

POPULAR COMMUNICATIONS

Beepers: The Inside Story!

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- Decode Non-Voice Pager Messages
- Selected English Language Broadcasts: Summer '95
- An Attorney Analyzes Pirate Radio
- Why Not Try Aeronautical Shortwave Monitoring?

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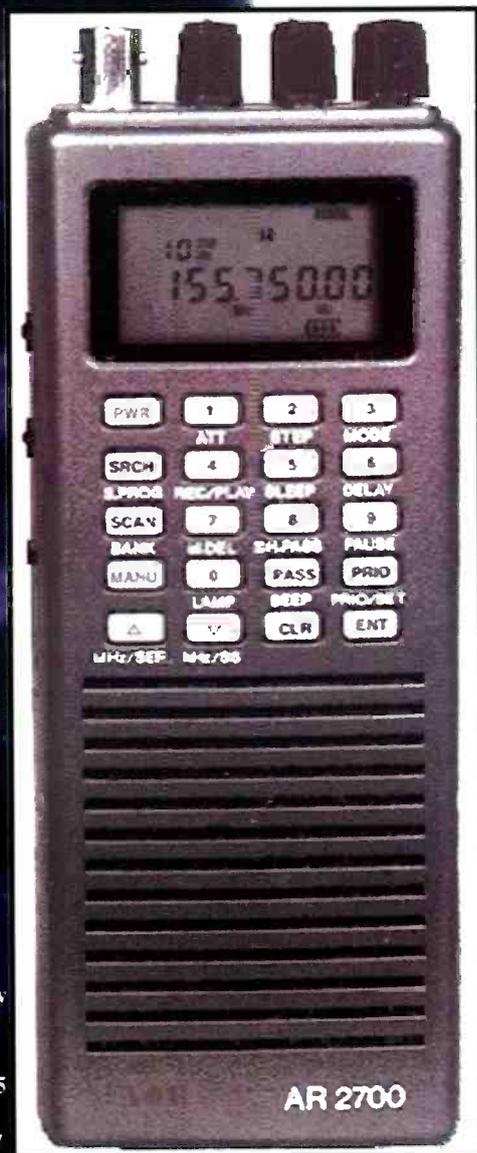
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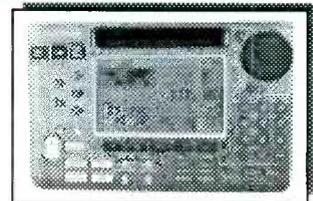
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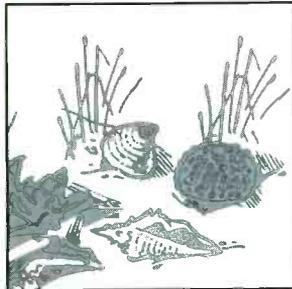
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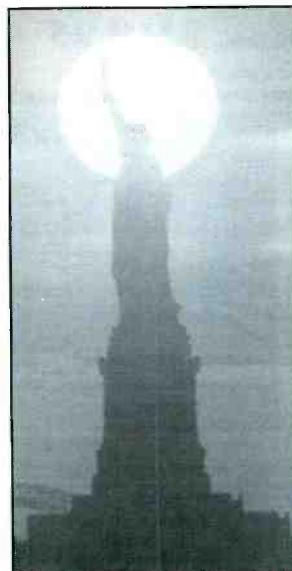
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This month's cover: Beepers are becoming the communications tool of the 1990s. This young woman uses her beeper to keep in touch with the office, her family, and friends, even when she's on the go! Photo by Larry Mulvehill, WB2ZPI.

EDITORIAL STAFF

Tom Kneitel, K2AES/KNY2AB, Editor
Deena Marie Amato, Associate Editor

CONTRIBUTING EDITORS

Gerry L. Dexter, Shortwave Broadcast
Gordon West, WB6NOA, Emergency
Don Schimmel, Utility Communications
Edward Teach, Alternative Radio
Harold A. Ort, Jr., SWL Conf. Coord.
Chuck Gysi, N2DUP, Scanners
Tim Kridel, AM/FM Broadcasts
Capt. William Mauldin, WG4R, Thoughts & Ideas
Donald E. Dickerson, N9CUE, Satellites
Brian Battles, WS10, Amateur Radio
Joe Carr, K4IPV, Antennas
Ted Lisle, KD4EXK, Handi-Chat Editor
Jack Elliott, SSB-734, CB Communications

BUSINESS STAFF

Richard A. Ross, K2MGA, Publisher
Donald R. Allen, N9ALK, Advertising Mgr.
Emily Kreutz, Sales Assistant
John Dorr, K1AR, General Manager
Frank V. Fuzia, Controller
Simon Schatzmann, Circulation Director
Catherine Ross, Circulation Manager
Melissa Nitschke, Operations Manager
Carol Licata, Data Processing
Denise Pyne, Customer Service

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Elizabeth Ryan, Art Director
Barbara Terzo, Associate Art Director
Susan Oliveri, Assistant Art Director
Edmond Pesonen, Electronic Comp. Mgr.
Dorothy Kehrwieler, Production Manager
Emily Kreutz, Assistant Production Manager
Pat Le Blanc, Phototypographer
Hal Keith, Technical Illustrator
Larry Mulvehill, WB2ZPI, Photographer



CQ Communications, Inc.
76 North Broadway
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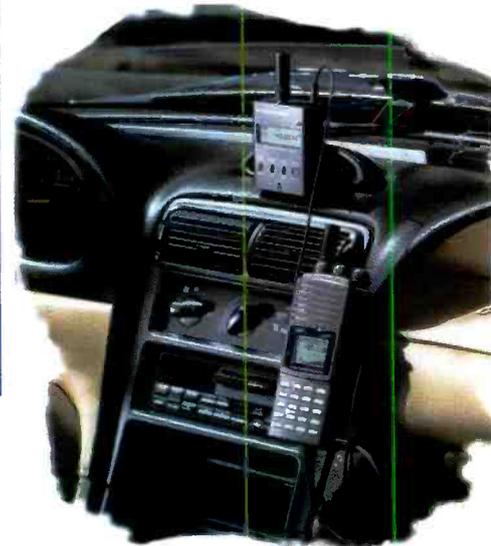
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- Automatically tunes these receivers with Reaction Tune (Pat. Pend.) CI-V receivers (ICOM's R7000, R7100, and R9000), (Pro 2005/2006 equipped with OS456, Pro 2035 equipped with OS535) or AOR models (AR2700 and AR8000).
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At right: Scout shown with CLIPMATE™. A handy windshield mount for Scout, for quick access and visibility.

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Is Everyone With a Radio a Hobbyist?

Recently, a Florida man, described in the hobby media as a "radio hobbyist," was reported as being sued by Motorola for various things, including allegations that he had violated their copyrights. I have seen letters circulating within the hobby from someone advocating his cause that I felt were intended to cause hobbyists to regard the man, a fellow enthusiast, as being unfairly harassed and set upon by a powerful and litigious corporation.

Being a communications hobbyist, you'd tend to be naturally supportive of others who share your interests. Nothing at all the matter with that. This is as it should be.

Over the years, this magazine has received many letters asking for support. I dislike sounding cynical, but right from the very first reading of any extremely sad tale, I begin to wonder if there is more to the story. Has something important been glossed over, minimized, or else completely left out of the version being presented? Sometimes there is more than first meets the eye.

My definition of the monitoring hobby has always been very broad. Persons who

misuse information they intercept don't fit into that definition. Yes, there's a point where people have gone beyond that fuzzy zone and I can't use the word "hobbyist" to describe them. The odd coincidence is that this invariably includes those who have a particularly sad tale of harassment to tell.

You might wonder how anyone knew about their interest in communications in order to harass them. Thought you'd never ask. The man in Florida, for instance, got himself arrested for prowling and trespass. This came about after he had been discovered by police at 4 a.m., rooting around in Motorola's garbage dumpster. The dumpster's padlock had been cut, and the police report alleged that the man ducked down to conceal himself from the officer. When discovered there, at first he said he was looking for parts, then is reported to have told police he was looking for something he had lost there.

The police report also stated that he was using a "police scanner while committing a crime." This was later found not to be anything you or I would call a scanner. It

was a Motorola handheld digital transceiver programmed to operate in the local trunked secure police radio system. Police radio logs verified that transmissions had been traced to his radio.

There is much more to this Florida man's situation, especially relating to Motorola's civil action. I mentioned only a few bits and pieces relevant to his wannabe connection to the monitoring hobby. He was monitoring, wasn't he? He is not a unique example of nightmare so-called "scanner hobbyists."

About five years ago, I received a letter from an attorney in south Florida asking me, as Editor of *POP'COMM*, to appear in court as a witness on behalf of his client. He told me his client was an avid communications hobbyist, a scanner owner and ham operator of many years, who was being ruthlessly persecuted by the government.

The attorney asked me to tell the jury how his client was a member of a wonderful and benign hobby, enjoyed by school children and retirees, men and women, etc. I told the attorney I'd think it over, but first wanted to look at the initial complaint, search warrant, an inventory of items confiscated, and the indictment.

It was after I read through the information that I learned there was strong evidence that this man had turned his home into a busy communications center for contacting inbound drug traffic boats and aircraft. This was not on ham frequencies. There was evidence he was providing the latest local weather and federal agency deployment information needed for safe and secure cargo delivery.

When federal agents raided his home, they confiscated his amateur radio communications equipment, scanners, lots of drugs, and enormous amounts of cash. I decided not to participate in his defense.

In February, 1994, a Texas attorney contacted me to say his 47-year-old client, a scanner hobbyist, had been arrested in Beaumont for "unlawfully possessing a device altered to intercept oral, wire, or electronic communications." He told me this meant the scanner had the cellular bands restored, and it caused him to come under investigation by the FBI. He asked if I would testify on behalf of his client, since it isn't unlawful to own a modified scanner.

What's missing from this picture? Why had his client been singled out? Most scanner listeners aren't arrested because of pursuing their hobby. When I got the documentation, I learned that police had arrested him after receiving a call about a suspicious vehicle and person near a truck

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The subject is described as follows:

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The elderly man interfered with the investigation of a heroin smuggling conspiracy by Pakistani crewmen who attempted to deliver 2 kilograms of heroin on April 21, 1988 on Fort Avenue and Key Highway, Locust Point, Baltimore. The elderly man apparently had a police radio scanner in his station wagon and notified the suspects of police surveillance.

If you have any information, call:

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U.S. CUSTOMS SERVICE

Reward poster concerning a scanner owner who tipped off drug suspects under surveillance. This poster is a few years old.

(Continued on page 83)

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.

DX Deluxe?

What's the DX status of the Spratly Islands? Are they part of Viet-Nam?

Ben Isaacs,
Vancouver, WA

There aren't presently any stations in the oil-rich Spratly Islands, so far as we can learn. They are a true "No Man's Land." China and Viet-Nam did sign an agreement not to go to war over them. However, the Chinese claim they had 400 scholars studying situation for ten

years, and they can prove the islands really belong to them. In the mean time, for several decades, the Spratlys are also being claimed by Brunei, Malaysia, the Philippines, and Taiwan.— Editor.

I'm planning on a visit to Australia soon. That made me wonder about the possibilities of a DXpedition to the Hutt River Province, the independent nation located on the Australian continent. Can a license be obtained for ham operation there?

P.N.A.,
Tulsa, OK

Hutt River Province was founded in 1970 when the owner of a large tract of land on the western coast announced that he had seceded from Australia.

Soon after, Hutt River began issuing its own postage stamps, gold and minor coinage, and other collectibles. This has long been marketed at premium prices to collectors around the world. The gold coins are issued showing face values up to three times that of their metal content. No nation recognizes the Hutt River

Province as a sovereign state. Australia still considers Hutt River as private property within that nation. Therefore, the "coins" are worthless for international trade. The "postage stamps" are useless for mailing letters. Hutt also sells their own sports cards. Maybe, if asked, Hutt River could be convinced to offer a complete line of Amateur Radio licenses.— Editor.

Cordless Monitoring Privacy

With respect to the privacy status of cordless phones, as often mentioned in POP'COMM, I would be in favor of keeping quiet about anything overheard unless there was pending violence being monitored. Your axiom was prudent, "He who eavesdrops with naught to say, lives to listen another day."

Why do we monitor at all? Several reasons. First, perhaps in conjunction with our jobs, such as police, fire, etc. Or, a person who is a dedicated hobbyist might want to be abreast of everything going on in the community and world, as it is happening. On the other hand, cordless and cellular listening is more in the line of collecting intelligence for one's own purposes.

What is done with that information becomes the moral question. My opinion is it's acceptable to use it for one's self-benefit, so long as it doesn't hurt anyone else. For example: You overhear your landlord talking to a real estate broker about selling your building. It might be a good idea to begin looking for a new place to live. In an actual case, a young woman who lives in my building was on a cordless phone telling her mother that she was lonely and wished she could meet someone nice.

Later, I happened to meet this woman a few times in the building's lobby. Then we went out for a drink. I felt I had a good friend. After this, I heard her on the cordless speaking about some rather unsavory things. I decided that our friendship was not a good idea, and that's when I put the brakes on.

I do not feel this was unethical. I didn't give out the woman's name and address to those who might cause her problems. Collecting personal intelligence on a discrete level can save time and effort, and can help you to get a handle on people with whom you are dealing. By monitoring cellphones and cordless phones, I have learned a lot about people and how they think and react.

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The Pager Insider

Did You Know These Facts?

BY DANNY BURNSTEIN

This report is presented to answer some of the most asked questions about pager systems. It is primarily focused on the U.S. and Canadian arrangements, but other countries are not forgotten.

1) What is a pager, anyway?

As usually described, a pager is a portable unit, generally about half the size of an audio cassette box, which can be signaled to send a one-way message to the pager owner.

2) What types of messages?

The most basic early units, usually called beepers, simply gave a tone alert. This was a signal to the wearer to, for example, call the answering service.

The next step: units that display numbers. While the most common use is to send it the phone number you want the person to call, you can, of course, add code numbers to mean anything else you want.

For example, the number xxx-yyyy-1 might mean to call the "xxx-yyyy" number at your leisure. Xxx-yyyy-9 could mean call the sender ASAP.

The most recent units, called alpha-numerics, display complete written messages. For example, the pager could show the message: "please call home, you have a letter from the IRS." There are also voice pagers that let you speak into the phone and have it come out the person's pager. These are less common. They are especially well-suited to emergency groups such as volunteer fire departments.

3) How are messages sent to the pager?

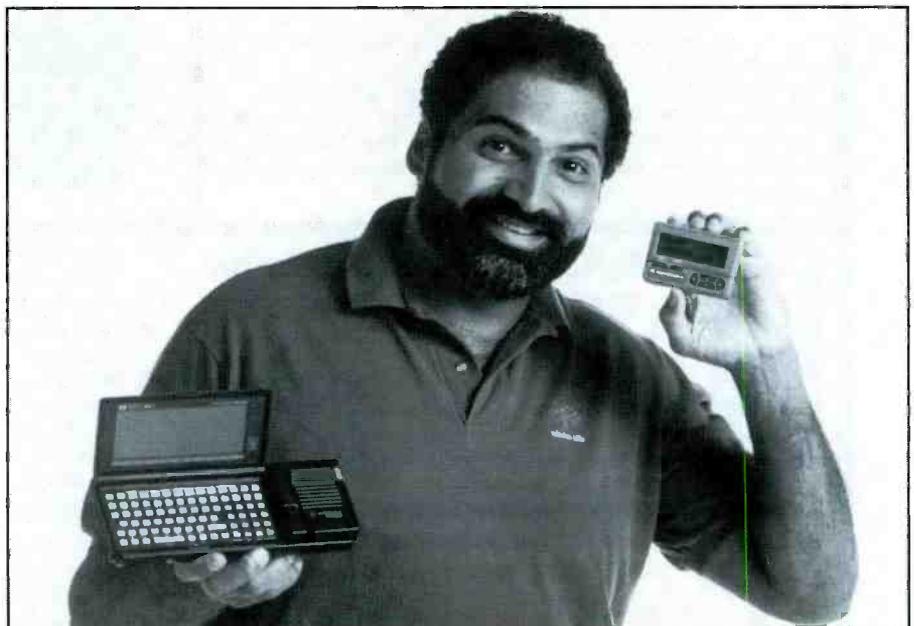
By radio. Well, it's a bit more complicated than that. Let's take a look at how a pager actually works: The pager is a small sized radio receiver that constantly monitors a specific radio frequency dedicated to pager use. It remains silent until it 'hears' a specific ID string which tells it to, in effect, turn on, and then listen up for, and display, a forthcoming message (again, that could be a numeric or other string).

This ID is called (in the U.S.) a CAP-CODE. It has *nothing* to do with the phone number you call or the ID you give to the page operator (see below). Rather, the ID you call or punch in is merely "Column A" in a lookup table; the pager radio service uses it to get the "capcode," which is in "Column B."

So the key point is that the pager company radio transmitter is constantly send-



Motorola EMBARC WBN Sports service to be received on (left to right) a "Sports to Go" pager; Non-Stop-Sports on a Compaq Aero portable PC; and Non-Stop-Sports on an HP100LX palmtop PC. (Photo courtesy of Hi Tech Communications.)



A closer look at two of Motorola's EMBARC WBN Sports service units, as displayed by Franco Harris. At the left, Non-Stop Sports on an HP100LX palmtop PC, while on the right, a "Sports to Go" pager. (Photo courtesy of Hi Tech Communications.)

ing out pages, and your specific unit will only activate when it hears its ID/CAP-CODE over the air.

4) How do I send out the message?

This depends on your pager vendor. Let's take the most common examples:

a) Alert tone only (the old style). You call up a phone number assigned to the pager. You'll hear some ringing, then a signal tone. At that point you hang up.

Shortly afterwards the pager transmitter will send out the individual unit's "capcode" and it will go off.

b) Touch tone entry. You will call a unique phone number dedicated to the specific pager. It will ring, then you'll hear a signal tone. At that point you punch in, using touch tone, the number you want displayed on the pager.

A few seconds later the transmitter will kick out the pager's "capcode," followed



Real-time Dow Jones financial news and Telerate stock price quotes come to subscribers nationally over this alphanumeric pager. Called FX Alert, the service is supplied by DocuPro, Inc., ← through a link with Paging Network (PageNet).

Grayson's "PageThru" is a synthesized 900 MHz paging repeater. It guarantees constant connections for paging subscribers by extending service areas previously on the fringe of signal coverage. Grayson Electronics, a Division of Allen Telecom Group, Inc., is based in Lynchburg, VA. ↓



by the numbers you punched in. Then the pager will give its alert tone, the person will read it, and call you back.

(Note that there is a variation on this in which a company uses a single dial-up phone number. You call it up, then punch in the pager's ID number, and continue as above. This is commonly used by pager companies which may have a 1-800 number to access their paging network.)

c) Alpha-numeric: With this one there are various ways of getting the message to the system.

i) Via an operator: The pager company will have you dial up their operator. When they answer, you give them the pager ID number and the message. They'll type it into the computer and shortly afterwards the transmitter will send out the "capcode" and the message.

ii) Using your computer: Most pager companies with alphanumeric have a dial-up number you can call yourself. Some of these will work with regular telecomm programs, while others require proprietary software.

The most common method is to have your computer dial up the number, then you type in the pager ID, followed by the message. Again, a moment later, the system will transmit it over the air, etc. (There are also various software packages that automate some of this.)

iii) Special terminals: Because of the popularity of this type of system, there are various stand-alone terminals specifically designed for this purpose. The most common one is Motorola's *Alphamate* and it automates many of the functions. It's basically a decent keyboard with a two line display, and is preprogrammed with the phone number of the company, etc.

5) How large/long a message can I send?

Answer: This depends on a couple of key items. This is a concern with an alphanumeric unit, although it has some relevance with numeric ones (i.e., if you're giv-

ing a long distance number, extension, and code...).

a) The design of your sending computer or pre-programmed terminal. For example, if you get an alphamate, chances are it will be preset to 80 characters. (You can reset it, provided that "b" and "c" below work out.)

b) The design of the pager transmitter system. It will place a limit on the maximum length message it will send over the air. This can vary dramatically. Generally (with a big YMMV) you'll get at least 80 characters on an alphanumeric. Some systems allow up to 225 alpha characters.

c) Design of the pager. Especially a problem with alphanumerics. Many of the ones on the market will only hold 80 characters; anything above that will be lost.

6) My company has given us pagers, and I notice that I have both an individual ID and a "group" number. When we page out to the group, everyone's unit goes off. How does this work?

Remember that a pager is basically a radio receiver that is constantly monitoring for its "capcode." You can get pagers which monitor more than one ID. In this case (which is quite common) your personal "capcode" might be yyyy, while your boss's might be yyzz. In addition, both pagers will be listening for the "capcode" zzzz.

When zzzz is detected, all the pagers with that "capcode" will go off.

It's also possible that the paging company's system is programmed that anytime someone calls in asking for the group ID it will translate it into separate sequential messages going to each ID. (See the section on news services.)

7) I keep hearing about sports or news services available by pager. How do they work?

Pagers work by constantly monitoring the radio channel for their "capcode." If you have ten pagers, a hundred, or a thou-

sand, all with the same "capcode," they will all go off at the same time.

The sports news company may have someone monitor the news wires for stories of interest. At that point, they'll page out using the group "capcode." The pager company sends out one message that gets displayed by all subscribers.

Note that this can also be done by having the company computer page out sequentially to each individual subscriber. While there are some software tricks in the paging protocols which reduce the overhead slightly, so, for example, sending 500 pages does not quite take 500 times as long as a single one, it does add a great deal of time. It becomes a trade off between convenience, cost, radio-air time, and security.

8) If I find a sports-news pager on the sidewalk can I use it for free?

Umm, kind of. As long as the company providing the service keeps using the same group code, your pager will continue to receive the messages. But the individual pager ID will probably be changed immediately so you won't be able to use it for your personal messages.

Note also that some pagers do have the ability to be turned into a lump of clay over the air. Very few systems have implemented this security feature, but it is there.

9) I've found a pager on the sidewalk and would like to use it. What can I do?

Not much. Keep in mind that you need an account with the paging company for them to send out the radio signal. So unless you keep paying them, the pager will soon become a nifty paperweight.

You might as well turn it in for the reward...

10) Can I listen in/monitor pager channels?

You can read elsewhere in this month's *POP'COMM* how to monitor and decode paging signals. Remember:

a) Paging companies probably don't appreciate their signals being intercepted.

b) You don't need a decode to monitor voice pagers, although the ECPA declares voice pagers illegal to monitor. Any scanner can easily copy voice pager signals. Digital (non-voice) pagers aren't covered under the ECPA.

11) I have a pager for which I'm paying big bucks each month. I miss many pages since I'm in the subway

a lot. What can I do about this?

There are a couple of things:

a) Some of the pager companies will repeat messages on request. Basically you call up their phone number, punch in a security code, then go through a menu which tells them to resend the last, say, five hours worth of messages.

b) You can get a second pager unit cloned identically to the first. Leave this one at home or in your office. When you get back you can compare its messages to the

one on your belt. The messages will be a few hours old, but at least you'll be getting them. (While most paging companies will be quite reluctant to clone your pager for you, there are many third parties which offer this service.)

12) What are the prices/services offered?

These vary dramatically by area and company. Unfortunately there is no central database keeping records on this.

Generally the following factors determine what you'll be paying:

- a) How honest the company is.
- b) Which type of pager and service you get. Again, the most common are numeric (cheaper) and alpha-numeric (more expensive).
- c) Level of usage. You may get, say, 25 free messages per month and then pay \$0.25 for each additional.
- d) Whether you own or are leasing the pager.
- e) Insurance, etc.
- f) Area of coverage. Smaller area is less expensive.

13) Speaking of coverage, what's this about satellite nationwide paging?

Well, it's not quite what you may be thinking. It's *not* a single super satellite covering the nation. Rather, what's done is: You call up the paging company. It then signals transmitters in the top 500 or so cities to send out your "capcode." Shortly afterwards you get the message. Note that you are *not* receiving a satellite's direct transmission.

Another technique is to have a multi-frequency pager which listens to different frequencies around the country (quite often in fact, the SCA channel on standard FM broadcasts).

14) What's in the pipeline?

Two key features are slowly filtering down:

a) Much more pager memory/longer messages. Most pagers are severely limited in the amount of material they can hold, with a typical maximum being about 20 messages. Units with much larger memories, or even better, units that are hooked into palmtop or laptop computers, are making it to market.

b) Two-way or interactive communications: In its simplest form this allows the pager to verify reception to the transmitter. Also on the way is complete two-way communication which would basically be wireless e-mail. These systems are still a bit limited, but are rapidly gaining footholds in the industry and should soon be consumer level. Take a look, for example, at what the Fedex folk carry.

Hope this helps. Updates and suggestions should be sent to the author at: danny-b@panix.com



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Aug. 21, 1987

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Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #670529

We have completed relative gain measurements of your model 1000 antenna using the K-40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below.

| FREQUENCY (MHZ) | RELATIVE GAIN (dB) | RELATIVE POWER GAIN (%) |
|-----------------|--------------------|-------------------------|
| 26.965 | 1.30 | 35 |
| 27.015 | 1.30 | 35 |
| 27.065 | 1.45 | 40 |
| 27.115 | 1.50 | 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 |
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Decoding Non-Voice Pager Messages

Digital Paging Signals Offer New Monitoring Vistas

BY TOM KNEITEL, K2AES, EDITOR

Many scanner owners have realized that people are prone to sending some very weird messages via voice beepers. In the overall picture, voice pagers comprise just a small part of the huge beeper scene. Most beepers are non-voice digital types, and those signals sound like rapid-fire coffee percolators or strange gurgles when tuned in on a scanner.

I always wondered what sneaky little messages were being flashed out over the airwaves and hidden in those incomprehensible digital *blurbles* and rumbling sounds. Curiosity eventually got the best of me. I had to find out more by checking into what these non-voice signals were all about, and how to read the hidden messages.

Non-Voice Basics

I learned that the digital paging signals I hear on my scanner are often a sequential mix combining several different paging transmission modes or formats. The most commonly encountered digital paging modes are known as GOLAY, POCSAG, and Super POCSAG. Super POCSAG is simply a sped-up method sending POCSAG. Whereas POCSAG operates at a rate of 512 bits per second, Super POCSAG transmits at 1200 bps. Intermixed with these signals there may also be DTMF and other sequential tones.

Transmissions are sent out as data bursts, each containing a large number of messages addressed to specific beepers. Beepers are each addressed by means of an individually assigned six-digit serial number, and will respond only to messages specifically meant for its use.

The digital paging messages may be numeric-only, or they can be alpha-numeric. Numeric-only messages, which are the ones most often observed, contain relatively little data, and therefore require only a brief moment of transmission time during a data burst. Numeric-only pager messages may contain a call-back number, or other digits such as extension numbers, parts or authorization numbers, or code numbers. Some have a call-back number followed by "-911," "-R," or "-UR," indicating "urgent."

Phone numbers are usually sent in their familiar formats, but not always. When sent without the usual trimmings, and with ex-



Uniden's XLT is called a numeric display pager because it is designed to deliver only messages consisting of strings of digits, such as telephone numbers.

erations, personal, health care related, repair service, humorous, sports scores, weather information, very intimate, apparent drug related, and also coded alpha-numeric. Alpha-numeric messages contain more data bits, and therefore take longer to send than numeric-only messages.

Both numeric-only and alpha-numeric messages may be used for simply causing a pager to *beep*, without any message at all. Plenty of these transmissions are sent, too. Data bursts contain a mix of numeric-only and alpha-numeric messages, each showing the six-digit serial number of the pager to which it is addressed.

The Intercept Special

As it turns out there's a commercially available decoder that reads out digital pager messages, the Universal M-400 Decoder. This self-contained unit, selling for about \$400, is within reach of hobbyists. It operates from 12 VDC, or can be operated from its accessory AC adapter.

The M-400 is a boon to the serious eavesdropper. It can decode GOLAY, POCSAG, and Super POCSAG digital paging modes. The unit also decodes VHF aero ACARS messages, DTMF frequencies, plus CTCSS and DCS codes. Al-

tension or other code numerals added, a phone number isn't easily recognized at first. At first glance, a simple phone number like 1-800-232-5673, Ext. 305, looks truly cryptic when it comes up on the display as: 18002325673-305.

Alpha-numeric messages sometimes contain only a call-back number or other series of digits, but usually they spell out an entire text message. Types of message categories intercepted include (not listed in any particular order): general business, law enforcement operations, news media op-



Alpha pagers, like these Motorola Memo Express units, are sophisticated devices that can deliver messages consisting of complete texts.



↑ Rear deck of the Universal M-400 Decoder. It's quite easy to connect and operate.

← The Universal M-400 Decoder connects to a scanner and reads out the text of the most commonly used digital pager modes.

though this report isn't concerned with the other things the Universal M-400 can do, take note that it also decodes modes such as Baudot RTTY, ASCII, SITOR A and B, FEC-A, SWED-ARQ, and FAX.

The M-400 operated in all modes, straight from the box, with PRO-2035 and PRO-2006 scanners by simply plugging it into the "record out" connector jack at the back of each scanner. Presumably, it should do likewise with any quality scanner having a similar low-level audio output source available. Modification instructions are provided in case you need to access your scanner's detector output. Alternately, the M-400 will operate from a scanner's speaker output. This is inconvenient since it forces you to unnecessarily listen to the annoying data bursts while reading the mail, and also may be unsuitable for obtaining accurate CTCSS or DCS readings.

No shortage of digital paging signals to monitor, they're all over the place. Listen for yourself, the following bands are loaded: 35.20 to 35.68 MHz, 43.20 to 43.68 MHz, 152.03 to 152.84 MHz, 453.025 to 453.175 MHz, 454.025 to 454.65 MHz, 462.80 to 462.925 MHz, and 929.0125 to 931.9875 MHz. Also check out: 154.625, 157.45, 157.74, 158.10, 158.46, 158.70, and 465.00 MHz. All you need is a couple of lively frequencies to keep you occupied around the clock, since pagers run continually.

Recently changed FCC regs may eventually produce non-voice paging signals in the 200 to 222 MHz band for the first time.

In Operation

Data is displayed on the M-400 via a two-line LCD displaying 20 characters on each line. The bottom line completely fills first, then scrolls up to the top line as new data is received. The M-400's display default is set at two seconds before each line scrolls. This scroll delay rate can be user-changed from instantaneous to a delay of five seconds. The M-400 also has a DB-25 parallel printer output port. The buffer of the M-400 can hold up to 8,000 received characters.

Previously received text may also be retrieved and reviewed by using the UP and DOWN scroll buttons.

Each data burst may last only a few seconds. Since the bursts keep coming every couple of seconds, the data pumps out in large dollops. When data is being received, a green panel light comes on. After the data light goes out, the M-400 takes a while to run out all information stored in its buffer from that one burst. With each new burst, more data is stored. Attempting to read this data stream any faster than the unit's default rate is difficult; slowing it down too much causes the buffer to fill up.

The M-400 is designed to be set for reception of only one mode specific paging format at a time. If you have it tuned to a station sending out both POCSAG and Super POCSAG messages, you'll have to decide which one of the two you want to decode since the M-400 doesn't automatically switch formats. This must be done manually by the operator. Just as well, since it isn't something easily done in the midst of a brief data burst.

The M-400 prefers to work with strong, noise-free paging signals, and they're easy to find. An input gain control on the M-400 shows the proper adjustment for the audio level, using a yellow panel light as a setting guide. Tune in a digital paging signal on your scanner, then step through the M-400's three paging format modes to see which one(s) will activate the green data indicator light. Those that cause it to light are formats in use on that frequency. You push a *Function* start-up button for any of the active formats, and can immediately read digital paging traffic. That's all there is to operating the M-400. Very simple!

In my area, most paging stations appear to use both POCSAG combined with Super POCSAG. In these formats, the six-digit pager address numbers are transmitted followed by one of three things. When followed by "=B," it means the type of signal was a *beep* only. If followed by a "#," it reflects a numeric message. When followed by "=A," it's an alpha-numeric message.

GOLAY traffic, in my own area, has been less often encountered. If only the address numbers are sent, then the page is a *beep*. If the address numbers are followed by an equal symbol (=), it signifies a numeric page. A colon (:) following the pager's numerical address indicates an alpha-numeric message.

The amount of textual traffic sent to non-voice pagers is enormous. Some of the messages are absolutely amazing, even hard to believe. Well, they talk about weird stuff on cellphones, so why not send it out as messages on pagers? Whatever, the M-400 brings it through in all of its glory. The M-400 certainly answers any curiosity you may have about such hidden traffic.

It should be mentioned that reception of digital pagers modes by private individuals is possibly not allowed in some areas. You'd want to with check on this with local authorities in the event you intend to monitor in a given community. The misuse, recording, publication, or divulging of the contents of specific transmissions would definitely be a violation of the law everywhere.

Persons with a PC and a VGA monitor can use a product related to the M-400 in order to to decode POCSAG and GOLAY, plus numerous other non-paging digital systems used in comms. This is the Universal M-1200 Decoder Card, which comes from the same company as the M-400.

The M-400 is from Universal Radio, Inc., 6830 Americana Pkwy., Reynoldsburg, OH 43068. Phone: (614) 866-4267. ■

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Movin' On Up!

Try Scanning These Federal Agency 900 MHz Relay Stations

BY TOM KNEITEL, K2AES

While sorting through frequency-assignment data in FCC records, some interesting federal agency stations popped up. This information related to point-to-point communications in the 932.5 to 935.0 MHz and 941.5 to 944.0 MHz government and non-government fixed service bands.

Although the specific federal agencies were not identified, FCC records indicated that the stations are authorized as shown. Even though a great many federal stations were listed, most

were shown as utilizing non-voice modes. The ones seen here were indicated as using standard NFM mode, such as could be received on standard scanners covering these frequencies. No indication was provided regarding activity status, or if transmission were sent scrambled on in the car.

In all cases, the transmissions are beamed to (aimed at) specific fixed receiving points (indicated in the far right column of our list) using highly directional parabolic antennas. What

this means is that a scanner would need to be directly in or close to the signal's directed path in order for it to be monitored.

Our guess is that at least some of these transmitters may be related to FAA operations. The transmitters in Idaho are most likely connected with Department of Energy operations.

