur).

The inverted-L antenna is fed at the bottom end of the vertical section with an antenna tuning unit (ATU). Coaxial cable is used from the ATU to the receiver's antenna input connector. The ATU used can be a simple "line flattener," but for most versatile use it should be a more flexible design that will cover a wide antenna impedance range. Some very high feedpoint impedances can be found in the inverted-L at some frequencies.

When the antenna is operated at frequencies off-resonance, which may be the main mode for shortwave listener's who operate all over the HF spectrum, the inverted-L antenna operates like a random length Marconi antenna. Decent performance can be realized from such antennas connected to the receiver's antenna input, although some improvement is seen when an antenna tuning unit (L-section coupler, for example) is used between the antenna feedpoint and the receiver.

#### "Calibrating" the ATU

One of the problems faced by SWLs using antenna tuning units is finding the correct settings. The perceived change in signal strength in many cases seems a bit overbroad to correctly guess the right setting. To make matters worse, you can't simply "dead center" the controls over the range because the tuning tends to

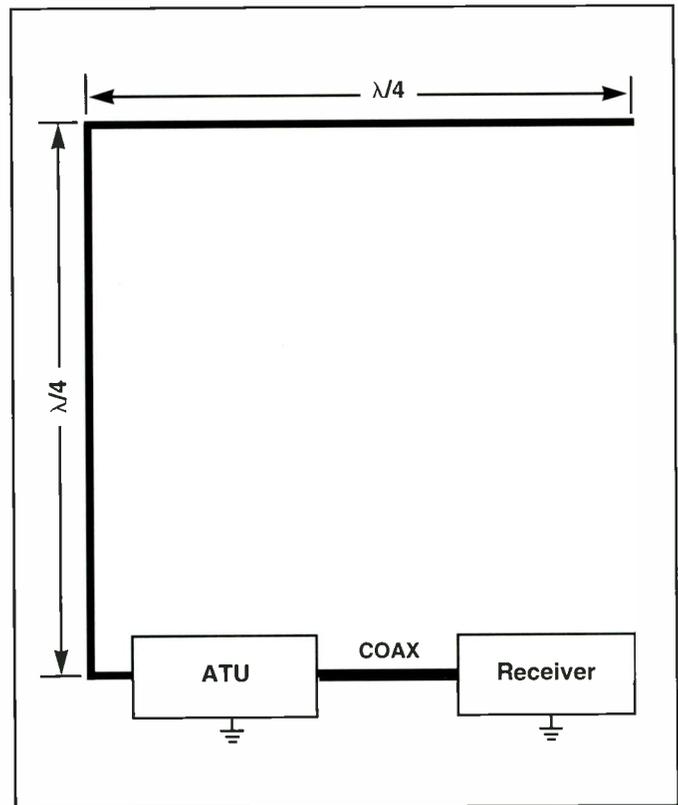


Figure 1.

be non-symmetrical, i.e., it's different above resonance than below. Hams solve this problem by using an SWR bridge (or "SWR meter"), an RF power meter, or some other instrument that depends on excitation by RF from their transmitters. SWLs lack that advantage.

One solution to the problem, however, is to use an "SWR analyzer" such as the MFJ Enterprises model MFJ-249, to find the spots on the ATU dial that cause minimum SWR at each frequency within the desired band. The data taken from these measurements can be kept as a table to look up the correct setting for each region of the band. I use a table for my ham transmitter ATU, and found it a quick way to get into the right neighborhood, especially when changing bands rapidly.

#### "Isotropic Gain" of Antennas

Reader TJM, of St. Louis, asked a question that may be of interest to a lot of other readers. He (or she?) asked what "isotropic gain" means in antenna books and advertisements. This concept comes from antenna theory, and is a convenient way for engineers to express the gain of antennas. It comes from a thought model of a perfectly spherical radiator in which all of the available RF power of a transmitter at the center of the sphere is equally distributed in all directions on the surface. The "gain" of the isotropic source is considered unity (one unit). All gain antennas are described as "gain" because they create directivity.

Instead of spreading all of the power out evenly on a spherical surface, the directional antenna concentrates it in a limited direction. By finding the ratio of the power density on the wavefront at some distance, and comparing to the isotropic power density, we get an idea of the gain and the directivity of the antenna. A half wavelength dipole has an isotropic gain that is just a scosh less than 2 dB.

