

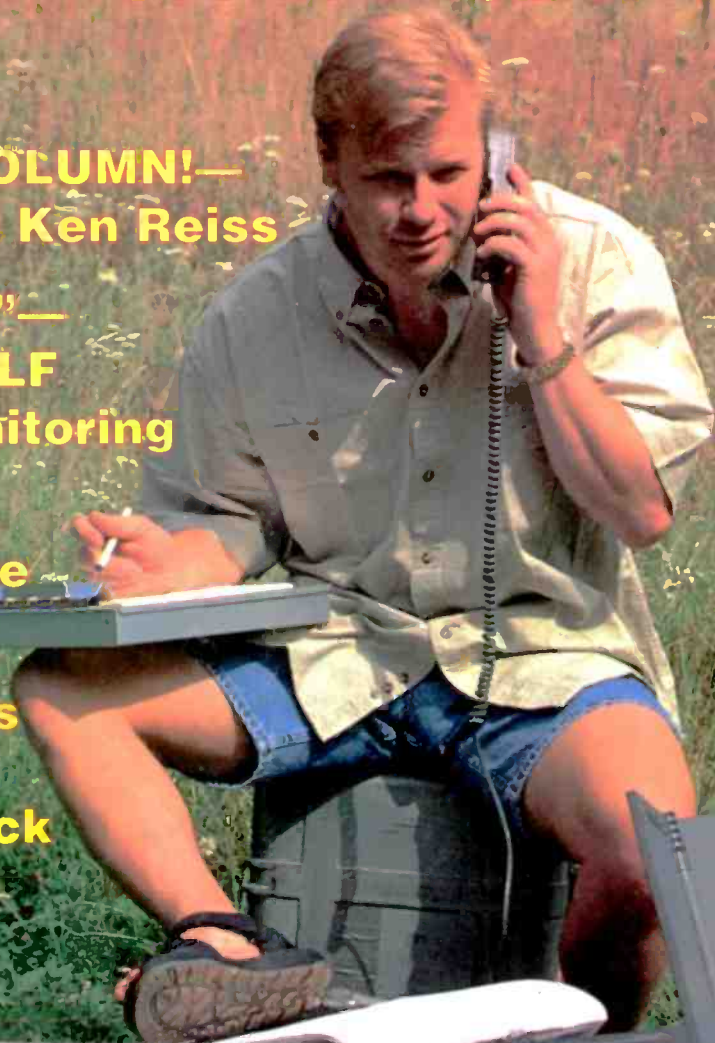
POPULAR COMMUNICATIONS

NOVEMBER 1997

WARNING!

SWLing and Scanning Could Soon Become a FELONY!

- **NEW SCANNING COLUMN!—**
Get Technical with Ken Reiss
- **DXing “Downstairs”—**
An Introduction to LF
and VLF Radio Monitoring
- **Bruce Conti Joins**
Pop’Comm for Some
“Broadcast DXing”
- **“Spotlight” Catches**
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Look To AOR For The Best Receivers



The introduction of the all new AR7030 shortwave receiver is geared to the discerning and dedicated listener. The AR7030 is the result of a combined project between AOR and a UK designer. The AR7030 represents the very latest and best design, featuring exceptionally strong signal handling and bristling with enhanced features, with coverage from 0 - 32MHz. The AR7030 has been targeted to handle strong signals that are of prime concern of European listeners. It offers greater than +35dBm IP3 (Intercept Point) and greater than 100dBm dynamic range. The DMOS FET QUAD first mixer with NCO drive DDS offers the ultimate performance. All this and great sensitivity better than 0.5µV for 10dB S/N in AM mode and better than 0.3µV for 10dB S/N in SSB. Selectivity too is razor sharp offering greater than 90dB @ 10kHz SSB and greater than 100dB @ 20kHz. No other receiver "in this class" nor indeed at considerably higher price can match the sheer performance excellence of the AR7030, RS232.

AR5000 Cyberscan

Test Results of the AR5000 vs. the competition show the AR5000 Superior in...

- Widest Coverage 10kHz to 2600MHz*
- 77 Functions front panel or RS232 controlled
- Sensitivity -Noise Figure -Dynamic Range
- Minimum detectable signal (MDS) -Superior IF Filtering
- 10.7MHz IF output levels and more

Government Agencies and Serious Scanner Users also gave the AR5000 two thumbs up.

- Fastest Scan Speed with or without a computer -Easier computer control (ASCII not CI-V) -Up to 4 antenna inputs (with opt. AS5000) all RS232 controlled -Cascade filters in 10.7 & 455 IF w/6 filters (opt. CW)
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***AR8000B non restoreable cellular blocked, unblocked available for export-government & qualified users.**



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AR7030 Superior by Design

Here is what the Pros say...

- *Larry Magne Passport To World Band Radio ★★★★★ Five Stars
- *World Radio TV Handbook. Table top Receiver of 1997
- *John Wilson noted U.K. Receiver guru —Shortwave Magazine 5/97 "AR7030 is at the leading edge of RF performance and will not be bettered for a long time."
- *Radio Netherlands ★★★★★ Five Stars

AR7030 'PLUS'

For those who want the "edge" this model has been designed for you. All aspects of performance have been carefully studied and specific performance enhancements makes this the ultimate receiver.

- Increased balance of the mixer for greatest IP2 & IP3
 - High tolerance 0.1% components in DDS ladder for low noise
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- The new AR7030 'PLUS' will be available form July '97 and is the best of the best**

PLUS
PERFORMANCE

Price TBA



PLUS
PERFORMANCE

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All the same features PLUS...

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Price TBA

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NOVEMBER 1997

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ON THE COVER: A field engineer uses a Magellan Systems Satellite Phone to talk with his office from a remote site. Check out Gordon West's "Radio Resources" column on page 44 for more information on using satellite phone systems. (Photo by Larry Mulvehill).



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- NEW COLUMN!—"ScanTech"** 24
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By Ken Reiss

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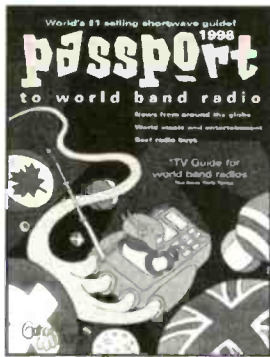
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- **Passport To World Band Radio '98** *Brand new!* Graphic presentation of all shortwave broadcast stations. Equipment reviews, too. **On sale!** #1000 \$15.90 (+\$2)
 - **Joe Carr's Receiving Antenna Handbook** Arguably the best book devoted to receiving antennas for longwave through shortwave. **On sale!** #3113 \$17.90 (+\$2)
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The Voice of Tauzin

As if Representative Markey's recently introduced bill, H.R. 1964 wasn't bad enough, his colleague, Representative Billy Tauzin (Rep. LA) has introduced H.R. 2369 which further erodes our rights to monitor the public airwaves. It was ironic that about the same time we got wind of this new attempt at banning radio monitoring, I was cleaning the trash from my office. One file folder of "trash" is about three inches thick with all kinds of news releases, comments and information about the ECPA and privacy as it pertains to us radio hobbyists. Oddly enough, the file continues to grow like some out of control weed that just won't die!

It should be very obvious to all of us by now that because of that intercepted Gingrich cellular call, this vendetta by our elected officials just isn't going to go away. You can pray, hope, and pluck the hairs from your Markey or Tauzin doll and it won't do any good. And of course sitting around waiting for someone else to send letters to those responsible for these bills doesn't cut the mustard either. The time to act is NOW! We encourage everyone to write a polite letter to each member of the elected community, respectfully requesting this bill not leave the committee in its present form. Members of Congress and the Senate can be reached at 202-224-3121. You can also find your representatives' local phone number by checking the U.S. Government section of your phone directory.

In case you're not familiar with H.R. 2369, it would, as currently written, give the United States of America the most restrictive monitoring laws in the entire world. About all you'd be able to legally listen to would be AM/FM broadcasts, shortwave broadcasts, amateur and CB transmissions. Tauzin's re-write of the Communications Act of 1934 would include the *act of listening* to communications in addition to the divulgence of what's heard. So contrary to what the Tauzin people are putting out in news releases and talk shows to their constituents, this bill is NOT about cellular privacy, but Section 3, Paragraph A, Part

"H.R. 2369 . . . would, as currently written, give the United States of America the most restrictive monitoring laws in the entire world."

I changes the wording of Section 705 of the 1934 Act adding "interception or" which would make the hobby monitor and anyone else using a shortwave radio or scanner, a felon. The broad brush that Tauzin has used in H.R. 2369 to paint a nasty picture of radio monitoring can only be described as painfully devastating, not just to radio monitors, but public safety professionals as well.

In an attempt to get the word out to the public, last week I made over a dozen phone calls (and am still waiting for return calls on most of them!), wrote letters to my Congressman and Senators and took the time to send personal letters to all the representatives responsible for reviewing these two bills. It would have been just as easy to write one letter to Mr. Markey or Tauzin, but I figured, what the heck—maybe, just like those letters I write to Santa Claus, they'll get read. Little folks like you and me are lucky to get a response from *our own* elected representatives, so you're probably right figuring they'll only give your letter a quick read; a lot like those human resource folks read your resume. It took you hours of blood, sweat and tears to put it together, and then some staffer reads it in 15 seconds or less.

One of our loyal readers, Sue Wilden in Indiana sent us a copy of what she sent to her Washington legislator. I don't think she'll mind if we show everyone part of what she wrote; it's a well written commentary that deserves some ink. Sue says, ". . . the idea behind these bills shows Mr. Markey and his colleagues has no idea why people listen to scanners and also shows why they have no understanding of the Constitution." Later on

(Continued on page 76)

POPULAR COMMUNICATIONS

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Each month we select representative reader letters for our Pop'Comm P.O. column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in Pop'Comm P.O. Address letters to: Harold Ort, N2RL, SSB-596, Editor, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909, or send e-mail via the Internet to <popularcom@aol.com>.

No Sour Grapes Here

Dear Editor:

Harold Ort's comments in the August PC about "code snobbery" are right on! I encourage him to keep banging the no-code drum as loudly as possible.

Code is the 1990s equivalent of smoke signals, and is about as relevant to modern communications as steam engines are to transportation. It stupefies me why this 100-plus year old technology is held high like some sort of fraternity hazing ritual while satellite, video, and packet modes are given only passing mention in ham radio circles.