If anybody discovers activity from these transmitters, please let us know and we'll share the information with our other readers. ■

Federal Agency 900 MHz P-T-P Voice

| | | | |
|--------------------|--------------|-------|--------------------|
| CA Black Mountain | 943.8875 MHz | 1 kW | To Fresno |
| CA Mount Tamalpais | 943.8875 MHz | 1 kW | To San Francisco |
| CA Sacramento | 934.8875 MHz | 1 kW | To Mount Eldorado |
| CO Squaw Mountain | 941.5625 MHz | 1 kW | To Denver |
| CO Squaw Mountain | 943.8875 MHz | 1 kW | To Denver |
| HI Honolulu | 934.8875 MHz | 1 kW | To Waianae |
| ID Grassy Butte | 934.8625 MHz | 10 kW | To Beacon Butte |
| ID Idaho Falls | 932.5625 MHz | 10 kW | To Howe Peak |
| ID Idaho Falls | 932.5625 MHz | 10 kW | To Beacon Butte |
| ID Idaho Falls | 934.8625 MHz | 10 kW | To Beacon Butte |
| ID Idaho Falls | 934.9125 MHz | 10 kW | To Howe Peak |
| ID Indian Meadows | 932.6625 MHz | 10 kW | To Howe Peak |
| ID INEL | 934.9125 MHz | 10 kW | To Howe Peak |
| NM Albuquerque | 932.5125 MHz | 1 kW | To Albuquerque |
| NM Albuquerque | 934.8875 MHz | 1 kW | To Sandia Crest |
| NM Albuquerque | 941.5125 MHz | 1 kW | To Albuquerque |
| NM San Luis | 932.5625 MHz | 1 kW | To Antelope Wells |
| NM Sandia Crest | 943.8875 MHz | 1 kW | To Albuquerque |
| NV Reno | 934.8875 MHz | 1 kW | To Slide Mountain |
| PR Hato Rey | 932.5375 MHz | 1 kW | To Mount Atalaya |
| PR Mount Atalaya | 941.5375 MHz | 1 kW | To Hato Rey |
| PR San Juan | 932.5875 MHz | 1 kW | To San Juan |
| PR San Juan | 941.5875 MHz | 1 kW | To San Juan |
| PR San Juan | 943.8875 MHz | 1 kW | To San Juan |
| TX Presidio | 941.5625 MHz | 1 kW | To Chinati Peak |
| UT Salt Lake City | 934.8875 MHz | 1 kW | To Farnsworth Peak |

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to be out in the elements. This antenna is a must if you want the best possible results! Also available as Diamond D-130 w/PL-259 connector...\$99



Sony ICF-SW100S \$349

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Selected English Language Broadcasts

Summer—1995

BY GERRY L. DEXTER

There are hundreds of English language broadcasts aired every day on shortwave. This is a representative listing; it 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.

| Time | Country | Frequency | Time | Country | Frequency |
|---------------------|------------------------------|---|---------------------------------------|---|-----------|
| 0000: | Radio Australia | 15365, 17795 | (30) Radio Portugal | 9570, 9705, 11840 | |
| | Radio China Int'l | 9710, 11715 | Voice of Free China, Taiwan | 5950, 9680 | |
| | Voice of Russia | 7105, 7165 | | | |
| | Radio Bulgaria | 7205, 9700 | 0300: China Radio Int'l | 9690, 9710, 11715 | |
| | (30) Radio Netherlands | 6020, 6185, 9840 | (40) Voice of Greece | 7448, 9420, 9935 | |
| | (30) BBC | 5975, 6175, 7335 | Radio New Zealand Int'l | 15115 | |
| | (30) VOIRI, Iran | 7100, 9022, 11790 | Monitor Radio | 5850, 9455 | |
| | (50) RAI, Italy | 9645, 11800 | Radio Prague, Czech Rep. | 5930, 7345 | |
| | Radio Lithuania | 7150 | Deutsche Welle, Germany | 6185, 9615, 9640, 11750 | |
| | REE, Spain | 9540 | Radio Japan | 5960, 9680 | |
| | (30) Radio Thailand | 11905 | Voice of Turkey | 9445 | |
| 0100: | (30) Radio Austria Int'l | 9655 | (30) Radio Sweden | 7120, 9850 | |
| | Slovak Radio | 59300, 7300, 9440 | ZBC, Zimbabwe | 3306, 3396, 4828 | |
| | (30) Voice of Greece | 7448, 9420, 9935 | HRVC, Honduras | 4820 | |
| | (Sun) R. Norway | 7480, 9560 | Channel Africa, South Africa | 5955, 7185, 9585 | |
| | HCJB, Ecuador | 9745 | | | |
| | R. Prague, Czech Rep. | 7345, 9405 | 0400: China Radio Int'l | 9730 | |
| | Deutsche Welle, Germany | 6040, 6085, 6145, 9555, 9640, 11740, 11865 | Voice of Russia | 5905, 5930, 5940, 7105, 7165, 7175, 7180, 7270, 7345, 9850, 9895, 12050 | |
| | (30) Radio Budapest, Hungary | 6010, 9835, 11910 | (30) Radio Netherlands | 6165, 9590 | |
| | Radio Japan | 9680 | Kol Israel | 7465, 9435 | |
| | (30) Radio Tirana, Albania | 9580, 11840 | Radio Romania Int'l | 5990, 6155, 9510, 9570, 11940 | |
| | Radio Havana Cuba | 6000 | Swiss Radio Int'l | 6135, 9885, 9905 | |
| Swiss Radio Int'l | 5885, 6135, 9885, 9905 | | | | |
| Radio Ukraine Int'l | 7405 | | | | |
| 0200: | (30) Radio Austria Int'l | 9655 | (30) Radio Austria Int'l | 6015 | |
| | Radio Canada Int'l | 6120, 9755, 11845 | (Sun) Radio Norway | 5905 | |
| | RAE, Argentina | 11710 | Radio Bulgaria | 7335, 9700 | |
| | Deutsche Welle, Germany | 7285, 9615, 9640, 9690, 11945, 11965, 12045 | Deutsche Welle, Germany | 6185, 9515, 11705 | |
| | Radio Romania Int'l | 5960, 6155, 9510, 9570, 11940 | Voice of Nigeria | 7255 | |
| | (30) Radio Budapest, Hungary | 6010, 9835, 11910 | REE, Spain | 9540 | |
| | (30) Radio Sweden | 7120, 9850 | | | |
| | (50) Vatican Radio | 6095, 7305 | 0600: (30) Radio Austria Int'l | 6015 | |
| | Radio Cairo, Egypt | 9475 | Voice of Russia | 5905, 5930, 7175, 7270, 7345, 9850, 9895, 12050 | |
| | | | Radio New Zealand Int'l | 11900 | |

| Time | Country | Frequency |
|--------------|---|---------------------------------|
| | HCJB, Ecuador | 9745 |
| | Radio Prague, Czech Rep. | 7345, 15640 |
| | ELWA, Liberia | 4760 |
| | Voice of the Mediterranean, Malta | 9765 |
| | Trans World Radio, Monaco | 7115 |
| | Voice of America | 3980, 5995, 6040, 6060, 6140 |
| | Vatican Radio | 4010, 6245 |
| | GBC, Ghana | 4915 |
| | Radio Kiribati | 9825 |
| 0700: | Radio For Peace Int'l, Costa Rica | 7384, 9400USB |
| | CHNX, Canada | 6130 |
| | (03) Croatian Radio | 5920, 7370, 9830, 13830 |
| | Voice of Free China, Taiwan | 5950 |
| | Wings of Hope, Lebanon | 11530 |
| 0800: | Radio Australia | 6020, 9580, 9860 |
| | HCJB, Ecuador | 6135, 6205 |
| | KNLS, Alaska | 9615 |
| | SLBC, Solomon Islands | 5020 9545 |
| | CFRX, Canada | 6070 |
| 0900: | Radio New Zealand Int'l | 9700 |
| | AWR, Guam | 9530 |
| | (Sun/30) Araks Radio Agency/ R. Yerevan, Armenia | 15275, 15375 |
| | Radio One, Singapore | 5010, 5052, 11940 |
| 1000: | Radio Vlaanderen Int'l, Belgium | 6035, 15510, 17595 |
| | Kol Israel | 15640, 15650, 17575 |
| | Voice of Vietnam | 9840, 12020, 15010 |
| | (30) Radio Korea, S. Korea | 11715 |
| | FEBC, Philippines | 9800, 11685 |
| 1100: | (30) Radio Austria Int'l | 13730 |
| | Radio Australia | 9580, 9860 |
| | HCJB, Ecuador | 12005 |
| | AWR, Costa Rica | 13750 |
| | Radio Pyongyang, N. Korea | 6576, 9977, 11335 |
| | Voice of Vietnam | 7285, 9730v |
| | Radio Pakistan | 15625, 17900 |
| | (20) Vatican Radio | 6245, 11740, 15210, 17585 |
| | (30) Radio Korea, S. Korea | 9650 |
| 1200: | Radio Australia | 11800 |
| | Radiobras, Brazil | 15445 |
| | Radio Bangladesh | 9548, 13615 |
| | (30) Voice of Vietnam | 9840 or 12020 or 15010 |
| | BBC | 6195, 9515, 11865 |
| | (irreg) R. Iraq Int'l | 13680 |
| | Radio Jordan | 9560 |
| | Radio France Int'l | 11615, 13625, 15530 |
| 1300: | Polish Radio Warsaw | 7145, 7270, 9525, 11815 |
| | Radio Canada Int'l | 11855, 17820 |
| | (Sun) Radio Norway | 9590, 11850 |
| | R. Vlaanderen Int'l, Belgium | 13670 |
| | R. Pyongyang, N. Korea | 9345, 9640, 11740, 13760, 15230 |
| | KNLS, Alaska | 7365 |
| | (30) Voice of Vietnam | 9840, 12020 or 15010 |
| | (03) Croatian Radio | 5920, 9830, 13640, 13830 |
| 1400: | China Radio Int'l | 7405 |
| | (30) Radio Finland Int'l | 15400, 17740 |
| | Voice of the Mediterranean | 11925 |
| | Radio France Int'l | 12030, 15405, 17560 |
| | Radio Jordan | 9560 |
| | All India Radio | 7412, 9950 |
| | (Sun) RTV Morocco | 17595 |
| 1500: | (30) Radio Finland | 15400, 17740 |
| | HCJB, Ecuador | 15115 |
| | Radio Jordan | 9560 |
| | FEBA, Seychelles | 9810 |

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- FEC-S * FEC1000 Simplex
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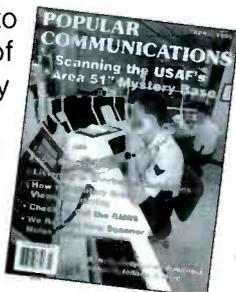
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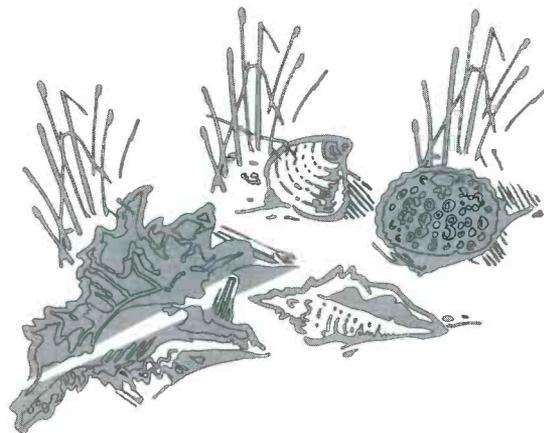
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| Time | Country | Frequency |
|--------------|--|---|
| | Polish Radio Warsaw | 7285, 9525, 11840 |
| | Radio Ethiopia | 9560 |
| 1600: | Monitor Radio | 9355, 17510, 21640 |
| | (Sun) Radio Norway | 11850 |
| | R. Prague, Czech Rep. | 5930, 17485 |
| | UAE Radio | 13675, 15320, 15395 |
| | Radio France Int'l | 11700, 11975, 12015, 15530, 17795 |
| | BSKSA | 9705, 9720 |
| 1700: | Radio For Peace Int'l | 6200, 15050 |
| | All India Radio | 7412, 9950, 11620 |
| | Radio Pakistan | 7485, 11570 |
| 1800: | Radiobras, Brazil | 15265 |
| | Radio Algiers, Algeria | 11715 |
| | Radio Georgia, Georgia Rep | 11805 |
| | Radio Kuwait | 11990 |
| | RAE, Argentina | 15345 |
| 1900: | HCJB, Ecuador | 15490 |
| | RAE, Argentina | 15345 |
| | AWR, Costa Rica | 13750 |
| | WRMI, USA | 9955 |
| | (30) VOIRI, Iran | 9022, 11965 |
| 2000: | Radio Kuwait | 11990 |
| | (05) Radio Damascus, Syria | 12085, 15095 |
| | Radio Nacional, Angola | 9535 |
| | (30) R. Finland | 6120, 9730, 11755 |
| 2100: | Radio Havana Cuba | 11720 |
| | All India Radio | 7412, 9950, 11620 |
| | (30) R. Dnestr Int'l, Modavia | 9620 |
| | (10) Radio Damascus, Syria | 12085, 15095 |
| | BBC | 5975 |
| 2200: | Radio Bulgaria | 7105, 9700 |
| | UAE Radio, Abu Dhabi | 9605, 9770, 11885 |
| | Radio Yugoslavia | 6100 |
| | Radio Canada Int'l | 5960, 9755, 11895, 13670, 13740, 15305 |
| 2300: | AWR, Costa Rica | 5030, 6150, 7375, 9725, 13750 |
| | Radio Canada Int'l | 5960, 9755 |
| | (30) Radio Netherlands | 6020, 6165, 9840 |
| | Radio Vlaanderen Int'l, Belgium | 9925 |
| | (30) Araks Radio Agency/ Radio Yerevan, Armenia | 9685, 11920, 11970 |
| | Radio Pyongyang, N. Korea | 11700, 13650 |
| | Voice of Turkey | 9445 |
| | Radio Bulgaria | 9700, 11720 |



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CB/GMRS Radios

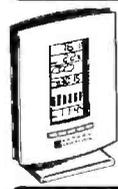


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Radio As it Was

Training Licensed Commercial Radio Operators

BY RONALD R. THOMAS

It was the best of times, and it was the worst of times. It was the Great Depression of the 1930's, and it was the golden age of radio.

Being a licensed commercial radio operator in the 1930's gave a man a chance for a job in a high-tech, glamour industry. It also offered the possibility for travel and adventure. It was the type of job sought after by many, but one that required specialized training and licensing.

Licensed Commercial Radio Operators

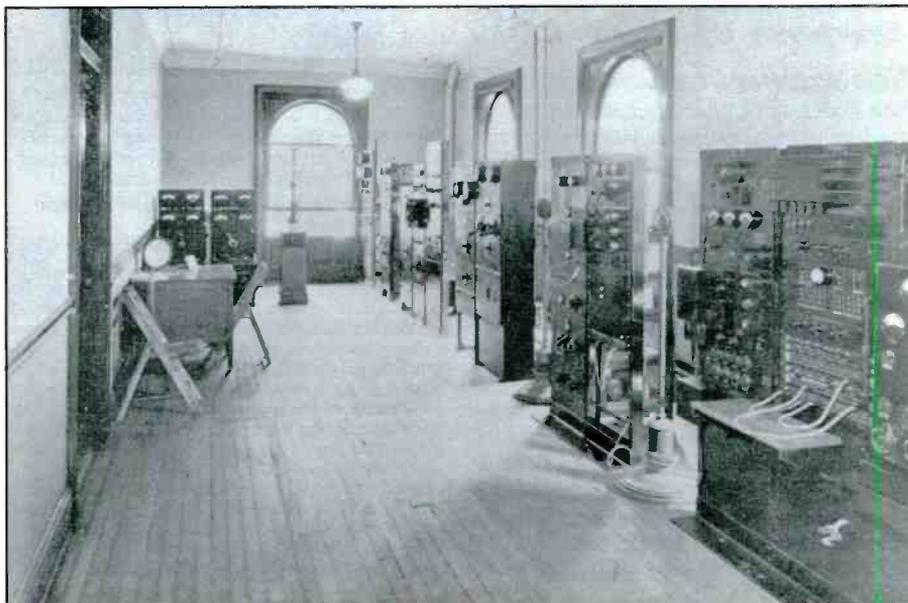
The requirement for licensed commercial radio operators existed by Federal law. In part, the law existed to address the U.S. Government obligation under international radio treaties and conventions. The law also existed because of technical realities that included the fact that radio equipment in the 1930's was complex to operate, frequency stability could be a problem, and International Morse Code was widely used for long distance communications. All of these technical and legal factors helped to generate the need for radio operators. The licensing requirement ensured that radio operators met certain minimal standards of technical and operational competence.

In the U.S., the "tickets to ride" were the First Class Commercial Radiotelephone and the Second Class Commercial Radiotelegraph Operator's licenses. Both licenses required passing a written theory test. In addition, the radiotelegraph license required passing a sending and receiving test in International Morse Code. Actually, the term operator's license was somewhat of a misnomer since operators also frequently performed maintenance and installation work.

Training

By the mid-1930's radio was a dynamic industry, even in the midst of the great depression. There were 2,500 American ships equipped with radiotelegraph equipment, and there were extensive land based stations devoted to maritime communications. There were also 633 commercial radio broadcasting stations, and others were associated with the commercial aviation industry. All of these stations required licensed commercial radio operators.

While some radio operators received their commercial operator's licenses through self-study, many individuals re-



Main Radio Laboratory at Massachusetts Radio School. All this equipment is wired, running, and used by the students under supervision of instructors.



Intermediate Code Room-Advanced Lecture Room.

ceived their training at commercial radio schools. In the 1930s, a number of these schools were in existence. The Massachusetts Radio and Telegraph School in Boston, Massachusetts is illustrative of the type of school then in existence as well as the type of training provided by these schools.

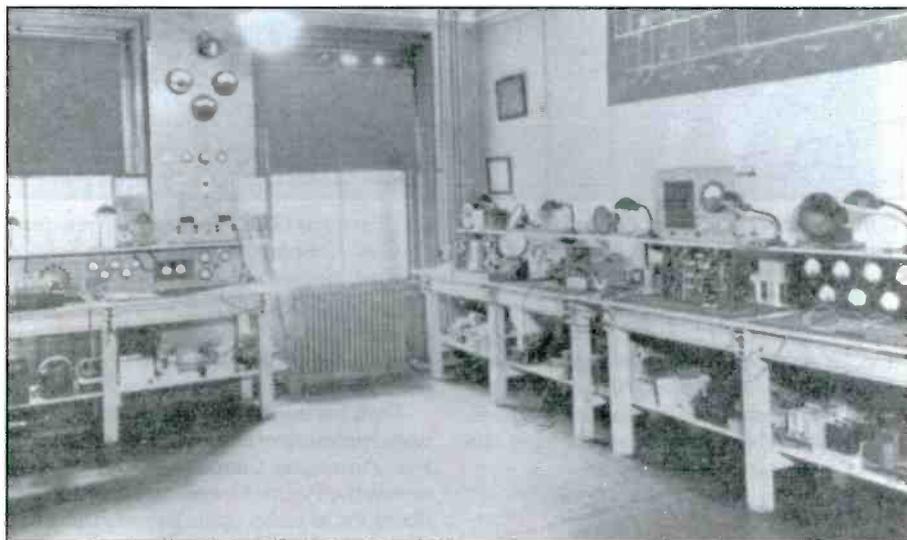
Mass. Radio was established in 1899, as the Boston School of Telegraphy to train operators for the telegraph industry. Over

the years, it expanded its operations to train men for the rapidly emerging field of radio communications.

By 1937, Mass. Radio occupied five large rooms in a building at the corner of Boylston and Washington Streets in downtown Boston. The school offered a nine-month daytime program and a 16-month evening program. The daytime program ran from 9 a.m. to 1 p.m., Monday through



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Friday; the evening program ran from 7 p.m. to 9 p.m. on Monday, Wednesday, and Friday. Both programs train students for the First Class Commercial Radiotelephone and Second Class Commercial Radiotelegraph Operator's licenses.

In 1937, the tuition for the daytime program was \$25 per month, or \$6.25 per week. The tuition for the evening program was \$12 per month, or \$3 per week. Students could attend classes on a "pay as they went" basis. This was an important factor to most students during the depression of the 1930s.

In the daytime program, new classes for beginners started every two months. During the first two months of schooling students had two periods of theory, two periods of code work, and a hand-sending period each day. They received training in electricity, magnetism, electrical circuits, radio phenomena, and fundamental radio principles. Students also learned to send and receive International Morse Code at a rate of 15 words per minute.

Students then graduated to seven months of advanced training, where they learned advanced radio and electrical theory. Also,

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one month of practical radio laboratory work and one month of practical radio service and repair was included in this advanced section, and students increased their International Morse Code sending and receiving speed to 20 words per minute.

The school had a radio laboratory equipped with transmitters, receivers, audio, and other equipment. It also had rooms equipped for learning to send and receive International Morse Code. Other rooms were used for general classroom instruction.

The evening program was patterned after the daytime program and differed primarily only in the hours of study and the length of time required to complete the program. However, the evening program did not include the one month practical service course that was included in the daytime program.

The instructors were all experienced individuals who had formal training and practical experience in the radio field. Like their students, they could be described as well groomed, intelligent, serious, and determined.

Students

While many scholars came from the Boston and New England area, others came from various cities in the U.S., and some even came from foreign countries as far away as Australia. Word of mouth was how many of the students heard about the school; although the school did some formal advertising to attract students.

Those who lived in the Boston area could commute to class each day. In 1937, students from outside the local area could obtain room and board near the school for approximately \$10 per week.

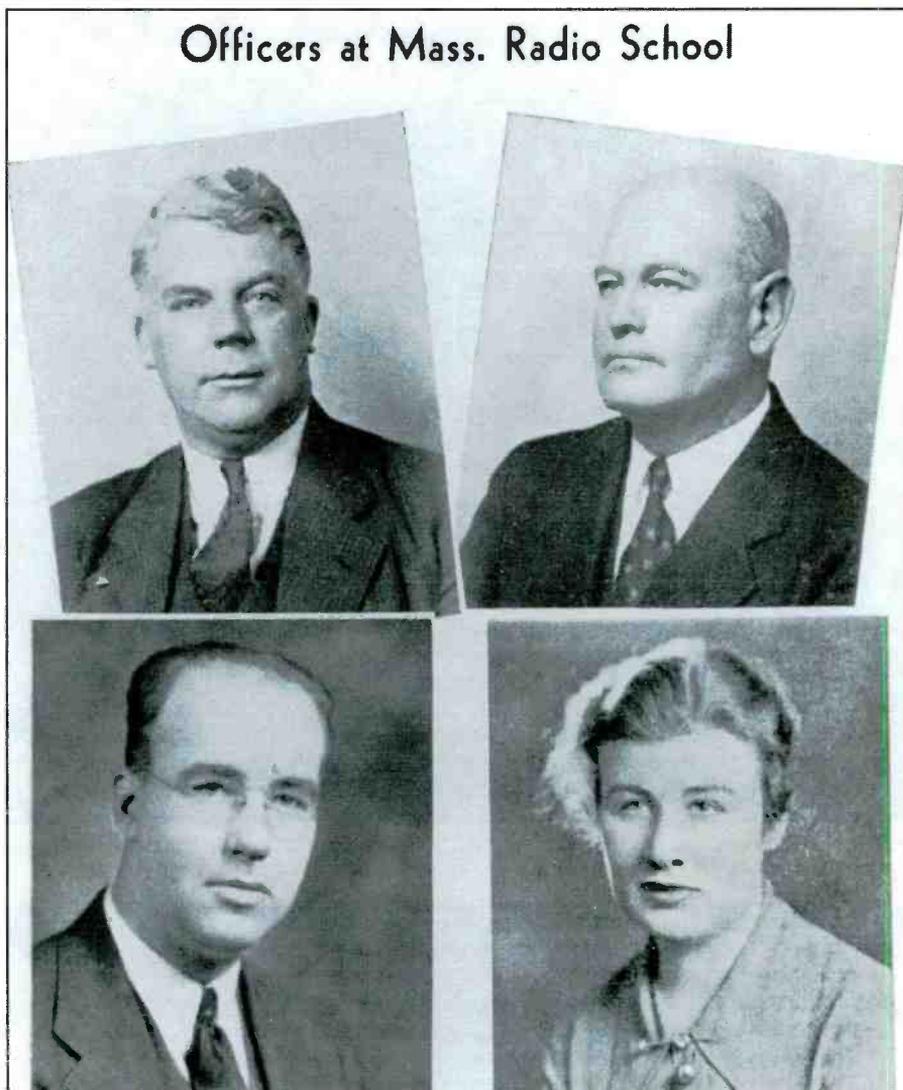
Many students worked in chain restaurants in return for meals and money; others found work running elevators, as night telephone operators, gas station attendants, salesmen, and in other jobs. Even the daytime program permitted some part-time employment.

Some students had experience as amateur radio operators, while others were complete beginners. The school program, however, presumed no prior knowledge of radio.

The school encouraged attendees to prepare for their Second Class Commercial Radiotelegraph Operator's licenses to first obtain an amateur radio license. This was done to help familiarize students with how the examinations were conducted and to minimize "stage fright" when they took the test for their commercial license. Also, thanks to amateur radio, many friendships made at the school lasted for many years.

Prior to graduation, the school arranged for the students, a few at a time, to visit radio activities in the Boston area. They had the opportunity to spend several hours with the operators on duty to observe their normal work activities first hand.

The school took an active interest in its graduates and their activities after graduation,



Officers at Mass. Radio School in the 1930's. Top (left) G. R. Entwistle, President; Top (right) R.F. Trop, Treasurer; Bottom (left) C.A. Kelleher, Supt. Evening School; Bottom (right) Gladys I Hunt, Secretary.

as successful graduates were a source of pride to the instructors. Also, these graduates demonstrated the training capabilities of the school to prospective new students and potential employers.

Employment

In the early 1930's employment opportunities for newly licensed commercial radio operators were rather limited. A newly licensed commercial radio operator took licenses in hand and made the rounds of the radio stations, ship yards, and any other sources of potential employment.

By 1937, employment opportunities had begun to improve significantly for licensed commercial radio operators on land, at sea, and in the air. Many students were hired directly out of school and avoided having to pound the pavement in search of work. At this time, commercial broadcasting and maritime radio stations offered significant employment opportunities. However, positions also existed with the aviation industry,

police radio departments, the U.S. Government, and other organizations.

Perhaps one of the most glamorous jobs was employment as a radio operator on the Pan American Clippers that were flying across the Pacific Ocean in the late 1930s. Positions as radio operators with commercial radio broadcasting stations and on freighters and passenger ships also provided their share of glamour and excitement.

The salary for newly licensed commercial radio operators in 1937 was approximately \$25 per week. Jobs on board ship typically included free room and board. Experienced personnel might earn nearly \$200 per month.

While some operators stayed with the same company, many changed jobs in search of more money or different employment opportunities. For example, after a stint at sea an operator might decide to look for a land-based job. The initial glamour of jobs on ships and aircraft would eventually wear off once the operator realized how

much time had to be spent away from home and family.

End of an Era

A number of factors led to the elimination of schools training licensed commercial radio operators, and inevitably even the need for many of these operators. World War II produced a tremendous number of trained radio operators who could qualify for commercial operators' licenses once they returned to civilian life. Also, WWII provided money for veterans to pursue their education at colleges and universities, rather than radio schools.

The introduction of television broadcasting in the late 1940's and early 1950's called for licensed commercial radio operators with more extensive training. During that period there was a significant increase in the demand for personnel to work on two-way radio equipment installed in police and commercial vehicles. While these positions required a Second Class Commercial Radiotelephone Operator's license, the work actually involved the installation and repair of two-way radio equipment. Many radio schools were not equipped to provide these types of training.

In the commercial radio broadcasting industry, the equipment became more stable and reliable. The legal requirement for licensed commercial radio operators continued long after the technical need for these personnel. Many radio stations in the 1950's and 1960's had licensed commercial radio operators whose primary responsibility was to hang their licenses on the wall and just be present. More than one such operator, including the author, used those jobs to help finance a college education and to provide study time.

In the 1980's, the First Class Commercial Radiotelephone Operator's license was eliminated, and the commercial radio and television industry was deregulated. This significantly affected the requirement for licensed commercial radio operators.

During the 1990s, the requirement for licensed commercial radiotelegraph operators on ocean going ships will be eliminated. Voice communications via satellite will be one of the primary methods of communications. Thus, the era of the licensed commercial radio operators continues to rapidly draw to a close. It is an era that will long be remembered by those who participated in it.

Acknowledgment

Technical assistance for this article was provided by Almon A. Gray, W1KA (Deceased), who graduated from the Massachusetts Radio and Telegraph School in 1930. He served as a flight radio officer for Pan American from 1935 to 1937. He then went on to be the Assistant Superintendent of Communications for Pa.: Am Pacific Operations.

Editor's Note: Alice Brannigan is on vacation.



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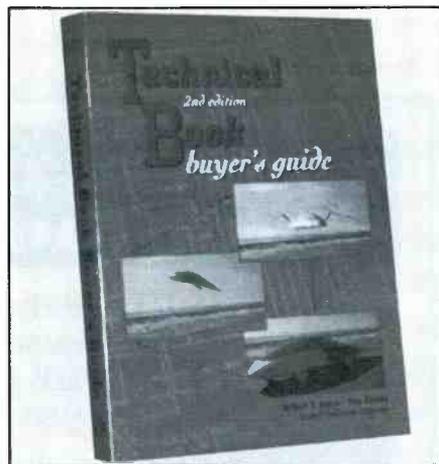
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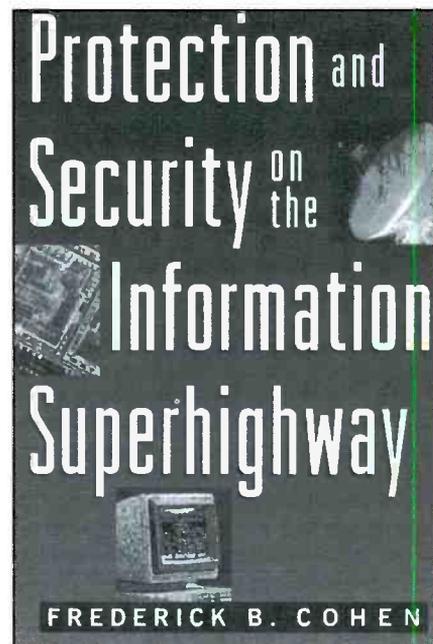
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| AR | 184 | ND | 115 |
| AZ | 200+ | NE | 206 |
| CA | 829 | NH | 88 |
| CO | 224 | NJ | 272 |
| CT | 100 | NM | 94 |
| DC | See MD | NV | 96 |
| DE | 48 | NY | 504 |
| FL | 472 | OH | 480 |
| GA | 336 | OK | 250+ |
| HI | 60+ | OR | 127 |
| IA | 272 | PA | 464 |
| ID | 128 | PR/VI | 116 |
| IL | 520 | RI | 56 |
| IN | 320 | SC | 164 |
| KS | 252 | SD | 121 |
| KY | 223 | TN | 280+ |
| LA | 212 | TX | 840 |
| MA | 231 | UT | 104 |
| MD | 152 | VA | 270 |
| ME | 120 | VT | 72 |
| MI | 400+ | WA | 172 |
| MN | 292 | WI | 300+ |
| MO | 280 | WV | 136 |
| MS | 170 | WY | 128 |

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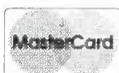
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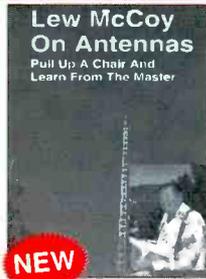
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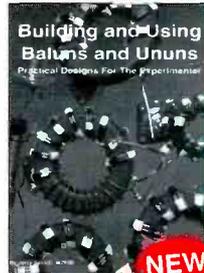
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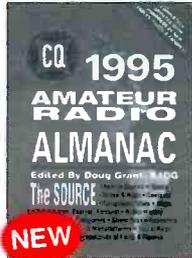


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What's Happening on the Very Low Frequencies?

24 Hour Service of News You Can Use

BY ROBERT S. CAPON, WA3ULH

Are you a news hound? Do you get a thrill out of monitoring international news broadcasts? Is your television locked onto CNN's Headline News? If so, what I have to tell you may be surprising because there is a remarkable news service on Very Low Frequency (VLF) that's one of the best kept secrets in radio.

The news service is generically known as radio reading for the blind. Essentially, a network of national and local providers read a wide range of publications throughout the day. These publications range from *The Wall Street Journal*, *The New York Times*, *People*, *Newsweek*, *Garbage*, *Cat Fancy* and your local newspaper! These services were created to benefit the blind, as well as other people, including the elderly and news hounds.

Here's how it works. National sources of radio reading materials, like the In Touch Network, broadcast a 24-hour reading service to radio stations via satellite. Many radio stations simply re-broadcast the service, while other stations augment the national news service with local newspaper reading. That is, they "turn the network on and off" and fill in the gaps with local programming.

Then these local radio reading services re-broadcast the program on the sub-carrier of FM radio stations, usually public radio stations. You can't hear the sub-carrier signal on your FM radio, but it's there. Here are three techniques to unlock the sub-carrier signal from the main FM signal, so that you can tune-in to this invaluable service.

What else is on VLF?

The Very Low Frequency band is generally considered to be the broadcast band below 500 KHz. The following table summarizes what's on VLF:

| Frequency | Service |
|-------------|--|
| 10-160 KHz | Long range navigation, radioteletype and other signals |
| 160-190 KHz | License-free band for 1 watt experimental stations |
| 150-280 KHz | High power European broadcasters |
| 190-410 KHz | Radiobeacons, some with AM weather broadcasts |
| 410-500 KHz | Coastal ships |

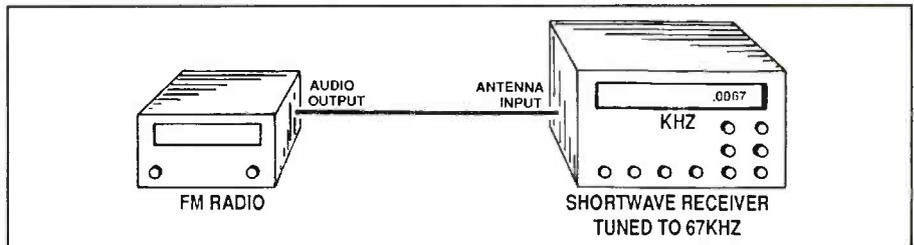


Diagram 1

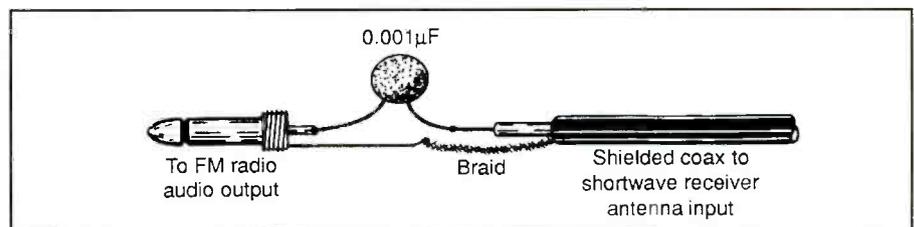


Diagram 2

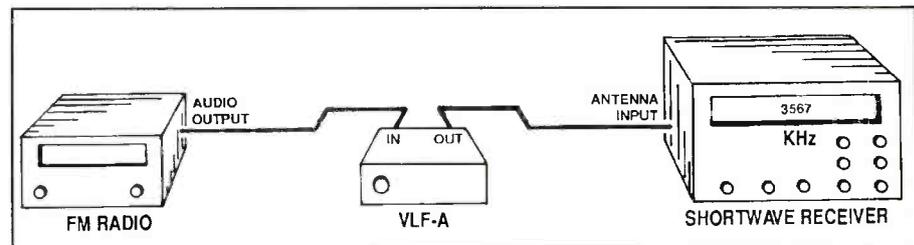


Diagram 3

If you happen to live near a large AM broadcast station, you may hear harmonics of these broadcasts on the VLF band.

Three Ways to Access Radio Reading Services on VLF

Sub-carrier signals operate at either 67 or 92 kHz, and are a component of the FM broadcaster's signal. The key to the three methods described below is separating this sub-carrier signal from the main signal.

Method 1. Take a moment to look at your world band base station receiver to determine if the radio can tune as low as 67 kHz or 92 kHz in the FM mode. Most receivers can only tune to 100 KHz, but a few like the ICOM R-72 and the Yaesu FRG-100 can receive on 30 KHz and 50 kHz respectively. If your radio can tune to 67 kHz/92 kHz, you're in luck. If not, you might want to skip to method 2.

To hear the signal, simply build a shielded patch cable to connect the audio output (or headphone, or earphone) jack of a portable FM radio to the antenna input of your base receiver (Diagram 1). Most FM radio audio output jacks use a 1/8-inch mini-plug. Most antenna input jacks use either PL-259 or a phono plug. You might have these connectors and a scrap of shielded coax in your junk box. If not, the parts should be available from your local Radio Shack for less than \$5.

While you are building your cable, solder a .001 μ F ceramic disk capacitor (such as a Radio Shack Catalog # 272-126) in series with the center conductor of the cable (Diagram 2). This will filter interference from the main FM signal from the sub-carrier signal. (If you look through your parts box to find the capacitor, the capacitor code for .001 μ F is "102".)

Now, connect the FM radio audio output to your world band radio antenna input,

tune your world band radio to 67 KHz and set the mode to FM, turn on your FM radio, and tune around until you hear your local reading service. If you cannot find the signal, at 67 KHz, try 92 KHz. If you still cannot find the signal, call your local public radio station, and ask for the frequency of the local radio reading service. Most metropolitan markets have the service.

When you find the signal, increase your FM radio volume control until you just begin to receive interference from the main FM signal, then back off on the volume control slightly. Then use the volume control on your world band receiver to adjust the reading signal to a comfortable volume.

Incidentally, if you are in the market for a world band receiver, you might want to consider its VLF frequency range before you make a purchase decision.

WARNING: If you are using an amateur radio transceiver instead of a world band base receiver, be sure not to accidentally transmit a signal while your favorite FM radio is connected to the antenna input. You will damage your FM radio, which was not designed to be a 100 watt dummy load!

Method 2. If your world band receiver is like most radios, it will not tune below 100 KHz. But there is a product called a "VLF Converter" that will enable you to receive

VLF signals on your world band radio.

The VLF Converter works this way. The converter receives VLF signals in the frequency range of 10-500 KHz, and converts the signal to a frequency range of 3510-4000 KHz that you can receive on your world band radio (Diagram 3).

To use the VLF Converter, simply use the patch cable described above (filtered with the .001 μ F capacitor) to connect the audio output of your FM radio to the input jack of the VLF Converter. Then use a standard coaxial cable to connect the VLF Converter output to the antenna input of your world band receiver.