A lot of antenna books (and some ads) compare antenna gain to the performance of a dipole. You will see gains quoted in the form "6.8 dB over a dipole." What this means is that the antenna will produce a signal strength that is 6.8 dB larger than that produced by the same power applied to a half wavelength dipole that is resonant on the same frequency. Because of the Law of Reciprocity, the same gain is seen on receive as is seen on transmit.

So how can two antennas be compared when one is quoted as having gain over a dipole, and the other as having gain over isotropic? Simple: add 2 dB to the gain over a dipole to get isotropic gain. To find dipole gain when isotropic is quoted, subtract the same 2 dB, more or less.

Actually, antenna "gain" is sometimes a bit hard to measure in practical terms. Local conditions, measurement method and other factors enter into the problem. As a result, I don't usually make antenna selections based on a two or three dB difference. While it can be argued that a 3 dB difference represents a doubling of received power, that's really only about half an S-unit on most receivers. In addition, the real gain realized at your location can be off from the idealized factory test site by about the same amount. The numbers, and whether they are isotropic or dipole referenced, are of importance, to be sure, but may not be the single most important factor in antenna selection (with the possible exception of very weak signal operations where every "dog biscuit" counts).

*Endnote:* It is largely due to Johnnie Thorne's death that I personally have a zero-minus-100-dB tolerance of drunk drivers. ■

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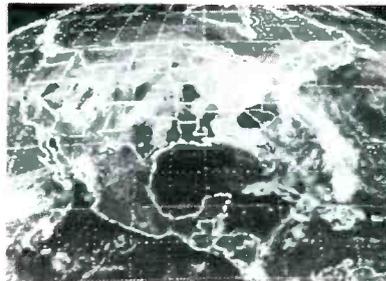
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# WASHINGTON PULSE

## FCC ACTIONS AFFECTING COMMUNICATIONS

### Denied Reconsideration of Order Regarding Typeface and Height Requirements of FCC Filings

The Commission denied David B. Popkin's petition for reconsideration of its Order which amended the rules to require that FCC filings must utilize a type of at least 12-point in height and be double-spaced with margins set so the printed material does not exceed 6-1/2 x 9-1/2 inches.

Popkin contended that the 12-point type requirement would preclude the use of a standard typewriter for the submission of pleadings; that many computer word processing programs do not provide for the control of the height of the typeface used; that a 16-point typeface had to be utilized on the instant pleading to comply with the rule, which resulted in an inappropriate number of pages of paper; and, there should only be a restriction on the maximum size of the printed area, as approximately centered, rather than on the size of the borders around the printed material.

The Commission said it found no merit in Popkin's contentions. Moreover, there has been no response to this petition for reconsideration indicating any support for Popkin's contentions. The Commission stated that no showing had been made warranting the revision of Section 1.49 of the rules which was intended to ensure that one party does not gain an unfair advantage over another, while at the same time minimizing the burden of all making filings with the Commission.

### Vanity Callsign System

In recognition of the strong sense of identity among amateur operators grounded in the callsigns of their stations, the Commission has decided to offer a vanity callsign system to the amateur service community. The Commission will also resume issuing new club and military recreation station licenses. The Commission said these actions are fundamental to its commitment to putting the needs of people first in providing the services that they want.

Each new amateur station licensed by the FCC is assigned a unique callsign. An automated process selects the callsign in accordance with the sequential callsign system. Until recently, the Commission was unable to accommodate the many thousands of requests from callsigns of the licensee's choice. The Commission stated

that one of its many steps in reinventing Government is to implement new licensing processing capabilities that make it practicable to grant such requests.

The Commission will implement the new system by using a series of four "starting gates." Gate One would allow a previous holder of a callsign to apply for that callsign or, where the holder is deceased, a close relative could apply. Gate Two would allow the 66,000 Amateur Extra Class operators, who have passed the most difficult license examinations, to apply. Gate Three would allow the 112,000 Advanced Class operators, who have passed the second most difficult license examinations, to apply; and Gate Four would open the system to any licensee, including a club station license trustee applying for the callsign of a deceased former holder. The Commission will announce the opening of each gate by a Public Notice. The first gate will open as soon as the new application form, FCC Form 610-V, is available and the Commission's licensing facility is prepared to begin processing the applications.