If the young would-be ham Harold mentioned winds up finding another hobby, it's probably because he doesn't see much fun or usefulness in tippy-tapping letters out at 10 wpm in a world of fiber optics and 28,800 bps modems. He may be better off taking his interests else-

"No-coders are welcome in my shack anytime."

where, as he probably knows more about computers and digital electronics than 90 percent of the old radio geezers out there and would make them look bad anyway. Maybe that's their true motivation for keeping the code alive.

For the record, I was licensed in 1982, well before no-code, so I'm not playing sour grapes here. No-coders are welcome in my shack anytime.

Charlie Warfield, Jr.
KA9OFN

Steve Hits a Home Run!

Dear Editor:

Thanks for your excellent editorial in the August issue. It's refreshing to hear such a logical perspective in the confused world of amateur radio today. It's true that many would-be hams avoid the hobby because of the "old, cranky, bureaucratic codgers" you mentioned and their unreasonable rules that make it so unwelcoming and unenjoyable! Ham radio should be a fun and friendly hobby, especially for newcomers. It's a shame that so many are insistent on preserving the requirement of Morse code. Given the amazing wireless technologies existing today, isn't it silly to cling to such an antiquated and clunky form of communication?

And isn't about time that the "no-coder" hatred stopped? Your editorial was hard-hitting and extremely relevant to today's amateur scene. I hope others like you will voice their opinions and bring about much-needed change.

Steve Smith, KE4RKV
Indianapolis

Freedoms Erode, One at a Time

Dear Editor:

Mr. Bob Reynold's letter, "Call to Action," in July serves to remind us all that the subtle, incisive intrusions to liberty that we all experience will one day become so obvious that they cannot be ignored. The question is, "Will it then be too late?"

Look around you. If you live in the West, you're told when you can water your lawn or wash your car: neighbors are encouraged to report neighbors who have disregarded the "official decree."

Smokers are told what they can smoke, when, and where. Firearms owners are told that their sport/hobby fosters crime or endangers the balance of nature, and they should give up their pleasures. Outdoors lovers in California are told that they cannot use lighter fluid on their barbecues due to the smog-enhancing fumes. Vehicle owners in New Jersey are being told that a new bill being proposed

"Freedom is being eroded a little at a time, first yours, then a neighbors, and now mine."

will allow the State to confiscate (yes, confiscate) older vehicles that cannot be made to meet emissions standards.

The Clinton Administration wants to censor the Internet, truly an international undertaking; only the Supreme Court had the common sense to stand in the way. Yet now, ECPA attempts to do the same, only this time it's to us, those little folks who do nothing but sit and listen.

Divide and Conquer. The government has done so. It's turned faction against faction. And it's carving a larger and larger piece of the pie for itself. Freedom is being eroded a little at a time, first yours, then a neighbors, and now mine.

I am reminded of the story of the man of the cloth in the days before World War II, who watched as one after another of his neighbors were taken away, without any protest from anyone, until his day came. And there was no-one to protest.

Take heed! Listen to the others whose freedoms are also being encroached-upon. We are not alone.

Andy Anderson
Midland, TX

Dear Andy:

Well said! Now only if I could convince Bill Clinton to buy our '87 Olds before our next inspection.

It's Just Plain Wrong!

Dear Editor:

I read with interest your editorial in the August issue. I know where you're coming from! I belong to a national support group of blind people. At the state level we have a lot of bickering and complaining going on. As a result, we can't do our job, so technically we don't exist. For some, this is the first impression of our organization. That is wrong! Wrong!

Fortunately our national president is coming down this weekend to break up the fight, as it were. So don't give up. Just keep shouting. Someone will hear you.

John

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Introduction to LF and VLF Radio Monitoring

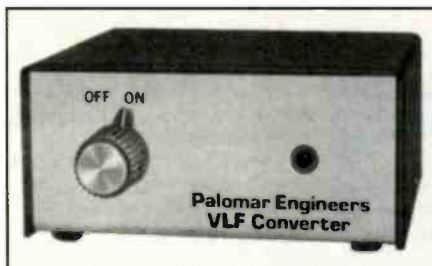
Here's What's "Downstairs" in Radioland and How to Hear it All ...

By Joseph Cooper, VE3FMQ

As we move towards the fall and winter monitoring seasons, many people will be looking for new challenges for their DXing abilities. While many will explore the "traditional" frequencies found in the medium wave, shortwave and VHF/UHF ranges, there is an often-overlooked group of frequencies that can provide interesting monitoring targets for both the beginner and the experienced listener. These are the "Low Frequencies" which cover from the beginning of the standard broadcast band at 535 kHz and extend all the way down the radio spectrum to 9,000 cycles per second (which is the lower limit for frequency allocation) and beyond! Indeed many listen to radio frequencies that are only a few hundreds of cycles per second in order to hear fascinating radio signals produced within nature, the solar system and the earth itself!

The many types of signals you can listen to in this low range of frequencies can vary greatly in their nature and purpose. This is not only due to the type of communication work being done, but due in great part to the propagation characteristics of the frequencies being used. For example, the frequencies that are found between 535 kHz to 300 kHz tend to have much the same characteristics as those of the low end of the broadcast band. You will find that these frequencies exhibit the same daytime ground wave propagation over short distances of roughly 200 miles, then open up at night to much greater distances when the ionosphere enables sky-wave propagation. This range of frequencies is used primarily by utility stations and navigational beacons. There are a great many low frequency listeners who specialize in logging these types of stations, finding great DX challenge in searching out weak and distant signals.

For many others, the LF/VLF spectrum (300 kHz to 3 kHz) offers many interesting monitoring possibilities due



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to its unique characteristics. In this range, propagation characteristics are very different from those of higher frequencies. When transmitted, these frequencies travel in powerful wave fronts that follow a "trough" formed between the earth's ionosphere and its surface. Unlike the higher frequencies, these waves follow the contour of the earth's crust and the ocean's surface very closely and actually penetrate to distances below both. This unique characteristic of penetration has been used primarily by the U.S. and other naval powers to maintain constant

communication with their submarine fleets when they are operating at depth. These frequencies are also of interest to the scientific community due to their unique behavior during various natural phenomena that take place both on earth and in space. This has lead many to begin to explore the ELF frequencies below 3 kHz, where you can hear such interesting phenomena as "whistlers," which are believed to be the sound of the energy pulse of a lightning bolt following the earth's magnetic field.

The ability of even the most casual listener to be able to monitor the lower radio frequencies has been made easier with the introduction of new communications receivers. Most sets are coming standard equipped with frequency ranges that begin below 500 kHz. While most offer coverage beginning at 100 kHz, many of these sets are able to tune as low as 10,000 cycles or even less, with some claiming to go all the way down to DC! It is not necessary to purchase one of these new sets to monitor low frequency ranges, as some of the classic tube sets and many

Some Active LF Broadcast Radio Stations

(Source: *The Lowdown* June 1996—compiled by Richard Morris)

Freq. (kHz)	Location	Power (kW)
279	Minsk, Belarus	500
270	Topolna, Czech Rep.	1500
261	Moscow, Russia	2000
252	Atlantic 252, Ireland	500
252	Tipaza, Algeria	1500
243	Kalundborg, Denmark	1000
234	Beidweiler, Lux.	2000
216	Roumoules RMC, France	1400
183	Saarlouis, Germany	750
171	Nador, Morocco	2000
162	Allouis, France	2000
153	Bod, Romania	1200

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early transistor models of the last few decades have low frequency bands available. Even those who currently own a shortwave only receiver, may listen in by placing a low frequency converter between their antenna and radio. These converters change low frequency signals into an alternative range (such as 3.510 to 4.0 MHz in the 80 meter ham band) which enables them to be monitored on your existing equipment.

What's Down There?

The question then what is to be found there for the casual listener? The first thing that is encountered by most people who tune in to the low frequencies are the slow and repetitive letter codes of their local airports and water navigation aids, plus a few teletype stations in between. Many may even hear the sounds of European and Middle East longwave broadcasters, particularly if you are located near the eastern coastal areas. To assist you in the monitoring of these lower frequencies, here are some suggested targets to aim for in order to find interesting stations to log. For those who wish to expand their monitoring skills, stations in the VLF range are also listed. We will also provide information for those who wish to move beyond *monitoring*, and report on the growing group called "Lowfers," who are experimenting with low frequency, low power, radio transmission using all of the conventional modes of communications, such as CW, SSB and even digital! Other topics of interest to those wishing to know more about LF and VLF radio are also listed with references to the World Wide Web.

Using the World Wide Web to Get Information

When first monitoring the LF (100 to 535 kHz Range) of frequencies one is often left wondering exactly what are those tones and slow Morse code IDs that are heard. Many will know that they have something to do with radio direction, but often wonder if there is any way that they can find out where they are, and how they are used? For the beginner there are several tools available to enable them to actively find and identify navigational beacons. In some ways this is the pure form of DX listening, because the reception and identification of the signal is the sole aim. While there may be no "message" in the signal, the pursuit of this part of the

Frequency Allocations for LF and VLF Operation

Utility/Government Allocation in USA/Canada

Frequency (kHz)	Allocation in USA/Canada
535 to 525	Aeronautical Navigation, Mobile
525 to 510	Aeronautical Navigation, Maritime Mobile
510 to 505	Maritime Mobile
505 to 495	500 kHz Maritime distress and guard freq.
495 to 435	Maritime Mobile
435 to 415	Aeronautical Navigation, Maritime Mobile
415 to 405	Radio Navigation, Aeronautical Mobile
405 to 335	Aeronautical/ Maritime Navigation, Aeronautical Mobile
335 to 285	Aeronautical/ Maritime Navigation
285 to 275	Aeronautical/ Maritime Navigation
275 to 200	Radio Navigation, Aeronautical Mobile
200 to 190	Aeronautical Navigation
190 to 160	Fixed Station (Lower shares with Maritime)
160 to 130	Maritime Mobile
130 to 110	Fixed, Maritime Mobile, Radio Navigation
110 to 90	Radio Navigation
90 to 70	Fixed, Maritime Mobile (Government), Radio Navigation
70 to 60.05	Fixed, Maritime Mobile (Government)
60.05 to 59.95	Standard Frequency and Time signal (WWVB)
59.95 to 20.05	Fixed and Maritime Mobile (Government)
20.05 to 19.95	Standard Frequency and Time signal (WWVB—not in service)
19.95 to 14	Fixed and Maritime Mobile (Government)
14 to 9	Radio Navigation
9 to 3	Not Allocated
below 3	ULF frequency range

radio listening hobby is to be part of the original "fox hunt" technology.