This time, tune your world band radio to 3567 KHz (or 3592 KHz) and set the mode to FM, turn on your FM radio and the VLF converter, and tune around until you hear your local reading service. When you find the signal, adjust the FM radio volume control and the volume control on your world band radio as above.

Method 3. Another easy way to tune in to your local radio reading service is to purchase a specially designed radio which is able to both operate as an FM radio and to separate the sub-carrier signal from the main signal. A supplier of these radios is listed at the conclusion of this article.

The benefit of this method is simplicity, and these radios cost about the same as the

VLF Converter. However, the benefit of using a VLF Converter, is that you can also use the Converter to tune in the other services and stations on VLF. As a radio enthusiast, I prefer having this added capability.

However, if you do not possess a tabletop world band radio that can tune 3567 KHz in the FM mode, purchasing one of these specially designed FM radios might be the way to go.

And remember, if you're in the market for a world band radio, be sure to check the frequency range to see if you can monitor the interesting world of VLF.

Source for VLF-A Converter:

Palomar Engineers
1924-F West Mission Road
Escondido, CA 92029

MFJ Enterprises
Box 494
Mississippi State, MS 39762

LF Engineering Company
17 Jeffry Road
East Haven, CT 06513

Source for Sub-Carrier FM Radio:

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Find That Channel!

Organize Your Scanner With a Spreadsheet

BY JOHN A. D'ANGELO

Have you ever heard, either on the radio or TV, news of an event which made you rush to your scanner to listen first hand to what was going on? Let's say on a Sunday afternoon, you hear a report of a truck loaded with pigs involved in a bumper to bumper accident. The report comes in that the pigs have escaped from the truck and are running all over the place! This event is something that you might want to use your scanner for, but you really only want to monitor the channels covering the units involved in the chase. Then after turning on your scanner, you realize you have forgotten which channel was allocated to the Wildlife Federation officials, and your scanner has to run through the entire bank. This makes the scanning process a hit or miss proposition; hopefully you will be on the correct frequency when the pig chasing information is transmitted. Actually, this problem even increases when you use a high capacity scanner.

For my scanning activities I use a Radio Shack Pro-2006, 400-channel receiver, which has the ability to store 400 channels in ten banks, 40 channels per bank. Although I organized the channels into primary groups, I just lost track of what the individual frequencies in each channel were for. I wanted to set up a system making it easy for me to remember the details of each channel, and easy to update with new information, if and when I learned of new frequencies. After trying out a number of different systems, I finally decided that using my home computer was the best way to go. Over the years, I've had the opportunity to work with a number of different spreadsheets including Lotus 123, Quatro Pro, and others. so I had a pretty good hunch that a spreadsheet would work just fine. I am currently using Microsoft Works 3.0 on my home computer. This program combines a word processor, spreadsheet, database, and communications program into one package.

After examining the channel and bank layout of my scanner, I decided to use a separate spreadsheet for each bank. This made it easier to categorize the banks and print them out. Each spreadsheet used the same basic layout as the other, and I organized the banks in the following manner:

Bank 1 police frequencies
Bank 2 fire/emergency frequencies
Bank 3 local railroad frequencies
Banks 4, VHF marine frequencies
5 and 6

Bank 7 search & rescue frequencies
Bank 8 aviation frequencies
Bank 9 military and space related frequencies
Bank 0 NOAA weather and miscellaneous frequencies

I set up each spreadsheet by putting a title at the top of the page indicating the primary use of the bank. The spreadsheet was organized into lines with the following information:

Channel Number/ Frequency/Source

I formatted the channel number group into 20 lines per page, with room for two groups so all 40 channels would be covered. I then formatted the frequency column into a number format with four places following the decimal so the scanner frequencies would not be rounded off by the computer. I made the length of the final column 25 characters long for station information. I also used the "Fill Down" function to easily number the channels, and also to repeat information such as "Kennedy Approach." The resulting printout for Bank 8 shows the final layout.

Once this was done for all the banks, I printed out all the pages and placed them in my SWL book. This enables me to quickly locate a particular frequency, and then I can sit and wait for someone to transmit. Using the spreadsheet for

changes in frequency information also makes reprogramming the scanner a breeze. For example, if I find a new frequency for Kennedy Airport, and want to have all my Kennedy frequencies grouped together, adding the new frequency is very simple.

I "cut and paste" the nearest frequency to the Kennedy group along with the other information into a free area on the spreadsheet. Then I insert the new frequency information into the channel which has been cleared out. Once the page has been rewritten to my satisfaction, I print it out, then reprogram the scanner using the revised sheet. It is amazing how a once formidable task, at least to me, is now so easy.

My particular spreadsheet program will let me "page" a number of spreadsheets at one time on the screen. The photo shows eight spreadsheets available on the screen, covering eight separate banks of information within easy reach of a mouse click. Other spreadsheets may have a page system using letters which run across the top of the screen. In any case, almost all spreadsheet programs available today have the cut and paste, copy, and fill down options which make the process so easy.

So, if you would like to make use of an excellent system for operating your scanner and have a home computer, try using a spreadsheet. You may enjoy using your scanner even more. ■

Scanner Assignments

| Bank 8: Aviation | | | |
|------------------|------------------------------|-------------|--------------------|
| 281118.3000 | Newark Control Tower | 301122.7500 | Unicom |
| 282257.6000 | Newark Control Tower(Mil) | 302122.8000 | Unicom |
| 283120.8000 | Kennedy International | 303122.8500 | Unicom |
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| 286120.8000 | Kennedy Approach | 306122.9500 | Unicom |
| 287125.2500 | Kennedy Approach | 307122.9750 | Unicom |
| 288126.0500 | Kennedy Approach | 308123.0000 | Unicom |
| 289126.4000 | Kennedy Approach | 309123.0250 | Unicom |
| 290127.4000 | Kennedy Approach | 310123.0500 | Unicom |
| 291127.6000 | Kennedy Approach | 311123.0750 | Unicom |
| 292127.8500 | Kennedy Approach | 312123.1000 | Search & Rescue |
| 293128.5500 | Kennedy Approach | 313121.5000 | Emergency |
| 294118.7000 | LaGuardia Control Tower | 314243.0000 | Military Emergency |
| 295263.0000 | LaGuardia Control Tower(Mil) | 315123.4500 | Multicom informal |
| 296119.9500 | LaGuardia Approach | 316121.3000 | Grumman |
| 297126.0500 | LaGuardia Approach | 317126.2000 | Grumman |
| 298119.3000 | MacArthur Control Tower | 318128.6500 | Calverton/Peconic |
| 299119.7000 | Westchester Control Tower | 319340.2000 | Peconic River |
| 300122.7000 | Unicom | 320118.8000 | Republic |

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 August Winner

This month's winner, Michael Benner, of Glendale, CA, shares his fondest short-wave memories:

"Radio has always seemed like magic to me. As a young boy in the mid-1950s, nothing about life amazed me as much as the way a radio with its maze of wires, components, and glowing tubes could pull music and voices out of thin air.

"Although it used a Benton Harbor mailing address, the famous Heathkit factory was actually located across the river in St. Joseph, Michigan—a short bicycle ride for my friends and me. We had such fun building those kits; and what a thrill to hear my finished projects come to life, knowing I had actually soldered those mysterious parts into a working radio.

"My eighth grade science teacher, Mr. Zick, W8PYP, had been our school's ham radio club advisor for some 30 years when I first logged on in 1961. He made radio theory easy to understand, and patiently tapped out Morse Code until each of us could pass the 5w/m Novice test. Upon receiving my call, WN8DZQ, I had finished building a Heathkit DX-40 transmitter.

"As an adult, I have worked as a broadcast journalist and talk show host for 25 years, and have been licensed as a General class ham, N6IJR, for 12 years. Amateur or commercial, the magic of radio is still present, and remains as amazing as ever."



Meet Michael Benner, doing what he enjoys most—SWLing!

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No Parrots Allowed

An Attorney's Opinions On Pirate Radio

BY ROBERT H. SCHWANINGER, JR.

The Amateur publications are filling up with comments from readers regarding the operation of "Pirate" broadcast facilities. As an attorney who practices before the FCC, it appears to me that most of the comments either miss the mark, forget the law, or just vent. So, for a thumbnail sketch of the status of the law, the FCC's enforcement efforts, and the skewed perspective of most persons familiar with the activity, I humbly offer the following.

The typical law which the FCC claims has been violated by these operators is Section 301 of the Communications Act which generally states that operation of a radio requires a license. The law is not directed at broadcast operations and is one of the more generic in its wording.

Despite the fact that the law appears to put "pirates" in the same class as every other unauthorized operator, the FCC enforcement teams give unlicensed broadcasters a special place. Typically, the amount of resources which the FCC is willing to devote toward nabbing an operator of an unlicensed broadcast facility is many times greater than the amount spent on an errant taxicab facility. Is this selective enforcement of the FCC Rules? Probably.

The other issue which arises out of the FCC's scrutiny of this activity is one related to injury. The FCC deals with numerous claims of harmful interference created by bootleg operators and authorized licensees. The claims arise because someone is injured by the operation. However, it is rare when anyone has complained to the FCC that an unlicensed broadcaster has injured their operation.

For example, in fiscal years 1988-90, the FCC issued one NAL for co-channel interference between licensed Private Radio facilities. It is difficult to reconcile the FCC's paucity of interest in harmful interference between licensed stations and its extreme interest in non-interfering unlicensed operation.

It must be, then, that the FCC's zeal against unlicensed broadcasts has nothing to do with injury, but with some other offense. I suggest that it has more to do with arrogance. The FCC's efforts seem moreover directed at persons whom they believe are thumbing their noses at the FCC's authority and power. Unauthorized broadcasters are often cocky in their cat-and-mouse game with the FCC and the taunting brings results.

One must wonder if the FCC will ever rise above this emotional reaction to unlicensed broadcasters and deal with them in the same manner as any other unauthorized operator. The agency's reaction has often caused its personnel to engage in violations of Constitutionally guaranteed rights and the tenets of the Communications Act. Given

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LOWE



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

SP150

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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.

Two or three tier rack mounts, along with a variety of accessories are also available from EDCO. Keypads for the HF150 and HF225, Carrying Cases, Mounting Brackets, and a Computer Control Interface are just a few of the extras which can give you optimum performance of your LOWE product. Contact EDCO for full details.



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H.F. Mobile Amplifiers

During the recent floods in the San Francisco Bay area last spring, emergency communicators needed additional power output than what their small high frequency SSB transceivers could produce. Most H.F. sets pump out 130 watts on a whistle, but average talk power may only be about 50 watts.

Some communicators may go into their transceivers and slightly decrease the amount of limiting in the automatic limiting control circuit (ALC), boosting power output dramatically, but causing the set to run warm, on the verge of distortion.

"One hundred watts power output on 40-meter ham bands and on 8 MHz FEMA frequencies was adequate during the days, but not enough at night," comments Cindy Hughes, KC6OPI, an emergency communications specialist with the American Red Cross. "Late at night foreign broadcast stations would override our signals on 40 meters, and a little more power could have helped," adds Hughes.

But for temporary mobile installations "out in the field," power amplification from a traditional amateur radio linear amplifier is not feasible. Most linears run high power output tubes, and need a good supply of 110 VAC or 220 VAC. Solid-state, 12-volt, DC amplifiers seem to be scarce around emergency command centers.

But there are 12-volt DC power amplifiers available that cover from 1.8 MHz up to 23 MHz. MFJ (Mississippi State, Mississippi) and SGC (Bellevue, Washington) offer solid-state equipment that takes an input of 100 watts on high frequency SSB and pumps it up to 600 watts output to pound through interference from modest antenna systems. These 12-volt, DC, solid-state amplifiers are broad-banded for H.F. operation, but for sale or United States use these amps require "hard keying" and band switching in order to meet FCC approval. These modest requirements are easily accomplished at the communications point by taking the "key" line (not the Morse Code key!), connecting it to the amplifier key line, and having the operator simply reach over and switch to a different band in order to switch in the necessary filters to minimize spurious and harmonic outputs.

For mobile use in an emergency command vehicle, some solid-state amplifiers can also be remotely switched to different bands by simply grounding out one out of six band selection wires.

For emergency communication "jump teams" that may deploy in foreign countries, the SGC SG-500 "Power Cube" amplifier covering 1.6 MHz to 24 MHz range is the popular choice. The amplifier can



The 500-watt amplifier was placed near the dipole antenna and the big 12-volt battery.

boost power levels as low as 60 watts output, or as high as 150 watts output, and boost them beyond 550 watts with the set-up running relatively cool for long periods of voice communications.

The SGC Power Cube features COR (carrier operated relay) keying where no hard wire is required to trigger the amp on when your H.F. microphone is energized and the operator begins to talk. The amplifier detects and adjusts its input for varying power levels, selects the correct filter band automatically without band switching remotely, and has a bank of status light-emitting diodes on the front panel to allow the operator to determine that the amplifier is indeed doing its job. During several weeks of testing this amplifier on an emergency exercise in Mexico, I was impressed with how fast it could be deployed and how clean the signals sounded over the airwaves. And all this without having to do any manual

band switching or power-tube tuning.

The 500 watts output throughout the high frequency band is easily achieved by the SGC amplifier from four pair of MRF 458 power transistors buffered by input and output splitter/combiners. Filter selection is accomplished from a microprocessor frequency-analyzer chip set to pull in the following filters automatically:

- 23.1 MHz-30 MHz
- 13.2 MHz-23.1 MHz
- 7.7 MHz-13.2 MHz
- 4.2 MHz-7.7 MHz
- 2.2 MHz-4.2 MHz
- 1.6 MHz-2.2 MHz

The output of the SGC, MFJ, and other solid-state high frequency amplifiers is 50 ohms unbalanced. The amplifiers are intended to run into a 50-ohm load, such as portable beams, dipoles, inverted vees, and with caution mobile antenna rated to at least a kilowatt.

Warning: Touching any antenna wire or metal element with 500 watts can result in a major burn. The burn would be equivalent to touching the red hot element of a 500-watt hair dryer. Be extremely careful where you place your antennas!

The 500 watts output from these amplifiers can also cause severe interference to other nearby electronic equipment. During our tests in Mexico, we found that 100 watts "barefoot" would slightly disturb wind direction and wind speed equipment at a weather survey site 100 yards away. Switching to 500 watts output caused their wind speed to peg and wind direction indicator to read erratic during modulation.

Although SGC also produces automat-



Large 12-volt DC power cables attach to the rear of the SGX power amplifier. The amp also needs to be well grounded.

ic antenna tuners, the popular SGC Model 230 tuner cannot handle the 500 watts of power. SGC may soon have an automatic antenna coupler that will handle this increased power level.

Solid-state amplifier from MFJ and SGC plus other manufacturers require major amounts of 12 volts. Wire size "00" as large as your starter cable on your car is required from the amplifier to a nearby battery. I recommend using a battery as your main 12-volt DC source at an emergency communications site because your external power source may go down, and you still need to stay on the air. If you should lose your AC lines, you could still continue to stay on the air from a single 12-volt battery. At 500 watts output, modulation peaks could draw upwards of 70 amps. While these 70 amps are only now and then on voice syllables, they nonetheless can take down an automobile battery fast if you do a lot of talking. Without recharging, we were able to communicate for up to three hours before a medium-sized automobile battery began to get dangerously too low for starting up our communications vehicle.

Five hundred watts output from a 12-volt, DC, solid-state power amplifier won't necessarily establish a communications path that you couldn't do with 100 watts. However, under noisy conditions or when operating on lower frequencies at nighttime, the 7 dB increase was enough to pull your signal out of the noise and dramati-

cally add "punch" to your modulation. When conditions are good, simply switch the amplifier off.

We also ran the amplifier into a long wire antenna system, using several different types of kilowatt antenna couplers. We had no problems in doing this, but use caution against switching the manual antenna coupler inductance settings when running anymore than about 30 watts of power out. The inductor band switches are easily burned by switching them through their settings on tune-up at any power level greater than minimum power. And the lower you operate in frequency, the greater the likelihood of arcing-over a manual antenna tuner when running more than a couple hundred watts through it—even the kilowatt tuners, too.

High frequency power amplifiers should be treated with caution. Make sure everyone stays well away from the radiating antenna wire or metal antenna elements. For any mobile installation, the antenna should be placed up high enough that there is absolutely no way that anyone could accidentally brush against the antenna while walking by your emergency command post.

When used properly, the half-kW, high frequency power amplifiers running off of a hefty 12-volt DC source are one answer to a boost in effective radiated power when you have exhausted all avenues of boosting antenna performance. ■

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SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

The summer is drawing to a close later this month and for many, that wraps up another exciting season of scanning. Many of us take our scanners along on vacation during the summer months and there is no better way to develop an appreciation for our surroundings than being tuned in.

One of the first things I do when I travel to a new area is to program in all the public safety frequencies to get a taste of the region. What kind of calls do the local police handle? What's the hottest action in town (cows on the roadway?) and what's going on when I hear sirens?

Don't hesitate to send in your favorite summer loggings, whether they are from your own neighborhood, or a new vacation spot you visited. Chances are you can help out someone else in monitoring new and exciting frequencies while they travel, too.

New York's New Band

There's a new public safety radio band in the New York City-Northern New Jersey area. The Federal Communications Commission earlier this year took action to waive its various rules that will allow public safety agencies, such as police and fire departments, to use the 482-488 MHz band. The 482-485 MHz segment is used for repeater, base, and mobile operations, while the 485-488 MHz segment is for mobile operations, typically repeater inputs.

The FCC's waiver reassigns TV Channel 16 (which uses 482-488 MHz) to the public safety radio services in the New York City metropolitan area, including Long Island, the northern suburbs, and northern and central New Jersey. The FCC's waiver was granted for a period of at least five years or until the FCC assigns Channel 16 in New York City for advanced television service and a broadcast licensee is authorized and ready to commence advanced television operations. Advanced television is the new format high-definition TV (HDTV) you may have heard about that will enhance television reception.

In order to accommodate HDTV, the broadcast industry is looking at letting each TV station receive an additional channel so their current broadcasts can continue on the usual channel, while HDTV signals will broadcast on a new channel simultaneously. TV viewers will need new HDTV-capable sets to get access to the HDTV signals on the new channels to be assigned.

There is no Channel 16 currently allocated to New York City, thus the FCC took the action to help alleviate the on-air crowding of frequencies that has become trou-



Here's the very impressive monitoring post and ham shack of Harry H. Abery Jr., N1JTL, in Hartford, Conn. Harry says that he obtained a nine-foot, 12-bay console from a local ambulance company and he reconfigured the racks for his own radio gear. The result is what you see: A very tidy radio communications center in Harry's home. Scanning is done on a Uniden Bearcat BC890XLT and a Realistic Pro-2006, both of which can be seen installed on the right side of the photo. Harry is now 65, but he started SWLing at the age of 12. He's employed as a dispatcher for Hartford's police/fire/EMS and recently visited mainland China with his wife. There, they received a tour of Radio China International.

blesome in the metro area.

By choosing the 482-488 MHz band for public safety, the FCC also is allowing compatibility with current public safety users in the 470-476 and 476-482 MHz bands in New York City. This allows inter-system interoperability in emergency situations.

The FCC took similar action in the Los Angeles region a few years ago when it also reallocated TV Channel 16 for public safety communications. In that situation, the Los Angeles County Sheriff's Office had sought spectrum relief from crowded frequencies. Today, the new band there has been licensed to several agencies throughout the Los Angeles region.

Oh, Ontario

Chris Williams writes from Ontario, Canada, to say he has been a POP'COMM reader for about eight years, and his interest in communications as a hobby has led to his career in cellular and two-way radio.

Chris scans with an AOR AR1000XLT and a Realistic Pro-43 and Pro-2004. His listening post is rounded out with HF gear for SWLing, and some 2-meter and UHF ham gear.

Metro Toronto police use the 857-862 MHz band, Chris says, and more than 100 channels are used. He says that most channels are in the 857-859 MHz segment and that a 110.9 Hertz tone is used on the system (for those with subaudible CTCSS-capable decoders on their scanners). In the Toronto area, Ontario Provincial Police use 142.365 and 141.705 MHz (however, use 107.2 Hertz as a CTCSS tone to decode out an annoying tone). For other OPP frequencies, be sure to tune around the 141 and 142 MHz band. Repeater inputs are exactly 4.02 MHz lower (i.e., 142.245 output, 138.225 input).

Peel Regional Police, which cover a population of 600,000 in the western suburbs of Toronto, includes these frequencies: 142.245 (11 Division), 142.605, (12 Division), 142.800 (21 Division), 142.455

(22 Division) and 141.585 (drug and tactical). Like other radio systems in Ontario, use a CTCSS decoder set at 127.3 Hertz to screen out bothersome noise.

In Mississauga, the fire department uses 414.5875 for dispatch, 154.950 for F1 simplex and 150.425 for F2 simplex. At Pearson International Airport, Canada's largest airport, crash-fire-rescue uses 461.8875.

Chris goes on to say that most fire service communications in Ontario use 150-155 MHz, while the low end of the 410-415 MHz band is used for dispatch. Likewise, most ambulance services use 148-152 MHz, with 150.100 and 152.000 used as provincial common frequencies.

It also should be noted, Chris says, that Ontario still is very rural, and there also are plenty of VHF low-band signals out there waiting to be monitored or heard via skip distances.

Page One

Morgan Lee Shivers of Pitman, New Jersey, says he's 22, and received his first scanner when he was only seven. He says he's been monitoring police, fire, and emergency medical services in southern New Jersey, noting that police, fire and ambulance services in his home county, Gloucester County, switched from VHF high band to the 506-MHz band over the past few years. He monitors with a Trident spectrum analyzer, a Uniden Bearcat 890XLT, Trident TR2400, Trident 980 and a Uniden Bearcat 8500XLT.

Morgan says that he's been experiencing a problem lately that has been annoying. No matter what frequency he is monitoring from 1 to 2060 MHz, he gets noise that is unwelcome. For instance, if he is monitoring his local police on 506.4375 MHz, when the dispatcher transmits, what appears to be another station wipes out the signal, even though the police are less than a block away.

Morgan describes the problem by saying that he hears Morse code as well as noise similar to fax machines and the like, on the scanner. It doesn't matter whether Morgan is searching or scanning when this problem occurs. He says he has become so aggravated at not being able to monitor what is going on in his community. He does indicate that this problem doesn't occur with some older programmable scanners he has and he wonders whether someone is sharing the repeater with the police or whether he should contact the Federal Communications Commission.

First of all, it sounds like you have a case of front-end overload! Actually what you are hearing on your scanner are two signals mixing together and wiping out whatever you hear—no matter what range you are trying to monitor. I had this problem

many years ago. First, there was a 24-hour weather transmitter on the air on 162.475 MHz and its transmitter was line of sight from my monitoring location. Whenever a local plumber transmitted on 151.775 MHz or a large company paged on the same frequency, the two signals mixed together and wiped out just about anything on VHF that I was monitoring.

How'd that happen? Well, if you subtract 151.775 from 162.475, you see the difference is 10.7 MHz, which happened to be the intermediate frequency (IF) used in the circuitry of the old Regency Touch 16-K that I was using at the time.

So Morgan, what you are experiencing is the signal of a paging transmitter mixing with another transmitter in your area and producing the product. It could even be double the IF that is producing the difference and mixing in your receiver. It won't be easy trying to track this down, but you probably have a paging transmitter near your home that is causing most of the trouble.

How do you cure it? You could send your scanner back to the factory and ask them to change the IF. They should be able to do this for a charge. Most IFs are either 10.7 or 10.8 MHz. A few have been 10.85 MHz, too. Another solution is to stay away from receivers with this kind of IF around 10 MHz. You may do better with a triple conversion type of receiver that has a much higher IF. You'll need to check the specs before you buy.

You also could purchase a notch filter from a scanner or two-way radio supplier, but you'll need to know what frequency is causing most of your problem (the paging channel, which is, by the way, the fax-type noise you are hearing). The notch filter will effectively eliminate signals on this frequency from being received by your scanner. However, it also will keep you from hearing other nearby signals in the same frequency range. For instance, if the paging transmitter causing you trouble is on 454.075 MHz, and you get a notch filter for that frequency (or use a tunable notch filter and dial in that approximate frequency), you also probably will eliminate your ability to hear signals on the 453 and 454 MHz channels. But your scanning may become more pleasant without the bumps and grinds of that paging transmitter!

Write In

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 POPCOMM@aol.com via the Internet. ■

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

Time for our monthly trip down short-wave's back alleys—where the murky world of political clandestine broadcasters hang out!

The fascinating Chinese clandestine, New Star Broadcasting Station, has been noted again using 8300 around, and signing on around 1559. It sends three "Ds," goes into the (mainland) Chinese anthem, and then numbers in Chinese. These broadcasts only last a few minutes—often less than ten, sometimes closing with the anthem, sometimes not. This station is believed to be an operation of the Taiwan government. The broadcasts are periodic and, in the past, have also made use of 9725, 11430 and 15388—anytime between 2200 and 1630. Your best shot at this one in North America would probably be in the 1200-1400 time slot.

Radio Free Somalia, funded by the same folks who brought you Radio Free Bougainville, is reported to have increased its power to 800 watts. It is now scheduled from 1000 to 1215 on 7215, 1230 to 1300 on 13820, and 1600 to 1715 on 3920. There's a 15 minute segment in English during the first and last transmissions. The station is located in the town of Galcayo. This is an extremely difficult catch in North America, but if you should get lucky the address for reports is Sam Voron, 2 Griffith Ave., Roseville NSW 2069, Australia. They want five International Reply Coupons with the report (which is about four more than they need to reply to you via airmail!). Some reports say this station is also supported by the Australian government and Rotary Australia.

The Voice of Oromo Liberation, which speaks for the Oromo Liberation Front which, in turn, wants independence for its area of Ethiopia is being carried via U.S. religious broadcaster WHRI in Indiana. The program airs Sundays, Tuesdays, and Fridays at 1900-2000 on 13760. The broadcasts are in the Oromo language. This is one you should have no trouble picking up!

Speaking of WHRI, the latest schedule on hand continues to air several broadcasts of a political/clandestine nature which you may want to check out. Included are the "Voice of the Foundation," Tuesday through Sunday (UTC days) at 0000; "Alpha 66" at 0800 and 2300; "Cuba 21," Mondays at 1000 and 0100—all three are anti-Castro programs. Also "Impacto" (which may or not fit into this genre) at 1330 and 2330 Saturdays. Most of these are carried via WHRI's "Angel One" transmitter, which beams to Latin America—see the featured schedule for frequencies.

| WORLD HARVEST RADIO | | |
|---------------------|--------------|------------|
| UTC TIME | EASTERN TIME | FREQUENCY |
| ANGEL 1 | | |
| 1800-1000 | 1PM-5AM | 9.495 Mhz |
| 1000-1300 | 5AM-8AM | 9.850 Mhz |
| 1300-1800 | 8AM-1PM | 15.105 Mhz |
| ANGEL 2 | | |
| 2300-0500 | 6PM-12AM | 7.315 Mhz |
| 1000-1500 | 5AM-10AM | 6.040 Mhz |
| 1500-2300 | 10AM-6PM | 13.760 Mhz |
| ANGEL 3 | | |
| 2200-0400 | 5PM-11PM | 17.510 Mhz |
| 0400-1600 | 11PM-11AM | 9.930 Mhz |
| 1600-1800 | 11AM-1PM | 6.120 Mhz |
| 1800-2000 | 1PM-3PM | 13.625 Mhz |
| 2000-2200 | 3PM-5PM | 11.980 Mhz |

The schedule of legitimate shortwave station WHRI, Indiana, contains several broadcasts of a political/clandestine nature mixed in with all the religious and other programming. This is their most recent transmitter schedule.

Also check Forum for Democracy in Vietnamese Tuesdays through Sundays at 1400 on WHRI's sister station, KWHR in Hawaii. KWHR also airs something called "Voice Present Truth China" at 1200 Tuesday to Friday; unsure whether or not it is politically oriented. KWHR uses 9930 during this time period, beamed to Asia.

The Voice of Iraqi Kurdistan currently operates from 0345 to 0530 on 4180 and 5945, 1030 to 1200 on 4180, and 1545 to 1800, on 4180. Apparently the broad-

casts are not being jammed any longer.

The Voice of Kashmir Freedom is operating from 00230 to 0330 and 1430 to 1530 on 5750 and 5300 and 6300, the latter two upper sideband (SSB) and 5750.

Another "voice"—The Voice of the Worker broadcasts until 1815 on 4190. This station is operated by the Iranian Revolutionary Workers Party.

The Voice of the Islamic Movement in Iraqi Kurdistan is now operating on 4110, 4400, and 6285 from 1330 to 1500—not

Clandestine Communique

too likely to be picked up in North America.

Abkhaz Radio (Radio Abkhaz Committee of Human Rights) broadcasts from the Abkhaz region of the former Soviet Republic of Georgia in support of a separate Abkhaz state. One broadcast segment appears to be from 0430 to 0550 on 9505, slightly variable. Apparently the schedule also varies and may not be daily.

The Voice of the Iranian Communist Party is currently on the air from 0430 to 0530 (Fridays only) on frequencies varying around 3870 to 3910 and 6400 to 6420. Also heard broadcasting at 1700 to 1800 (apparently on other days).

Voice of the Iraqi People broadcasts on 3915 and 7095, both frequencies variable, at 0300 to 0500 in Arabic and 1500 to 1645 in Kurdisa. Also in Arabic at 1700 to 1745 on 3910 and 7095, both variable.

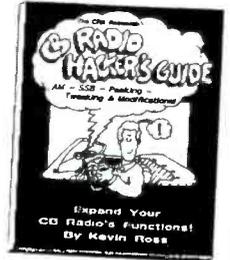
That covers things for this month. We are always interested in receiving your information about clandestine broadcasts and broadcasters. This includes news, the details of stations/programs you've logged, information about schedules, addresses, and so on. We welcome your input as often as you are able.

Until next month—good hunting! ■

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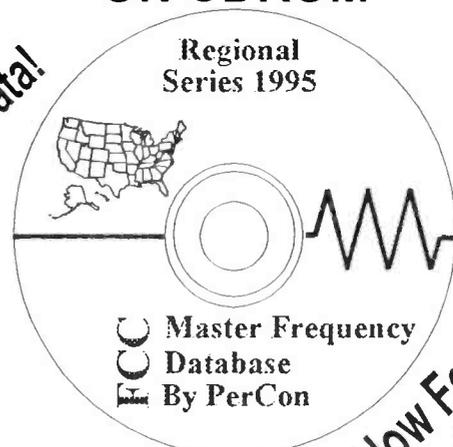


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CIRCLE 69 ON READER SERVICE CARD

August 1995 / POPULAR COMMUNICATIONS / 41

Understanding Aircraft Shortwave

If you are a shortwave listener, you've heard commercial airliners and military aircraft using shortwave bands for weather information and position reporting. Listening to these reports can be educational, exciting, and quite rewarding.

Regulations say that any aircraft on an instrument flight plan and out of range of a VHF or UHF air traffic control facility for more than an hour must have HF shortwave capability unless operating with special permission or authority. On flights over the oceans, except in the Western Atlantic area specified under special exemption, two HF shortwave radios are required for all commercial airliners. The regulation also says that if one of these shortwave transceivers becomes inoperative after take-off, the flight may continue with only one transceiver. The FAA also notes that in granting this exception, it feels the aircraft has the capability to relay position reports through other aircraft via VHF should the second HF transceiver fail. No commercial flight can be legally dispatched without two operating HF transceivers.

Any person who enjoys shortwave listening has encountered the routine aircraft position reports and aviation weather reports. Although most of the position reports can be pretty routine, sometimes things can get very interesting and exciting.

Years ago most aircraft communications were AM, and pilots were required to monitor the primary air traffic control frequency. Today, most aircraft communications are done in the upper sideband mode (USB) and thanks to Selcal, the pilots no longer have to actually listen to the primary and secondary HF air traffic control frequencies. Selcal is the dual, two tone sound that you hear frequently on the aircraft shortwave frequencies and on company VHF channels.

To understand the basics of aircraft shortwave communications, you need to have some basic information about how the system works for commercial airliners. As a flight starts out, the air traffic controllers use VHF channels to control the flight. Air Route Traffic Control Centers (ARTCC) such as Boston, Oakland, and Los Angeles, handle the flights on normal VHF air traffic control (ATC) channels, or frequencies, until the flight reaches the limit of the VHF ground station. Just prior to reaching that point, the ARTCC controller will advise the flight of the primary and secondary HF shortwave frequencies being used. These frequencies do not remain the same. They are changed every few hours as propagation and conditions on the HF bands shift and change.

The primary frequency is normally on a higher or lower aeronautical HF band than the secondary. The primary frequency is

selected because during the upcoming period of operation it is predicted to offer the best communications between the plane and the ground station. The secondary is selected because it is predicted that if the HF band shifts, it will shift in that direction, and the secondary will become the primary, generally speaking. If that happens, another secondary frequency will be selected and assigned.

Before the flight starts, the first officer does a ramp communications check consisting of a VHF and HF radio check to insure that both communications systems are working. These radio checks are normally done on company frequencies and not with ATC controllers. Part of the check is the Selcal check.

As mentioned earlier, Selcal is a dual, two tone sound or beep. Every advanced state-of-the-art commercial airliner is equipped with Selcal. The dual, two tone sound is identified by four letters. When the first officer asks for his Selcal check, he will advise the company station radio operator of this four letter identification. For example, the pilot will say, "Please give me a Selcal check. Our Selcal is Hotel-November Tango-Bravo." The radio operator then transmits the dual tones of HN-TB and you will hear a dual, two tone sound. In the cockpit these Selcal tones cause a light to come on, open the squelch on the radio receiver, and cause a bell or chime to ring. This is acknowledged as a valid Selcal check. As the flight reaches the HF entry point, the pilots are advised of the primary and secondary shortwave frequencies, and again the Selcal system is checked.

It might be interesting to note that most state-of-the-art commercial aircraft used by the larger airlines today also use Selcal on the VHF company channels. These frequencies are found between 129 MHz and 132 MHz on the "company" portion of the VHF aeronautical band.

Selcal allows a frequency to be monitored without actually having to listen to it. Once ATC or company radio operators have the Selcal code for a flight, they can get in touch with the flight crew just by sending the Selcal tones, alerting the pilots of a pending radio message. It works the same on VHF as on HF.

Here is something else that most shortwave listeners don't know. When operating inside the United States, you hear pilots talking to and receiving instructions from the FAA Air Route Traffic Control Centers while enroute. The voice of the controller is coming from an FAA employee, a controller in the Boston Center for example. When you hear an international flight working "New York" on shortwave, the voice is not that of

an FAA air traffic controller although the FAA might be controlling the flight within the "New York airspace." You are listening to an employee of ARINC, Aeronautical Radio. ARINC serves as the communicators or radio operators for the FAA, relaying the controller instructions to the enroute flights.

While in international airspace, say over the Atlantic Ocean, a flight must let ATC know their position at least every hour. In addition to the regular position reports and the related enroute weather information that is always included, a flight must advise the controller by radio any time they vacate a previously assigned altitude, when they reach a newly assigned altitude, and whenever they leave an assigned holding fix. They must also tell ATC if they encounter any weather conditions that are hazardous or unforecast, such as a line of thunderstorms. ATC must be advised in case any piece of navigation or communications equipment fails. Pilots must also advise ATC if their true airspeed changes from that of the initial flight plan by plus or minus five percent. ATC must be notified if the flight has a change in the estimated arrive time over the next fix of plus or minus three minutes. And, of course, ATC must know of any emergency that is taking place.

As you can tell, there is much more to listen for on the HF aeronautical frequencies than just routine position reports. It can get pretty busy and interesting at times.

Aeronautical HF weather reports, called Volmets, are broadcast at regular intervals on shortwave. Volmet is an abbreviation of a French phrase meaning "flight meteorology." These weather information broadcasts are normally done at regular times and repeated several times during the hour. For example, Shannon ATC broadcasts Volmet weather on 3413 kHz, 5505 kHz, 8957 kHz, and on 13264 kHz at five minutes after the hour and 35 minutes after the hour, every hour. These weather reports give current weather and forecast weather for Shannon, Prestwick, London, Amsterdam, and Manchester airports. Other HF weather stations such as Hong Kong, Bombay, and Tokyo also maintain a regular weather broadcast schedule on other close-by frequencies in the aeronautical band. When there is weather at a destination airport or enroute, the HF aeronautical band traffic increases at a rapid rate. These periods can bring hours of exciting listening.

When monitoring the aeronautical bands, remember that the higher frequencies are normally used in the daytime and the lower frequencies at night. This is because of normal propagation.