With respect to new club station licenses, the FCC stated that persons not already holding a club station license must first apply for and receive a license before filing an application with the fee collection contractor requesting the license be modified to show a vanity callsign. However, the Commission will begin accepting applications for new club and military recreation station licenses on the date the Report and Order in this proceeding becomes effective.

### FCC Proposed to Add Prince William Sound to Coast Guard's Radio Protection Areas

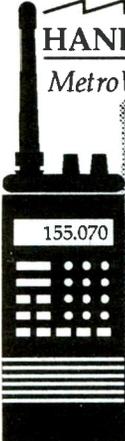
At the request of the United States Coast Guard, the Commission proposed amending Part 80 of the rules to add Prince William Sound to the Coast Guard's design noted radio protection areas for mandatory Vessel Traffic Services (VTS) and establish marine VHF channel 11 as the VTS frequency for Prince William Sound. The Commission said the proposed rule would promote vessel safety by adding Prince William Sound to the list of designated radio protection areas for VTS services.

The Commission stated that designating Prince William Sound as a VTS area will allow the Coast Guard to manage vessel traffic in the Valdez, Alaska area more efficiently and protect the marine environment by preventing vessel collisions and grounding. ■

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# CLANDESTINE COMMUNIQUE

## WHAT'S NEW WITH THE CLANDESTINES

**M**ainland China has rarely been without some sort of clandestine broadcasts beamed its way since the Communists took over in 1949. One station which has been active for several years now is the Voice of China, carried over Taiwan's domestic shortwave network—the Central Broadcasting System. Recently the long time 2100 to 2200 schedule on 15280 was increased. Now there's a second hour-long broadcast, aired from 0830 to 0930 on 11940. The Voice of China is operated by exiles from the mainland and was originally produced in Chicago. It is now headquartered in California and will usually QSL reports sent to P.O. Box 11663, Berkeley, CA 94701.

A much more mysterious anti-Beijing broadcaster is the New Star Broadcasting Station, believed to be based in Taiwan. Its programming, other than a station ID, consists of strings of numbers read in Chinese. It uses 8300, 9725, 11430, and 15388 at various times. New Star is rarely reported, though that could be due largely to its sporadic operation. Try tuning during the early morning hours. It was logged in Europe not long ago on 8300 at around 1300.

Korean clandestine the Voice of National Salvation is noted on 4119 in the morning hours (it operates here in the U.S. from 0955 to 1700), and for most or all of that time is in parallel on 3480, 4400 and 4557. This North Korean-based station beams to the South and is supposedly operated by something called the National Democratic Front of South Korea, which is obviously a front used by the Pyongyang government. We don't know of any QSLs from this station but, after many years of operation, an address finally turned up sometime back. Try writing the Mission of the National Democratic Front of South Korea in Japan, Amatsu Bldg., 2-1 Hirakawa 1-chome, Chiyoda-ku, Tokyo 102.

Nevermind that the Ethiopian civil war ended a couple of years ago and nevermind that Eritrea, which fought so long for its independence finally achieved it. There is still clandestine activity aimed at this area. The Voice of Russia (ex Radio Moscow) is airing Free Radio Voice of Ethiopian Unity, in Amharic on 11945, opening at 1600 on Sundays and Wednesdays and running to 1700 close. Its address is P.O. Box 91701, Washington, DC 20090.

Another Ethiopian clandestine is the Voice of the Ethiopian People for Peace, Democracy, and Freedom; sometimes noted on 6940, coming on the air around 0330 with programs also in Amharic.

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*The Cuban American National Fundacion program "La Voz de Fundacion" is now issuing its own QSL card. The address is 7300 NW 35 Terrace, Miami FL 33122.*

Voice of the Mojahed, which slogans itself as the Voice of the National Liberation Army of Iran is now using 3850, 4150, 4250, 4670, 5150, 5450, 6005, 6175, and 7180. If you check for this one nose around either side of those spots as this station has a history of adjusting its frequencies in order to avoid jamming by the Iranian government.