Most people use air and marine navigational charts to locate and identify beacons. Also, there are a number of groups

which specialize in monitoring beacons and provide good advice to their members on how to log and get QSL cards from these stations. It should be noted that with the advent of GPS and other new naviga-



The AOR AR5000 communications receiver is a high-end receiver capable of VLF coverage.

VE3FMQ

Joseph Cooper
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 Canada

Email joe@westonia.com
 CW-FISTS Member 2135
 Radio Amateurs of Canada

NIST web page at: <http://www.boulder.nist.gov/timefreq/>.

Finding Out More About Lower Radio

Under the FCC's Part 15 rules regarding the use of low powered radios, it is legal to operate a low frequency transmitter in the frequency range of 160 to 190 kHz, though this must be done on a shared basis with other licensed stations found in this frequency band. The main restriction placed upon Lower operation is that the station must be operated with a limitation of 1 watt input power to an antenna system that does not exceed a total length for lead, antenna and ground of 15 meters. Despite these limitations, many people are operating CW, SSB, SST, TTY and even digital modes in two way communications with other Lower operators. Commercial (kit and built) sets are available at about the same cost as a good CB radio station. Depending upon conditions, a Lower station can expect a transmitting radius of between five to 50 miles. For more information you can write the Longwave Club of America, 45 Wildflower Rd. Levittown, PA 19057 or

tional aids, the age of the beacon may be ending soon, so this may be the last chance to hear these "radio lighthouses" until the beginning of the next century when the majority will be decommissioned sometime near 2000.

To find out more about navigational beacons and utility stations operating in the LF range, see these Web Pages:

<http://members.aol.com/RKDX/N9MBK-Publications.html>—N9MBK Publications, *Longwave Targets of the North Atlas*.

<http://members.aol.com/us66soft/lful.html>—Longwave Club of America Utility database.

<http://pw1.netcom.com/~spmcgrvy/artoftoc.html>—*ON THE ART OF NDB DXING* by Sheldon Remington, N16E.

Very Low Frequency Time Signals in the U.S.

The National Institute of Standards and Technology operates WWVB, the long-wave counterpart of the better known WWV and WWVH. Using a protected frequency of 60 kHz, it's time signal is more accurate than the HF versions. It's transmitted from Fort Collins, CO. The signal that is transmitted is not the modulated tone that you may be used to, but rather it is a digital pulse. Likewise, there are no voice announcements made to tell you the exact time. The signal can still be heard by setting your VLF receiver to CW/SSB mode and then tuning around the frequen-

cy until you hear the pulse carrier.

The WWVB transmitter has been upgraded for higher output power in conjunction with the introduction of a new service for consumers. In the years to come, many home appliances, such as clock radios and VCRs will have the ability to set their own time, using WWVB's signal. For more information take a look at the

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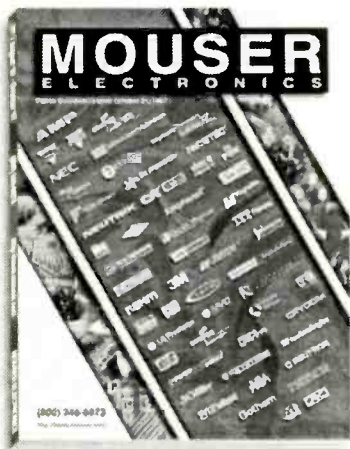
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Target Frequencies Below 100 kHz

(Note: frequencies change without notice)

Freq. (kHz)	Call/Location
.076	USN-Clam Lake, WI /Republic, MI ("Project ELF")
1.280	Test (1979/1980)-Kaford, Norway (ERP=29 W)
11.8	Omega C-Haiku, Maui, HI (one of multiple nav aids)
16.025	GBR Naval-Rugby, Warwickshire, UK (FSK) (ERP=60 kW)
15.1	FUB Naval-Rosnay, Le Blanc, France(FSK)(actual call HWU)
16.025	GBR Naval-Rugby, Warwickshire, UK (FSK) (ERP=60 kW)
16.2	"UMS" Naval-Petropavlosk, Kamchatskiy (FSK/CW)
16.4	JXN Naval-Novika(Helgeland), Norway (FSK/CW)(IDs as JXZ)
16.8	FUB Naval-Sr. Assise, France (FSK/CW) (actual call FTA2)
17.4	NDT USN-Yosami, Honshu, Japan (100 Bd MSK)
18.975	GQD Naval-Anthorn, Cumbria, UK (FSK) (ERP=100 kw)
19.575	GBZ Naval-Criggion. Powys. Whales (FSK)
19.9	WWVL SFTS-Ft. Collins, CO (off air at this time)
20.0	WWVL SFTS-Ft. Collins. CO (off air at this time)
21.4	NSS USN-Annapolis, MD (200 Bd MSK)
22.3	NWC USN-Exmouth, North West Cape, Australia (200 Bd MSK)
23.1	USN-TACAMO aircraft (FSK/CW)
23.4	NPM USN-Lualualei. Oahu, HI (200 Bd MSK) (May be decommissioned)
24.0	NAA USN-Cutler, ME (200 Bd MSK) (Submarine Command/ still operating)
24.8	NLK USN-Jim Creek, Oso, WA (200 Bd MSK) (Submarine Command/still operating)
26.2	NOV USN-TACAMO aircraft (FSK/800 Bd/MSK/CW)
26.3	NJB USN-TACAMO aircraft (FSK/800 Bd/CW)
27.0	USN-TACAMO aircraft (FSK/MSK/CW)
27.9	NJB USN-TACAMO aircraft (FSK/800 Bd/CW)
28.5	NAU USN-Aguada. Puerto Rico (200 Bd MSK/FSK 50 Bd)
29.5	"FXL" USAF SAC-Silver Creek, NE (moved to 48.5)
29.6	USN-TACAMO aircraft (MSK/CW)
37.2	"XLC" USAF SAC-Hawes, CA (FSK 5/50 Bd, MSK) (off)
40.0	JG2AS SFTS-Sanwa, Ibaraki, Japan
44.0	VHB Belconnen, Australia (FSK/75 Bd)
51.6	NSS USN-Annapolis, MD (FSK 75 Bd)
51.95	GYA Naval-London, UK (FSK)
53.0	USN-San Diego (Chollis Heights), CA (FSK) (may be off)
55.5	GXH USN-Thurso, Highland, Scotland (FSK)
57.4	CNL USN-Kenitra, Morocco (FSK)
60.0000	WWVB SFTS-Fort Collins, CO (Standard Freq. and Time— in operation)
65.8	FUB Naval-Brest, Finistere, France(FSK)(actual call FUE)
68.0	GBY20 Naval-Rugby, Warwickshire, UK (FSK)
68.9	XPH USAF-Thule AB, Greenland (FSK)
73.6	CFH Naval-Halifax (Mill Cove), NS, Canada (FSK 75 Bd)
76.2	CKN Naval-Vancouver, BC, Canada (FSK)
77.15	NAM USN-Norfolk (Driver), VA (FSK 50 Bd)
81.0	GYN2 Naval-London, UK
82.75	MKL Military-Petreavie, Rosyth, Scotland (FSK/CW)
83.1	OFA83 Meteo-Helsinki, Finland (FAX-RPM/IOC 120/576)
83.8	FTA83 SFTS-Saint Andre de Corcy, France
88.0	NSS USN-Annapolis, MD (FSK 50 Bd/MUL)

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*Pictured Right:
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Listening to Nature Radio

By Joseph Cooper

The radio spectrum located below 10,000 kHz is not allocated by any government agency, but a great deal of radio "broadcasting" activity takes place here. Rather than being generated by manmade sources, the majority of radio sources heard in this frequency range is produced by *natural* sources. A number of scientific research projects are underway to study many of the phenomena that occur in these lower frequencies, and many amateur VLF enthusiasts monitor these fascinating and ever-changing phenomena.

Some monitor the VLF frequencies in conjunction with amateur solar astronomy. What are being "observed" are Sudden Ionospheric Disturbances (or SIDs) which are produced by disturbances on the sun's surface. When a disturbance turns into a flare, this can result in severe disturbances in the upper frequencies (particularly those in the shortwave bands, which can be disrupted for days) due to the bombardment of the earth's ionosphere with high energy particles released by the flare. VLF frequencies are unusual in that they actually become *more efficient* during these SID's for reasons that are still not fully understood, hence the study being done.

For more information contact The American Association of

Variable Star Observers/Solar Division (AAVSO) through their Web page at <<http://www.aavso.org/>>.

A range of earth-based phenomena are also being studied by such scientific bodies as the VLF Group at Stanford University <<http://www-star.stanford.edu:80/~vlf/>>. The work that is being done covers events in the upper atmosphere that are optical (special lightning called red sprites, blue jets and elves), as well as special lightning events that can be monitored on VLF radio, such as "whistlers", which are produced by regular lightning trapped in the earth's magnetic field. There are many other events that can be monitored by radio which are still very much a mystery, such as the "dawnchours", "tweaks" and "Sferics." Many amateur monitors are active in listening to these strange sounds using either regular VLF receivers or special "nature" radios that are designed specifically to receive these signals. A very good overview on how to monitor nature radio appeared in the January 1995 issue of *Popular Communications* as *Chorus, Sferics, Tweaks and Whistlers* by Steve McGreevy, N6NKS. Further information can also be gathered from the Longwave Club of America's Web page at <<http://members.aol.com/warmspgs/natrad.htm>>.

see their Web Page at <<http://members.aol.com/wcaneews/index.html>> and also be certain to check <<http://members.aol.com/part15/lfmfbcn.txt>> for a list of articles on operating a Lower station.

Tuning In The Last Operating Anderson Generator Transmitter Site

The last remaining Anderson VLF transmitter, located in Grimeton, Sweden, can be tuned up and operated on 16.7 kHz using CW signals. At one time

this type of transmitter was the only way that reliable trans-Atlantic radio communications could be maintained. Many of these transmitters were operating into the 1960s. A few VLF transmitters still exist (such as NAA at Annapolis, MD, and the Jim Creek site in the state of Washington), but these are now using modern transmitters. The Anderson transmitter, named after the General Electric engineer who perfected them, uses a high frequency AC generator rather than a vacuum tube (or even spark gap) oscillator. These generators were able to operate at the very high speeds needed to reach into the radio fre-

"... several hams are combining "Spelunking" (Cave exploration) with their ham radio hobby."

quency spectrum in order to generate the radio waves frequencies.

The station is operated by a group of volunteers and on special occasions it is put on the air. For more information on when, where and how to listen for these special transmissions and how to get a QSL if you are able to receive them, see the stations' Web page at <<http://www.telemuseum.se/Grimeton/Grimeen.HTML>>.