Although it is impossible to list all ARINC
(Continued on page 46)

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MFJ-108B

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POP'COMM's World Band Tuning Tips

August—1995

| Freq. | Station/Country | UTC | Notes | Freq. | Station/Country | UTC | Notes |
|-------|----------------------------------|------|-------|-------|--------------------------------|------|------------|
| 2390 | R. Huayacocotla, Mexico | 1130 | SS | 6040 | R. Thailand | 1130 | |
| 3220 | HCJB, Ecuador | 0430 | | 6055 | R. Rwandaise, Rwanda | 0430 | |
| 3240 | TWR, Swaziland | 0300 | | 6070 | CFRX/CFRB, Canada | 1200 | |
| 3250 | R. Luz y Vida, Honduras | 0100 | SS | 6075 | Deutsche Welle, Germany | 0330 | gg |
| 3280 | La Voz del Napo, Ecuador | 1000 | SS | 6080 | HCJB, Ecuador | 1030 | SS |
| 3290 | Namibia Broadcasting Service | 0345 | | 6095 | Vatican Radio | 0250 | |
| 3300 | R. Cultural, Guatemala | 0300 | | 6130 | CHNX, Canada | 0600 | relay CHNS |
| 3306 | ZBC, Zimbabwe | 0300 | s/on | 6140 | R. Nationale du Burundi | 0300 | FF |
| 3325 | R. Maya, Guatemala | 1100 | SS | 6150 | Caracol Colombia | 0330 | SS |
| 3340 | R. Altura, Peru | 1030 | SS | 6155 | R. Austria Int'l | 0700 | |
| 3366 | GBC, Ghana | 0600 | | 6165 | R. Netherlands, Bonaire relay | 0100 | |
| 3370 | R. Tezulutlan, Guatemala | 1100 | SS | 6165 | Swiss Radio Int'l | 0530 | |
| 3380 | R. Chortis, Guatemala | 0130 | SS | 6183 | R. Nacional Amazonas, Brazil | 0900 | PP |
| 3396 | ZBC, Zimbabwe | 0256 | s/on | 6250 | R. Nacional Malabo, Eq. Guinea | 0500 | SS |
| 3870 | R. France Int'l | 0000 | SS | 6260 | V of Greece | 0130 | GG/EE |
| 4010 | Vatican Radio | 0327 | s/on | 6299 | Sani Radio, Honduras | 0100 | SS |
| 4460 | R. Norandina, Peru | 0400 | SS | 6627 | LV de San Antonio, Peru | 0300 | SS |
| 4753 | RRI Ujung Pandang, Indonesia | 1200 | II | 6895 | R. Sensacion, Peru | 0100 | SS |
| 4760 | ELWA, Liberia | 0600 | | 7100 | VOIRI, Iran | 0030 | |
| 4765 | R. Rural, Brazil | 0230 | PP | 7115 | AWR via Slovakia | 0730 | |
| 4770 | R. Nigeria, Kaduna | 0430 | | 7125 | RTV Guineenne, Guinea | 0530 | FF |
| 4775 | Onda Musical, Dom. Rep. | 0130 | SS | 7145 | R. Thailand | 1300 | CC |
| 4780 | R. Ukraine Int'l | 0400 | | 7150 | Trans World R., Swaziland | 0400 | vern |
| 4785 | R. Super de Ibaque, Colombia | 0200 | SS | 7150 | R. Vilnius, Lithuania | 0000 | LL/EE |
| 4800 | R. Lesotho | 0300 | | 7170 | ORTS, Senegal | 0700 | FF |
| 4815 | RTV Burkina, Burkina Faso | 0700 | FF | 7210 | Qatar Broadcasting Service | 0245 | AA |
| 4820 | La Voz Evangelica, Honduras | 0300 | | 7260 | R. Vanuatu | 0930 | |
| 4830 | R. Tachira, Venezuela | 0200 | SS | 7270 | R. Oranje, S. Africa | 0500 | |
| 4840 | R. Valera, Venezuela | 0300 | SS | 7345 | R. Prague, Czech Rep. | 0700 | |
| 4845 | ORTM, Mauritania | 0630 | FF | 7400 | V of Vietnam, via Russia | 0600 | SS |
| 4865 | La Voz del Cinaruco, Colombia | 0600 | SS | 7448 | V of Greece | 0130 | |
| 4865 | R. Sentinela, Brazil | 0800 | PP | 7450 | R. Denmark, via Norway | 0230 | DD |
| 4870 | ORTB, Benin | 0530 | FF | 7475 | RTT, Tunisia | 0400 | AA |
| 4885 | R. Clube do Para, Brazil | 0000 | PP | 9200 | R. Omdurman, Sudan | 1800 | |
| 4890 | NBC, Papua New Guinea | 1100 | EE | 9335 | R. Fana, Ethiopia | 0327 | s/on |
| 4915 | GBC-Radio One, Ghana | 0400 | | 9380 | CPBS, China | 1200 | CC |
| 4920 | R. Quito, Ecuador | 0200 | SS | 9425 | Monitor Radio, Saipan | 1230 | |
| 4930 | R. Internacional, Honduras | 0130 | SS | 9445 | Voice of Turkey | 2330 | TT |
| 4955 | R. Nacional, Colombia | 0300 | SS | 9475 | R. Cairo, Egypt | 0200 | |
| 4980 | Ecos del Torbes, Venezuela | 0300 | SS | 9500 | Trans World Radio, Swaziland | 0330 | s/on |
| 4985 | R. Brazil Central | 0130 | PP | 9530 | R. Singapore Int'l | 1300 | |
| 5020 | LV du Sahel, Niger | 0500 | FF | 9535 | R. Japan | 1400 | |
| 5030 | AWR-Pan America, Costa Rica | 0330 | SS | 9535 | Swiss R. Int'l | 1000 | |
| 5035 | R. Centafricaine, Cent. Af. Rep. | 0430 | FF | 9540 | R. Espana Exterior, Spain | 0100 | |
| 5047 | RTV Togolaise, Togo | 0500 | FF | 9555 | BSKSA, Saudi Arabia | 1800 | AA |
| 5055 | TIFC, Costa Rica | 0400 | | 9570 | R. Portugal | 0230 | |
| 5055 | RFO, French Guiana | 0400 | FF | 9570 | R. Romania Int'l | 0230 | |
| 5075 | Caracol Colombia | 0300 | SS | 9575 | Radio Medi Un, Morocco | 0030 | FF |
| 5770 | R. Miskut, Nicaragua | 2330 | SS | 9580 | R. Tirana, Albania | 0230 | |
| 5905 | R. Norway Int'l | 0000 | | 9580 | Channel Africa | 0254 | s/on |
| 5940 | V of Vietnam, via Russia | 0400 | | 9600 | HCJB, Ecuador | 0730 | |
| 5960 | R. Japan via Canada | 0100 | | 9605 | UAE Radio, Abu Dhabi | 2300 | |
| 5975 | R. Japan via Canada | 0700 | | 9605 | Vatican Radio | 0330 | SS |
| 6000 | R. Havana Cuba | 0130 | | 9610 | BBC relay, S. Africa | 0230 | |
| 6005 | R. Reloj, Costa Rica | 0200 | SS | 9620 | R. Dniester Int'l, Moldova | 2130 | |
| 6015 | R. Austria Int'l, via Canada | 0530 | | 9645 | R. Bandeirantes, Brazil | 0500 | PP |
| 6020 | R. Netherlands | 0100 | DD | 9650 | R. Korea, S. Korea, via Canada | 1130 | |

| Freq. | Station/Country | UTC | Notes | Freq. | Station/Country | UTC | Notes |
|--------|-----------------------------------|------|-------|--------|------------------------------------|------|-----------|
| 9655 | R. New Zealand Int'l | 1300 | | 13605 | R. Australia | 1100 | |
| 9670 | R. Veritas, Philippines | 1130 | unid | 13635 | Swiss R. Int'l, via Fr. Guiana | 0030 | |
| 9680 | RRI, Indonesia | 1230 | II | 13460 | Croatian (Hrvatska) Radio | 1230 | |
| 9690 | R. Nacional, Argentina | 2300 | | 13670 | R. Vlanderen Int'l, Belgium | 1400 | |
| 9690 | China Radio Int'l, via Spain | 0300 | | 13675 | UAE Radio, Dubai | 1630 | |
| 9700 | R. Bulgaria | 0000 | | 13680v | R. Iraq Int'l | 1200 | AA,irr |
| 9700 | R. New Zealand Int'l | 0800 | | 13730 | All India Radio, Bangalore | 1300 | |
| 9705 | R. Mexico Int'l | 1500 | SS | 13750 | AWR, Costa Rica | 1200 | s/on |
| 9710 | China Radio Int'l | 0000 | | 13770 | Monitor Radio | 2000 | |
| 9725 | RAI, Italy | 0100 | | 13785 | R. Tashkent, Uzbekistan | 1200 | |
| 9735 | R. Nacional, Paraguay | 0100 | SS | 13800 | R. Denmark, via Norway | 1430 | dd |
| 9745 | HCJB, Ecuador | 0730 | | 13860 | INBS, Iceland | 2300 | Icelandic |
| 9755 | Radio Canada Int'l | 0000 | | 15009 | V of Vietnam | 1330 | |
| 9765 | Voice of the Mediterranean, Malta | 0600 | | 15050 | RFPI, Costa Rica | 1600 | |
| 9770 | V of UAE, Abu Dhabi | 2300 | | 15084 | VOIRI, Iran | 2200 | Farsi |
| 9780 | Yemini Republic Radio | 0300 | | 15095 | R. Damascus, Syria | 2030 | |
| 9810 | FEBA, Seychelles | 1530 | | 15115 | R. New Zealand Int'l | 0600 | |
| 9815 | Radio Havana Cuba | 0200 | USB | 15130 | R. Veritas, Philippines | 1130 | |
| 9825 | R. Kiribati | 0600 | | 15168 | R. Tahiti | 0300 | FF/TT |
| 9830 | R. Jordan | 1830 | AA | 15175 | BSKSA, Saudi Arabia | 1200 | AA |
| 9860 | R. Australia | 0900 | | 15190 | R. Africa, Eq. guinea | 2200 | |
| 9860 | Swiss R. Int'l, via Fr. Guiana | 0400 | | 15220 | Golos Rossii | 1200 | RR |
| 9860 | R. Sweden | 1100 | Swed | 15235 | V of Great Homeland, Libya | 2000 | AA |
| 9870 | R. Austria Int'l | 0130 | | 15240 | Channel Africa, S. Africa | 1600 | |
| 9900 | R. Cairo, Egypt | 2230 | | 15240 | R. Sweden | 1330 | |
| 9925 | R. Vlaanderen Int'l, Belgium | 1900 | | 15270 | Deutsche Welle via Rwanda | 2055 | s/on |
| 9977 | R. Pyongyang, N. Korea | 1100 | | 15270 | HCJB, Ecuador | 1930 | |
| 10058 | V of Vietnam | 0000 | VV | 15325 | R. Gazeta, Brazil | 230 | PP |
| 11560 | R. Cairo, Egypt | 1400 | AA | 15325 | R. Canada Int'l | 2100 | |
| 11570 | R. Pakistan | 1700 | | 15345 | RTV Morocaine, Morocco | 1800 | AA |
| 11580 | Trans World Radio, Guam | 1500 | | 15365 | R. France Int'l | 1230 | |
| 11603 | Kol Israel | 2000 | | 15395 | UAE Radio, Dubai | 1330 | |
| 11620 | All India Radio | 1100 | | 15400 | R. Finland Int'l | 1330 | |
| 11650 | R. Sweden | 1330 | | 15400 | BBC via Ascension | 1900 | |
| 11650 | KFBS, Saipan, No. Marianas | 1300 | RR | 15435 | V of the Great Homeland, Libya | 1645 | s/on |
| 11670 | R. France Int'l, via Fr. Guiana | 0130 | SS | 15445 | Radiobras, Brazil | 1200 | |
| 11675 | R. Kuwait | 2200 | AA | 15475 | R. Atlantika, Russia | 1300 | RR, Tu-Fr |
| 11690 | FEBC, Philippines | 1200 | VV | 15475 | Africa Number One, Gabon | 2100 | FF |
| 11700 | R. Pyongyang, N. Korea | 2300 | | 15490 | HCJB, Ecuador | 1700 | |
| 11710 | V of Turkey | 2330 | | 15530 | R. Australia | 2200 | II |
| 11715 | China R. Int'l, via Mali | 0300 | | 15555 | R. Pakistan | 1600 | |
| 11715 | R. Algiers, Algeria | 1800 | | 15565 | R. Australia | 1200 | |
| 11720 | R. Bulgaria | 2100 | | 15570 | All India Radio | 1200 | |
| 11740 | All India Radio | 1530 | s/on | 15575 | R. Korea, S. Korea | 0030 | |
| 11745v | R. Tirana, Albania | 0200 | | 15590 | Vatican Radio | 1345 | |
| 11750 | Qatar Broadcasting Service | 1330 | AA | 15615 | Kol Israel | 1500 | HH |
| 11765 | RAI, Italy, via Ascension Is. | 0200 | II | 15650 | V of Greece | 1400 | GG/EE |
| 11775 | R. Espana Exterior, Spain | 1900 | | 15675 | R. Pakistan | 1430 | Urdu |
| 11790 | VOIRI, Iran | 0030 | | 15675 | R. Copan Int'l, Honduras | 2300 | SS |
| 11800 | R. Australia | 1300 | | 15770 | All India Radio | 1200 | vern |
| 11805 | VOA relay, Thailand | 1230 | | 17490 | HCJB, Ecuador | 1000 | USB |
| 11830 | Vatican Radio | 2250 | | 17500 | RTT, Tunisia | 1330 | AA |
| 11830 | R. Romania Int'l | 0400 | | 17520 | V of Greece | 1430 | GG/EE |
| 11845 | R. Canada Int'l | 2200 | | 17575 | Kol Israel | 1100 | |
| 11850 | R. Norway Int'l | 1200 | Sun | 17605 | R. Netherlands via Bonaire | 1830 | |
| 11870 | FEBA, Seychelles | 1500 | | 17620 | R. France Int'l | 1600 | |
| 11885 | UAE Radio, Abu Dhabi | 2300 | | 17630 | Africa No. One, Gabon | 1430 | FF |
| 11895 | R. Japan via Fr. Guiana | 0300 | | 17655 | R. Netherlands via Bonaire | 1830 | |
| 11905 | R. Thailand | 0030 | | 17670 | Swiss Radio Int'l | 1500 | |
| 11920 | RTV Ivoirienne, Cote d'Ivoire | 2000 | | 17740 | R. Finland Int'l | 1430 | |
| 11925 | V of Mediterranean, Malta | 1400 | | 17745 | R. Algiers, Algeria | 1930 | |
| 11955 | R. Nacional, Angola | 2200 | PP | 17775 | R. Romania Int'l | 1300 | |
| 11960 | VOA via Greece | 1800 | AA | 17810 | R. Japan | 2300 | |
| 11970 | R. Havana Cuba | 0030 | SS | 17820 | R. Canada Int'l | 1300 | |
| 11990 | R. Kuwait | 1800 | | 17870 | R. Exterior Espana, via Costa Rica | 2200 | SS |
| 11995 | FEBA, Philippines | 1300 | | 17870 | RAI, Italy | 1730 | II |
| 12065 | V of Russia | 1300 | s/on | 17895 | Qatar Broadcasting Service | 1400 | AA |
| 12085 | R. Damascus, Syria | 2030 | | 17900 | R. Portugal | 2000 | PP |
| 12095 | BBC, England | 1300 | | 17905 | RFPI, Costa Rica | 1900 | USB |
| 13605 | RS Atlantika, Russia | 0200 | RR | 21455 | HCJB, Ecuador | 1330 | |

No Parrots Allowed

(from page 34)

the lack of evidence of injury caused by the unauthorized operators, it appears that the FCC's legal shortcuts are not justified.

Equally vexing is the FCC's self-congratulatory public notices of each "arrest." Before the accused has an opportunity to defend themselves, before any formal document has been sent demanding payment of forfeitures or other sanctions, before the FCC has even set the particulars of its case, the FCC personnel delights in advertising their "successes" to the world. Such activity is clearly prejudicial to the accused and suggests that no defense has an opportunity for a fair hearing before the FCC. And the content of the notices appears to clearly state that the accused has been arrested, tried, and convicted, even before formal charges have been received.

As an attorney, I am trained to ask a few questions about each circumstance. They are 1) what was the duty?; 2) was the duty breached?; and 3) what was the harm caused by the breach? By asking these three simple questions all legal matters can be analyzed for the seriousness of the matter. When these questions are asked honestly about unauthorized broadcast, one must wonder about the FCC's priorities in devoting substantial resources to this type of violation as compared with others.

I do not suggest that unlicensed broad-

casting is a good thing, an understandable thing, or something which should be encouraged or supported. All unauthorized operation creates greater chaos in the use of the radio spectrum, and is an unfair shortcut compared with the cost and efforts put forth by legitimate operators.

However, the activity should be viewed for what it is, unauthorized operation of a transmitter. Nothing more, nothing less, and certainly nothing more glamorous. By attaching the PIRATE moniker to the activity, it then appears to be far more less glitzy than it deserves to be. It gives unearned importance to something that is neither difficult nor heroic. For the same reasons that the FCC should deal with unauthorized broadcast operations in a professional, unbiased fashion, the amateur community should not glamorize the activity with snappy titles, like Pirate.

I have never met an unauthorized broadcaster who wears an eye patch, has a peg leg, drinks grog, and has a parrot on his shoulder. I have also never seen one which truly runs up the Jolly Roger and challenges the foes directly. Until that day, my first suggestion is that the industry stop use the using the term "pirate." My second suggestion is that the FCC gain some perspective and recognize the difference between unauthorized operation of a 7000 kHz transmitter and a 450 MHz transmitter, is in the injury created, not in the content of the transmissions. ■

You Should Know

(from page 42)

HF frequencies in this column because of space, here is a brief list that might get you started. New York ARINC can be found on these HF frequencies: 2887 kHz, 5550 kHz, 6577 kHz, 8918 kHz, 11330 kHz, 11396 kHz, 13297 kHz, 17907 kHz as they control flights in Sector A. Frequencies for Sector B and C are 3016 kHz, 3455 kHz, 5520 kHz, 5598 kHz, 6586 kHz, 8846 kHz, 8906 kHz, 11387 kHz, and 13306 kHz.

When a serious HF aircraft listener tunes to the primary and secondary frequencies, you will often find him making notes on flight numbers, their current position and their next estimated position, on the weather, and winds. Then, as the listening continues, he will often use a plotting chart or map to keep track of the planes and how they are doing. This can make for hours of interesting listening, especially when you add in all of the extras that often come up. Here is one more hint that might make the listening even more educational. Pick up some airline timetables or a copy of the Official Airline Guide. These helpful booklets can give you information on departure times, arrival times, and airports. Also, don't forget to search out those HF company frequencies and HF datalinks, as these can be especially interesting for those juicy bits of information not normally passed to ATC through ARINC. ■

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CIRCLE 63 ON READER SERVICE CARD

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

What I suspected last month seems even truer four weeks later—activity by pirate broadcasters appears even lighter. It seems logical to put the blame for this on the shoulders of the FCC. Many pirate operators seem to be lying low, for the time being anyway. That makes it harder for pirate fans to make new loggings, obviously. I guess we all just have to work harder at it, while keeping in mind that these situations are not of a permanent nature!

Here's the first "scanner pirate" log I think I've ever seen, sent in from Van B. Johnson, in Missouri. Van says the operator called himself "Cocomo Joe"—"in the crow's nest," and claimed to be broadcasting from Dutchtown, in South St. Louis. Van indicates this was heard from 1420 to 1500 on 44.975 MHz. He also heard the station on 96.1 FM between 0215 and 0400, signing on with the "Twilight Zone" theme and off with "Eve of Destruction." "Joe" talked about neighborhood violence, crooked government, etc., and invited phone reports to (314) 353-3675.

George Roberts, in Pennsylvania logged Up Against the Wall Radio on 6955 upper sideband, running from 0050 to 0125 close with fake advertising and a spoof of Connie Chung.

WLIS was also picked up by Roberts, heard at 2315 to closing at 2239 on 6955 upper sideband, with the usual offering of station interval signals, and mentions of several other pirate stations or hosts. Announced the Blue Ridge Summit address.

Paul Jarmulowicz, in California reports hearing KDED on 6965 upper sideband, running "space music." They gave P.O. Box 452, Wellsville, NY 14895 for reports.

Jack Sheldon, in Michigan had Radio Garbanzo on 6955 upper sideband with Fearless Freddy and Harry P. Ness broadcasting "live from Ethel's Burns Truck," at 2230. Jack says the program content was pretty "low life" and included a lot of fake commercials. Reports go to the above Wellsville address.

Roberts heard Canadian Club on 7414.6 at 0135 with an assortment of rock/punk songs. The broadcast was over-modulated or something, and thus hard to understand, says George.

A station ID'ing as Microdot Radio was heard by Alton Phillips, in New Jersey on 9655 upper sideband around 2330 and featured a Michael somebody-or-other with a talk. Alton says the signal was weak and hard to copy, and he couldn't pick out anything in the way of a QSL address.

Captain Eddy's Radio Airplane was heard by Roberts on 6955 upper sideband at 0010 with a show about the FCC and talk about several station busts. He even

included the telephone numbers for several FCC monitoring stations!

Jazz was heard by Dick Wilkie, in Ohio on 7385 at 0145 with various modern jazz instrumental numbers and a mention of the Wellsville address for reports.

Don Sebesky, in North Carolina found KICK Radio on 7417 at 1830 with some Beavis and Butthead material, several heavy rock and roll numbers, and assorted talk. The host identified himself as Pete Ross(?).

Radio is Not Radio, but it was heard, by Roberts on 6955 upper sideband having some fun at the expense of Radio USA at 2240 tune in.

Sheldon picked up K2000 at 0102 on 6955 upper sideband, running a take off on the "Spectrum" shortwave program hosted by Dave Outhouse, and featuring a lot of call-ins, though Jack isn't sure if the calls were real.

As I said at the beginning, things are a little thin on the bands these days. But there is pirate activity out there and I encourage you to keep the hunt going. These days it seems a lot of stations have given up on the 7300-7500 range in favor of the area around 6955-6965, so I recommend you include "high six" land as one of your regular haunts. Some activity continues on such popular spots as 7385 and 7415 of course, so don't give up on those traditional

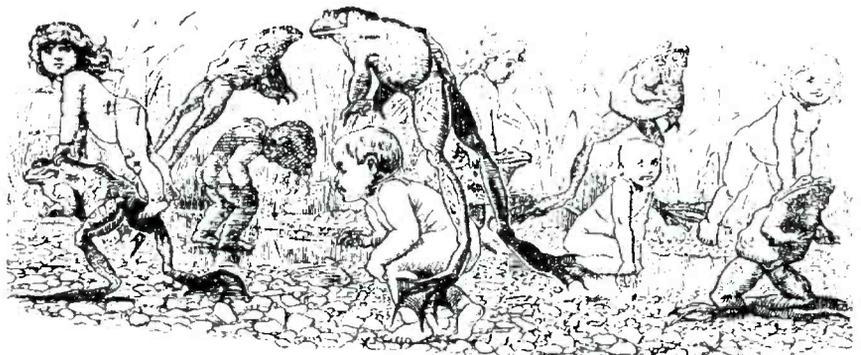


pirate frequencies. As I'm sure you know, weekends and holidays are prime times for pursuing pirates.

Finally, please remember that I am anxious to receive your logs and other pirate-related news for inclusion in this column.

Catch ya next time! ■

Bullfrog Radio



Dick Pearce, of Vermont recently received this QSL from Bullfrog Radio.

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



GPS Firmware & Optional APRS Adapter

AEA's PK-12 Packet controller now includes firmware which enables it to connect to GPS receivers with an NMEA-0183 interface.

AEA's optional APRS Adapter Cable for the PK-12 was designed for Hardware Single Port Mode operation. This cable lets users running APRS (Automatic Packet Reporting System) software devote only one COM port for the GPS receiver and the PK-12. This is a great feature since most computers only have two COM ports with one used by a mouse. Laptop users only have one COM port so AEA's APRS Adapter Cable is a must.

When used without the APRS adapter cable, the new firmware lets the PK-12 be used as a Stand Alone Tracking device. This means a PK-12 can obtain positioning information from a GPS receiver and beacon it in Packet over the ham bands through a transceiver without using APRS software; no computer is needed.

Vehicles equipped with the PK-12 parse GPS data so no computer is needed and the new adapter cable solves many hardware constraints. The PK-12 itself is a solid 1200bps Packet controller. It features Gateway firmware, so it works as a node; it is compatible with PC PakRatt for Windows 2.0 for ease of use, and it comes standard with 15K MailDrop (32K RAM) which is easily expandable to 100K (128K RAM).

The PK-12 is inexpensive, light, compact, and it uses little power. These qualities make it perfect for going mobile—which is what GPS is all about.

Integrating GPS with the PK-12 results in a powerful tool for tracking vehicles and people during disasters, and for mapping DX spots (an eyeball QSO with every spot). Send messages to other APRS users or just keep track of mobile units with Packet and communicate with voice.

The new firmware built into the PK-12 is GPS and Loran compatible. The PK-12 is also ULTIMETER-II compatible which allows users to receive weather information from remote sites. Further the PK-12 is ARNAV compatible, something no other GPS TNC can do.

The PK-12 Packet controller and APRS Adapter Cable, as well as the rest of AEA's high quality product line, are available from your favorite amateur radio dealer. For more information, call AEA's Literature Request Line at 1-800-432-8873.

Wireless Vehicle Alarm Systems

Midland Communications announced that the company's line of wireless remote vehicle alarm systems and related accessories is available through Midland's international network of land mobile two-way radio dealers. The line comprises three product levels.



Model 72-375A is a completely portable unit that installs easily and is movable from vehicle to vehicle. It features a standard key arming system featuring thousands of user-adjustable codes, to arm or disarm from up to 30 feet from the vehicle.

Model 72-372 is a complete permanent system providing sensing for shock, voltage, and glass breakage. Offering both passive and remote arming, the system features a powerful 120 dB siren plus a wireless valet function.

A deluxe model, 72-373, offers wireless remote arming/disarming and panic protection, wireless valet override parking white flasher, door open notification, and numerous other high technology features.

For complete information contact Midland LMR Marketing Department, 1690 North Topping, Kansas City, MO 64120, or call 1-800-MIDLAND, ext. 1690.

Voice Logging Recorder Offers Instant Message Recall of Multi-Channel Calls

Racal Recorders, Inc., based in Irvine,

CA, demonstrated the modular, multi-channel Rapidax Ranger digital recording system, a computer-based "instant access voice logging recorder based on Racal's Rapidax Recorder.

The Rapidax Ranger system is a total voice-recording solution that easily interconnects to financial trading systems, PBXs, command and control systems, and computer networks. The system is designed for general office environments—in financial institutions, emergency service and transportation industry dispatch centers, for example—where networked users need to simultaneously record, access, and replay from their own station's multi-channel telephone transactions, radio communications, and other voice transmissions.

The system can provide up to 316 remote positions with spoken-message replay capability. Authorized users at their own stations can instantly recall, analyze and manipulate any message in the database, without the need for separate, centralized replay facilities.

"The Rapidax Ranger addresses the need for instantaneous remote multi-user message replay, and no other voice logger can deliver simultaneous remote replay to one hundred percent of the stations recorded," said John Cummings, Racal Recorders' vice president/general manager.

The Rapidax Ranger system features parallel disk-and-tape data storage capacity:

- Short-term—a large-capacity hard disk provides instant access to a comprehensive database of up to 5,000 messages, or 125 channel-hours of speech.

- Long-term—an archive tape system using the DDS DAT (digital audio tape) format can record more than 675 channel-hours of speech on one tape.

Telephone users search for messages on the database through a system manager's console. To directly access the database and listen to messages, operators at individual stations use either a desktop console (DTC) or a PC running a Windows™ application. Unlike usual recording systems, Rapidax Ranger utilizes a multi-tasking operating system to provide these remote users with complete, independent and simultaneous access to recorded messages.

All replay sessions take place without affecting the recording process, which continues uninterrupted.

To ensure highly secure recorded information, Rapidax Ranger system administrators can set up 999 different accounts with different levels of access through password identification. The system monitors usage by individuals, detailing times and modes of operation to provide valuable criteria for database message searches.

Housed in a compact chassis, the mod-

ular Rapidax Ranger is equally suited to desktop or rack-mounted configurations that can cover any requirement. When networked together, the Rapidax system can simultaneously record and replay a maximum of 316 channels.

Racal configured the Rapidax Ranger system around:

- a *Central System Workstation* recorder module utilizing AT&T DSPR32C digital signal processors (one per channel). Attached are a Rapidax Ranger custom keyboard with "quick action" keys, a serial mouse and a VGA monitor (color or monochrome) for system setup and management. This central workstation not only acts as the control center for the system, it also has a full replay capability. The system manager can select whether to control the system directly at the central system unit, or remotely in a more convenient location.

- *Desktop console (DTC) interface unit* connects up to 15 desktop consoles for remote operator replay, as an input connection unit supports all voice inputs (telephone, radio, microphone, etc.) for each Rapidax Ranger unit.

- With *DTCs*, operators enjoy the convenience of replay from their stations. The desktop consoles provide 17 keys for replay and features, plus a 16-character LCD display giving on-demand indication of message status, date, and time (current and replayed), dialed number, replay position, message duration and channel number.

- *Rapidax for Windows/PC Connectivity*. The Rapidax Ranger system includes optional inter-connectivity to PCs, allowing control and replay within the Windows environment. This option allows users to access messages stored on Rapidax Ranger from their own PCs, running under Windows 3.1. The package is comprised of hardware that fits in the PC and application software that mimics the central system controller. Giving users greater access to features they can have from a DTC, Rapidax for Windows allows remote access to virtually all features available within the system.

The Rapidax recorder is priced from \$15,000, with availability 45 days ARO.

For more information, contact Racal Recorders, Inc., 115375 Borranco Parkway, Suite H-101, Irvine, CA 92718, or circle 102 on our Readers' Service.

C-T21A VHF and IC-T41A UHF Handhelds

Icom introduces a new generation of handhelds, the IC-T21A and IC-T41A. Packed with innovative new features, the IC-T21A and IC-T41A utilize elastomer construction on the side panels for a grip contoured to fit comfortably in your hand. Combined with a lightweight (11.1 ounce) and compact (2-1/16 inch W by 4-1/4 inch H by 1-1/4 inch D) design, the IC-T21A and IC-T41A are a pleasure to use, even during long hours of operation.

A backlit keypad allows access to multiple functions, while a large, easy-to-read display with four selectable levels of contrast indicates 17 different functions, in addition to battery capacity and the sub-band frequency.

The IC-T21A transmits and re-echoes on 144 to 148 MHz; the IC-T41A on 440 to 450 MHz. Both have dual-band receive capability for full duplex crossband operation between the 2-meter and 70 cm bands. With Icom's unique "whisper mode" mic, you can have telephone-type QSO's.

Designed for low-power consumption while receiving (only 8mA on standby) with an SC-1257 power module for six watts* of RF output power with the optional CP-12 13.8V DC power source or optional BP-153 battery pack, you'll be able to operate longer and even receive in fringe areas. Standard output for the IC-T21A and IC-T41A is 1.4 watts. An auto power control function conserves battery life by monitoring the repeater signal strength and selecting the best matching output power from five levels (down to 15mW.) Further, an auto low power function automatically selects 15mW just before battery exhaustion so you can operate your QSO.

Scan three to four times faster than most handhelds (33 channels per second/12.5 memory channels per second). Other scanning functions include scanning the "bonus band" while the primary band is being scanned. Or use tone scan to identify sub-audible tones if you don't know the tone frequency when trying to access a repeater. Further, you can scan all 114 memory channels. Plus, with six priority watch modes, you can monitor other signals while operating on a VFO frequency.

Innovative memory functions allow you to store the operating frequency, tone/offset frequency, skip information and dual-band frequencies for crossband operation. With the RPT-M key, you can quickly recall the settings of the repeater you worked last.

With memory select, you can quickly access up to 30 of the 100 memory channels. Memory transfer allows you to transfer a memory channel's contents to VFO. An EEPROM ensures that memory channel information is retained virtually forever.

Additional features include the ability to automatically dial your five favorite telephone numbers, a built-in pager, code squelch, pocket beep and tone squelch.

The IC-T21A and IC-T41A come with a flexible antenna, belt clip, hand strap, rechargeable BP-151 NiCd battery pack and BC-74A charger.

For information on pricing and availability, please contact your local amateur radio dealer or Icom America, Inc., 2380-116th Avenue N.E., Bellevue, WA 98004, (206) 454-8155, or circle 103 on our Readers' Service.

*5.5 to six hours with 1:1:8 duty cycle (Tx high, Rx standby)

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27 MHz COMMUNICATIONS ACTIVITIES

When Cobra told me they were bringing out a new AM/SSB base station, I was excited. After all, such an announcement is a rare event in the world of CB radio. And upon learning that the Cobra 2010 GTL WX would be the new top-of-the-line rig for their company, I felt like a kid waiting for Christmas.

The press announcement said the 2010 would be a "side band base station that raises industry standards to a new level for performance and features." But press releases *always* say that kind of thing. Would the 2010 really live up to the marketing rhetoric?

The short answer is that the 2010 is all I hoped it would be—and more besides.

The 2010 looks like it escaped from Lockheed's Skunk Works (the creators of the SR-71)—black, wrinkle-finished metal case; black faceplate with gold lettering; and black molded knobs—pure stealth.

On the upper left corner of the faceplate, the power switch; simply push it to bring the 2010 to life. A jack for headphones is just below the power switch. To the right of that, the volume knob, good-sized and, like all the other knobs on this CB, molded from a rubber compound that is slightly soft to the touch.

To the right of the volume control, an analog signal strength meter with a white background, a red indicator needle, and black and red lettering. Moving still further right, "information central" for the 2010—a large liquid crystal display that shows transmit or receive indicators, mode (AM, LSB, or USB), channel number, and the user's choice of frequency or time.

To the right of the LCD are three small buttons for setting the time and choosing frequency and time display. This is followed by the SWR/modulation meter, which is done up in the same color scheme as the signal strength meter. Both meters are illuminated whenever the 2010 is powered up, and the LCD between them is backlit.

At the far right of the 2010 are four buttons: one each for activating the automatic noise limiter and noise blanker, another for instant Ch. 9 access, and one for activating the rig's weather channel reception.

The lower left corner has the microphone connector, followed by control knobs for microphone gain, squelch, RF gain, clarifier (a concentric knob with fine and coarse rings), mode selector, SWR calibration, and controlling the functions of the righthand meter: calibration, SWR, or modulation. At the 2010's lower righthand



The Cobra 2010 GTL WX 40 Channel AM/SSB with seven Weather Channels—a new standard in base stations. The inset shows the power microphone that is standard with the 2010.

corner is a big, beefy, channel selector knob.

On the back panel of the 2010 is an AC power cord, a connector for DC power, a coax connector, a fuse holder, a jack for an external speaker, and—surprise!—a tiny, separate speaker for the Weather Alert function (more about it later). Part of the top of the transceiver is perforated with holes for a top-firing speaker.

The 2010 measures 13 inches wide, about 4.5 inches from the bottom of its rubber feet to the top of the case, and is roughly 10 inches deep, including knobs and projections. That means the 2010 less real estate on a desktop than its predecessor, the Cobra 2000 GTL, but unlike the 2000, the 2010 does not require an external speaker to operate. And, in another departure from the 2000, the 2010 ships with its own power microphone.

The Power Mike

The 2010's power mike looks like a graceful metal sculpture—a round, flat-black metal base; a flexible silver neck; and a flat black microphone head. There are two buttons on the base of the mike: one for talk, and one to lock the microphone in talk mode. There is also a sliding control to adjust the microphone gain.

On the underside of the microphone are four rubber feet to protect the furniture. Unscrew a knurled knob, and a metal plate drops down for easy access to the 9-volt

battery. The power mike even comes with a foam "puffer" for the microphone head.

A Base Station with Weather Radio and Weather Alert

Across the United States, the National Oceanic and Atmospheric Administration (NOAA) maintains a series of round-the-clock radio stations that broadcast the latest weather information from the National Weather Service on seven different frequencies in the 162 MHz band. When there is threatening weather (a flood watch, tornado, high winds, or severe winter storm), the Weather Service broadcasts a 10-second tone that alerts people to turn on their weather radios to hear a special weather bulletin. The 2010 is equipped to receive all seven NOAA weather radio channels—so you can hear weather forecasts at the touch of a button—and to hear the NOAA weather alert tone.