Of the several other Iranian clandestines, one, the Voice of the Iranian Revolution, has apparently been reactivated, using frequencies 3871 and 6410 (both variable). Unfortunately, the 1500 UTC makes reception in North America next to impossible on those frequencies.

The Voice of Iranian Kordestan now operates in Kurdish from 0900-1000, 1530 to 1630 and 0330 to 0430 and in Persian (Farsi) from 1000 to 1030 and 1630 to 1700, using variable 4280.

The Radio Voice of Human Rights and Freedom for Iran is scheduled from 0230 to 0425 on 9350, 11470 and 15145; 0600 to 0640 on 9350 and 11650 (try also 9255 and 15150), 1545 to 1620 on 9350 and 11650 and 1630 to 1825 on 9350, 11470 and 15620. This one is often heard in North America. Reports may be sent to Mina Alborzi, 18bis, rue Violet, F-75015 Paris, France.

Al Quds—Palestinian Arab Radio, operated by the Popular Front for the Liberation of Palestine—General Command says it uses 5990, with 5910 in reserve. The last known schedule was 0600 to 1100 and 1300 to 1715, mostly in Arabic. The station broadcasts against the Gaza/Jericho agreement between Israel and the PLO.

A station broadcasting against the government of the former Soviet Republic of Georgia is using as a name The International Committee for Defense of Human Rights and Red Cross of Abkhazia, and is operating between 0430 and 0630 on 9365 (sometimes 9373). We wonder if the use of this name is a deliberate attempt to make people believe the station is connected with the International Committee of the Red Cross. The station's "official" name is the Voice of Abkhazia and it broadcasts in opposition to both the Russian and Georgian governments.

That covers things for this month. All information and observations you have about the clandestine broadcasting scene are always more than welcome. That includes news of QSLs, station schedules and addresses, loggings, background material, and so on. Your input is always very much appreciated!

Until next month, good hunting! ■

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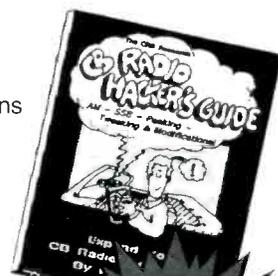
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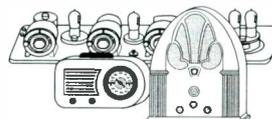
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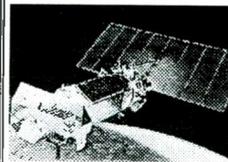
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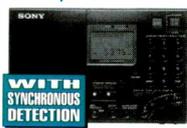
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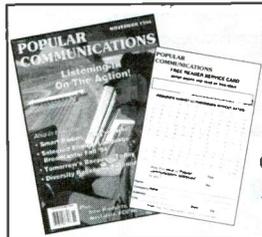
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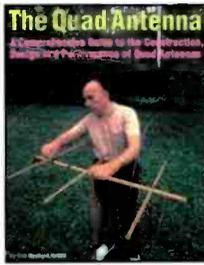
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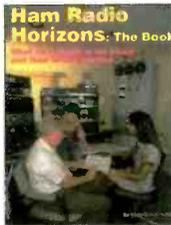
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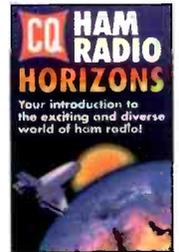
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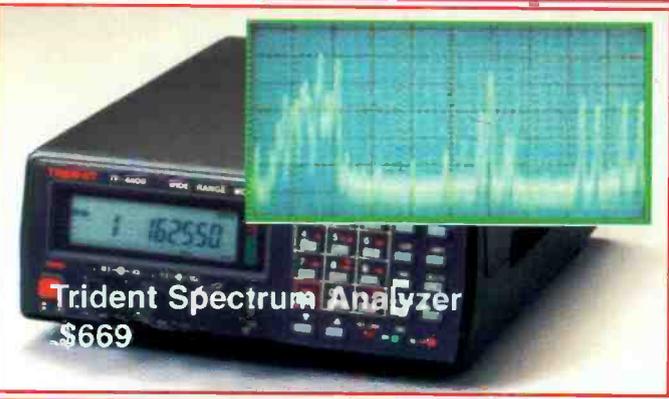
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