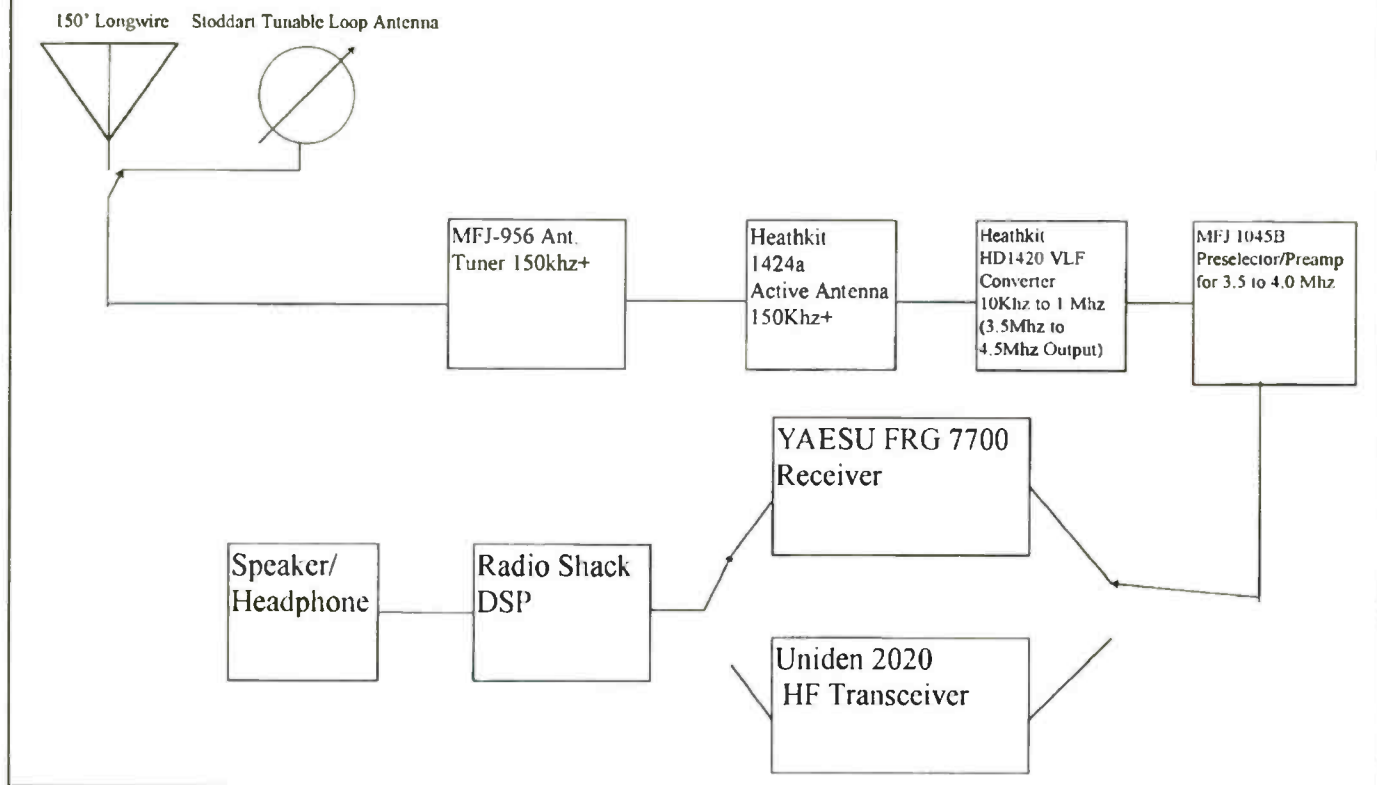
More LF: England's New 73 kHz Ham Band: A Model For The U.S.?

Hams in the British Isles have been given a "per-use" access to LF spectrum at 73 kHz. This is an experimental band that has the interesting characteristic of being usable underground. At 73 kHz radio waves are able to penetrate rock for considerable distances, and several hams are combining "Spelunking" (Cave exploration) with their ham radio hobby. Power is restricted to 1 watt, and the antenna sys-



Joseph Cooper at the controls of his radio gear in Canada. Joe is amateur operator VE3FMQ and has been licensed since 1970 and is active in the Xtal Set Society.

Using this configuration, an S5 signal can be boosted to S9 plus 30 db with little or no noise (QRN).



A typical VLF monitoring system.

“These frequencies are also of interest to the scientific community due to their unique behavior during various natural phenomena . . .”

tem may be no longer than 15 meters. Still, many hams have been working towards breaking distance records above and below ground, and even working mobile! There is a movement in the entire European community to open up new LF spectrum for experimentation, particularly as beacons (the traditional users of these frequencies) become less important for navigation. For more information see the 73 kHz home page at: <<http://www.stonix.demon.co.uk/73kHz/>>.

The ELF frequencies: Transmitting at 76 Cycles And Below!

The U.S. Navy, and other military groups around the world have been working with extremely low frequencies to communicate with submarines. These low frequencies are capable of forming strong wavefronts that are able to dip deep

below the ocean waves. The efficiency of these transmitters is very poor, and considerable amounts of RF energy are wasted as heat, so the antenna systems are huge, covering many, many miles in the rocky area of Wisconsin and Michigan. To get more information on one of the strangest radio technologies to emerge from the Cold War period, see the U.S. Navy Web page at <<http://www.mtifwb.com/navy.html>>.

✎ **Editor's Note:** Writer Joseph Cooper, VE3FMQ was born in 1951 in Toronto, Ontario. He was originally trained in Electronics and Electricity in high school, and then spent several years in industry as a technician. Between 1976 and 1983 he was granted a BA (Hon) from Trent University in Peterborough Ont. and an MA in social sciences with minors in history and statistics from Carleton in Ottawa. Joe is currently employed full time as the technical writer for a software company located in Mississauga Ontario. He received his Amateur Radio Certificate in 1970 and is also active in the Xtal Set Society, having recently contributed an article for their new book of Crystal Radio Set projects. Joe is also a member of the Longwave Club of America. ■

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World's First Major Shortwave Broadcaster

When Innovation Was the Name of the Game

By Alice Brannigan

In 1927, when the world was first becoming aware of the usefulness of shortwave for long-range telegraphic communications, station PCJ (under its first call letters, PCJJ) had already begun broadcasting with 15 kW on 9550 kHz. It was one of the world's earliest shortwave broadcasters; certainly the first major one.

PCJ was established in March of 1927 at Eindhoven, Netherlands, with its transmitter at Hilversum, southeast of Amsterdam. The innovative station had been created by Holland's famous Philips Radio Laboratories of Eindhoven. In the beginning, PCJ's primary purpose was to give Dutch nationals in the East and West Indies colonies a vivid picture of the mother country. Programming included popular and classical music, discussions relating to events at home and throughout Europe, also information on sports, literature, and entertainment. Within a

few years, PCJ's programming would be directed at a wider audience.

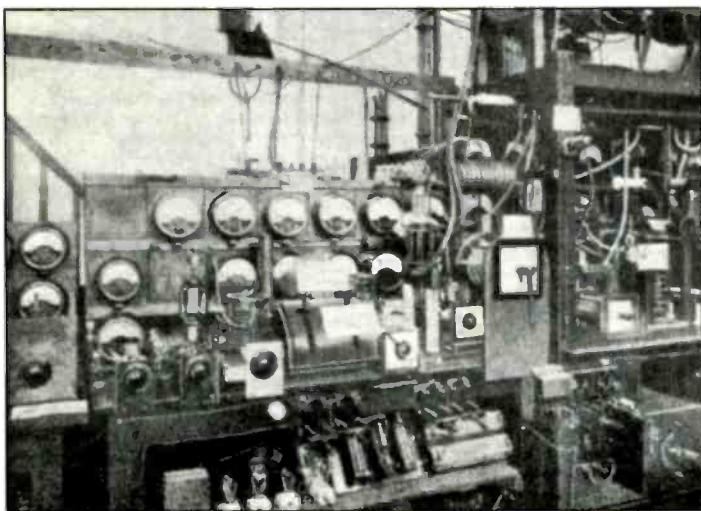
PCJ's inaugural broadcast was initiated by Her Majesty Queen Wilhelmina, addressing her subjects in the colonies. Right from the station's first day of operation, the most often heard PCJ air personality would become Eddie Startz.

In 1929, a new 25 kW transmitter was put into service at Huizen, southeast of Amsterdam, with studios in Hilversum. Officially the call letters were PHI (and PHOHI), but the station became most popularly known under the more familiar generic call letters of PCJ. The original 1927 transmitter remained in service until 1931. The new transmitter operated on 9590 and 15220 kHz, offering announcements in Dutch, English, French, Spanish, and German. Well heard throughout the world, PCJ quickly became a favorite with DX listeners, and was extremely attentive to reception

"... PCJ's primary purpose was to give Dutch nationals in the East and West Indies colonies a vivid picture of the mother country."

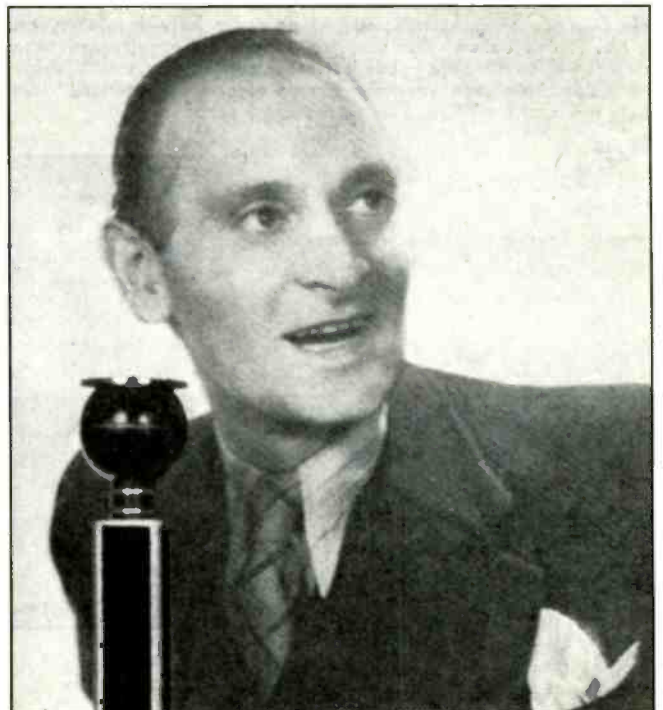
reports. Virtually every SWL proudly displayed an orange-black-white QSL card from PCJ.