Here's how it works: the weather alert receiver is automatically turned on whenever the 2010 is plugged into a live wall socket and is connected to an antenna. To activate the alert function, just turn on the 2010, press the WX button, and use the tuning knob to select the NOAA weather channel that comes in best at your location. Then go about your CBing as usual.

From then on, *even if the rig is turned*

off (so long as it is connected to live power), it will receive the NOAA weather alert tone whenever it is broadcast. When that happens, a tone—a very loud tone—will come out of the small speaker on the back of the 2010. That's your signal to turn on the 2010 and punch up the weather channel to hear what the alert is all about.

When I first heard the weather alert tone, I thought that it was excessively loud, but on further reflection, I changed my mind. If NOAA is trying to let me know that a tornado is headed my way, I don't want to sleep through the warning! If you decide, however, that you don't want to bother with the weather alert function, you can defeat it by tuning to one of the weather channels that is inactive in your area.

Attention to Detail

The designers at Cobra Electronics have done a number of things that make the 2010 a pleasure to operate. All the controls are good-sized, well-placed, and easy to adjust. The alphanumeric display in the central liquid crystal display are highly legible, and the channel indicator is positively HUGE—I can easily tell what channel is selected from a good 20 feet away, even with my "over-40" eyes.

I also like the fact that the power switch is independent of all the other controls. That means I can set the volume control to a level that I want and not have to worry about readjusting it every time I power-up the radio. In addition, the volume control is ringed with small gold numbers to indicate the exact volume setting.

And the final production models will be even nicer—when I told the engineers at Cobra that it was sometimes difficult to see where some of the controls were set, they decided to put a gold-colored fill in the indicator slot on each knob.

On the Air

I've saved the best part for last: if you've ever heard or used a Cobra 2000 GTL, then you know exactly what to expect from the 2010. That's because the 2010 retains all the great circuitry—including multi-stage filtering—that made the 2000 base station such a wonderful performer.

The microphone that comes with the 2010 is designed to provide full gain if used with another radio, and the radio itself is equipped with its own microphone gain control which provides maximum flexibility if used with another company's microphone. As a result, when using the 2010 with its own base station microphone, you won't get optimum performance if both the radio and microphone gain controls are turned up full. With both gain controls "maxed out," you'll get slight squealing

between words in AM mode. Through on-the-air experimentation, I found the best combination was to set the gain control on the microphone at "7" and the mike gain on the transceiver at about 1 o'clock.

With the gain controls set properly, my test partners reported the audio from the 2010 in both AM and SSB modes was crystal clear and the signal was just a touch stronger than from the Cobra 2000 I normally operate. On receive, the noise blanker and automatic noise blanker really do their job, giving the 2010 some of the sweetest sounding audio you'll find in a CB anywhere. In addition, I was delighted to find that the top-firing speaker really sounded good.

The Cobra 2000, the predecessor to the 2010, was often referred to as a "legendary" base station. With the introduction of the Cobra 2010 GTL WX, the legend definitely lives on. Suggested retail price of the 2010 is \$659.95. For the name of your local dealer or for more information, call 1-800-COBRA 22, and tell 'em you read about it in POP'COMM.

From the Mail Bag

Jim and Rose Bowles wrote from Oklahoma City, OK, with an interesting question: they currently have an AM-only CB in their recreational vehicle, and wonder if SSB CB be a good addition to their communications capabilities or would GMRS be better?

There so few GMRS licensees in the U.S. (only about 30,000), that it seems odds are against you for getting help on the road, unless you happen to be in an area where GMRS is active. By contrast, there are over 600,000 amateur radio operators in the country (and thousands of 2-meter repeaters). But check this out: industry insiders estimate that there will be 1.5-3.0 million CBs sold this year. In short, CB has the advantage of numbers. Even some of the hams I know from ARRL headquarters tell me they pop a CB into the family car when going on a lengthy trip. Get the SSB CB, Jim and Rose, I think you'll enjoy it.

A Moment of Silence, Please

One of the operators who occasionally helped me in checking out new radios was Frenchman, an old-timer who exemplified the best in CBing. One of the last things Frenchman did before he passed away suddenly was to help in the evaluation of the Cobra 2010. This column is dedicated to his memory. Frenchman, we'll miss you.

Until next time, please send me your cards, letters, questions, and photographs of your operating set-up.

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CIRCLE 71 ON READER SERVICE CARD

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

This month's assortment of news from the shortwave broadcasting world is almost entirely of a positive nature (for a change!).

First off: KGEI will be returning! Far East Broadcasting, which owned KGEI, has donated the station's 250 kW transmitter to "Calvary Chapel," which will operate the station with the same mission it had before—broadcasting to Latin America, especially to Mexico. They'll even continue to use the "Voice of Friendship" slogan. The station, however, will not be broadcasting from its former Redwood City, California location, but, instead, from a new site near Twin Falls, Idaho. No word on when the return to the airwaves will occur. KGEI's former 50 kW transmitter was donated to ELWA in Liberia; it seems likely we could be hearing that one on 4760.

Another station which has returned to the air is CHNX, Halifax, Nova Scotia, back on its old 6130 spot. Eventually it should be broadcasting with what's said to be a fairly new 1 kW transmitter, although its full strength will only be the licensed 500 watts. This station relays CHNS AM/FM, which runs an oldies format.

More Good News

After years—make that decades—of negative news about Radio Denmark comes word that is actually planning to reinstate English broadcasts next year! Can't recall when English was last a part of Radio Denmark's regular schedule, but those programs were the favorites of many SWLs back in the 1950s. Let's keep our fingers crossed, and really support English broadcasts from Denmark if they do happen.

The religious/cult group Aum Shinrikyo was accused of perpetrating the gas attack in the Tokyo subway last spring. This is the same organization that broadcast a program called Radio Aum Shinrikyo over



Dave Jeffery sends this nice QSL from Radio France International. The letters "RFI" are backed by blue, red, and blue, respectively.

Radio Moscow/Voice of Russia transmitters, which many of us QSL'd. The program went off the air not long after the incident. Soon after, the Voice of Russia denied the broadcasts were ever approved or carried on any of its transmitters.

High Adventure Ministries (KVOH—Voice of Hope-Lebanon, Voice of Hope-Asia at Palau) is planning to add still more transmitters. Two 100 kW boxes are being installed at Palau to use for broadcasts to Japan, Australia, and New Zealand, the third will be installed near Jerusalem.

The threatened (further) cutback in Kol Israel's service wasn't implemented. You can still find English from Israel at 0400-0415 on 7465 and 9435, though the former may have since been changed. English is also aired at 1000-1030 on 15640, 15650 and 17575, and 1900-1910 on 7465, 9435, 11605, and 11685.

The Czech station Radio Metropolis, which hadn't been on shortwave more than

a few months, has gone off both shortwave and domestic channels, apparently due to financial problems. They say they hope to be able to work things out and return. Incidentally, we saw one report somewhere which said that the studios used by Radio Metropolis are in a tunnel—and are the same as those used by Radio Prague during the 1968 Soviet invasion!

China Radio International says it got more mail in 1994 than ever—578,744 letters from 179 countries—an increase of 24 thousand over 1993.

Other Things

Rick Barton, in Arizona says he thought he had Deutsche Welle via Rwanda, then realized they are shut down. Rick, during the worst of the civil war they did close the station and used Channel Africa's facility at Meyerton. But Kigali is back "online" now. Sometimes the SWBC scene changes



Looks like Charles Alexander in Columbus, Ohio can have his choice of DXing vintage or modern, depending on the mood he's in.

faster than we can keep up with it.

Thanks to Charles C. Scott, of Scotland, who sent quite a packet of nice QSL cards for use in this column.

Nice to see and visit with Marie Lamb, Sherly Paszkiewicz, Errol Urbelis, and a couple of others at the Winter SWL 'Fest in Pennsylvania, in March. More of you should try to attend this event—it's a fun-filled weekend which always features some great seminars.

We Want—Information!

That line from the old TV series "The Prisoner" hits things right on the head. You know, of course, that your SWBC station loggings are always welcome. We just ask that you list them by country and double space between each station listing (not just between country listings). Also, be sure to include your last name and state abbreviation after each item or we can't use them.

Also welcomed with open arms are station schedules, QSLing information, shack and station photographs, and spare QSLs we can use as illustrations, and station news and background information. Thanks for your continued support!

Here are this month's logs. Non-English language broadcasts are indicated by a language abbreviation, such as FF (French), AA (Arabic), etc. Times are UTC, which is five hours ahead of EST—0000 UTC=7 p.m. EST, 6 p.m., CST, 4 p.m. PST.

ANGOLA—Radio Nacional in PP at 0210-0400 on 3375//4950 with local info. IDs. commercials, pop and hi-life music. (Urbelis, NY)

ANTIGUA—BBC relay on 5975 at 2348. (Harris, TN)

Deutsche Welle relay on 6040 in GG at 0150 with music. ID. list of frequencies in EE. Also 1454 in GG on 15275. (Williams, TX) 1511 on 6075 in GG at 0523. (Foss, AK)

ARGENTINA—Radio Nacional. 6060 in SS at 1040 with news and features. (Behrendt, NE)

ASCENSION ISLAND—BBC relay on 9600 at 0433 and 15400 at 2050. (Harris, TN) 21490 at 1525 and 21600 at 1528. (Williams, TX)

AUSTRALIA—Radio Australia. 7260 at 1455. (Barton, AZ) 9710 at 1404 in CC via Shepparton and 11800 at 1429. (Williams, TX) 2340 on 13605//15240//17860 with pops. 15365//17860//17795 at 2200 with news, ID, sports. "Report From East Timor." (Lamb, NY)

AUSTRIA—Radio Austria Int'l. 6015 via Canada at 0530. (Harris, TN) 9655 in GG at 0006 and 9870 in EE at 0035. (Williams, TX)

BELGIUM—Radio Vlaanderen Int'l. 6030 at 0040 with DX Program. (Behrendt, NE) 17555 at 1505 in FF. (Williams, TX)

BOLIVIA—Radio Villamontes, 4599 at 0945 in SS with continuous Latin American music. (Behrendt, NE)

Radio San Miguel, 4925 at 1000 with ID. announcements, local music and info. (Urbelis, NY)

Radio Centenario. 4855 at 1000 with IDs, commercials, announcements, local music. (Urbelis, NY)

BOTSWANA—VOA relay on new 9630 at 0516; 12080 at 2045 in FF. (Lamb, NY)

BRAZIL—Radiodifusora do Amazonas, Manaus, 4805 at 1000 in PP with music. announcements and IDs. (Behrendt, NE)

Radio Cancao Nova, 9675 at 2205 in PP with talk or interview. (Klingman, NY)

Radio Cairi, Porto Velho, 0305 to 0340 with definite ID. Brazil pops, announcements, time checks. Heard only one night. (Urbelis, NY) (4785. Errol? ed)

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 |

Radio Liberal. 3325 at 0510 with Brazil pops. IDs, commercials. RTTY QRM. (Urbelis, NY)

Radio Rural, Santarem. 4765 at 1000 in PP with music. IDs, talk. (Urbelis, NY)

Radio Sentinel da Amazonia. tentative, 4865 at 0807 in PP with non-stop US standards and Brazilian pops. No ID given but this is supposed to be a relay of Sao Paulo FM station "Radio Lider." (Lamb, NY)

Radio Clube do Para, 4885 at 0755 in PP with live samba music for carnival, talks, crowd sounds, IDs. (Lamb, NY)

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Radio Tupi. 4975 in PP at 0450 with Brazilian pops. IDs. frequency announcement. (Lamb. NY)

Note: Very few Brazilian stations broadcast in Spanish!

BULGARIA—Radio Bulgaria. 9700 at 0013 with music. YL in EE. ID. frequency info. (Williams. TX)

CANADA—Radio Canada Int'l. 5960 at 2346. (Wilken. IN) 9650 in SS at 1300. 9755 at 0024. 9835 at 2330 in SS. 11855 at 1314. (Williams. TX)

CHINA—Central People's Broadcasting System at HoHot in CC on 6840 at 0021. (Foss. AK)

China Radio Int'l via Mali on 11715 at 0053. (Williams. TX)

COLOMBIA—Caracol Colombia. Bogota. 5075 in SS at 1025; 0540. (Behrendt. NE. Foss. AK)

Radiodifusora Nacional de Colombia. on new 4955 at 0313 with SS show "Musica del Caribe." ID. "Pasetas Colombianas" program. greetings to foreign listeners. (Lamb. NY)

La Voz de Yopal. 5040 at 0431 in SS with RCN network IDs. news. jingles. LA pops. (Lamb. NY)

COSTA RICA—Radio For Peace Int'l. 9400 in USB at 0533. (Harris. TN)

TIFC. 5055/9645 at 0507 in SS with contemporary Christian music. ID. phone number. religious program. (Lamb. NY)

Radio Exterior Espana relay. 9630 at 1257 with music. ID in SS. Also 11815 at 1313 in SS. (Williams. TX)

Radio Reloj. 4832 in SS at 0019. (Williams. TX)
Adventist World Radio on 5030 at 0134 in EE. 9725 in SS at 1405. (Williams. TX)

COTE D'IVOIRE—Radio Cote d'Ivoire. 11920 at 0024 in FF with music. (Jeffery. NY)

CUBA—Radio Havana Cuba. 9815 at 0031 and 11760 in SS at 1310. (Williams. TX) 9820 at 0601. (Harris. TN)

Radio Rebelde. 5025 in SS at 2304; 1400. (Williams. TX; Northrup. MO)

CZECH REPUBLIC—Radio Metropolis 7305 with test in EE/RR/GG and Czech at 2050. with IS. address. station info and frequencies. Also on 6200 at

0017. (Lamb. NY) (Off the air at this writing, although they say they hope to return. Editor)

Radio Prague. 7345 at 0018 in EE. 0130 in Czech. 0200 in SS. Multi-lingual IDs at 0129 and 0157. (Pappas. SD)

DOMINICAN REPUBLIC—Radio Barahona. 4930 at 0200 in SS with news. (Klingman. NY)

Onda Musical. 4780 in SS at 0112. (Williams. TX)

ECUADOR—Radio Popular. Cuenca. 4800 at 0014 in local and SS. (Williams. TX)

La Voz de Upano. 5020 at 0131 in SS. (Williams. TX)

Radio Ecos del Oriente. Lago Agrio. 3270 at 1005 in SS with definite IDs. Andes music. local info. (Urbelis. NY)

La Voz del Napo. Tena. 3280 at 0950 with local info. IDs. talks. SS and local language. into Bible program. (Urbelis. NY) 1030 in SS with religious program. (Behrendt. NE)

Radio Centro. Ambato. 3290 at 1010 with talks. time checks. IDs. (Urbelis. NY)

Radio Quito. 4920. reactivated, at 0532 in SS with news. IDs. US and LA pops and "La Voz de la Capital" slogan. ads for "El Comercio," the newspaper that owns the station. (Lamb. NY)

1015 in SS with Latin music and frequent IDs. (Behrendt. NE)

HCJB. 3220 at 0900 in SS. (Behrendt. NE) 17790 at 1518 in SS. (Williams. TX)

EGYPT—Radio Cairo. 9900 at 2324. (Harris. TN) 9990 at 1806 in Italian with talks. ID. Egyptian music. news. anthem. (Lamb. NY)

ENGLAND—BBC. 9590 via Sackville. Canada at 2337 with rock and ballads. (Lamb. NY) 12095 at 1438. (Williams. TX)

FINLAND—Radio Finland. 15400 at 1500 with IS. ID in EE then in Finnish. (Williams. TX)

FRANCE—Radio France Int'l. 5920 in SS at 0142. 5945 at 0144 in FF. 9800 at 0030 in FF. 11995 in SS at 0059. 15365 at 1456. 15460 at 1503. 17575 at 1505 in FF. 12620 at 1526 in FF.

17630 in FF at 1522. 17880 presumed at 1549 in FF. 25820 at 1558. (Williams. TX)

FRENCH GUIANA—RFI relay. 13625 at 1320. 17860 at 1521 and 21645 in FF at 1527. (Williams. TX)

GABON—Africa Number One. 9580 at 2045 in FF with "International Reggae." news at 2100. African pops to 2200. (Behrendt. NE) 17630 at 1509 with FF ballads. (Williams. TX)

RFI relay. 12015 in FF at 1528. 1605 in EE. (Williams. TX; Behrendt. NE)

GERMANY—Deutsche Welle. 5960 at 0526. (Foss. AK) 13780 from Julich at 1444 in GG. 13795 in GG at 1447. 17765 from Wertachtal at 1517 in GG. (Williams. TX)

Bayerischer Rundfunk. 6085 at 0253 in GG with US and GG pops. local time check. ID. news. traffic. weather. DW via Sackville is usually on this frequency after 0300 but not this time. so I could here this. (Lamb. NY)

GHANA—Ghana Broadcasting Corp.. 3366 at 0507 with news and talk. (Jeffery. NY) 4915 at 0000 with African music. ballads. IS. ID in EE. continuing in African language. (Williams. TX)

GREECE—RS Makedonias. 9935 at 0039 in presumed Greek. local music. (Williams. TX) 0000 in Greek with anthem and sign on. (Behrendt. NE) 11595 at 1739. (Klingman. NY)

Voice of Greece. 6260 (new)/7448 at 0014 in GG with talks. EE news at 0130 and 0341. Off 0350. (Lamb. NY)

GUAM—KTWR on 9430 at 1510 with music and Asian language. ID and off at 1514. (Barton. AZ)

GUATEMALA—Radio Cultural. 3300 at 1030 in SS with religious music. (Behrendt. NE) 0410 with EE religious talk. (Klingman. NY)

Radio Chortis. 3380 at 0110 with music. commercial. SS. (Williams. TX)

Radio K'ekchi'. 4845 at 0122 with religious talk in SS. (Williams. TX)

Radio Maya de Barillas. 3325 at 0105 with talk in SS. (Williams. TX)

La Voz de Nahuala. 3360 at 0106 with music. ID in SS. (Williams. TX)

Radio Tezultlan. 3370 at 0108 with chorus. 4836 at 0120 with marimba music. (Williams. TX)

Radio Buenas Nuevas. 4799 in SS at 0318. (Jeffery. NY)

HAWAII—KWHR. 17510 at 2240 in presumed CC with religious talk. "Amazing Grace." IDs in EE/CC. address. "Family Bible." (Lamb. NY)

HONDURAS—Radio Luz y Vida. 3249 at 0228 in SS with presumed religious talk. ID. callsign (H-RPC), frequency announcement and Latin-style Christian music. (Lamb. NY)

HRVC. 4820 at 0230 in SS with "La Voz de Evangelica" ID. (Alexander. OH)

HRET. Puerto Lempira. 0125 in SS. (Williams. TX) 0205-0305 with Latin middle-of-the-road music. (Urbelis. NY)

HUNGARY—Radio Budapest. 9835 at 0032 in FH. (Williams. TX)

ICELAND—ICBS. 13680 at 2305 in Icelandic with news and brief interview. (Jeffery. NY)

INDIA—All India Radio. 9615 at 1352 with chants or singing in an Indian language with sitar music. (Williams. TX) 9910 in EE at 1530. (Pappas. SD)

INDONESIA—RRI Ujung Pandang. 4753 at 2152 in II with pops. "Song of the Coconut Islands." ID. news. followed by a patriotic song. (Lamb. NY)

IRAN—Voice of the Islamic Republic of Iran. 7100 at 0028 in EE with IS. ID. music. (Jeffery. NY) 9575//11790 at 1530 in EE. (Pappas. SD)

IRAQ—Radio Iraq Int'l. 7180 at 0337 with music. (Jeffery. NY)

ISRAEL—Kol Israel. 15640 at 1518 in RR. (Williams. TX)

ITALY—RAI. 7290 at 2108 with SS pops. ID. anthem. bell IS. news in PP. 11800 at 2040 with EE pops. ID. frequencies for Near East. (Lamb. NY) 9575 at 2334 in II. 9645 at 2358 and 21755 at 1527 also in II. (Williams. TX)

JAPAN—Radio Tampa. 3925 in JJ at 0915 with news. discussion. ID. classical music. (Behrendt. NE) 1315. (Northrup. MO) (not "Tanpa." editor)

Radio Japan. 5960 at 0215 in JJ. 6025 at 0525. via Canada (Harris. TN) 5975 via Skelton. England at 0703. (Lamb. NY) 9535 at 1520. (Barton. AZ) 1335 in JJ. (Williams. TX) 11885 at 0536. (Foss. AK)

JORDAN—Radio Jordan. 9560 at 1548 with pops. birthday greetings. news. (Pappas. SD) 9830 at 1828 in AA with Koran. ID. religious talk. music. (Lamb. NY) 11810 in AA at 1433. 11940 at 0057 in AA. and "a little" EE. (Williams. TX)

Behrendt says he recently received a QSL from this station after many efforts, but says he doesn't know if this is a new policy or just random luck. It's certainly a very tough one to pull a reply from. Steve. Congratulations!

KUWAIT—Radio Kuwait. 11990 at 2030 in EE with daily program on the "Deeds of Allah." (Stonikinis. VA)

LESOTHO—Radio Lesotho. tentative. 4800 at 0443 in presumed SeSotho. talks. African music. jingle. presumed news. (Lamb. NY)

BBC relay. 3255 at 0405 with world news. ID. (Lamb. NY)

LIBYA—Radio Jamahiriya. 15235 in AA at 1600. (Jeffery. NY)

MADAGASCAR—Radio Netherlands relay. 9895 at 1413. (Williams. TX)

MALI—China Radio Int'l. via Mali. 11715 at 0000. (Jeffery. NY)

RTV Malienne. presumed. 7286 at 0747 in FF with African guitar music. talks. several mentions of Bamako. (Lamb. NY)

MALTA—Deutsche Welle relay. 6025 at 0525 in AA with talks. Co-channel with Radio Japan/Sackville. Malta site ID. IS and off 0550. (Lamb. NY)

MEXICO—Radio Educacion. 6185 in SS at 0228. with mailing address given in EE. (Alexander. OH) 0744. with EE ID at 0800. (Foss. AK) 6185 at 1050 in SS/EE. (Behrendt. NE)

Radio Mil. 6010 in SS at 0827. ID 0828. (Pappas. SD) 0148. (Williams. TX)

Radio Mexico Int'l. 9705 with ID in SS at 1600. (Behrendt. NE) presumed. 1611 in SS. Also 11770 in SS at 1337. (Williams. TX)

MOLDOVA—Voice of Russia 17625 at 1507 in FF. (Williams. TX)

Golos Rossii. 17670 at 1510 in RR. (Williams. TX)

MOROCCO—RTV Marocaine. 15345 in AA at 1930 with recitations. news at 2030. (Pappas. SD)

VOA relay. 15410 at 2123 with news and promo for "Communications World" program. (Lamb. NY)

Radio Medi Un. 9575 at 2334 in AA with talk and

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CIRCLE 86 ON READER SERVICE CARD



A recent QSL from Radio Bulgaria. Apparently they are heard on Mars!

music, QRM'ing Italy. (Williams, TX)

NAMIBIA—Namibian Broadcasting Corp., 3270//3290 at 0423 in EE with sports, news, time check, ID, commercial for Rembrandt Van Rijn cigarettes. (Lamb, NY) 3290 at 0432 with music. (Jeffery, NY)

NETHERLANDS—Radio Netherlands, 6020 at 0149 in DD, 9840 at 0034, 11655 at 0051, 13700 at 1442 and 13770 in DD at 1443. (Williams, TX)

NETHERLANDS ANTILLES—Radio Netherlands Bonaire relay, 6165 at 0220. (Harris, TN)

NEW ZEALAND—Radio New Zealand Int'l, 9700 at 1033. (Barton, AZ) 15115 at 0418 with National Radio relay. (Jeffery, NY) 0609. (Harris, TN)

NORTHERN MARIANAS—KFBS, Far East Broadcasting, 9495 at 1325 in CC. Also on 9670 at 1359 with EE ID, IS, into unidentified language. (Williams, TX)

NORWAY—Radio Norway Int'l, 5965 at 0559 with IS, EE ID, frequencies, news in NN. (Lamb, NY)

PAKISTAN—Radio Pakistan, 11570 at 1659, going into EE with ID, news, commentary, Koran with EE translation. (Lamb, NY)

PAPUA NEW GUINEA—NBC Port Moresby, 4890 at 1015 in EE with pops, public service messages. (Behrendt, NE) 0840 with sports of Papua New Guinea. (Foss, AK)

Radio New Ireland, Kavieng, 3905 at 0900 in local language with pops and local music. (Behrendt, NE)

Radio Manus, Lorengau, 3315 at 1030 in EE and pidgin, with news. (Behrendt, NE)

PARAGUAY—Radio Nacional, 9735, 2235 in SS with music and ID. Co-channel QRM from Radio Oman. (Jeffery, NY) 0022 with drama in SS. (Williams, TX)

PERU—Radio La Hora, tentative, 4860 2354 in SS and language with talks, folk music, many mentions of Cusco. (Lamb, NY)

Radio Ancash, 4990.9 in SS at 0953 with music and talk with heavy echo effects. (Pappas, SD)

Radio Tropical, Tarapoto, 4935 at 1020 in SS. (Behrendt, NE)

Radio Atlantida, Iquitos, 4790 at 1000 in SS. (Behrendt, NE)

Radio Paucartambo, Cusco, 5855 at 1030 in SS. (Behrendt, NE)

Radio Eco, Iquitos, 5097 at 1025 in SS with LA music and rock. (Behrendt, NE) 1005-1030 with Andes music, talks, ID, time checks. (Urbelis, NY)

Radio San Martin, Tarapoto, 4810 at 1000 with Andes music, IDs, commercials. (Urbelis, NY)

Radio Altura, Cerro de Pasco, 1010 in SS with Andes music, ID. (Urbelis, NY)

La Voz de Selva, Iquitos, 4825 at 1005 in SS, heavy

QRM from Venezuela-4830. (Urbelis, NY)

Radio Maranon, 4835 at 1002 sign on with anthem, ID, frequency and music. Wiped out by Radio Tachira-4830 sign on. (Urbelis, NY)

Radio Cora, Lima, 4915 at 1000 with Andes music, announcements, IDs. (Urbelis, NY)

PHILIPPINES—FEBC, 9475 at 1323 in presumed Asian language. (Williams, TX)

Radio Veritas Asia, 9520 at 1332 in presumed Asian language. (Williams, TX) 9760 at 1526 in EE with ID, into Urdu at 1530. (Barton, AZ)

PORTUGAL—Radio Portugal, 9570 at 2350 in PP. (Harris, TN) 2333 in PP. Also 9635 at 2342 with comedy program. Also 15200 at 1507 with sports, 21515 at 1554 and 21655 at 1556, all PP. (Williams, TX)

Deutsche Welle via Sines, 15145 at 1900 with frequencies, news, ID. Parallel Rwanda relay on 9670. (Lamb, NY)

RUSSIA—Voice of Russia, 7125 at 0003 with news. Doesn't seem as polished and professional as it once was. (Wilden, IN)

7345 at 0555. (Harris, TN) 0480 at 2327, 9490 at 2328 in FF, 11695 in CC/RR at 1422. (Williams, TX) 13680 in RR at 1236. (Jeffery, NY)

RS Tikhy Okean, 5920//7175 in RR at 0844. (Pappas, SD)

Radio Lena, 59220 at 0919 with man, woman announcers and music. Covered at 0957 by RFI via Fr. Guiana. (Pappas, SD)

RWANDA—Deutsche Welle via Kigali, 17860 at 2136 in GG with pops, talk, pops, site ID. (Lamb, NY)

SAUDI ARABIA—BSKSA, 9555 at 2213 with recitations. (Pappas, SD) Here and 9870 at 1818 in AA with mideast music, news, ID. (Lamb, NY) 15165 at 1434 in AA. (Jeffery, NY) 15175 in AA at 1450. (Williams, TX)

SEYCHELLES—FEBA, 9810 at 1410 in unidentified language. (Williams, TX)

BBC relay, 11730 at 0424. (Jeffery, NY) 11860 in unidentified language. (Williams, TX)

SINGAPORE—Radio Singapore Int'l, 9530 at 1104 with news, ID, weather; 1334 with news. (Barton, AZ; Williams, TX)

BBC relay, 9605 at 1351 in Asian language, also 9740 at 1407. (Williams, TX)

SLOVAKIA—AWR, 7115 at 0745 with music and religious language. (Pappas, SD)

SOUTH AFRICA—Radio 2000/Afrikaans Stereo, 3320—a seasonal switch from 4810—at 0253 in Afrikaans. Into Afrikaans Stereo at 0300 with time check, ID, news, jazz, pops and classical. (Lamb, NY)

Radio Oranje, 3230 at 0157 in EE/Afrikaans with pops, IDs. (Lamb, NY)

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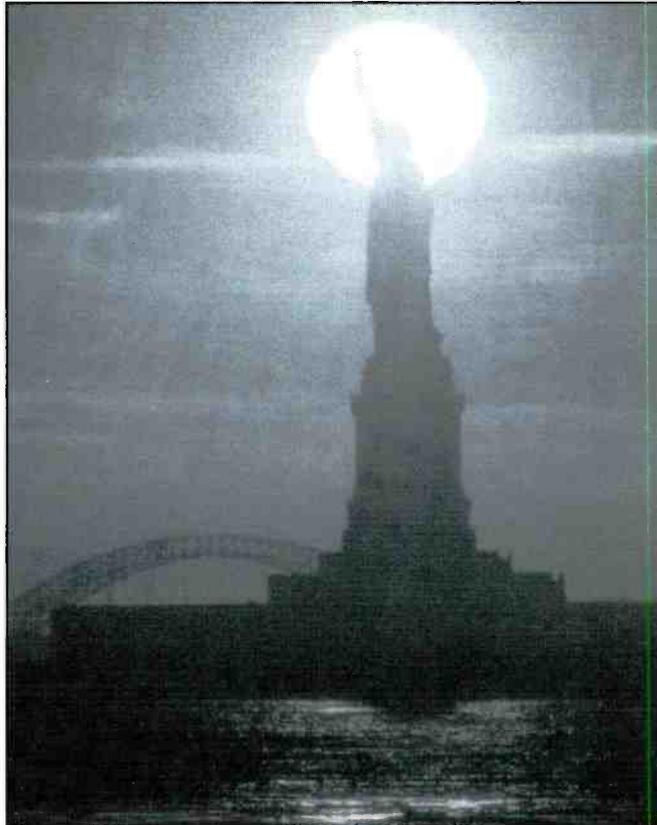
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CIRCLE 55 ON READER SERVICE CARD



This colorful card from Radio Exterior de Espana shows a scene in Madrid. (Thanks: Charles Scott)

One of the dozens of full color QSLs the VOA has issued in recent years. (Charles Scott)



SPAIN—Radio Exterior Espana. 6055 at 0000 with ID, time pips. (Wilden, IN) 9540 at 0213 in SS. (Harris, TN) 9620 at 2340 with music, IS, ID. 15110 at 1448 in SS. (Williams, TX)

Radio Liberty relay, 9640 at 0427 in RR with old time jazz, big band music, ID, talks. (Lamb, NY)

SWEDEN—Radio Sweden, 11650 at 1441 with "60 Degrees North" program. (Wilden, IN) 11650 at 1419 in RR, 15240 at 1450. (Williams, TX)

SWITZERLAND—Swiss Radio Int'l, via Brasilia, 5887 at 0140 in SS. 9885 at 0208. (Harris, TN) 9895 at 0036, 9905 at 0038, 13635 at 1440, all in GG. (Williams, TX)

TAIWAN—Family Radio via Taiwan relay, 9465

2326 with hymns, talk in CC. (Williams, TX)

THAILAND—Radio Thailand, 7145 in CC at 1318, EE ID 1330 and into Thai. Via VOA's Udorn Thani site. (Pappas, SD) 11835 at 2030 to Europe and Asia with news. 2045 with chimes, ID and into news in Thai. ((Behrendt, NE)

VOA relay, 9645 at 1357 in EE, then into unidentified language. Also 9680 at 1402 in CC. (Williams, TX)

TOGO—Radio Kara, 3222 at 0535 in FF with hi-life music, announcements, rooster crows, dog barking. Different than 5047. (Urbelis, NY)

TUNISIA—RTT Tunisienne, 7475 at 2207 in AA with Koran readings. (Klingman, NY)

TURKEY—Voice of Turkey, 9445 at 2322 with

"The Turkish Album." Also 9460 in TT at 2319. (Williams, TX)

UKRAINE—Radio Ukraine Int'l, 17725 at 1513 with classical music, presumed Ukrainian. (Williams, TX)

UNITED ARAB EMIRATES—UAE Radio, Dubai, 15320 at 1511, music and talk in AA. (Williams, TX)

UAE Radio, Abu Dhabi, 9605 at 2339 in EE with AA and western music. (Williams, TX)

VATICAN CITY—Vatican Radio, 6245 at 0544 in FF. (Foss, AK)

9660//11625//13765 at 1737 in EE with church news and other features, into PP at 1800. Also on new 4010 at 0344 with IS, ID, "Fanfare for the Common Man" and Slovenian broadcast. Into Croatian at 0400, Czech at 0415. (Lamb, NY)

VENEZUELA—Radio Valera, 4840 at 1015 in SS with music, frequent IDs. (Behrendt, NE)

ZAMBIA—ZNBC, 4910 at 0249 sign on with fish eagle IS, anthem, IDs, news. (Urbelis, NY)

ZIMBABWE—ZBC, 3396 at 0324 with African/US pops, slogan "Zimbabwe's Number one radio station." ID for Radio Three service, local time check, news. (Lamb, NY) 0300 with lots of cool jazz, rhythm & blues and soul. (Klingman, NY)

That's it! A lift of your cap and a sweeping bow to the following people who were the good guys this month:

Marie Lamb, Brewerton, NY; Rick Barton, Phoenix, AZ; Marty Foss, Wasilla, AK; Sue Wilden, Columbus, IN; Maria Pappas, Huron, SD; George Stonkinis, Jr., Farmville, VA; Errol Urbelis, King's Park, NY; Stephen Behrendt, Lincoln, NE; Richard Klingman, Mt. Upton, NY; Mark Northrup, Gladstone, MO; Steve Williams, Corpus Christi, TX; Paul Harris, Columbia, TN; Charles Alexander, Columbus, OH and Dave Jeffery, Niagara Falls, NY. Thanks to each of you.

Until next month—good listening! ■



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CIRCLE 84 ON READER SERVICE CARD

BROADCAST DX'ING

BY TIM KRIDEL

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

In the Know: In radio, as in any other business, information is a valuable commodity. Which songs are in the Top 40? How often do you play them? How often does your competition play them? Until recently, gathering such information meant reviewing the charts in magazines like *Billboard* or tuning around the dial to hear what other stations were playing; in either case, this research took up valuable time and was often far from comprehensive. How could the number-one R&B station in, say, New York City compare its playlist against that of the number-one R&B station in Miami or Los Angeles?

Enter Radio Track. Developed by Broadcast Data Systems (BDS), the airplay monitoring service uses computers to "listen" to stations and record which songs and artists are being played. Field monitors—computers interfaced with radios—in various markets across the U.S., Canada, and England tune in selected stations. As it is played, each song is compared by the computer against the pattern library, which contains thousands of unique electronic "fingerprints" for each song, whether it's "I Swear," by the R&B group All-4-One, or "I Swear," by country artist John Michael Montgomery. When a match is made, the computer records the date, time, song, artist, and station.

Each evening, the information is downloaded to BDS headquarters, which sorts and compiles the data according to categories such as the number of plays a song has received in a single market or nationwide, and which stations are playing what songs when and how often. By the following morning, this information is relayed to computers at BDS clients, which include radio stations, *Billboard* magazine, and record labels.

Presently, over 750 radio stations in 125 U.S. markets are being monitored, as well as television music channels like MTV, VH1, and BET. The system can also be used to track commercials on radio and TV.

How to Get Their Attention: Once a broadcaster has decided that a change of format is needed, the next step is to alert listeners that something new is on the way. In past columns we've told you about stations that had filled empty air time between formats with everything from random sound effects—thunder, trains, and creaking doors—to bizarre comedy sketches. A station in the North Kansas City, Missouri, town of Liberty found itself in limbo after dropping its country format in mid-March. Rather than play dead air until a new format was chosen, the management of KKCJ-FM decided to fill the time with Christmas music, but soon found that Christmas albums were scarce out of sea-



The Cape Cod town of Falmouth is home to 50-kw WCIB-FM, "Lite 102." (Courtesy WCIB sales manager Mark Schmit.)

son. And so instead they settled on polka music. Staffers made the rounds at local record stores, amassing 35 CDs—and quite a few strange looks from clerks. "We bought every CD we could find," a station official told the *Kansas City Business Journal*. Still, the sight of someone walking up to the check-out counter with an armful of polka albums was enough to give some clerks pause. "They were reluctant to take a personal check," said program director Beau Reines.

The owners of a pair of Massachusetts stations used a similar approach to provoke audience reaction after abandoning a format of country music. For five days, sister stations WFAL-FM, licensed to the Cape Cod community of Falmouth, and WFXR-FM, of Harwich Port, played a different song

over and over each day. After 24 hours each of the polka "Dance Little Chicken" by Happy Accordion, "Can't Touch This" by rapper Hammer, Tchaikovsky's "1812 Overture," the "Barney" theme song, and "Fly Like an Eagle" by the Steve Miller Band, the stations' switchboards were flooded with calls from hundreds of perturbed listeners.

Station management later admitted that it was all a gimmick to get the public's attention and determine which formats were underserved in the area. "This has worked better than we hoped it would," said general manager Bill Files in an unidentified newspaper article sent to us by *POP'COMM* reader Mark Schmit. "We are trying to conduct a fast sample of our listeners to find out what they want to hear, and...people have been calling in like crazy."

| | |
|---------------|-----|
| STATION | |
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| DATE | |
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POP'COMM reader Richard Kowalski answered our call for QSLs by sending in this card—his own.

Pending AM Call Letter Changes

| Old | New | |
|------|------|------------------------|
| WDCQ | WTLQ | Pine Island Center, FL |
| WPGR | WNWR | Philadelphia, PA |

Changed AM Call Letters

| New | Was | |
|------|------|----------------------|
| KMUZ | KKBK | Gresham, OR |
| KNOB | KKHI | San Rafael, CA |
| KNWX | KIMF | Seattle, WA |
| KQEQ | KRGO | Fresno, CA |
| KREL | KZMP | California, MO |
| KZDC | KZEP | San Antonio, TX |
| KZRK | KAKS | Canyon, TX |
| WACC | WRFM | Hialeah, FL |
| WATB | WWEV | Decatur, GA |
| WIFM | WJOS | Elkin, NC |
| WERD | WMLD | East Point, GA |
| WLAZ | WOEQ | Royal Palm Beach, FL |
| WKAP | WXKW | Allentown, PA |
| WLNO | WNOE | New Orleans, LA |
| WLNK | WQDW | Kinston, NC |
| WQIX | WIQT | Horseheads, NY |
| WVNS | WBVS | Claremont, VA |
| WXLX | WSKQ | Newark, NJ |
| WZNO | WTKX | Pensacola, FL |

Pending FM Call Letter Changes

| Old | New | |
|------|------|--------------|
| KOYT | KPZA | Espanola, NM |
| KZTO | KCHZ | Ottawa, KS |
| WCIG | WWSK | Mullins, SC |

Changed FM Call Letters

| New | Was | |
|---------|------|----------------|
| KANS-FM | KZOC | Osage City, KS |
| KARO | KHEZ | Caldwell, ID |
| KBDN | KAJT | Bandon, OR |

| | | |
|---------|---------|---------------------|
| KBKO-FM | KOHZ | Billings, MT |
| KBSZ | KMEO | Wickenburg, AZ |
| KBZR | KAZR | Coolidge, AZ |
| KCJZ | KDIL | Terrell Hills, TX |
| KEGR | KZAP | Red Bluff, GA |
| KGDE | KYNN | Lincoln, NE |
| KKHT | KKZR | Conroe, TX |
| KMKX | KJQY | San Diego, CA |
| KMXQ | KRRA | Socorro, NM |
| KNCR | KTBG | Paso Robles, CA |
| KNSG | KLPR | Springfield, MN |
| KQNV | KNDE | Sparks, NV |
| KZLF | KJAZ-FM | Alameda, CA |
| KZRK-FM | KAKS-FM | Canyon, TX |
| KZZI | KDDX | Belle Fourche, SD |
| WAIB | WUMX | Tallahassee, FL |
| WASK-FM | WIIZ | Battle Ground, IN |
| WDXZ | WNMX | Newberry, SC |
| WGUL-FM | WBSB | Dade City, FL |
| WJCD | WMXN | Norfolk, VA |
| WKNK | WAPC | Edmonton, KY |
| WLEE-FM | WDCK | Williamsburg, VA |
| WMRQ | WYSR | Waterbury, CT |
| WNJW | WJUX | Franklin Lakes, NJ |
| WNTX | WKGH | Allegan, MI |
| WPGI | WQIX | Horseheads, NY |
| WRWO | WLNE-FM | Montgomery, AL |
| WSJZ | WBUF | Buffalo, NY |
| WSRI | WWEM | Rochester, NY |
| WTBT | WGUL-FM | New Port Richey, FL |
| WTHK | WRVW | Hudson, NY |
| WTJY | WRZR | Johnstown, OH |
| WTYE | WTAY-FM | Robinson, IL |
| WUNX | WFXR | Harwichport, MA |
| WUNZ | WFAL | Falmouth, MA |
| WVLI | WZZP | Kankakee, IL |
| WWFO | WAIB | Lafayette, FL |
| WWXQ | WHMX | Trinity, AL |
| WYKT | WDND | Wilmington, IL |
| WZXI | WSKO | Buffalo Gap, VA |

After hundreds of calls pointed to a lack of adult rock programming in the area, a new format of modern and alternative rock was launched, called the "Underground Network," which Files describes as "very contemporary...mass-appeal new rock." As part of the change, WFAL and WFXR have switched their calls to WUNZ and WUNX, respectively.

Don't Tread on Me: As if they didn't have enough on their hands contending with interference in the crowded AM band and competition from FM, AM broadcasters have over the past few years been

forced to deal with yet another radio signal, that of Public Mobile Services (PMS). With the increasing demand for cellular and paging services has come interference to AM signals from the services' antenna towers that have sprouted up like mushrooms after a spring rain. As one veteran engineer explained to *Radio World*, "I can't tell you how many times I built an AM array thinking this is way out in the country, and three years later they were building housing across the street. Then, later, cell sites were installed in those areas to accommodate that populace." But even when PMS

interference meant that listeners within a station's licensed signal contour had trouble tuning in, AM broadcasters often found themselves with little legal recourse by which to demand modification.

That situation changed with an FCC ruling earlier this year requiring PMS operators to notify any AM stations within one to three kilometers, depending on whether the AM signal is directional or non-directional, of the proposed site of a transmitting tower. PMS operators must also determine if a proposed antenna construction or modification will interfere with AM signals in the immediate vicinity, or pay to have corrected any interference from existing cellular installations.

Bandscan: If you're a DXer looking to add Florida to your list of states heard, or just want to keep your references updated, *POP'COMM* reader Sheldon J. Swartz checks in with a rundown of some of the stations in the West Palm Beach, Florida, area. The current number-one AM station in the West Palm Beach market is news/talk WJNO, which apparently has little trouble getting its signal out—although the station runs only 1 kW on 1230 kHz, Sheldon reports that it has "another 1-kW facility in Pompano Beach, delivering a local signal to



Originally part of the Bee newspaper empire, Modesto, California's KBEE-AM reverted back to its original calls from KOOK and now carries adult standards in stereo. (Courtesy George Saunders, Modesto, California.)

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Applied for Permits to Construct New FM Stations

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| AL Trinity | 88.1 MHz | 12 kW |
| AZ Phoenix | 105.5 MHz | 43 kW (KKER booster) |
| AZ Prescott | 89.3 MHz | 100 watts |
| AZ Show Low | 90.7 MHz | 100 watts |
| AZ Winslow | 95.1 MHz | 100 kW |
| CA Santa Cruz | 90.7 MHz | 316 watts |
| CA Templeton | 100.5 MHz | 1.2 kW |
| FL Sebastian | 95.9 MHz | 25 kW |
| GA The Rock | 88.9 MHz | 9 kW |
| HI Hanalei | 90.9 MHz | 900 watts |
| HI Kilauea | 91.9 MHz | 950 watts |
| HI Lihue | 98.1 MHz | 100 kW |
| HI Princeville | 98.9 MHz | 100 kW |
| IA Des Moines | 93.1 MHz | 6 kW |
| IA Madrid | 96.1 MHz | 6 kW |
| IA Ottumwa | 89.1 MHz | 13.5 kW |
| ID Shelley | 107.9 MHz | 100 kW |
| ID Sun Valley | 107.5 MHz | |
| IL Carlinville | 90.1 MHz | 3 kW |
| IL Charleston | 91.3 MHz | 1 kW |
| IL Galatia | 98.9 MHz | 5 kW |
| IL Salem | 91.3 MHz | 900 watts |
| KY Clinton | 102.1 MHz | 25 kW |
| KY Glasgow | 94.1 MHz | 6 kW |
| LA Franklinton | 98.9 MHz | 6 kW |
| LA Lake Arthur | 107.3 MHz | 25 kW |
| LA Monroe | 88.7 MHz | 25 kW |
| ME Freeport | 89.3 MHz | 8 kW |

| | | |
|-----------------------|-----------|-----------|
| MI Harbor Beach | 103.7 MHz | |
| MN Bagley | 96.7 MHz | 25 kW |
| MN Grand Marais | 90.7 MHz | 25 kW |
| MO New London | 105.9 MHz | 10 kW |
| MP Garapan, Saipan | 101.1 MHz | 3.2 kW |
| MS Tunica | 96.1 MHz | |
| MT Cascade | 104.9 MHz | 73 kW |
| MT Hamilton | 91.9 MHz | 850 watts |
| MT Helena | 91.7 MHz | 950 watts |
| MT Kalispell | 89.9 MHz | 850 watts |
| NC Ocean Island Beach | 93.5 MHz | 6 kW |
| NC Southern Shores | 100.9 MHz | 50 kW |
| ND Cavalier | 105.1 MHz | 44 kW |
| ND Rugby | 95.3 MHz | 6 kW |
| NV Moapa Valley | 104.7 MHz | 3 kW |
| NY Grand Function | 105.3 MHz | 340 watts |
| OH Athens | 95.9 MHz | 6 kW |
| OH Bryan | 90.9 MHz | 750 watts |
| OH Van Wert | 93.9 MHz | 6 kW |
| PA Johnstown | 89.7 MHz | 8 kW |
| PA Tafton | 88.3 MHz | 850 watts |
| PR Mayaguez | 88.3 MHz | 2 kW |
| SC North Myrtle Beach | 88.9 MHz | 100 kW |
| SD Belle Fourche | 102.1 MHz | 10 kW |
| SD Flandreau | 107.9 MHz | 10 kW |
| TX Borger | 106.7 MHz | 6 kW |
| TX Uvalde | 93.7 MHz | 3 kW |
| TX Yuma | 91.9 MHz | 25 kW |

Seeking Changed FM Facilities

| | | |
|------------------------|----------|---------------------------------|
| KLVN Chowchilla, CA | 93.3 MHz | Seeks non-commercial status. |
| KMEO Wickenburg, AZ | 93.7 MHz | Seeks move to 94.1 MHz, 6.4 kW. |
| WFGE Mackinaw City, MI | 94.3 MHz | Seeks move to 94.5 MHz. |
| WGUF Marco, FL | 96.9 MHz | Seeks move to 98.9 MHz. |
| WUTS Sewanee, TN | 91.3 MHz | Seeks move to 88.5 MHz. |

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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.
- Spectrum log function will sweep a frequency spectrum, generate a histogram and log frequency/activity to screen and/or disk in real time.
- 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 logs 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.
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DELTA COMM™ I-7100 communication manager comes complete with Delta Research custom (CI-V) communication interface, UL listed power supply, manual and receiver interface cable for \$349.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H. Contact us for additional information on DELTA COMM™ communication managers for ICOM™ R7000, R71A, R72 and IC735. Performance is proportional to video card, type of computer and receiver squelch detection method.



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Cancelled

| | | | |
|---------|-------------------|-----------|-----------|
| KAEC | Arkansas City, KS | 102.5 MHz | 6 kW |
| KIRO-FM | Everett, WA | 100.7 MHz | (booster) |
| KOOZ | Great Falls, MT | 100.3 MHz | 100 kW |
| KYRK | Eunice, NM | 100.9 MHz | 3 kW |
| WCKM-FM | Cannelton, IN | 102.9 MHz | 3 kW |
| WJTI | Bethany Beach, DE | 103.5 MHz | 830 watts |
| WTFX | Louisville, KY | 100.5 MHz | 50 kW |

Seeking Changed AM Facilities

| | | | |
|------|--------------------|----------|---|
| KCPL | Olympia, WA | 920 kHz | Seeks drop to 3 kW; multiplex from Lacey. |
| KNZZ | Grand Junction, CO | 1100 kHz | Seeks drop to 36 kW during critical hrs. |
| KRMO | Monett, MO | 990 kHz | Seeks move to Cassville. |
| WCHB | Taylor, MI | 1200 kHz | Seeks increase to 50/2.1 kW. |
| WDER | Derry, NH | 1320 kHz | Seeks increase to 10/1 kW. |
| WJJJ | Christiansburg, VA | 1260 kHz | Seeks increase to 2.8 kW. |
| WJMX | Florence, SC | 970 kHz | Seeks daytime increase to 10 kW. |
| WKVN | Quebradillas, PR | 960 kHz | Seeks increase to 1.7/1 kW. |
| WLAW | Fairhaven, MA | 1270 kHz | Seeks move to North Dartmouth. |
| WQLS | Ozark, AL | 1200 kHz | Seeks move to 1210 kHz; 10/1 kW. |

Changed AM Facilities

| | | | |
|------|------------------|----------|--------------------------------|
| KCOH | Houston, TX | 1430 kHz | Increased nights to 330 watts. |
| KMRF | Marshfield, MO | 1510 kHz | Increased to 1 kW. |
| WLUV | Loves Park, IL | 1520 kHz | Added nights with 12.5 watts. |
| WOHT | Cleveland, MS | 1410 kHz | Added nights with 23 watts. |
| WPNX | Phoenix City, AL | 1460 kHz | Dropped to 4 kW/140 watts. |

Changed FM Facilities

| | | | |
|------|------------------|-----------|-------------------------------|
| KDAY | Independence, CA | 106.3 MHz | Moved to 92.5 MHz, 870 watts. |
| WSLN | Delaware, OH | 91.1 MHz | Moved to 98.7 MHz. |

New AM Call Letters Issued

| | |
|------|-----------------|
| KXEM | Bakersfield, CA |
| KXMR | Bismark, ND |

New FM Call Letters Issued

| | |
|---------|----------------------|
| KACG | Eldon, IA |
| KAKD | Eureka, CA |
| KTBI-FM | Ephrata, WA |
| KWRB | Bisbee, WA |
| KZAC | Esparto, CA |
| WAJX | Crossville, TN |
| WAKD | Sheffield, AL |
| WAKF | Murfreesboro, TN |
| WAKJ | Defuniak Springs, FL |
| WAKN | Murfreesboro, TN |
| WCMK | Bolton, VT |
| WRRH | Hormigueros, PR |
| WXNC | Warrenton, NC |

Granted Permits to Construct New FM Stations

| | | | |
|----|---------------|-----------|--------------------------|
| AR | Monticello | 99.9 MHz | 3 kW |
| AZ | Bagdad | 103.9 MHz | 1.4 kW |
| AZ | Bisbee | 90.9 MHz | |
| AZ | Chinlee | 107.3 MHz | 3.6 kW |
| CA | Pleasanton | 98.9 MHz | 186 watts (KSOL booster) |
| FL | Florida City | 88.5 MHz | 21 kW |
| FL | St. Augustine | 105.5 MHz | 1.9 kW |
| ID | Gooding | 100.9 MHz | 100 kW |
| TN | Jackson | 88.1 MHz | 750 watts |
| TN | Murfreesboro | 88.3 MHz | 200 watts |
| VT | Barre | 89.9 MHz | 940 watts |

Fort Lauderdale." If that weren't enough, its sister station in Fort Pierce, WJNX, simulcasts WJNO's programming 24 hours a day. A former WJNO staffer himself, Sheldon notes that this arrangement has helped make the station "one of the most commonly DXed" in the area, with reports from as far away as England.

With more power but less stability is WEAT, which presently carries AP

Network news 24 hours a day after having gone through a half-dozen format changes in as many years. The 850 kHz station has apparently made some other changes as well, since Sheldon reports that it now runs 50 kW days and 1 kW nights into a directional antenna, which contradicts the 1995 *M Street Radio Directory's* statistics of 5 kW and 1 kW, both non-directional. Also struggling is Lantana's 1-kW talker WPBR,

which when unable to sell overnight time to local groups, plays alternative music. Royal Palm Beach's WLVIJ has been broadcasting sporadically—although in the past it has run as much as 50 kW, the religious-format station is now "often at varying powers, low audio, or off the air entirely. The boast [of] a signal to Miami, but even during the day, it peters out right after Fort Lauderdale."

Other AM stations in the area include 5-kW rap/R&B WPOM, 1-kW religious daytimer WLVS, which takes its calls from the fact that it was once owned by Elvis' manager, and WONQ, a Spanish adult contemporary station in Royal Palm Beach that IDs as "Once Q," (pronounced ON-say-KOO and meaning "12 Q").

Some of you may recognize Sheldon's name since he has in the past been a member of the medium wave clubs International Radio Club of America and the National Radio Club. He now has his own nationally syndicated radio program, "Opportunity," and anyone who would like a list of its 65 affiliates may write to Sheldon at P.O. Box 16601, West Palm Beach, Florida 33416-6601.

Majors and Minors: The consolidation



Formerly KBEE-FM, KATM is the sister station of KBEE-AM. (Courtesy George Saunders, Modesto, California.)

craze hit Chicagoland earlier this year when Group W Radio, owner of WMAQ-AM, announced that it had inked a deal to purchase WXRT-FM and WSCR-AM from Diamond Broadcasting. Group W paid \$44 million for alternative rocker WXRT and \$15 million for sports/talk WSCR, according to a *Chicago Tribune* article sent to us by ever-faithful *POP'COMM* reader Elmer Wallesen, of La Grange Park, Illinois. The deal, subject to FCC approval, teams news/sports WMAQ with upstart WSCR—since its debut in January 1992, the 5-kW station has captured a respectable chunk of the Chicago radio market. WSCR also received a green light from the FCC to begin a nighttime signal of 1.2 kW, which should be in place by the time you read this.

East coast readers may recognize the WSCR calls—in the '80s, it made the rounds first on 1220 kHz as Hamden, Connecticut's "Suburban Country Radio," and then on 1320 kHz in Scranton, Pennsylvania. Now, as "The Score," WSCR shares an antenna with WSBC-AM, also owned by Diamond Broadcasting. According to an article in the *Chicago Sun-Times*, courtesy of William T. Hassig, of Mt. Prospect, Illinois, the Chicago-based company will focus its attention on its sole remaining holding in the city, WSBC. The 70-year-old station shares 1240 kHz with WCRW and WEDC, making for an unusual mix of ethnic programming on the channel. Although the three stations have separate owners and facilities, the *Sun-Times* reports that Diamond is negotiating to buy out the other two owners and merge the three into a single, 24-hour operation.

"All Jewish All the Time": Billing itself as "America's Only All Jewish Radio Station," WLIR-AM has found a niche by catering to the sizable Jewish population in the Rockland County, New York, area. *POP'COMM* reader Howard L. Miller sent us the station's ads from the *Rockland Advertiser*, which includes not only a lineup of shows, but also notes that the station can be heard via the Spacenet II satellite on transponder 1, 7.6 MHz, as well as on cable systems based in Fresh Meadows and Manhattan. Another ad mentions a "special introductory offer" for those wishing to produce their own show, and includes a sidebar featuring New York City's WMCA-AM, which is "All Jewish All Night."

In Brief: Nine months after the debut of his Sunday night talk show, former presidential candidate Ross Perot pulled the plug on June 4. A spokesman for the hour-long show's syndicator, Tribune Radio Networks, cited Perot's numerous other commitments as the reason for his departure. It "was taking more time than he envisioned."

A Christmastime spin through the Detroit area radio dial by Jerry Weichbrodt, of Livonia, Michigan, turned up two new formats. Dearborn's WMTG has switched from R&B oldies to children's programming, including the syndicated "Radio Oz,"

and has changed its calls to WDOZ. To the south, Monroe, Michigan's WHND-AM has dropped oldies music for Spanish-language programming, and often IDs with a slogan that sounds like "La Super Gigante."

New to the Grand Junction, Colorado, radio market is KGEM-AM, featuring the greatest hits of the '40s and '50s. *POP'COMM* reader Richard S. Kowalski, of Grand Junction, reports that the former KKTK-AM drummed up support for its new format by offering listeners a "VIP Gold Card," good for discounts at local merchants and a chance to win a \$500 gift cer-

tificate from—what else?—a local jeweler.

During a recent pledge drive, a public radio station in Phoenix, Arizona got an offer it couldn't refuse. Marlon Brando surprised staffers at KJZZ-FM, campus radio station at Maricopa County Community College, with an offer to contribute \$20 each for the first 250 pledges from first-time contributors. The actor made good on his promise with a check for \$5,000.

Thanks: The letters have been pouring in, and you all deserve a round of thanks for your enthusiastic support. Keep up the great work! 73s. ■



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BLUE ANGELS



1995

| | | | |
|---|---|--|--|
| MARCH 18 NAF El Centro, CA 25-26 Mesa, AZ APRIL 1-2 Sanford, FL 8 MCAS Cherry Point, NC 22-23 ^o MacDill AFB, FL 26-30 MCAS El Toro, CA MAY 6-7 NAS Inshore, CA 13-14 NAS Meridian, MS 20-21 Fort Smith, AR 27 NAS Patuxent River, MD 29 U.S. Naval Academy, MD | JUNE 2-4 Detroit, MI 10-11 North Kingstown, RI 17-18 Oklahoma City, OK 24-25 McCombs AFB, KS JULY 1-2 Redding, CA 8-9 Beeshel Park, Canada Hillsborn, OR 15-16 Pensacola Beach, FL 22 Kansas City, MO | AUGUST 5-6 Columbus, OH 12-13 Dubuque, IA 19-20 Reading, PA 25-27 NAS Miramar, CA SEPTEMBER 2-3 NAS Barber's Point, HI 9-10 NAS Whidbey Island, WA 16-17 Smyrna, TN 23-24 NAS Oceana, VA 30 Alexandria, LA | OCTOBER 1 Alexandria, LA 7-8 San Francisco, CA 14 NAS Fallon, NV 21-22 Houston, TX 28-29 Beppington AFB, TN NOVEMBER 4-5 NAS Cecil Field, FL 10-11 NAS Pensacola, FL |
|---|---|--|--|

Norm Pihale, MN, sent in this Blue Angel schedule.

8367.2 kHz has been found to be very active for French Navy ships working 6WW, FUF, and FUM.

Tom Severt, KS, indicates he finally found a couple of the Russian MFA transmissions. "Also, I found an Egyptian diplomatic station in ARQ mode. I noted quite a few sweep jammers on the air lately."

A press release from Globe Wireless describes the installation of three high-gain, log-periodic antennas at the KFS marine radio receive site near Half Moon Bay, California.

"The antennas, designed and manufactured by TCI International, will be used

along with 11 existing antennas to communicate via HF radio, with ships throughout the entire Pacific ocean basin.

"The KFS radio receive antennas are located on an isolated, 300-acre cliff-top site directly at the shore of the Pacific ocean. This location has been in continuous use since 1932, receiving HF radio signals from ships at sea and land stations located around the Pacific rim. Radio engineers have described the site as an ideal location for radio reception from the whole Pacific ocean region.

"Installed were two TCI model 532 improved medium range log-periodic anten-

nas and one TCI model 527B super high gain log-periodic antenna. The gain of the model 532, a single log-periodic array, is 13 dB over a 3 to 30 MHz bandwidth.

"One of the two TCI model 532 antennas is oriented toward New Zealand to cover the Southern Pacific ocean; the other is oriented toward Indonesia and will provide Central and Eastern Pacific coverage. The larger, TCI model 527B antenna is oriented to cover the Panama Canal, and Central and South America."

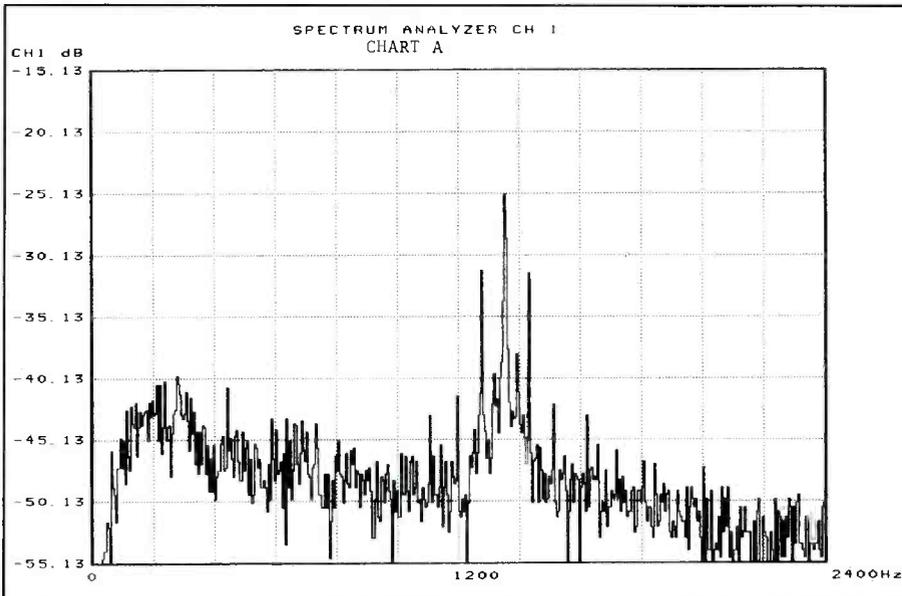
When Donald Tomkinson, CA, used the GOES header details found in the April column, and then combined them with his own information, he came up with a neat quick reference chart (see Figure 1).

Several readers sent in the text of the NMN, Portsmouth, VA, message which announced that HF CW operations were discontinued effective 010001Z April 1995. Here is the message:

CQ CQ CQ DE NMN NMN NMN QRU?
 K NMN WILL QRT ALL CW HF OPS AT
 010001Z APR 95. ANY STATION WISH-
 ING TO QSO NMN FOR THE LAST TIME
 CAN CALL BETWEEN 312300Z MAR
 AND 010001Z APR. NMN WILL BCST
 FINAL MSG AT 010001Z APR 95 ON
 16976/12718.5/8471/5870 KHZ AR

Al Henmalin, RI, saw a "Notice to Mariners" message which indicated the closure of four beacons: 325 kHz, PT, Pt. Judith, RI; 301 kHz, BI Block Island, RI; 296 kHz, SB, Saybrook Pt., CT; and 286 kHz, T, Ambrose Light, NY. Beacon 291 kHz, NP, Nobska Pt., MA was also to be deactivated.

One last item before we look at the loggings. Earlier this year, Globe Wireless added another station to its coastal station network. The new station, call sign KEJ, is located near Honolulu, Hawaii. It will extend HF radio data communications to ships in the Central and Western Pacific Ocean.



The following spectrum analyzer charts are all of a signal on 17480 kHz, USB mode, centered 1350 Hz, with tones 75 Hz on either side of the center tone. Possible U.S. Army transmission, possibly PSK keying 75 or 150 bps. Chart A is when the signal came up. Charts courtesy of Kevin Tubbs, VT.

UTE Loggings SSB/CW/RTTY/SITOR/etc. All Times in UTC.

- 73.25** Probably RAF Crimond in 75 baud at 1808 w/RTTY Crypto msgs. (AB)
- 82.2**: MKL, RAF Edinburgh w/CW mkr at 1712 foll by RTTY. (AB)
- 201**: Beacon YKX, Kirkland, Ont., Canada at 0430. (RH)
- 205**: Beacon COR, Corcoran Salyer Farms, CA at 0512. (BV)
- 211**: Beacon HDG, Gooding, ID at 0856. (SF)
- 218**: Beacon RL, Red Lake, Ont., Canada at 0239. (RH)
- 227**: Beacon CPC, Whiteville, NC at 0955; Beacon SZO, Freyburg, ME at 0905. (AH)
- 233**: Beacon LG, Long Beach, Daughtery Field, CA at 0514. (BV)
- 234**: Beacon RYD, Green Cove Springs, FL at 0959. (AH)
- 248**: Beacon MO, Mobile, AL at 0637. DSB? (PC)
- 251**: Beacon LUG, Lewisburg, TN at 0648; Beacon TZO, Bristow, OK at 0516. (PC)
- 253**: Beacon UR, Burbank-Glendale-Pasadena, CA at 0514. (BV)
- 254**: Beacon 5B, Summerside, PEI, Canada at 0325. (RH)
- 257**: Beacon LKA, Chino, CA at 0515. (BV)
- 258**: Beacon ZSJ, Sandy Lake, Ont., Canada at 0856. DAID. (AH)

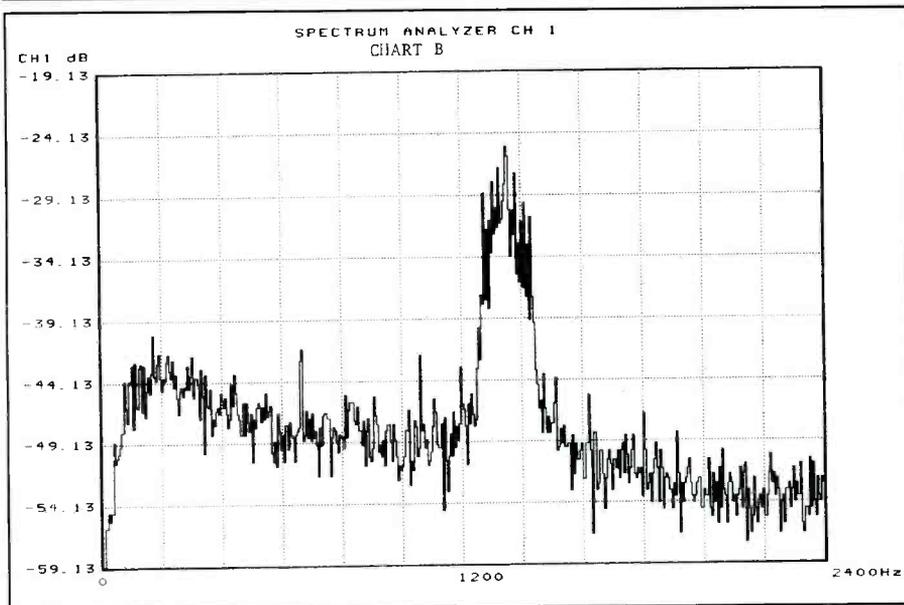


Chart B shows repetitive patterns which may possibly be sync signals.

- 264: Beacon SZT, Sandpoint, ID at 0836. (SF)
- 278: Beacon SB, Salisbury, MD at 0417. DSB; Beacon BKV, Brooksville, FL at 0608. (PC)
- 282: Beacon LRO, Lathrop (US Army), CA at 0930. (SF)
- 285: Beacon JZP, Jasper, GA at 0825. Slow ID. (PC)
- 286: Beacon T, Ambrose LS, NY at 0830. MCNT. (PC)
- 289: Beacon MR, Marina Del Rey Light 3, CA at 0517. (BV)
- 294: Beacon ZIP, Zipaquira, Colombia, 2529 miles at 0939. (AH)
- 299: Beacon TV, Turner Valley Ranch, Alberta, Canada at 0807. (SF)
- 300: Beacon YOG, Ogoli Post, Ont., Canada at 0918. 400 Hz. (PC); Beacon 3B, Brockville, Ont., Canada at 0344. (RH)
- 307: Beacon G, Sand Head LS, BC, Canada at 1036. (SF)
- 317: Beacon CVP, Helena, MT at 0902; Beacon VC, La Ronge, SK, Canada at 0902. (SF)
- 323: Beacon GTN, Georgetown, VA at 1012. (AH)

- 326: Beacon BHF, Freeport, Bahamas at 0257; Beacon PKZ, Pensacola, FL at 0339; Beacon UOT, Union, SC at 0357. (RH)
- 344: Beacon FCH, Fresno, CA at 1045. (SF)
- 348: Beacon MNC, Shelton, WA at 0918. (SF)
- 350: Beacon LE, Raleigh, NC at 0237; Beacon RG, Oklahoma City, OK at 0353. (RH)
- 351: Beacon NO, Reno Cannon Int'l, NV at 0524. (BV)
- 353: Beacon LLD, Lanai, HI at 1019. (SF)
- 356: Beacon TIM, Georgetown, Guyana at 0621. 2550 miles. (AH)
- 359: Beacon BQO, Boise Air Terminal, ID at 0528; Beacon EMT, El Monte, CA at 0528. (BV)
- 365: Beacon PAL, Guayaquil, Ecuador at 0855. 3057 mile. (AH)
- 369: Beacon SLP, Shelby, NC at 0436. (RH)
- 371: Beacon YK, Yakima, WA at 0954. (SF)
- 374: Beacon EKG, Carlsbad Palomar, CA at 0530. (BV)
- 382: Beacon POS, Port of Spain, Trinidad at 0947. 2221 miles; Beacon UPA, Punta Alegre, Cuba at 0933. 1394 miles. (AH)
- 383: Beacon CNP, Chappell, NE at 0748. (SF)

Abbreviations Used For Intercepts

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

- 388: Beacon AM, Tampa, FL at 0407; Beacon GLY, Clinton, MD at 0335. (RH)
- 392: Beacon BZE, Belize at 1044, 1941 miles. (AH)
- 396: Beacon GOL, Gold Beach, OR at 0733. (SF)
- 397: Beacon LLJ, Chalis, ID at 0533. (BV)
- 400: Beacon HU, Sacramento, CA at 0924. (SF); Beacon ENS, Cipres, Ensensada, BCN, Mexico at 0510. First appeared April 1994, has been off/on for total of eight months, last hrd 11 months ago as ENS E, now on here 24 hrs a day. (BV)
- 402: Beacon USJ, San Julian, Cuba at 0647, 1539 miles. (AH)
- 406: Beacon FLR, Fall River, MA at 0510. DSH? (PC)
- 410: Beacon MK, Milwaukee, WI at 0235. (RH)
- 412: Beacon MTU, Mitu, Colombia at 0832, 2793 miles. (AH)
- 414: Beacon PYD, u/i, hrd at 0535. (BV); Beacon SUE, Sturgeon Bay, WI at 1116. (AH)
- 415: Beacon HZE, Hazen, ND at 0909. (SF)
- 420: Beacon TU, Tupelo, MS at 1053, 1078 miles. (AH)
- 468: KSHF, SS Guadeloupe at 2334 in CW w/kg KNFG. (JN)
- 500: KNFG, M/V Sea Wolf clg KSHF at 2333. (JN)
- 515: Beacon SAK, Kalispell, MT at 1045. (SF); Beacon OS, Columbus, OH (Ohio State U) at 0317; Beacon RRQ, Rock Rapids, IA at 0250. (RH)
- 518: Beacon GCT, Guthrie Center, IA at 1049, 1193 miles. (AH)
- 524: Beacon HEH, Newark, OH at 1054. (AH)
- 526: Beacon RWE, Camp Roberts, CA at 1028. (SF)

1630: Beacon TI in CW at 0613. U/i, any info. (BS) This is a MedFER and the actual freq is 1631.40 kHz. It is operated by Rex Wilson, 4550 Vernetti Lane, Kingman, AZ 86401. (Ed.)