Part of what this meant was that PCJ's Eddie Startz became the world's first enormously popular international radio personality. Startz had a devoted worldwide following. He spoke seven languages fluently, had a quick wit, and a habit of ad-libbing personal remarks into all of his programs. As a result, the station management gave Startz plenty of air time for his entertaining programs conducted in Dutch, Spanish, Portuguese and English. One of his most popular on-the-



The first PCJ (actually PCJJ) 15 kW transmitter used in 1927.

Station PCJ's venerable air personality, Eddie Startz. His "nice cup of tea" and quick wit endeared him and his "Happy Station" program to listeners around the world for decades. This photo is from the mid-1930s.



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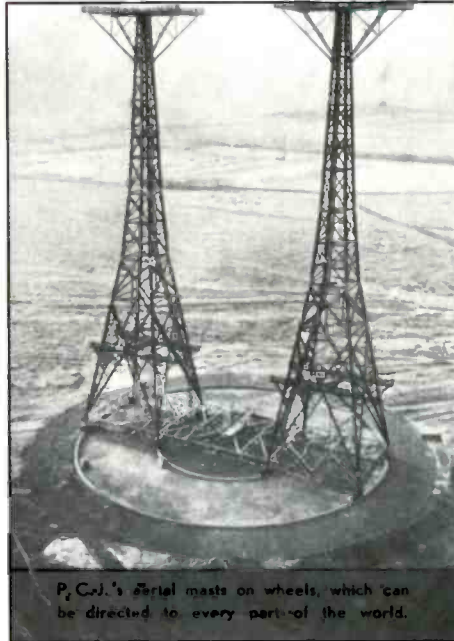
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This photo shows the PCJ revolving beam antenna system's iron pivot partly sunk into a concrete foundation. The whole system of undercarriers rotated around this pivot, united by a steel bridge.



P.C.J.'s aerial masts on wheels, which can be directed to every part of the world.

A QSL from PCJ shows an overview of the rotating beam antenna. The QSL is dated May 30, 1939, less than a year before the Nazi invasion of the Netherlands that took PCJ off the air for the duration of WWII.

HAPPY STATION



HILVERSUM HOLLAND

wish to convey to you their appreciation of your kind communication regarding the experimental transmission on behalf of Philips Radio Works - Eindhoven - Holland. on May 30th 1939 frequency 9590 kc/sec.

Frequency: 15220 kc/s; Wavelength appr. 19.71 M
9590 kc/s; Wavelength appr. 31.28 M
Power: Two Philips' Tubes
Type T.A. 20/250 in the final stage
Position: Lat. 52°17'32"N - Long. 5°14'48"E

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air features was the "nice cup of tea" Startz shared with his listeners during each broadcast.

It was only Startz' program specifically that was entitled, "The Happy Station," but many listeners thought it was the station slogan of PCJ, itself. Startz mixed music, world news, letters and questions from listeners, trivia, stunts, humor, interviews, and other ingredients to form a unique and wonderful multi-lingual blend that was so popular the station recorded it and beamed it out several times daily to different areas of the world.

On the Beam

Certainly one of the most interesting and innovative technical ideas PCJ had was the fantastic directional antenna system it built and installed in 1937 after upping its power to 60 kW. By this time, PCJ had become one of the most powerful, and well-known, shortwave broadcasters in the world.

What PCJ had devised was an experimental revolving beam antenna for 9590 kHz. This may not initially sound like much to you if you have a modern directional TV or ham yagi on your roof, but remember PCJ did it 60 years ago. They realized the concept of a rotating beam by taking their gigantic steel towers and mounting them on a massive rotating turntable - no minor engineering feat!

The antenna towers were built on

heavy steel carriers mounted on wheels. The wheels of the carriers ran on a circular track which was similar to railroad tracks, but heavier and the rails were spaced wider apart. The steel carriers were united by a bridge, turning around its center (which was also the center point of the track) on an iron pivot partly sunk into a huge concrete block. In this way, masts, carriers, and bridge all formed one entity that could turn on the iron pivot. The antennas suspended on the masts could thus be rotated in a few minutes towards any desired precise direction.

This experimental antenna was initially intended to be used only for programming sent to areas situated to the south and southwest of the Netherlands, such as Africa and Latin America. The idea was that if the turntable system proved viable, the station would later construct a similar antenna system for use on its 15220 kHz channel.

The Netherlands was invaded by Nazi Germany on May 10, 1940 and the nation was brutally occupied for five years. PCJ was off the air, and the second turntable was never built. When World War II ended, PCJ returned to the air as "Radio

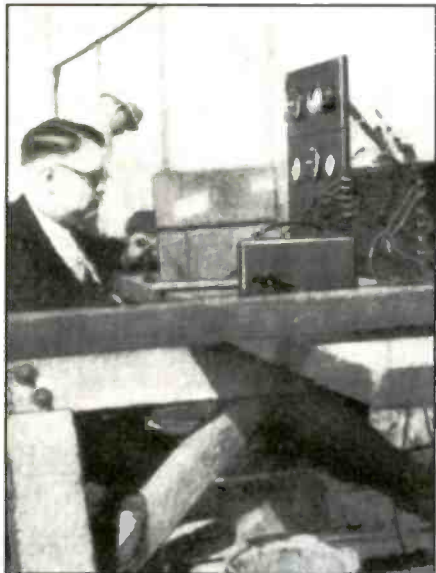
"... PCJ's Eddie Startz became the world's first enormously popular international radio personality."

Netherlands." Transmitting from Huizen, two 40 kW transmitters operated on the old 9590 and 15220 kHz channels. Additionally, the station was running 5 kW on 6025, 11730 and 11770 kHz, and 15 kW on 21480 kHz. Listeners around the world were overjoyed to hear, "Here is Radio Netherlands via shortwave transmitter PCJ, with our daily broadcast for Dutch nationals abroad. Good morning, good afternoon, and good night Netherlands, wherever you are." Perhaps, best of all, beloved Eddie Startz and his "Happy Station" were going strong again. Eddie was there an hour and a half on Sundays and Wednesdays, with numerous repeats.

Now known as "Radio Netherlands, the Dutch International Service," the still-popular station runs considerably higher power on more than 40 frequencies from Huizen and overseas relay transmitters. Sadly, Eddie Startz' and his "Happy Station" are no longer with us.

Homegrown Innovator

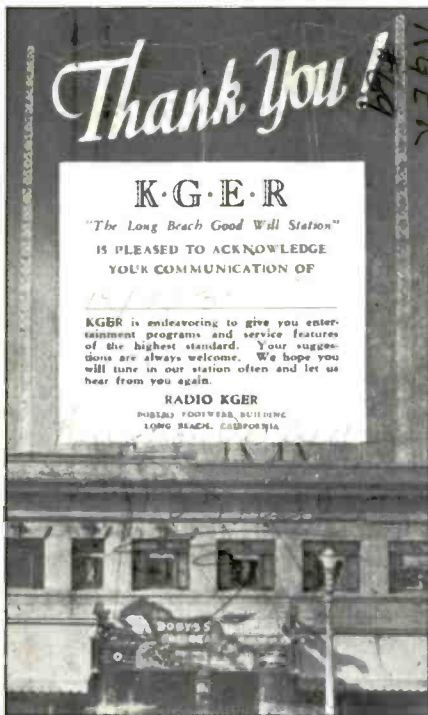
Don't think that nothing innovative was being done in the U.S. On January 23, 1927, station KGER took to the airwaves on 1390 kHz with 100 watts. This station was owned and operated by C. Merwyn Dobyms, owner and operator of Dobyms Footwear, 435 Pine Ave., Long Beach, California. The station was completely located in his large shoe store,



Merwyn Dobyns, owner of station KGER, operates remote pickup broadcast station 6XBV from a barge during a 1928 boating regatta. Note the boxes shielding the mic from the wind.

with the twin antenna towers on the roof of his two-story building. Though inexperienced in radio, he wanted to be a broadcaster and was actively involved in KGER's operations. KGER was known as "The Long Beach Good Will Station," "The Service Club of The Air," and "The Wave of Long Beach."

What distinguished KGER from hun-



A 1931 QSL card from KGER, Long Beach, CA, owned by the Dobyns Footwear shop on Pine Avenue.

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- "The best...built like an antenna should be."—Larry Magne in *World Radio TV Handbook*
- "Our best seller."—EEB in their recent ads and catalogs
- "Now in use in 45 countries."—Gilder Shortwave in 1983

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dreds of other local broadcasters of the late 1920s? Probably not a lot, except for a few of Dobyns' innovative ideas. In 1928, the Pacific Southwest Exposition held regattas in Long Beach harbor. Dobyns cleverly obtained a special license to operate a remote shortwave station from aboard the official barge in order to transmit race descriptions and results for direct rebroadcast over KGER. The remote station was authorized for voice operations with the call letters 6XBV and was assigned the frequency of 6140 kHz. Dobyns, being a hands-on station owner, did the remote broadcasts himself. That's where he learned that wind on a mic doesn't sound very pleasing, but solved the problem by improvising a wind shield by placing the mic inside some boxes. Listeners reported that the weird effect caused by the mic in the boxes was at least less annoying than the wind.

Dobyns style of broadcasting was appealing, and KGER turned out to be a rather successful operation. In late 1928, the station shifted to 1370 kHz, then 1360 kHz, and by the early 1930s had increased its power to 1 kW. At that time it was using a 186 ft. tower. Though still in Long Beach, KGER then was being run by

remote control by the innovative Dobyns (under the corporate name of Consolidated Broadcasting) from 643 South Olive, Los Angeles.

In 1941, KGER increased its power to 5 kW and shifted to 1390 kHz, installing its new transmitter at Atlantic and

"Dobyns style of broadcasting was appealing, and KGER turned out to be a rather successful operation."

Compton Blvds., Long Beach. Presently, (under the ownership of Salem Media of CA since 1986) the station operates full time from Long Beach on 1390 kHz with 5 kW days, 3.5 kW at night.

That's a wrap for this time. Please send me your old time radio and wireless QSLs, station photos, news clippings, picture postcards, and station listings. Also needed are your memories, anecdotes, suggestions for future topics, and comments about old time radio, which you may E-mail directly to me at <Radioville@juno.com>. See you on the road to Radioville! ■

Scanning The Globe

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

A Potpourri of Scanning Information

Fall is in full swing now, and that means cold weather is just around the corner for many of us in the United States and Canada. There's no time like the present to get up on the roof or tower and check your radio antennas and cable to make sure they survive the harsh winter you may experience. If the antenna and cable aren't up to snuff, don't expect to hear too much on your scanners and receivers! I might add that while fall is an excellent time for antenna repair, it also is a great time to put up new antennas. So what are you waiting for?