1685: Beacon MER, Mercaderes, Colombia in CW at 0109. (BS)

2118: UMOT, SRTMK Itkil' at 0657 in USB w/kg VOT, CCG, St. Johns CG Radio (on 2514 kHz) for R/T t/c. (RB)

2295.8: Believed be Landeskriminalamt or LKA (German State Police) station HFVBR, Berlin, Germany at 0700 in ARQ-E 96/425 idling. These are supposed to be MOI stations run by LKA. (RB)

2965: Bangkok VOLMET in USB at 1643. OM/EE opr. (DW)

3116: Magadan, Russia VOLMET is USB at 1650. YL/RR opr. (DW)

3181: Scrambled speech at 0616. (TS)

3195: SLHF "R" in CW at 1412. Also on 7452 kHz at 1435. (BS)

3230: KAWN in RTTY 75/425 at 0114 w/wx data. (SW)

3330: CHU Time Station at 0115. (SW)

4024: On Wed 0400 CW station sending NNN for five mins then YL/EE with 'Group 25' and into 5F grps. (SM)

4028: YL/SS rptng "atencion 18891" and into 5F grps. Cut nbr stn noted in background w/msg 33927. (TS)

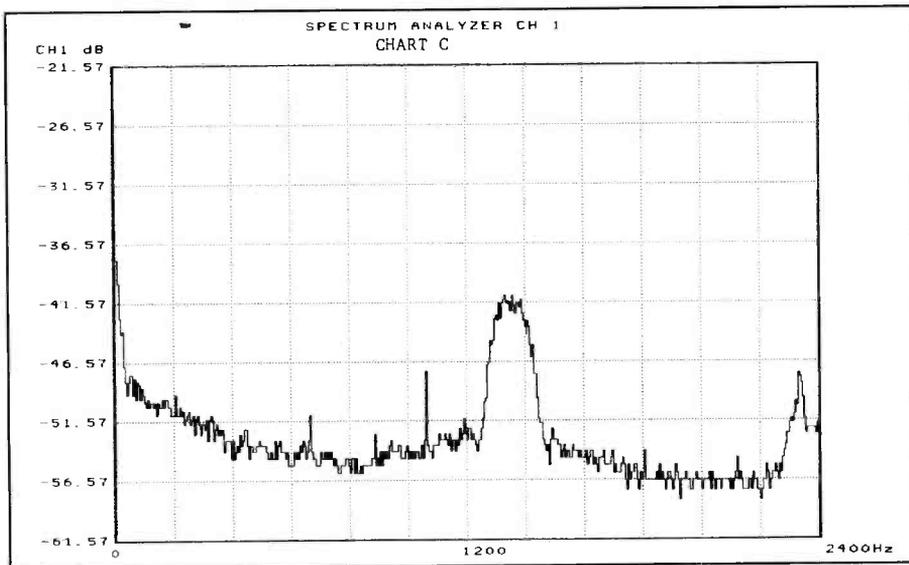


Chart C shows a data transmission now present.



Overall view of the abandoned mystery site.

4175: C6LV2, M/V Mico at 0435 w/ARQ tx ftc. (JN)

4286: VCS, Halifax CG Radio, NS, Canada in CW at 0124 w/mkr. (SW)

4309: WNU, Slidell, LA in CW at 2341 w/CQ QSX mkr. (SW)

4384: VAI, CCG Vancouver at 0700 in USB w/coastal marine forecast, Anchorage wx. (RB)

4516.7: RXB72, Khabarovsk Pogoda (WX) FAX At 1320. (DW)

4520: YL/EE at 0200 rptng 416 til 0205, then 829 829 11 11 foll by 11 grp 5F# msg. Signd off w/00000. (TS)

4572: At 2020 OM/RR with 585 585 585 1, then 122 122 131 131 and into 5F grps. (SM)

4700: Prob CanForce activity; OM opr passing wx for Gander and few other locations. USB mode at 0623. (DS)

4854: Sweep jammer at 0218. Alson on next night at 0323. Jammers also hrd 5266, 7397, 7868 & 7982 kHz. (TS)

5046: YL/EE in AM at 0100 w/3+2F grps. Sent "End" at 0127. Prior to msg sent "Count 87." (WA)

5091: YL opr, vy weak. USB at 0332, rpts "JSR" in phonetics foll by inaudible msg preamble & then into 5L grps. (DS)

5118.2: MARS packet stns AAAOUSA wkng AAT8TCO at 0328. (TS)

5301: At 0400 WED OLX YL/Czech was rptng

'961.' At same time on same freq YL/GG w/1-0 count and '957.' OLX went into 3/2F grps. (SM)

5306: SLHFM "F" in CW at 1328. Also hrd on 7039, 8495, and 13636 kHz. (BS)

5321.5: RETYVM, Guardia Civil, Spain at 0743 in 100/170 Sitor-A. sends Selcall TVAT & into tfc in SS. (RB)

5397: U/i CW stn P7X at 0342 w/120 grp 5L grps w/high-speed data xmsns between CW msgs. (TS) This activity has been observed for years. Poss training activity. (Ed.)

5629: YL/EE in USB at 1926 announcing SYN2 (x6) phonetically. At 1930 sent SYN2 (X51). Mossad stn. (DW)

5691: Irkutsk, Russia VOLMET in USB at 1355. YL/RR opr. (DW)

5696: NOM, USCG AirSta Miami at 0000 ack ETA of a/c 2122 given to CommSta, New Orleans. At 0431, NOJ, USCG CommSta Kodiak, Wkg Res 1715 (HC-130), foll by 6024 (HH-60J), for flt ops & posn. At 0604, NOF, USCG AirSta Clearwater wkg CG 1719 (HC-130) w/status, ETA. At 1759 NOQ5, USCG ATC Mobile, AL "Mobile Air," wkg Rescue 2120 (HU-25) re est size if oil spill in Gulf of Mex. At 1839, NMN, CAMSLANT Chesapeake, wkg Rescue 1502 (HC-130) re establishing comms w/USC Caron (DD-970) to assist in u/i SAR. At 1913, NMD47, USCG Group Buffalo, NY wkg CG 2103 (HU-25) re transferring rdo guard fm NMN to them. Some 'rare'



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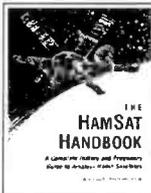


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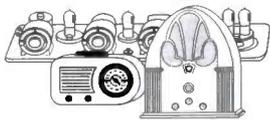
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View of building with surrounding fence.

callsigns hrd. All comms USB. (RB)

6267: OXCB2, M/V Charlotte Maersk in ARQ w/meteo obs msg at 0005. (JN)

6270: HCIO, M/V Ciudad de Guayaquil at 222327 in Sitor-A w/tlx re cargo tendered via WLO Mobile, AL. (RB)

6273: 9ANB, M/V Cvijeta Zuzoric in ARQ w/tlx tlc to Dubrovnik at 0315. (JN)

6296.5: UUI, Odessa, Ukraine in CW at 0531 w/V mkr. (PS)

6313.5: UFL, Vladivostok, active in Sitor-A all day. (DW)

6459.8: UKA, Vladivostok in RTTY 50/170 at 0810. (JC)

6604: WSY70, New York VOLMET in USB at 0444 w/meteo report. (JC)

6617: Moscow VOLMET in USB at 1642. YL/RR opr; Kiev, Ukraine VOLMET in USB at 1650. YL/RR opr. (DW)

6628: Santa Maria, Azores LDOC at 2341 in USB. (BS). This is ICAO HF network—NAT-E area and not an LDOC freq. (Ed.)

6676: Sydney VOLMET in USB fm 1301-1303; was YL opr, medium sigs. (DS)

6679: VOLMET stns: Hong Kong at 1745. OM/EE opr; Tokyo at 1410. YL/RR opr; Auckland at 1520. YL/EE opr. All in USB mode. (DW)

6683: Andrews VIP at 1651 in USB wkg Special Air Missions (SAM) 201. tail 86-0201, SAM 202, tail 86-0202 (both C-20B Gulfstream III's) and SAM 681,

tail 73-1681, C-9C for comms cks. (RB)

6693: DU9D w/pp thru Halifax Military to prob Halifax Ops. Talk re COUGAR-61s departure from Halifax. Ground stn suggested that DU (D listen t VHF 126.7 MHz for COUGAR-61. USB at 1109. (DS)

6779: DRAU, FGS Koln (F-211) German Navy type-12 Frigate, at 0259 wkg DHJ59, Wilhelmshaven Naval w/QRU after passing RTTY tlc. Up next night at 0023 w/same. At 2229, DRAN, FGS Augsburg (F-213) another type-12 Frigate, "The Wild 13," wkg DHJ59, w/same. At 2310 DRHL, u/i German Navy ship clg DHJ59 w/no joy. All voice USB. (RB)

6797: YL/SS rptng "Atencion 25012" at 0900, then 5F grps & down w/"finale." (TS)

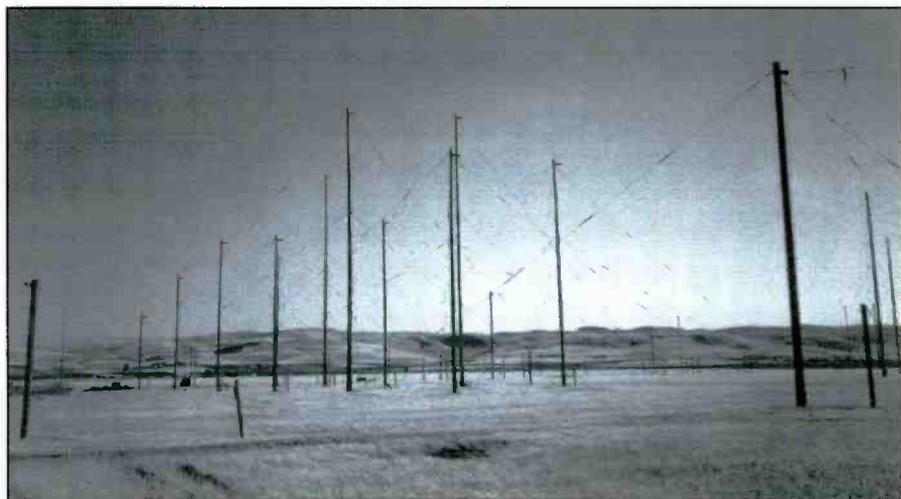
7470: YL/EE in AM sending 5F tlc at 1413 & down at 1450. (DW)

7535: SESEF Norfolk: NYSV, USS Kalamazoo (AOR-6) at 1506 w/HF xmtr tests. At 1544, NFBS, USS Stump (DD-978) w/rdo ck. At 1607, NCAS, USS Clifton Sprague (FFG-16) w/rdo ck & no further tlc. At 1647, NRNA, USS Antrim (FFG-20) concluding HF tests. At 1925, Mayport SESEF wkg SESEF Norfolk w/rdo test. Now has three wkg xmtrs ready to go. New SESEF? Primary mode is UBB. (RB)

7715: U/i CW stn RK14 wkg RK15 at 0809. (TS)

7835: OTH radar at 0815. Other OTH radar sigs hrd on 8106, 8173, and 9300 kHz. (TS)

7907: Every Sunday at 2000 YL/EE w/1-0 count and '714'. After ten tones, 'Count 86' and into 3/2F



Antenna farm at the abandoned site.



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REMARKS:



SIGNED

Richard Baker, OH, received this QSL from a German warship.

8297: AAC2, Harbormaster, Fort Eustis, VA at 1603 wkg AAFA, USAV SP4 James A. Loux (LSV-6) for posn. afterwards AAFA wkg AFF1, unk Army sta. w/ref to S. Louis time At 1713 ADTK, u/i USAV fm Ft. Eustis wkg AAC2 w/posn. At 1718, ADNF, USAV Perryville (LCU-2034), wkg AAC2 again, QSY "to 4." At 0140, FCEN, FS Centaure (A-674), French Navy ocean-going tug w/"non-protège" t/c to FUF. At 0201, u/i French naval ship "FG" ekg FUF w/BX like wx report. At 0425, FAMJ, FS Jeanne D'Arc (R-97) French Navy helicopter carrier wkg FUF w/non-protège t/c. At 0455, FAV, FS Vendemiaire (F-734) French Navy Floreal-class frigate wkg FUM, French Navy Papeete w/non-protège t/c. All t/c in CW mode. (RB)

8408: UFJI, NIS Akademik Mstislav Keldy at 2300 in RTTY 50/170 w/RY's to UIW, Kaliningrad & then into crew TG's. This is the Russian research/science vessel that plugged the sunken nuclear Russian sub "Komsomolets" tubes and holes using her Deep Submergence Vehicle's (DSV's) last year. (RB)

8416.5: NMO, USCG CommSta Honolulu, HI at 0448 in SITOR-B w/end of offshore wx forecast & sta info. (RB)

8417.5: KFS, Palo Alto, CA in FEC at 0726 w/tfc list. (TS)

8494: SLHFH "S" in CW at 2358. Also hrd on 13635 kHz at 1810. (BS)

8515: 5AT, Tripoli, Libya in CW at 0335 w/CQ V's mkr. (MR)

8641: YL opr at 0216 rpts MIW2 in phonetics. On another day YL opr at 2251 passing 5L grps. Both USB mode. (DS)

8828: Honolulu Radio w/VOLMET bcst in USB fm 0225-0229; locations incl Vancouver, Anchorage, Elmendorf AFB, and Fairbanks. (DS)

8861: Irkustsk, Russia VOLMET in USB at 0825. YL/RR opr. (DW)

8942: Ho Chi Minh, Vietnam at 1406 in USB. (BS) This is ICAO HF Network, SEA-2 area. (Ed.)

9130: YL/EE in USB mode at 0149 w/5 grps, each passed x2. Medium sig w/intermittent fading. (DS)

10031.7: 5FL grps in ARQ at 2042. Egyptian diplo t/c fm Wash DC to Cairo, Egypt. (TS)

10281.5: RFLIG, French Forces Cayenne in ARQ E3 96/397 at 0558 idling. (AB)

10493.9: RFTJF, French Forces Port Bouet in ARQ E3 48/425 idling at 0856. (AB)

10865: NAM, USN Norfolk, VA at 2038 w/FAX 120/576, fair wx chart. (AB)

10959.9: CNA Taipei in RTTY 48/873 w/nx in EE at 0756. (AB)

11089: KVM70, Honolulu Meteo. FAX at 0315. (JC)

11175: BETA 53 USAF HC-130 at 1925 in USB wkg MacDill GHFS pp, BATTLESTAR (CP 910th ALG Youngstown, OH) w/ETA Chicago O'Hare. (RB); Argument between pilot of 68307 (C-5 Galaxy) and Flight Ops Officer at Charleston. 68307 wanted land there but unable to do so due to two C-5s in ground. Pilot got angry and asked FOO to rpt his name, then called "TACC (?)" at Andrews AFB, complained to officer there, and was finally given permission to land at Charleston by that base's C.O. Hrd fm 1849-1910 in USB. (RK)

11181: MacDill AFB, FL wrkng SAM-201 w/pp to u/i party in USB mode at 1310; ref's to "VP-30" and probable VIP passengers. SAM-201 advised he'd be on VHF 123.3 MHz. (DS)

11192: Blvd de CSY, Santa Maria Air, Azores at 2251 in RTTY 50/850 NOTAM's wx, w/circuit ID MZA. (RB)

11450.3: RDD77, Moscow Meteo in RTTY 50/991 at 1955 w/wx codes. (AB)

11553.8: GG Diplo, MFA Bonn w/GG Emb Brazil in ARQ-E 96/162 at 1958. (AB)

12177.4: Pyong Yang, North Korea, (Korean News Agency) in RTTY 50/300 at 0506 w/nx in EE. (PS)

12184.4: KAWN, Carswell auto wx station, sea/aero wx Caribbean/Atlantic areas. RTTY 75/834 at 1942. (AB)

12353: Lobo Grande wkg Jacksonville, FL in USB at 1512. At 1605 Chinless joy in Pensacola, FL clg for rdo ck. No answer. (WA)

12494.5: 9ANB, M/V Cvijeta Zuzoric at 1915 in ARQ w/noon report t/c, vessel bound Freeport to Port Said. (RB)

12601.5: ZSC63, Cape Town, S. Africa, in CW at 0525. Mkr w/SITOR sked. (PS)

12603: YL/EE sending 5F grps/Lincolnshire Poacher" sign/up/down. Active at 1500-1546 and 1600-1646. (DW)

14441.5: NAVMAR CORMARS, NNNOCLE, USS Valley Forge (CG-50) at 1702 wkg NNN0ERA, both QSY 14470 for pp t/c. At 1730, NNN0NOO, u/i, MARS sta wkg NNN0FMN w/QSY 14470 for pp t/c. At 1741, NNN0CYM USS Jack Williams (FFG024) wkg NNN0HLQ, both QSY 14477. At 1748, NNN0CRB,

USS Detroit (AOE-4) wkg NNN0NIU w/QSY 13826. At 1843, NNN0CZA, USS Deyo (DD-989) wkg NNN0HLQ w/QSY to 14848.5, at 1847 back clg ASSMS. At 1914, NNN0CPD, USS Ogden (LPD-5), clg "any U.S. shore sta fm west coast." At 2219, NNN0CYT, USS Yorktown (CG-48), wkg NNN0NIG, Naval Tech Center, Pensacola, FL, w/QSY 14463.5. At 2329, NNN0CMS, USCGC Courageous (WMEC-622) clg ASSMS for pp t/c w/beam hdng of SE, NNN0UTO answers, QSY 14467. All USB mode. (RB)

14469: Every day at 1300 Alternative Lincolnshire Poacher w/"Cherry Picker" song w/YL rptng '29661' until 1310 when two tones sent three times. YL/EE into 5F grps. Other original L. Poacher on 14487/15682/16084 kHz. (SM)

14508.7: Zaire bank circuit, Sitor-A at 0941. TFC/FF, some SSB. (AB)

14654.5: SPW, Warsaw in CW at 1655 w/ID, QSX, etc. (AB)

14663: DMK, Bonn, Germany. German MFA w/encrypted t/c to GG Emb in Brazil. ARQ-E 96/125 at 1847. (PS)

14738.2: Suspected RR Diplo in CW at 2207. 5F grps and off w/54T 54T 237 237. Same sign off next day. U/i call, poss WFO. (PS)

14750: At 1415, Mossad YL w/MIW2 callup. Also on 12747 kHz. (SM)

14814: OMZ, Prague, Czech Rep. Czech MFA w/t/c for Berne & Bratislava. RTTY 100/400 at 1316. (PS)

16180.9: Polish t/c out of Tel Aviv in RTTY 100/350 at 1310, off w/QRU GB. (PS)

16688.5: UJVE, TH Otomar Oshkahn, at 2141 in ARQ w/t/c to Jardine Ship, Honolulu via WLO, Mobile, AL. (RB)

16690.5: OXQZ2, M/V Katrina in ARQ w/t/c t/c at 1549. (JN)

16710: ELLF6, SS Alsama Alarabia (crude carrier) at 1905 in QRQ w/bunkering agreement via WLO, Mobile, AL. (RB)

16841.2: Russian MFA stn JMS being called for RTTY 75/500 bcst at 2230 of 5L grps. (TS)

17016: SLHFH "K" in CW at 2334. (BS)

17478.2: Russian MFA stn YBU being called for RTTY 75/500 bcst 5L grps. (TS)

18000: At 1100 YL rptng Baker Edward Charlie. If msg follows then YL says Queen Thomas Charlie, Nancy Robert 1, George Robert 01 (i.e., QTC NR1 GR10). Note that the group nbrs are reversed. If no msg then Queen Robert Union is sent. Phonetic letters are form the 1948 ARRL phonetic alphabet. Msg texts are 5L grps w/titrs also from indicated phonetic alpha- bet. (SM)

18886: WLO, Mobile, AL in SITOR-B at 0250. Some deep fading. (JC)

22286.5: H3BX, M/V Polymnia w/ARQ t/c t/c at 1546. (JN)

22461: FUJ, Noumea, New Caledonia in RTTY 75/170 w/RY's at 2115. (JC)

22541.3: JJC, Tokyo, Japan w/FAX (Kyodo Nx) 60/288 at 2255. (JC)

22575: WNU36, Slidell, LA w/CQ mkr at 2251 in CW. (JC)

22659: JOR, Nagasaki, Japan in CW at 2311 w/CQ mkr. (JC)

Contributors this month include: WA—W. Alexander, OH; AB—Ary Boender, Netherlands; RB—Richard Baker, OH; JC—James Callaway, NV; PC—Perry Crabill, Jr., VA; SF—Stan Forsman, CA; AH—Al Hemmalin, RI; RH—Russ Hill, MI; RK—Richard Klingman, NY; SM—Simon Mason, England; JN—Jim Navary, VA; MR—Michael Roslowski, Jr., NJ; BS—Basil Shelley, CA; DS—David Sabo, MD; PS—Paul Scalzo, Quebec, Canada; TS—Tom Sevart, KS; BV—Bjorn Vaage, CA; SW—Sue Wilden, IN; DW—David Wright, Japan.

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

What's New?

The International Amateur Radio community is preparing for the launch of the "next generation" spacecraft known as Phase 3-D. Scheduled for launch in 1996, Phase 3-D will be ten times larger and four times heavier than current amateur satellites. It will be placed into a highly elliptical orbit by an Ariane 5 launch vehicle from the European Space Agency's launch site in South America. The spacecraft will carry a wide scope of frequencies on a complex matrix of transponders ranging from 21 MHz to 5.6 GHz in digital and analog formats (more details next month).

If you are looking for tracking elements from NASA you will have to get them electronically from Internet. Publishers of Spacewarn bulletin have discontinued production of a hard copy. Goddard's Internet address is: REQUEST@NSSDCA.GSFC.NASA.GOV.

For all of you satellite trackers, here comes a new product from Advanced Electronic Applications, Inc. The ST-1 satellite tracker will automatically track azimuth and elevation on any spacecraft, will tune your radio to the proper uplinks and downlinks (in the case of Amateur Radio satellites for example), and even compensate for Doppler shift. What more could a man ask? Give AEA Inc., a call at (206) 774-5554; tell them POP'COMM sent you!

Speaking of Amateur Satellites, Logsat Software Corp., has a new satellite tracking program, the Logsat Professional v5.0 for Windows. Minimum requirements for the program are 386SX with 2MB of RAM, VGA graphics, Microsoft Windows, and a mouse; a sound board is optional, but recommended. The program allows you to track hundreds of satellites and display them on five different maps (see graphic). This tracking program was developed with Aviation/Aerospace users in mind and has several useful and unique features. Call Logsat at 1-800-350-3871, and ask for Donald Brian.

Mitsubishi has signed a contract with KVH Industries to manufacture satellite tracking antennas for marine installations. The system will be used on the American Mobile Satellite Corps (AMSC) Mobile Satellite (MSAT) system. AMSC, a satellite communications service provider, is scheduled to begin operation in late 1995 with a full range of voice, data, and fax services within the continental U.S., Alaska,



The ST-1 offers hands-off control of antennas and transceiver tuning to make satellite operation easy.

LogSat Professional v5.0 *LogSat Professional v5.0*

Projections

The way the Earth is visualized on flat surface (the screen) is called a projection. There are 5 types of projections available.

Mercator Projection - The earth's surface is shown as a rectangle, with the meridians as parallel straight lines spaced at equal intervals. The parallels of latitude are shown as parallel straight lines intersecting the meridians at right angles but spaced further apart as their distance from the equator increases. Areas on such maps become increasingly distorted towards the poles.

Equidistant Cylindrical Projection - The earth's surface is shown as a rectangle, with the meridians and the parallels of latitude as parallel straight lines spaced at equal intervals, intersecting at right angles. Contours, not areas, on such maps become increasingly distorted towards the poles.

Hammer Projection - The parallels are parallel straight lines and the meridians are ellipses, the central meridian being a straight line at right angles to the equator, which is equally divided.

Sinusoidal Cylindrical Projection - Based on a sin curve. A cylindrical projection.

Orthographic Projection - The earth is viewed from outer space, with the point of vision at an infinite distance and the rays consequently parallel. Minimal distortion, but only one half of the earth is visible at a time...

The LogSat Professional v5.0 program allows you to track hundreds of satellites and display them on five different maps. (Graphic courtesy of LogSat Software Corp.)

Hawaii, Puerto Rico, the U.S. Virgin Islands, and 200 miles of coastal waters. The antenna will be capable of tracking satellites while mounted on ships, and it can lock onto the spacecraft even while the vessel is rolling and pitching in rough seas. The antenna's software and CPU will compensate for this movement. And who said you could tell the difference between technology and magic?

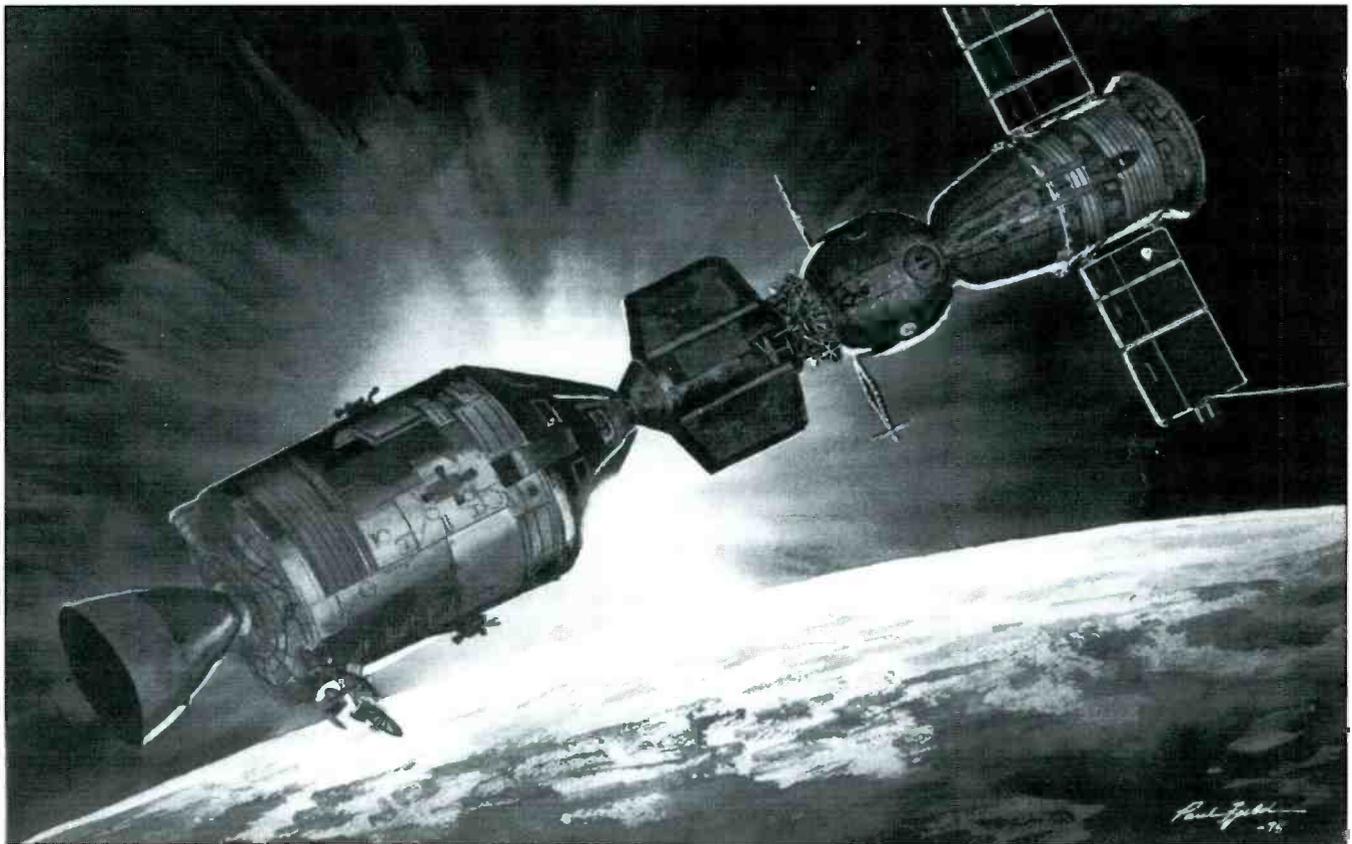
With MSAT in mind the FCC allocated some frequencies to the satellite services. Not only were 1530-1544 and 1626.5-

1645.5 MHz allocated to the mobile service, but 19.7-20.2 and 29.5-30.0 GHz, the domain of the fixed satellite service, was also allocated to MSS. If you have not already heard, the new digital audio radio service was allocated 2310-2360 MHz.

While on the subject of the FCC, they have just established a new international Bureau to handle all international communications, including satellite programs and policies. Notice the organization chart for the Bureau which includes names of key personnel.

UPCOMING SHUTTLE MISSIONS

| MISSION | TARGET DATE MISSION DURATION | ORBITER | MAJOR PAYLOADS AND/OR MISSION ACTIVITIES | CREW |
|---------------|---------------------------------|-----------|--|---|
| STS-73 | September 1995 16 Days | COLUMBIA | <ul style="list-style-type: none"> o United States Microgravity Laboratory-2 (USML-2) o OARE | CDR: BOWERSOX PLT: ROMINGER MS: THORNTON MS: COLEMAN MS: LOPEZ-ALGERIA PS: LESLIE PS: SACCO |
| STS-74 | October 1995 6 +1 Days | ATLANTIS | <ul style="list-style-type: none"> o Shuttle-Mir Mission-2 | CDR: CAMERON PLT: HALSELL MS: ROSS MS: MCARTHUR MS: HADFIELD |
| STS-72 | November 1995 10 Days | ENDEAVOUR | <ul style="list-style-type: none"> o Space Flyer Unit - Retrieval o OAST-FLYER o SSBUV o LACIE | CDR: DUFFY PLT: JETT MS: CHIAO MS: BARRY MS: SCOTT MS: WAKATA |
| STS-75 | February 1996 13 Days | COLUMBIA | <ul style="list-style-type: none"> o Tethered Satellite System-2 o United States Microgravity Payload-3 (USMP-3) | CDR: TBD PLT: TBD MS: CHANG-DIAZ MS: TBD MS: TBD PS: GUIDONI |



The joint U.S./Soviet Apollo-Soyuz mission of 1975.



It was 20 years ago that this American/Soviet crew flew the first joint space mission.

NASA is trying to use the TDRSS spacecraft to squeeze the most out of the information superhighway. New technologies will be tested with future application in the LEO telecommunication satellites. These new technology tests are expected to lower the cost of orbiting and using LEO spacecraft. The program is called MOST, Mobile Satcom TDRSS.

We end with a final note from NASA. STS-63 made the first trial run for the joint Mir/Shuttle flight scheduled for October (STS-74). STS-63 and crew flew to the Mir station, coming within a few feet of the station. Though they did not dock with Mir they did practice all the maneuvers that docking requires and tested the electronic systems which will make docking possible. Included is a schedule of future shuttle launches. Our last and only other joint manned mission with Russia took place 20 years ago. It was hoped that this event would usher in a new era of cooperation in space exploration, but it did not. Hopefully, STS-74 will help bring about such cooperation. All I can say to the crew is good luck, and it's about time! See you next month.

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CIRCLE 83 ON READER SERVICE CARD

Stalking the Wild Wallpaper

To give you fair warning, you might be disappointed with this month's column. Most of what we're going to look at involves HF operating, so people who hold codeless Technician licenses may feel a bit left out. On the other hand, anyone who wants to can upgrade to a license class that provides HF privileges, so if you see something here that piques your interest, perhaps you'll want to give code a try. It's up to you; I'm not going to tell you what you "should" do. I just don't want to get a truckload of crabby letters from people saying "there wasn't anything in there for us Techs!" (Besides, if you look carefully, there is something here for hams who stay above 50 MHz.)

Late summer, things generally settle down on the HF bands. Field Day is over, most major contests are a couple of months away, no particular seasonal band openings are expected, the low bands are at their noisiest, many amateurs are spending summer vacation with their families, and few people want to go on a DXpedition/vacation to the tropics this time of year. What is there to do? How about wallpapering your shack?

Not much of an interior decorator? Don't know how to select or hang wallpaper? Or do you prefer paint or wood paneling? Perhaps you didn't know that in Amateur Radio, the wallpaper in your radio room says a lot about your operating interests, skill, and habits.

"Wallpaper" is ham radio jargon for operating awards and certificates. There are plenty to choose from—hundreds, actually—and if you're the kind of person who enjoys a hobby where you can set goals and work toward specific achievements, this should be right up your alley.

Anyone can sponsor Amateur Radio award programs. Most of them are sponsored by organizations. For example, almost every country's national Amateur Radio society offers some type of award or certificate program to promote contacts between foreign hams and amateurs inside their country. Many U.S. ham clubs do the same type of thing to encourage others to contact their members or hams in their state. Special-interest groups offer fun, frivolous and formidable programs to recognize all kinds of on-air achievements.

For example, the QRP Amateur Radio Club International (QRP ARCI) offers various awards and issues a unique, challenging certificate that encourages using extremely low power for two-way contacts, based on the ratio of miles-per-watt. A QSO between stations each using about a twentieth of a watt to communicate between Chicago and Calcutta could work out

to the equivalent of a half-million miles per watt! Such incredible efficiency has been achieved, and the limits are constantly pushed by patient, skilled operators.

If you've listened to hams on 28.0 to 29.7 MHz, you've undoubtedly heard people exchanging "10-10 numbers" and wondered what was going on. It's not some obscure permutation of the public safety 10-code (such as "10-4" for "affirmative," etc); in this context, a Ten-Ten number is a unique personal membership number (mine is 53313). Yes, there's a huge worldwide group that concentrates all its attention on one band; the Ten-Ten International Net is strictly for fans of 10 meters. This capricious band, which can be as reliable and effective as a telephone one day, and as futile as hollering down a well the next, brings out passionate enthusiasts. (This organization was founded by hams in California—what a surprise.) The idea is to promote using 10 meters even when band conditions are stinkomatic. It keeps amateurs interested in 28 to 29 MHz during troughs in the sunspot cycle, and helps to improve the odds that if an isolated opening does occur, someone might be around to notice and take advantage of it. You can have a number issued to you if you work at least 10 members of the Ten-Ten group on the 10-meter band, log the contacts, including their Ten-Ten numbers, and then send in an application with a small fee. Ten-Ten International Net sponsors several awards and contests, as a whole entity and via many regional chapters.

The most famous award program in Amateur Radio is the ARRL's DX Century Club (DXCC). You can qualify for membership in the DXCC (and a handsome certificate) by working other hams in at least 100 countries. After you receive their QSL cards as confirmation of the contacts, you send the cards for inspection and verification to ARRL Headquarters in Newington, Connecticut, with an application form. The cards are returned to you when the certificate is issued. For Technicians and other operators who enjoy "the world above 50 MHz," the ARRL has the VHF/UHF Century Club (VUCC) for making two-way contacts with ham stations in at least 100 grid squares, on frequencies above 50 MHz. The IARU sponsors the Worked All Continents (WAC) award. There's also the popular and challenging Worked All World Zones (WAZ) certificate, issued by *Popular Communications*'s sister publication, *CQ* magazine, which also administers the WPX program for collecting contacts with unique call sign prefixes—and there are thousands!

Perhaps you'd like to concentrate on stateside contacts. You can earn a Worked

All States (WAS) certificate upon proof of your contacts with hams in the 50 U.S. states, which also requires sending your confirming QSL cards to ARRL HQ. Try looking at smaller slices of the country, and go after a County Hunter's certificate. To earn this award, you must provide confirmation of contacts with an amateur station in each of the 3,076 counties in the U.S.

A unique, coveted award is the exclusive A-1 Operator Club. Sponsored by the ARRL, many feel that it's the greatest honor in Amateur Radio. But you can't apply for it. A certificate is issued only after two A-1 Operator Club members anonymously nominate you for membership. I was pleasantly surprised and honored to receive my A-1 Operator Club certificate in the mail a few years ago! Many hams consider this an ultimate honor in Amateur Radio because it represents recognition by their peers, who are themselves proud members of this elite group restricted to amateurs who exhibit the most skillful, proficient, and courteous on-air techniques. It's also mysterious and exciting because you'll never learn who your sponsors are. It's a deep secret and a profound accolade.

If you'd like more than an FCC license to document your ability to copy Morse code, Code Proficiency certificates are available if you can copy messages sent by WIAW at a variety of speeds during each month's scheduled Qualifying Runs (the WIAW operating schedule is published each month in *QST*). Complete information about awards and contests is provided in the *ARRL Operating Manual*.

Next month we'll have a look at "Bri's Basics for Beginning DXers," and then a month later, our timing should be just about right for an introduction to contest operation as we move into the busy fall contest season. Meanwhile, keep cool, have fun on the air, and send your mail (and swimming pool guest passes!) to me at ARRL HQ, Dept PC, 225 Main St, Newington, CT 06111; e-mail bbattles@arrl.org.

Here are the addresses to contact the award-sponsoring organizations mentioned in this article:

ARRL, 225 Main St., Newington, CT 06111; (203) 666-1541; e-mail contest@arrl.org

CQ Amateur Radio, CQ Communications Inc., 76 N. Broadway, Hicksville, NY 11801.

QRP ARCI, Bob Gaye, K2LGG, 25 Hampton Pkwy., Buffalo, NY 14217-1217.

Ten-Ten International Net Inc., Alan Sherman, K1AS, RR 4-Box 422, Danielson, CT 06239. ■



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HANDI-CHAT

BY TED LISLE, KD4EXK

FOR THE HANDICAPABLE COMMUNICATIONS HOBBYIST

Hello again, and welcome. In the past year and a half, we have focused on several major aspects of present-day communication. One notable exception has been telecommunication; yet every day, handicapped professionals and hobbyists utilize interoffice networks, local bulletin boards, commercial online services [yes, Virginia], even the Internet. Modems are becoming faster and cheaper by the month, and most can handle standard data transmissions, fax, even voice mail. The current standard allows for an uncompressed maximum throughput of 28.8KBPS (kilobits per second) over analog phone lines, and compression ratios can approach 4-1. With microprocessors and i/o transfer rates approaching warp speed, and businesses beginning to make the transition from analog to digital phone lines, the end is nowhere in sight. We will be in touch at home, at the office, and on the road. Future applications will include real-time video conferencing (already a reality in some offices), and the exchange of full-motion video and high-fidelity CD-quality audio.