What's On What Bands?

Roger Rains of Raleigh, North Carolina, wrote in saying that he's been checking out the specifications of various scanners he is considering buying, but many offer bands he's not familiar with. He asks what can be heard on the various bands offered on scanners. To make things quick and easy, this guide may be of some assistance to those considering whether or not to purchase a certain scanner because of the bands it covers.

Here's what you will find in the United States on the various scanner bands offered on different models of radios:

29-30 MHz—The 10-meter ham band runs from 28 to 29.7 MHz. Many hams operate narrowband FM simplex (direct) on 29.6 and through repeaters with outputs between 29.61 and 29.70. When the band is open, you can hear hams all around the hemisphere.

30-50 MHz—One of the three basic scanner bands, includes public safety, business, military and cordless phones.

50-54 MHz—The 6-meter ham band. When this band is open, you can hear hams for hundreds of miles on 52.525 MHz simplex.

54-72 MHz—Audio and picture signal for TV channels 2 and 3.

72-76 MHz—Paging and two-way radio links and some industrial control stuff—not too much exciting here.



During MEDEVAC operations be ready for public safety as well as aircraft communications. (Photo by Steve Adams)

76-88 MHz—Audio and picture signal for TV channels 5 and 6.

88-108 MHz—You can tune in the FM broadcast band on some scanners, but you will need to use wideband FM, like you do for TV signals.

108-137 MHz—Routine aviation communications and broadcasts can be heard within this segment, however, all communications are in the AM mode, unlike the narrowband FM mode in other bands.

137-144 MHz—Typically used only by the military.

144-148 MHz—The popular 2-meter ham band. Listen to hams on repeaters on 145.11-145.49 and 146.61-147.39. Hear space shuttles on 145.55 and hams using simplex on 146.52, the most popular ham frequency anywhere.

148-150.75 MHz—Primarily military communications.

150.75-162 MHz—The primary VHF high band, where you'll find police, fire, ambulance, paging, mobile telephone and businesses.

162-174 MHz—Used primarily by the federal government, with some other various channels sprinkled in.

174-216 MHz—Audio and picture signal for TV channels 7 through 13, as well as wireless mics used by broadcasters.

216-220 MHz—Interactive TV signals and inland marine telephones for the Mississippi River and its tributaries. Hams have secondary use of the 219 MHz band for data links, but there aren't many using it.

220-222 MHz—A new land mobile band that uses narrowband technology and cannot be received on most scanners because of the modulation technique.

222-225 MHz—An under-utilized ham band in many areas. The primary simplex frequency is 223.5.

225-400 MHz—You will find not only military aviation communications, but also military satellites. Listen in the AM mode for aviation, and narrow band FM and even single sideband on communications receivers for the satellites and downlinks from executive aircraft (like the president's).

400-406 MHz—Not much here.

406-420 MHz—Federal government and military communications and links.

420-450 MHz—Amateur radio (sim-

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plex 446.0), as well as public safety and business from 420–430 in some U.S. cities near the Canadian border.

450–470 MHz—Media, farmers, industrial, business, public safety, mobile telephone, security and more.

470–512 MHz—Audio and picture signal for TV channels 14–20 as well as public safety and business in the nation's top cities in 6-MHz segments.

512–806 MHz—Audio and picture signal for TV channels 21–69.

806–902 MHz—Cellular (blocked out on all new scanners), businesses, trunked shared systems, public safety.

902–928 MHz—Amateur radio, but seldom used. Also shared by some other services such as cordless phones.

928–932 MHz—Typically paging.

932–956 MHz—Various uses, including point-to-point and radio station studio-to-transmitter links.

956–2000 MHz—Various uses, also, including aviation purposes, satellites, computer links, including a ham band from 1240–1300 MHz.

I hope that helps. If you have suggestions for other bands, let me know.

Shuttle Comms

Ted Lamont of Pleasantville, New Jersey, says he's interested in listening to voice communications from the space shuttles on 259.7 and 296.8 MHz. He says he has been trying to catch the NASA crews, but hasn't been successful yet. He wants to know whether there is a trick to hearing the astronauts. As most shuttle listeners tell me, perseverance is the key. Don't expect to hear the crew talking day in and day out while they are orbiting around Earth.

The shuttle makes use of much higher microwave frequencies and satellites for routine communications while in orbit. If you want to hear them on the 200 MHz band, make sure your receiver is in the AM mode. You probably will hear communications on the 200 MHz channels only immediately after launch, as shuttle crews check out the radio system (it's used only as a backup these days), and immediately before the shuttle lands back on earth, as the crew again checks out the

"I know of many scanner listeners who have gotten very satisfactory results from TV preamps on their scanners . . ."



Are you ready for winter? Whether you're in the sunny South or chilly North, Mother Nature can wreak havoc on your antenna and coax. Try 9913 coax instead of the CB type RG-58U for better overall reception. All coax cable will absorb moisture if the PL-259 is not sealed. (Photo by Gordon West)

radio system. Check the launch and landing times in your local newspaper, on TV or the Internet and keep an ear to the radio. You will hear them as long as it isn't a classified military flight.

It's Gone!

An anonymous reader from California asks why the range from 868.9875 to 894.0125 is eliminated from the older used Bearcat 200XLT scanner he recently bought. He wants to know if these frequencies are in use, and if so, why they are eliminated from his scanner. He also wants to know whether this range can be restored to his receiver. First, the range from 869–894 MHz is used for the base side of cellular phone calls (the mobile side is 45 MHz lower and also is eliminated from your receiver—823.9875 to 849.0125). This range can be restored to Bearcat 200XLT and the similar BC-205XLT scanners, but the Electronics Communications Privacy Act of 1986 prohibits persons from listening to cellular phone calls.

You might be able to find a dealer who is willing to make the modification to your receiver. While some versions could be modified by simply snipping a diode, other versions require additional procedures to make the modification. There are

modification books available from many scanner dealers.

Under Construction

Tyler Rubin of Iowa Park, Texas, says that he is familiar with the itinerant business radio frequencies of 151.625, 464.500, 464.550, 469.500 and 469.550. These frequencies are used by businesses that move around from area to area a lot, and are an effort to minimize interference to normal business radio users on their everyday frequencies. (It should be noted that 27.49, in the AM mode, and 35.04 also are itinerant business frequencies, however these aren't used much.) John says that he has heard that there are similar itinerant frequencies used by businesses such as construction crews and farms, however, he hasn't been able to find these frequencies.

These frequencies, which are licensed under the special industrial radio service, are 43.04, 151.505, 158.400, 451.800 and 456.800 (mobile only). The 151.505 MHz channel probably is the most popular one of the bunch, with 158.400 and 451.800 also getting a fair amount of use.

The 43.04 frequency is used in some rural areas of the U.S. where VHF low band offers better range. Enter these frequencies into your scanner and you may be able to hear some heavy construction crews on a major project or a road-paving job. You never know who might be using these frequencies.

Can't Hear It

An unsigned e-mail comes from a reader who says he monitors with a handheld scanner and a ground plane antenna atop his home. He says he can hear most stations in a 50-mile radius of his home because the area is mostly flat. However, he wants to hear a couple of police repeaters about 75 miles away and wants to know how to do this.

There are several reasons you aren't hearing the station. The station's power output may be too low for you to ever hear it, no matter what you do. If you can hear it mobile a good distance from where the transmitter is located, then you might be able to tune it in from home with a few tricks. Also, consider that there may be a natural obstruction that keeps you from hearing the signal. Is there a mountain or high rise in the land that would effectively block the signal?

If you want to try to capture the signal, here are a few tips. First of all, omnidi-



Listen in the AM mode for aircraft communications between 108-137 MHz. (Courtesy Continental Airlines)

rectional antennas are out of the picture. You've got to aim and point a directional (yagi) antenna at the signal. The more elements you have on the yagi antenna, the greater your chances of snagging the station. You also need to get the yagi antenna up as high as possible, even if it means a tall mast or tower to accomplish the task. Yagi antennas aren't generally available from scanner shops. You'll need to check with a local two-way dealer or amateur radio supplier for what you want.

The yagi antenna will be operative on one band only, too, such as VHF high band or UHF (there are some dual-band VHF/UHF yagis made for hams, but stay away from them for this purpose). Ham yagi antennas are generally cheaper than yagi antennas made for two-way radio users and perform the same (and sometimes are the exact same antenna, but cut lower in frequency for the ham bands at 144-148 and 440-450 MHz).

In addition to a yagi, be sure to use a good coaxial cable. Forget the CB type RG-58U cable as you will lose too much signal before it gets from the antenna to the receiver. Spend a little more on a cable such as 9913, which has a lot less signal loss at VHF and UHF frequencies.

Another idea would be to purchase a signal preamplifier designed for scanner users, or even better yet, one designed for the band you want to hear. If you can't find one of these from a radio supplier, you even can use a preamp designed for TV. Check to see the frequency range of the preamp. Typically you will find them for a range such as 50-900 MHz, which would cover all the TV channels, as well as all VHF high and UHF scanner bands, including the 800 and 900 MHz bands. I

know of many scanner listeners who have gotten very satisfactory results from TV preamps on their scanners (between the antenna and receiver).

By improving the reception capability for your scanner, you greatly improve your chances of hearing a faraway signal. We're not guaranteeing that you will be able to hear the station you want to hear, but you will be much closer with each step you take to improve your setup.

Monitor Calls

Jane Simons of Williamsport, Pennsylvania, writes to inquire how she can become a "registered monitor" with a distinctive call sign much like my own—KPA3CA. These identifiers can help in showing your intent when corresponding with other monitors and those stations you may write to for information or QSLs. Registered monitor call signs can be obtained from CRB Research Books Inc., P.O. Box 56, Commack, N.Y. 11725. Tell them Scanning the Globe sent you!

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 the Globe, *Popular Communications*, Box 11, Iowa City, Iowa 52244-0011, fax to (516) 681-2926, or e-mail to <SCAN911@aol.com>. Make sure you indicate in your e-mail that you are writing regarding this column. ■

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TRUNKING, TIPS, TECHNIQUES and MODS

Working With Trunked Systems

Greetings everyone and welcome to "ScanTech." This new column will provide information and techniques for the serious scanner listener. With the advent of trunking scanners, computer control, legal restrictions, new modes of operation, refarming and other up-and-coming issues, scanning is more challenging, and exciting, than ever.

Let's jump right in with this month's topic. Uniden recently introduced the TrunkTracker™, which I'm sure is not news to anyone. However, since its introduction, a lot of scanner enthusiasts are confused about some of the new techniques and setup for this wonderful new scanner. Over the past couple of months, J.T. Ward has done an excellent job of introducing the 235 and some of the vocabulary that needs to be learned to be effective with it. I'll try not to repeat any more of that info than necessary, as you can dig out your *Pop'Comm* back issues for that information.

Fleeting Success

Much to do has been made out of the notion of fleet maps, and whether or not you need to custom program one, and how to find out if you do *need* to program one. Let's take a look at what's going on here, and then give you some step-by-step (although lengthy) procedures for discovering your fleet map.

Notice that I said *discovering* your fleet map, and not if you need one or not. You are using a fleet map every time you run the TrunkTracker™ in the trunking mode. The default of the radio is to run in the type II mode because for most systems, this is the appropriate setting. However, it doesn't work everywhere, and it depends entirely on the system you are listening to. Lots of systems, particularly ones that have been in place for some time, may have some older "type I" radios on the system, or if the system is old enough, it may be entirely a type I sys-

*9051 Watson Rd. No. 309, St. Louis, MO 63126

tem. Type I and Type II radios mixed together on the communications system is called type Iii, and that seems to be a fairly common occurrence.

What difference does it make? Well, that depends. If you only want to listen to particular users, and know their ID numbers, you may be able to get away with leaving the radio in its default type II mode even with a Iii system. Here in St. Louis, for instance, it turns out that all of the police and EMS groups are type II. So if you program in the ID numbers to a scan list and plan to just scan those ID numbers, the radio works fine, and you'll catch all the action.

But what happens if you want to go searching? Before too long, you'll start to encounter the water department, the street department and other folks that you may not care hear. No problem, the TrunkTracker™ has a lockout feature. Just lock out the ID numbers that you want to skip and keep searching.

That will work for a while. The problem is the TrunkTracker™ has a limit of 100 lockouts, and on a busy system, that can prove to be a limitation. If the users that you're trying to lock out are type I users, they will generate lots of ID numbers, using up your available lockout positions in a hurry because each unit on a Type I radio can generate a unique ID number, rather than correctly displaying the talk group or subfleet number.

So, just to lock out the correct people, a correct fleet map is useful. It also turned out on the St. Louis system that some of those Type I users were well worth listening to, both for entertainment and for serious monitoring.

So How Do I Decide?

The first step in determining fleet map programming is to get the radio programmed into the trunked mode. You should have all the frequencies entered, and be able to search the trunked bank looking for ID numbers. One of the first hints that you may need a custom fleet map is to look at the ID numbers them-



The BC-235XL TrunkTracker™ has made following a Motorola trunked system possible for the first time. This may be the biggest breakthrough in scanning since the programmable scanner.

selves as you listen to the conversations. If you are seeing lots of numbers, particularly odd ones (those ending in an odd number), it may indicate that you need to adjust the fleet map. However, there are times in a type II system that odd numbers will be legitimate, so don't conclude that you have the wrong fleet map just because of an odd ID or two.

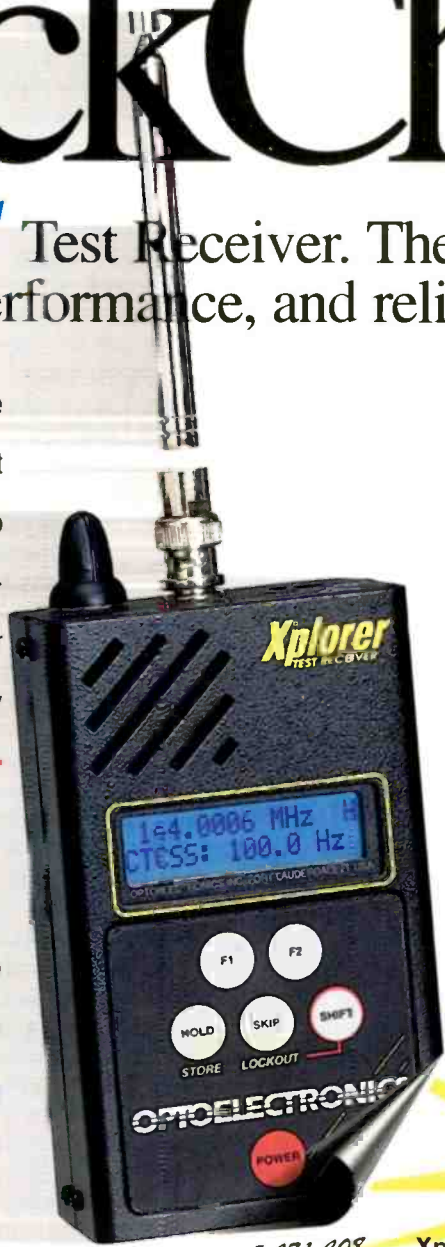
As you watch the ID numbers, listen to the voices. You'll quickly begin to recognize some of the dispatchers, as well as background sounds or other tell-tale signs that one particular user is transmitting. Pick one of these that you think is

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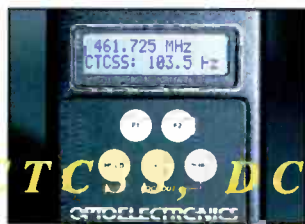
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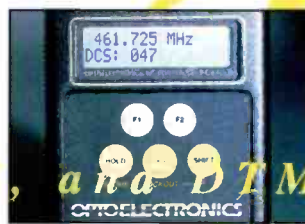
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incorrect, and wait for that ID to pop up. If the delay mode is on, you should hear a response. Sometimes, you won't hear the response, but you'll hear the first person answer back. This is definitely a sign of an incorrect fleet map.

Another way to look for problems is to start searching again, this time with the delay off, waiting for a transmission that you think is in the troubled group. As soon as the transmission ends, hit search again to look for the reply. Here, you may actually have to use your lockouts to lock out the busier channels or the users that you think are working OK. (Remember you can always undo all of your lockouts by pressing and holding the Lockout button until it beeps twice and then hitting the enter key). If the fleet map is correct, you'll get the same ID number for the reply as the original transmission. If you don't, another fleet map setting will probably work better for you.

It's helpful to note the ID numbers that you are getting, even though they are wrong. If you're up to a bit of math, you can divide the ID number by 8192 (don't worry about any decimal fraction) and the number will tell you what "block" the user is in.

Now, we're ready to experiment. It's useful to do the early work on this at night when many users of the system are off the air, but eventually you'll have to check during the day to make sure that you've got the whole system under control. If you're noticing that all of the transmissions you're hearing are coming up with different numbers even when they appear to be talking to each other, it may be that you have a type I system. If some of them seem to work OK (keep the same ID number for the reply) then you probably have a type Iii system. Either one will require some experimenting at this point. If you

can identify transmissions that are correct, it is worthwhile to do the math (divide the ID by 8192 and drop the decimal part) to determine which blocks you can leave alone. A type II ID is Size code 0, and those blocks can be left alone, which will shorten the list of combinations you have to try.

Programming a Fleet Map

Uniden has included several preprogrammed fleet maps. The default map that is used is for a pure type II system, which is the most common. There is also a number of "standard" type I and type Iii maps that can be used which are preprogrammed into the radio, which are worth checking before you set out to reinvent the wheel. These preprogrammed maps are listed in the back of the manual along with the size codes that are represented by each one.

To get to any of the fleet maps, put your scanner in the trunk programming mode by pushing and holding the **TRUNK** button until it you hear one beep, followed by two more beeps. Then select the bank that you wish to work with. (Note that this is the same procedure so far that you had to follow to program the radio for trunking in the first place). Once the bank is selected, pushing the **DATA** button will give you access to the fleet map system. E2 is the all type 2 mode that is default. By pressing the up or down arrows, you can switch to E1 which is the area where other modes are accessed. Press **DATA** on the E1 to go to the next selection, which is the actual fleet map that you will use. You can step through the built-in maps (the manual defines what settings are associated with each) and at the end of the list is the **USR** mode. Pressing **DATA** here will take you to programming the individual blocks that make up your own custom fleet map.

At this point, you begin programming the size codes you want for the map. If you've been through the exercise of trying all the built-in maps, you may already have some ideas of what does and doesn't work. Use the up and down arrows to select the size code you want for a particular block, then press enter to go to the next block (0 through 7). Once all seven have been entered, it will cycle back around to 0, or you can press **SEARCH** to exit the programming mode and begin testing your new configuration. You'll likely have to repeat this procedure often before you come up with an accurate map.

The St. Louis, MO Fleet Map

Below is the fleet map that we believe to be correct for the St. Louis Metropolitan Police. It's still a bit of a work in progress, so your corrections would be welcome.

Block: Size Code:

b0	S0
b1	S4
b2	S4
b3	S11
b4	S12
b6	S0
b7	S0

(note that size 12 takes 2 blocks, so there is no entry for b5.)

ID Numbers:

57360	1st & 2nd District
57392	3rd District
57424	4th & 5th District
57456	6th & 8th District
57488	7th District
57520	9th District
57552	SODD (Special Operation Deployment Division)
57555	Traffic
57648	Tac a
57680	Tac b
57696	Tac c
57712	Info a
57744	Info b
57936	Radar
58416	EMS 1
58448	EMS 2
58480	EMS 3
58544	EMS 4

Type I users that have been identified include:

200-2	Water Dept.
200-3	Water Dept.
200-4	Water Dept.
200-6	Water Dept.
200-8	Water Dept. (Service Building)
400-7	Parking meters
400-8	Street Repairs?
400-9	Street Lights/ Signs
400-10	Towing
400-12	Refuse
400-13	Tree Removal
400-15	City Jail

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The BC-895XLT Trunktracker™ is the much awaited base unit which should be shipping by the time this article appears. Look for a full review soon!

Any block that is using a type 1 size code will identify on the scanner with a number beginning with that block number (400-1 would be a block 4 ID, fleet 00, subfleet 1). So it will make it much easier to tell if a particular block's ID is working or not in this mode. Simply watch for the ID in the block you're testing, and hit **HOLD** to see if you can hear the return conversation. It is a much better test if the repeater actually drops before the reply is heard as then the controller has to assign a new frequency to the subfleet, and your Trunktracker™ will have the opportunity to follow that new assignment. Sometimes it only takes a few seconds of listening to determine that a particular size code is wrong, but it can take quite a while, so be patient.