For the present, the three most common online activities are chatting (either one-on-one or as part of a round table), file transfers (usually involving the exchange of shareware or freeware), and e-mail. (Faxes constitute a separate category, and, as such, will not receive detailed treatment here.) E-mail messages can be exchanged between individuals, or distributed to the members of a special interest group (often called a conference or a forum), devoted to the discussion of a particular topic. Either way, files can often be appended to messages. As a practical example, electronic mail was used both to research the recent Handi-Chat profiles of Tom Lykins (December, '94), and Tim Cranmer (June, '95), and to verify their accuracy.

The recent proliferation of fast, reliable, affordable internal and external modems has made them something of a commodity purchase, allowing the prospective buyer to focus primarily on price. Communications software, on the other hand, is an entirely different matter. In choosing the right package, look for one which can be easily customized to fit your needs, offers broad hardware support, and includes a wide selection of transfer protocols—especially variations of the fast, powerful Y and Z protocols. Other handy features include the ability to create and store multiple phone books; automatic redial of busy numbers; manual dialing of numbers not stored; a scripting language for automating your online sessions; and a "host mode," which allows your computer to receive calls as well as make them.

After deciding to go online in early 1994, I spent the next six months searching for the right software. In addition to the con-

siderations listed above, I needed a DOS-based package which would work well with speech. All tests were made on an IBM PS/2 Model 40SX with 2MB of RAM, running the popular ASAP (Automatic Screen Access Program) screenreader with a LiteTalk synthesizer. What follows is based on my own experiences; different hardware/software combinations may yield different results.

Most hardware manufacturers bundle at least one communications program with their products. Today's average package will probably include data and fax software for both DOS and Windows. At least two of these OEM products—Comit and QuickLink II—are worthy of consideration. Comit, from a West-Coast company called Tradewind Software, is easily installed, flexible, and powerful, including such features as an online operating manual and a decent set of diagnostic tools. Unfortunately, going online silences all speech, but for those who do not require audio feedback, this package could fill the bill admirably. QuickLink II from Smith Micro Software of Huntington Beach, California is one of the few DOS programs to combine data and fax capability under one umbrella. Several TSR (terminate-and-stay-resident)'s for handling faxes in the background are included, but all data and fax features may be accessed and customized through a central text-based interface, simply by executing "QLM001." The program's greatest weakness is its relatively poor protocol selection, especially the lack of a Z protocol.

Of course, choosing a software package from the many competitive alternatives available is usually a highly subjective process. Reading reviews and talking to friends or fellow members of your local PC users' group cannot substitute for practical hands-on experience. That's why many savvy shoppers choose the shareware alternative. Whereas the unauthorized duplication of standard commercial programs is piracy, the duplication and distribution of shareware is both allowed and encouraged. Take it home and try it for a few days or weeks. If you like it, simply send the author the specified amount, which is usually far less than the cost of a comparable off-the-shelf product. If you don't like it, just erase and forget it. Not surprisingly, the two leading DOS communications packages—Mustang Software's QModem Pro, and DataStorm's ProComm Plus—have shareware pedigrees. Both are stellar performers—combining speed, power, flexibility, and reliability with solid (although not toll-free) technical support.

For many years after going commercial, DataStorm continued to market ProComm as shareware, while its more powerful sibling, ProComm Plus, was offered through

standard retail channels at a slightly higher price. The shareware version is no longer supported, but many local clubs and bulletin boards will have older copies on hand. Both versions have a similar look and feel, but visually-impaired users who purchase the commercial version may require sighted help during the initial setup and installation. Any subsequent modifications can be easily performed without assistance.

Mustang Software has taken a truly radical approach by making a free "Testdrive" version of QModem available to potential users, either through the company BBS (at (805) 395-0650), or through local boards and/or clubs. As with ProComm, this free trial version lacks some of the fancy features available in QModem Pro, but there is more than enough power to meet the needs of most individuals, and many bulletin boards (I know one local SYSOP who uses it for daily Internet runs). Above all, the program is absolutely free to individual users, although small businesses are limited to a 60-day shareware trial period.

Which is the better program? When products are this closely matched, it usually comes down to availability and price. Either may be ordered factory-direct, or obtained through local dealers, often at a substantial discount. QModem is packaged with Mustang's powerful little mailreader, OLX (Off-Line Express). ProComm Plus has the most extensive list of terminal emulations I have seen, an important consideration for those who must regularly communicate with mainframes. Furthermore, should the DOS program follow the lead of its Windows counterpart by incorporating fax and data into one easy package (at press time, a DataStorm spokesperson could neither confirm nor deny this possibility), ProComm Plus would once again stand alone at the top.

Having said all this, it should finally be noted that any of the products mentioned above can also be used for on-the-air digital communications. Packet is currently one of the hottest modes in all of amateur radio, providing many of the same services and opportunities as the more traditional land-line alternative. Readers wishing to learn more about packet should consult QST's Stan Horzempa (WA1LOU)'s monthly "Packet Perspective" column, while amateur radio's link to the Internet was recently spotlighted in a series of four feature articles (September through December, 1994) by Steve Ford (WB8IMY) and Scott Ehrlich (WY1Z).

Well, that ties the bow on this one. As always, please remember that your input is the best way to insure that this column continues to meet your needs and interests. So drop us a line, either by post or e-mail. Until next time, take care. ■

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

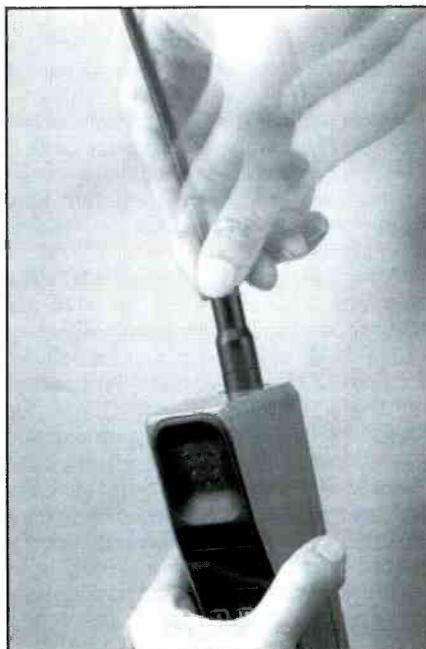
It may never have occurred to you that eventually the operating life of a cellphone comes to an end. It's true! Wonder what happens to such cellphones? Until recently, these phones piled up in warehouses or contributed to a landfill.

In 1991 a company known as ReCellular Inc., came along and has now become the nation's largest refurbisher of used and obsolete cellphones. It holds a 60 percent share of the nation's cellphone recycling market. ReCellular obtains its cellphones from cellular carriers and manufacturers, purchasing up their unwanted used and traded-in equipment.

Among the many companies ReCellular has purchased used and/or trade-in equipment from are: Ameritech Cellular Services, Bell Atlantic Mobile, BellSouth Mobility, Cellular One-New York, Comcast Metrophone, Contel Cellular, Movicom C.R.M., Los Angeles Cellular, McCar Cellular Communications, Telcel, and U.S. West New Vector.

Recently, the company contracted to purchase for refurbishment more than 40,000 cellphones from cellular carriers in Argentina and Mexico.

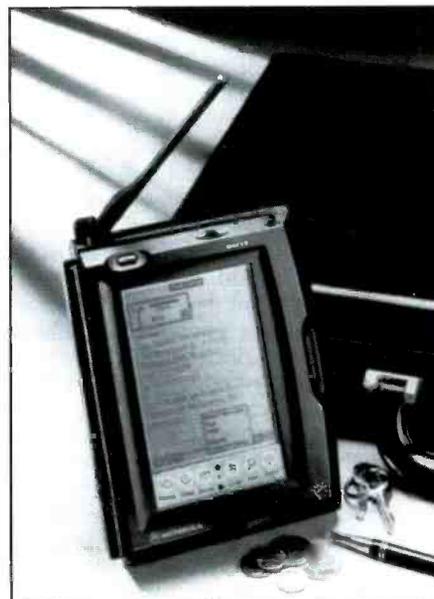
After purchase, the company refurbishes units through an extensive state-of-the-art process that restores cellular equipment to an appearance and functional state that is akin to "like new." The refurbished equipment is then sold, under warranty, to more than 20 leading American and Canadian



Mobile Mark's coupler for the Motorola Classic Series cellphone.

cellphone companies, their authorized dealers, and agents.

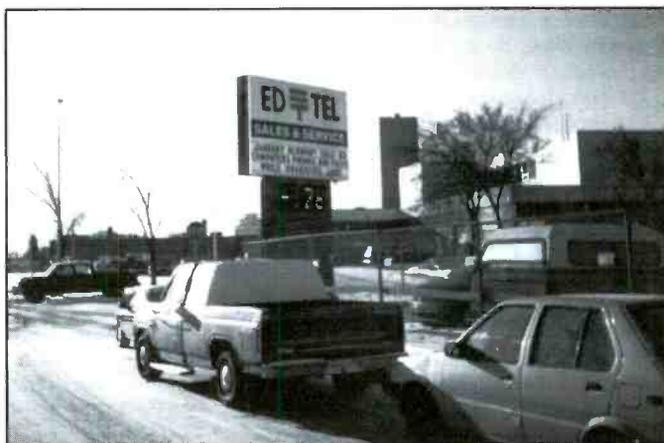
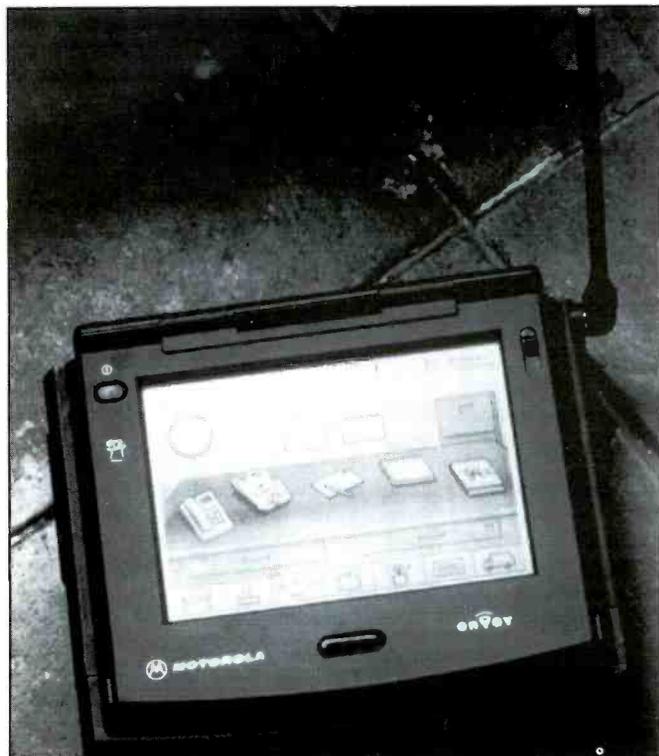
At the refurbishing center, equipment is tested for engineering integrity and quality. Then, each part of the cellphone, including the case or shell, cord, antenna, display lens, and key pad is cleaned and polished.



The Marco PIC canaccess FAX machines and other Marco users through Motorola's ARDIS two-way radio system.

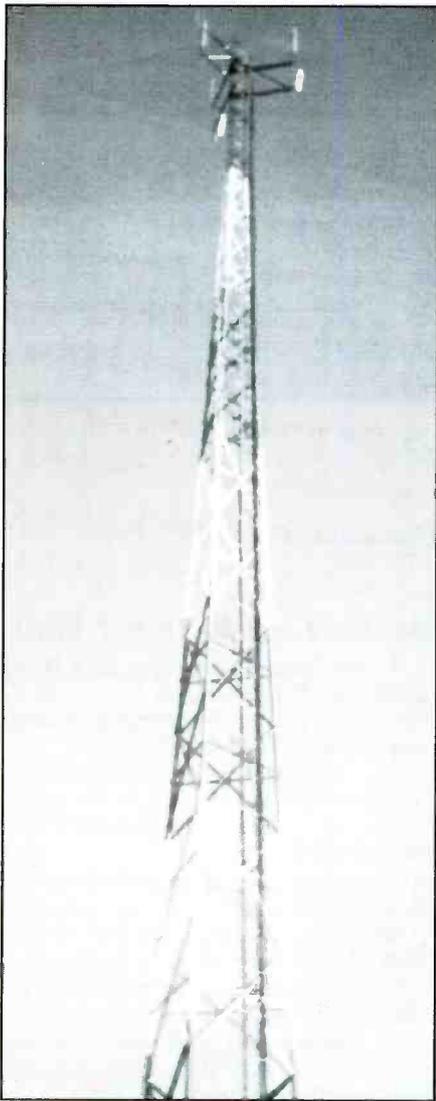
Next, cellphone components are assembled or rebuilt by a refurbisher. Finally, each unit is inspected and tested before packaging and shipment. Each phone contains an owners manual for that specific model.

ReCellular has thusfar refurbished about 500,000 cellphones, and is currently com-



▲ *Ed Tel is the phone company in Edmonton, Alberta, Canada. One of their frequencies is 169.59 MHz. This shows their main building. (Photo by Trevor Fletcher, Edmonton, Alberta.)*

◀ *The Envoy PIC uses an operating system developed by General Magic to access FAX machines and the Internet.*



The antenna system atop the Ed Tel building, Edmonton. (Photo by Trevor Fletcher, Edmonton, Alberta.)



Audiovox says its MVX-800 is the smallest portable.

For more information, contact Mobile Mark Communications Antennas, 3900-B River Road, Schiller Park, IL 60176. Phone: 1-800-648-2800 and (708) 671-6690. Please tell them you read about this in *POP COMM!*

PIC-ture This

Personal Intelligent Communicators (PIC's) are portable devices that allow extensive two-way data comms without being hooked to a landline. With them, you can send/receive e-mail, FAXes, check airline skeds, get stock quotes, communicate with other wireless product users, and organize appointment skeds.

PIC's can be used in cars and taxis, waiting rooms, on boats, offices, or while strolling down a hall. You don't need to connect to a phone line. The units work through Motorola's vast ARDIS two-way radio network. This is the world's first and largest wireless data net, covering the top 400 U.S. metro areas (80 percent of the nation's population, and 90 percent of its business activity). Signals can reach into high-rise office buildings.

Two new PIC's are the *Marco* and *Envoy*, introduced by Motorola. They will be selling between \$1,400 and \$1,600, depending upon features and accessories included. Pricing for the use of the ARDIS systems is on a message-unit basis (a unit can consist of 240 bytes of data). Depending upon the volume usage plan selected by the customer, message units cost between 21 and 39 cents.

Marco uses the Newton operating system developed by the Apple Computer Company. *Envoy* is based on the Magic Cap operating system developed by General Magic.

Mighty Mite

Audiovox unveiled what it tells me is the smallest cellphone in the world. It's the 5.3 ounce MVX-800, which boasts a volume of a mere 100 cc. It's got a lot of features packed into it, and allows direct access to the new Cellular Digital Packet Data (CDPD) technology.

This unit comes with a desk top charger and a battery providing one hour of yak time with 12 hours of standby. Other features include an LED indicator that flashes to alert you when there's an incoming call, a keypad lock, one-touch speed-dialer, anti-fraud PIN-entry circuit, also battery and signal strength indicators. A carrier version (Model MVX-850) also includes a voice mail access key.

Optional accessories include are a PCMCIA card modem for data transmissions, an extended time three-hour battery, hands-free car kit, cigarette lighter adapter, travel charger, and three-watt transmit signal booster.

For more information on the MVX-800, contact Audiovox Corporation, Cellular

pleting work on more than 800 units each day. In fiscal 1993, they rang up \$9.2-million in sales. More than \$20-million is projected for fiscal 1995.

Recently, the company entered the Asian market with the planned purchase of 7,500 used cellphone batteries from Singapore Telecom. These will be restored to 80 percent of their original capacity and sold with refurbished cellphones.

ReCellular points out that the use of refurbished cellphones provides suppliers with an alternate source for attractive, reliable, cellphones to use in promotions and same-model replacements. There are also obvious environmental benefits.

ReCellular Inc. is located at 7400 Newman Boulevard, Dexter, MI 48130. Phone: (313) 426-0800.

External Antenna

Now you can easily connect the popular Motorola Classic, Ultra Classic, or Model 8000/9000 cellphones to external an-

tennas. This is accomplished by means of an easy-to-use "push-on/pull-off" coupler connection that holds the sets' original rubberized antenna securely in place.

Special adapters are attached to the phone and stub antenna. After this one-time simple operation, antenna connection is reduced to a two-step process. Step 1: Pull-off the cellphone's antenna. Step 2: Push-on special Electro-Coupler.

The signal through the coupler is then transferred to an external mobile antenna. Antenna types available with this Mobile Mark coupler include magnet mount, window clip-on, and on-window. This arrangement improves in-car performance of the Motorola Classic phone without going to the expense of getting a car kit.

These antennas are rated at 5 dB, and are all supplied with RG-58A/U cable and mini-UHF connectors. There is also a 3 dB version of the mag mount available. Whips are stainless steel with copper, covered with a black protective coating.

Model No. MPHF
We Keep The World Talking

Portable Hands-Free

Designed for use with portable cellular telephones, the Portable Hands-Free enables you to conveniently use your portable in a hands-free mode, anytime and anywhere.

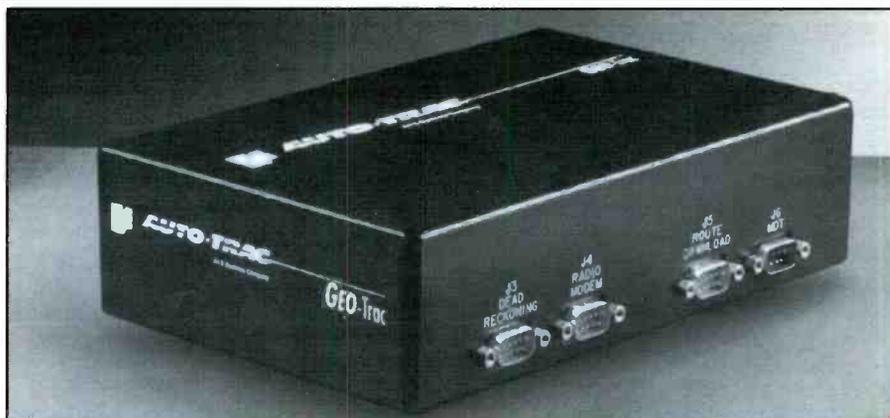
The only thing free about cellphones is hands-free operation, and here's the kit that will get it for you!

Communications Division, 185 Oser Ave., Hauppauge, NY 11788. Phone: (516) 233-3300.

Free Cellphone Operation?

Not much is free when it comes to cellars. Don't overlook hands-free. ORA Electronics hasn't, and has introduced its line of Portable Hands Free, providing portable cellphone users with the convenience of cellphone calling without the expense of installing the equipment in their vehicles.

Portable Hands Free kits are available



Car 54 Where Are You? The Geo-Trac VTU will transmit the location to a dispatcher, and be accurate to within 30 feet, from anywhere!

for many makes and models, but all have the same basic components. A connector plugs into the phone. Then the user plugs in the mic/earpiece cord and places the "bud" type earphone in the ear. The mic, about the size of a dime, will pick up a user's voice with the same clarity as the phone's built-in mic.

In the kit for the Motorola MicroTAC Series, a small battery to power the connector is provided. With others (including the Motorola MicroTAC Elite), no battery is necessary. The Portable Hands-Free comes in two formats. The basic one is for use with phones equipped for audio output without the need for an additional amplifier (such as models from AT&T, Audiovox, OKI, Panasonic, plus the Motorola MicroTAC Elite). The MSRP is \$19.95.

The other configuration comes with a tiny amplifier built into the connector piece. It's available for use with the rest of Motorola's MicroTAC Series, and Ericsson/GE portables. This model carries an MSRP of \$69.95.

For more information, contact ORA Electronics, 9410 Owensmouth Ave.,

Chatsworth, CA 91313. Phone: (818) 772-2700.

We Be Lost Without You!

A new Vehicle Tracking Unit (VTU) called Geo-Trac has been introduced by Auto-Trac, Inc., an E-Systems Company, headquartered in Dallas, Texas.

Geo-Trac is light, small, has a fast micro-processor, and a ten-channel GPS receiver. It's one of three components of the Fleetservice Automatic Vehicle Location (AVL) system that allows companies to track their vehicles on computerized maps.

Geo-Trac's six programmable RS-232 ports support peripheral devices, such as mobile data terminals, automated stop announcement systems, signing systems, smart card readers, dead reckoning navigational aids, and a route download source. The seventh port is a J-1708 that meets transit industry standards. The integration of these peripheral devices allows the VTU to send data messages to the dispatcher.

Other standard features include a GPS antenna and a radio modem antenna. GPS positioning can calculate vehicle latitude and longitude to within 100 meters, and within 10 meters (roughly 30 feet) with Differential Global Positioning System (DGPS) correction information added.

Geo-Trac can transmit location information to a dispatcher via the modem in one of four various modes: 1) Reports vehicle location at specified time intervals; 2) Initiated by the driver; 3) On-request of the dispatcher; 4) Location is sent based on specific events.

Auto-Trac Inc. didn't provide a mail address, but they did pass along a name and phone number for companies seeking additional information. It's Jacqueline Jones, phone, (214) 480-8145.

That's about as much trouble as we have the space to get into for this month. Please send along any news clippings, press releases, new product information, or other items relating to cellphones, cordless, pagers, personal comms, and related matters.

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WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Apparently Liable for Forfeiture of \$1,410,000 in Slamming Case

The Commission issued a Notice of Apparent Liability (NAL) finding Oncor Communications, Inc. apparently liable for a forfeiture penalty of \$1.41-million for willful and repeated violations of Commission rules and orders concerning changes to consumers' long distance carriers.

Based on an investigation conducted by the Common Carrier Bureau's Enforcement Division, the Commission has determined that Oncor apparently violated the Commission's rules by substituting itself as the primary inter-exchange carrier ("PIC") for 94 pay telephone lines maintained by the Metropolitan Transportation Authority of the State of New York ("MTA") without MTA's authorization. The practice of changing a consumer's PIC without authorization is commonly known as "slamming."

Commission rules require that PIC change requests submitted by long distance carriers be confirmed by either a Letter of Agency (LOA), signed by the customer or, for sales generated by telemarketing, one of four verification procedures: 1) written authorization; 2) electronic verification via a customer-dialed 800-number call; 3) independent third-party verification of a customer's oral authorization; or 4) a follow-up information package, affording the customer an opportunity to cancel the request. The staff's investigation revealed that Oncor did not meet any of these requirements before it made PIC changes to MTA pay telephones.

The NAL also names Operator Communications, Inc., which does business using the Oncor name. Both companies are wholly owned by Ronald J. Haan.

Between November 1993 and April 1994, Oncor made numerous unauthorized changes to MTA pay telephones, according to the staff investigation. MTA did not authorize the PIC changes, and notified Oncor that it did not want Oncor service and returned purported LOAs disguised as "commission checks." Oncor also apparently slammed certain MTA telephone lines two times, converting some of the pay phones to its service after MTA had already cancelled unauthorized Oncor service once before.

According to the NAL, when requested by the staff, Oncor did not provide a copy of any LOA or other evidence indicating that Oncor complied with the Commission's PIC change rules or that MTA approved the PIC changes. Rather, the company stated that an agent of two Oncor distributors respon-

sible for soliciting long distance customers had requested the MTA PIC changes and the distributors electronically submitted the change orders to Oncor.

Under the terms of the Communications Act, a carrier has responsibility for these actions. In addition, based on the number, frequency, and circumstances surrounding the unauthorized conversions, the staff concluded that Oncor apparently knew or should have known that MTA had not authorized Oncor to provide service for its pay telephones.

Based on the willful and repeated nature of the violations, the FCC has notified Oncor of its apparent liability for a forfeiture of \$15,000 for each of the 94 slamming incidents, or a total of \$1,410,000. The Communications Act provides for a forfeiture of up to \$100,000 per violation or each day of continuing violation, up to a maximum of \$1,000,000 for a single act or failure to act. The Act also requires the Commission to reconsider "the nature, circumstances, extent, and gravity of the violation and, with respect to the violator, the degree of culpability, any history of prior offenses, ability to pay, and such other matters as justice may require."

The Commission stated that, based on the information obtained during the investigation of this matter, it believes this amount is reasonably relative to Oncor's assets and revenues. Oncor, however, will have the opportunity to submit evidence and arguments in response to this NAL to show that no forfeiture should be imposed or that some lesser amount should be assessed. The Commission noted in making this finding that a license's gross revenues are the best indicator of its ability to pay a forfeiture and that use of gross revenues to determine a party's ability to pay is reasonable, appropriate, and a useful yardstick in helping to analyze a company's financial condition for forfeiture purposes.

Publication of Updated Communications Act

The FCC announced publication by the House Commerce Committee of an updated edition of the Communications Act of 1934 and related statutes.

The publication is entitled, *Compilation of Selected Acts Within the Jurisdiction of the Committee on Commerce: Communications Law*. This 518-page publication reflects major communications-related legislation enacted into law in the 103rd Congress. These new laws include the Omnibus Budget Reconciliation Act of 1993, the Communications Assistance for

Law Enforcement Act of 1994, and the implementing legislation of the General Agreement on Tariffs and Trades.

The Compilation also contains the National Telecommunications and Information Administration Organization Act of 1992, the Public Telecommunications Act of 1992, the Cable Television Consumer Protection and Competition Act of 1992, the Electronic Communications Privacy Act of 1986, the Communications Satellite Act of 1962, and other major communications legislation. In addition, the Compilation offers an "Index of Public Laws Amending the Communications Act."

The Compilation can be ordered for \$19 from the Superintendent of Documents, Government Printing Office, Washington DC 20402. Credit card orders are accepted by the G.P.O.'s Document Sales Office at (202) 512-1800. The publication stock number for ordering is 052-070-06992-9.

FCC Processes 40,000 800-MHz SMR Applications

The FCC processed more than 40,000 800-MHz Specialized Mobile Radio (SMR) license applications; of this number, 4,556 new licenses were granted.

An industry gift of computer hardware and software that aids in coordinating frequencies and assuring appropriate mileage separations between base stations helped to speed the processing time.

"This is a significant milestone for the FCC," said Chairman Reed Hundt. "It is a great example of how industry and the FCC can do work together to get the job done and get it done fast. As we reinvent government at the FCC, we can improve customer service through cooperative efforts such as this one."

An influx of SMR applications began in November 1993, as advanced technology made possible a new generation of wide area SMR systems. The deluge of applications resulted in a processing backlog. In 1994, the Commission froze the application process.

In January, the FCC began to process the backlog of more than 40,000 applications using computer hardware, software, and personnel donated by an industry trade coalition that included the American Mobile Telecommunications Association (AMTA), Industrial Telecommunications Association (ITA), Council of Independent Communications Suppliers (CICS), and the National Association of Business and Educational Radio (NABER).

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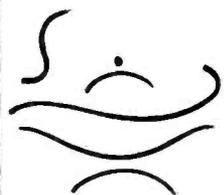
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Regina Keeney, Chief of the FCC's Wireless Telecommunications Bureau, said, "I applaud the industry coalition for its contribution to this effort and congratulate the Bureau's Licensing Division in Gettysburg. The division worked around-the-clock to process the applications and grant the licenses."

Traditionally, SMR licensees have been used by private companies for dispatch services such as those used by taxi drivers. With new digital technology, SMRs may soon be competing with cellular and other mobile service providers.

The industry gift was accepted under the FCC's statutory gift authority, 47 U.S.C. 154(g)(3), which permits the FCC to accept unconditional gifts, donations, and bequests in furtherance of its regulatory functions.

FCC Moves Towards Licensing New Wireless Era

The delivery of the next generation of wireless communications services moved one step closer. Having completed the \$737-billion auction for broadband personal communications services (PCS), the FCC is now moving with record speed toward licensing successful bidders. Today, the FCC announced that it's accepted all of the auction's license applications, just one week after the winning bidders filed their long form applications.

"The speed with which the FCC accepted these applications and put them on Public Notice is unprecedented in the licensing of any new service by the Commission. This action demonstrates the FCC's commitment to speeding new competitive services to the public," said Wireless Telecommunications Bureau Chief Regina Keeney. "The sooner the licenses are granted, the sooner these new services—and the competition they generate—will reach the marketplace," she said.

Broadband PCS is a family of services which will allow consumers and businesses the opportunity to choose from a growing number of suppliers of phone service.

In addition, the Commission denied a request filed by Commission One, Inc., to delay licensing of the A and B blocks for broadband PCS. In its order, denying the request, the Bureau said, "the public interest in rapidly providing new competitive sources of wireless services outweighs any possible competitive harm that might result from the A and B block licensees being licensed ahead of auction winners in other PCS blocks."

Public Safety Liaison Officer

The Wireless Telecommunications Bureau announces the appointment of a Public Safety Liaison Officer to work with the

primary safety agencies and their representatives.

The Public Safety Liaison Officer will interface with the public safety community and other concerned Federal agencies on matters affecting public safety communications needs. Among other duties, the Public Safety Liaison Officer will follow areas of special interest to public safety, such as APCO Project 25 and the public safety licensing process.

Kathryn Hosford has been named as the Public Safety Liaison Officer. Ms. Hosford, an engineer, has 17 years experience with the Commission and currently is heading up the Refarming Task Force. Her area of expertise is radio spectrum management and she has worked extensively in the FM broadcast and maritime mobile areas. In her past assignments, she has worked closely with the National Telecommunication and Information Administration (NTIA). Within the Wireless Telecommunications Bureau, Ms. Hosford is Assistant Chief for Land Mobile Radio and Public Safety Radio Services, Private Radio Division.

Electronic Granting of Licenses at FCC's Wireless Bureau

Effective immediately, the complete amateur service license database is available on Internet via the FCC's ftp site. This new service marks the beginning of electronic granting of licenses at the FCC's Wireless Telecommunications Bureau. As soon as the data for a new license appears in the database, the license is effective and all privileges of that license can be exercised by the licensee. Licensees will no longer need to wait to receive a license document in the mail. New licensees can use the Internet as proof of licensing and go on the air immediately, even if they have not received the license document from the Commission.

The database will be updated every Monday by noon and daily updates will be posted on a five workday cycle (i.e., Monday's data will be overlaid by the following Monday, Tuesday's data will be overlaid by the following Tuesday, etc.)

Information can be retrieved from the amateur service license database using the following procedure:

Access: anonymous ftp fcc.gov
Directory: pub/XFs_AlphaTest/amateur
Files: Full database: amateur.zip
Daily updates: mon.zip
tue.zip wed.zip thu.zip
fri.zip
Documentation: readme.txt

If you have any questions concerning the data on the amateur service license database, please contact the FCC's Consumer Assistance staff located in Gettysburg, PA (800) 322-1117, or (717) 337-1212. ■

Beaming In (from page 5)

stop. This was a known drug location. In his vehicle, officers discovered scanners, pistols, several pieces of clothing displaying FBI identification, and an altered U.S. passport bearing the man's name. Police suspected he wasn't an average hobbyist, and neither did I. I declined the honor of participating in his defense.

This past spring, a letter came from a gentlemen in Colorado seeking my support after Denver police obtained a warrant and entered his residence to cart off his 800 MHz equipment. He wrote that he's been a radio buff for 40 years, monitoring short-wave and scanner frequencies. He said he has no police record, and told me, "in no way do I believe I have violated any federal or state laws with my hobby."

In his letter, he didn't explain why he had been singled out for owning 800 MHz equipment. He said the FCC told him he hadn't violated any of their rules by simply owning an 800 MHz scanner. It was very puzzling.

A look at the search warrant filled in some of the blanks. Police were looking for portable digital transceivers programmed for operation in Denver's 800 MHz trunked police communications system. They were also seeking computer programs and manufacturing equipment capable of being used to clone other transceivers to operate on the 20 paired frequencies in the Denver police's 800 MHz trunked digital system.

Police took away 13 items of interest, including several GE portable and mobile two-way 800 MHz digital trunked radios, and a computer. No standard hobby-type scanners were listed in the search warrant, and none were taken as evidence.

What had drawn police attention to him in the first place? I don't know. He claimed he had legally purchased the digital transceivers directly from GE, though he didn't claim that GE sold them to him programmed to transmit and receive on Denver's digital trunked police channels. Obviously the police had some reason to consider this chap to be different from the average communications hobbyist.

Problems arise when people who exist beyond the realm of average hobbyists like to claim they're simple hobbyists being unfairly harassed. They feel they can use the hobby's support when they get burned. Unfortunately, when the news media reports on these folks, they are often referred to as "scanner users" or "hobbyists." You and I take part of their rap.

The difference between these people and hobbyists isn't readily apparent to the media and public. Lamentably, this has caused scanner hobbyists to be perceived with suspicion by many people, and even some public safety agencies. The would-be "scanner hobbyists" who misuse intercepted information are the folks that cause restrictive legislation affecting scanners to be introduced.

I recall a newspaper story ten years ago telling of a drug bust and how the DEA apprehended several suspects who were using a scanner. The newspaper reacted at length and with horror about their use of a scanner, but said very little regarding the type and amount of drugs these people were suspected of trying to sell.

About the same time there were news reports about the Minn. man and his scanner. He monitored federal drug and treasury agents watching drug and stolen goods suspects. Problems arose only when he contacted the suspects to warn them that they were under surveillance. I didn't feel he was a mainstream hobbyist, neither did the judge. He was sentenced to three months in prison and ordered to spend nearly three years without owning any communications gear.

Then, there was the time the U.S. Customs Service was offering a \$500 reward for a Maryland scanner owner they alleged did pretty much the same thing as the man in Minnesota.

What have we learned from these and other recent disasters? If you have a scanner, don't misuse it. That means: Monitor, but don't make tape recordings of intercepts. Don't reveal to others the contents of any intercepts. Don't use communications equipment to aid or abet criminal activity. Keep in mind that police tend to frown upon outsiders owning transceivers that operate on their frequencies. ■

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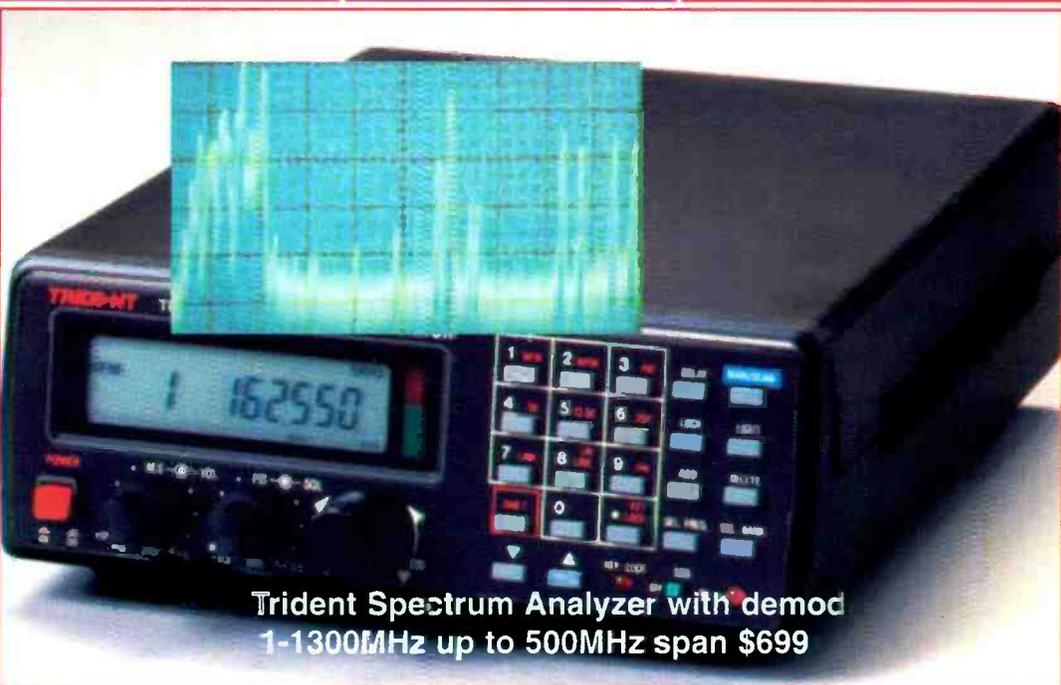
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