Your Input Is Needed

With all the topics and technology around us, it would be easy to start writing and never look back. But we want this to be your column. So if you have topics that you've always wondered about, or want more info on, send them in. We're also interested in your fleet maps, ID numbers and other information you might have on your local trunking system. Also, if you have pictures you think the rest of us would like to see, send those in (sorry, pictures can not be returned without SASE, so send a copy or an SASE). We're looking for action shots, great equipment

rooms, and of course dispatch centers. See you next month!

Editor's Note: Ken Reiss, of St. Louis, MO, is a computer consultant, specializing in desktop publishing and pre-press. He says "... it's been over 20 years since my friend was cleaning out his garage and I became the new owner of a very old shortwave receiver. One thing lead to another and pretty soon listening hobbies spread from DC to daylight."

Ken tries to keep current on radio regulations and "anything pertaining to radio." He says listening has always remained his first hobby, although his wife argues that his hobby is not radio listening, but rather radio collecting. He also makes a point to stay active in a local scanner club, sharing experiences with other radio enthusiasts.

When he's not listening to the radio, there's his wife, teenage daughter, three cats and a poodle to listen to. He says "life is never dull here, and locking myself in my office with several scanners and a shortwave receiver or two blaring is occasionally very calming." Several readers may know Ken as "Armadillo", host of the weekly (Thursday 9-11 p.m. EST) ScanScene conference on AOL. Ken says they have a lot of pun (not a typo!), get answers to a few questions and occasionally learn something important.

Welcome aboard, Ken!

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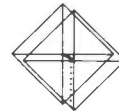
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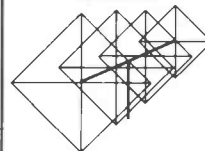
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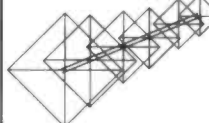
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The Listening Post

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Voice of Greece Relayed Via VOA Transmitters and Radio Comoro Coming Back!

Fans of the Voice of Greece should now be able to get broadcasts from this country loud and clear via the Greenville and Della (CA) transmitters of the Voice of America. Relays of the Voice of Greece are currently scheduled on **9775** at 0600 to 0850, 1200 to 1350 on **9590**, 1830 to 2200 on **11730** and 1830 to 2200 on **17745**. Not all of this is in English, however.

A South American old-timer, SODRE in Uruguay, has been reactivated, operating on **9621** from 0950 to 0300. The downside of this is that it's using only 250 watts. SODRE is located in Montevideo. All Spanish, as you might have guessed. The address is Capsule 7011, Montevideo.

A new station in the former Soviet Union is Radio Tatarstan, on the air in the Tartar language from 0800 to 0900 on **9690** but this may be a relay rather than a direct broadcast.

WVHA (formerly Herald Broadcasting's WCSN), operated by Prophecy Countdown, has closed down. The organization has been having financial difficulties for some time and the local power company cut their supply for non payment. A finance company has taken over the facility.

It's just possible that another challenging DX target may be back on the air by the time you read this. Word is that Radio Comoro in the Comoro Islands hopes to get back on track with their low power transmitter on **3331**, running from 0300 to 1900 (our best chance is at 0300 sign on). You have to fight the Canadian time station CHU on 3330 plus persnickety propagation, so count on having to make many attempts before you snare this one.

Radio Australia's Darwin transmitter site has now closed down as part of the government's edict which dictated financial cutbacks. However, it's a pretty safe bet that one or more other international broadcasters will work out rental agreements which would bring the transmitter site back on the air. One like-



QSL cards from Radio Australia may be scarce in the future due to staff cutbacks forced by a reduced budget. SWLs don't see the bureaucrats who forced these changes nearly as cute as the Nocturnal Sugar Glider pictured on this card sent in by Andy Johns.

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VK2ME was the predecessor of Radio Australia, using 12 kilowatts in the 31 meter band. (Thanks to Adrian Peterson)

ly user is the U.S. government's Radio Free Asia service.

The final damage report for Radio Australia includes a budget reduction that dropped by more than half, to \$6.3 million (Australian) per year for programming and from \$7 million to \$2 million per year for transmitting needs for the next three years. These cuts have also forced a reduction in staff of over 50 percent, from 144 employees down to just 67. All Radio Australia transmissions will come only from the Shepparton and Brandon sites. Further, responses to reception reports or other inquiries will probably be spotty at best and may no longer be possible in all cases.

A newish Irish broadcast is Emerald Radio, broadcast over WWCR on Sundays from 1900 to 1930 on 12160 and again on the following Saturday at 0800 to 0830 on 5070. You can report to the station at P.O. Box 200, Dublin, Ireland.

A new Liberian station is Star Radio, into which the U.S. government has put some start-up money. Apparently this was to help promote the Liberian elections so it's unclear how permanent this operation will be. The schedule is unknown at this point but check 5890 or 3400 in the late evenings.

Broadcasts from Radio Pyongyang now run between 57 and 58 minutes in length instead of the former 50 minutes. The national anthem is now used only to open broadcasts in Korean.

Your logging reports and other information are always important and always welcome. Please make sure your double space your logs, list them by country and add your last name and state or province abbreviation after each one. We're also interested in receiving station schedules and informational brochures, bumper stickers, station photos, spare or sample SL cards and the like for use as illustrations. Photos of your shack (with or without you in them) are also needed. New station addresses, information about QSLing policies and so on are also wanted. Send information to *Pop'Comm's* headquarters in Hicksville, NY or to me on the *Pop'Comm* Web site at <<http://www.popcomm.com>>.

Here are this month's logs. All times are UTC, which is five hours ahead of EST (0000 UTC equals 7 p.m. EST, 6 p.m. CST, 5 p.m. MST, 4 p.m. PST). Abbreviations such as SS, PP, RR, AA, GG stand for languages (Spanish, Portuguese, Russian, Arabic, German). If no language abbreviation is given the



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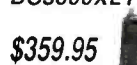
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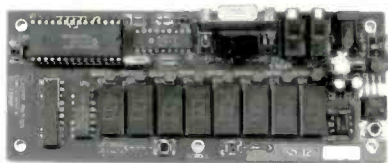
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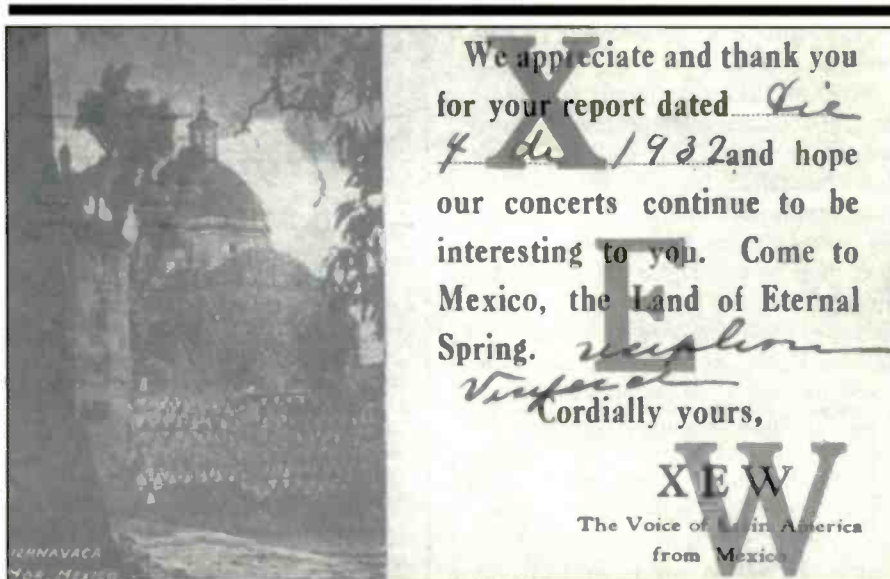


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This card from Mexican XEW is a reproduction sent by Adventist World Radio's Adrian Peterson.

broadcast is assumed to have been in English (EE).

ALBANIA- Radio Tirana, **7270** at 0000 in Albanian and other, unidentified language. (Ziegner, MA)

ANTIGUA-Deutsche Welle relay heard on **17810** at 2152 in GG with classical music. (Jeffery, NY)

ASCENSION ISLAND-BBC relay with world service to Europe and Americas on **11750** at 2202. (Jeffery, NY)

AUSTRALIA-Radio Australia, **9560** at 1211 in CC with talk by man mixed with occasional music. **17795** at 0302 with news. (Jeffery, NY) **9580** at 1136, co-channel with BBC via Thailand. Also **9710** at 1150 with Pidgin popular music. (Miller, WA)

AUSTRIA-Radio Austria Int'l, **9780** at 0232 with ID. Deep fades. (Tucker, AL)

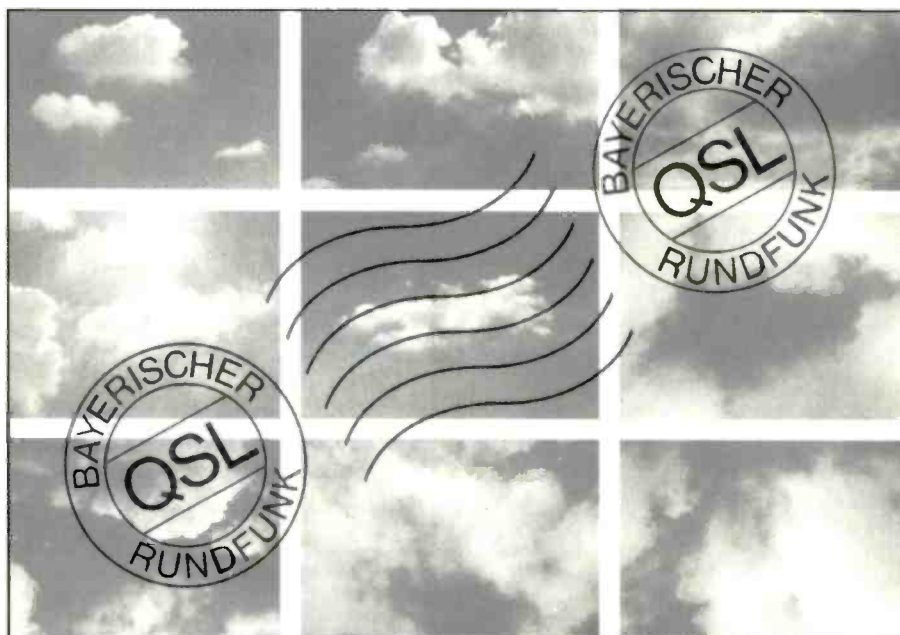
BELARUS-Mogilev Radio, **11840** at 2238 with classical music, unidentified language. (Miller, WA)

BRAZIL-Radio Nacional Amazonas, **11780** in PP at 2349 with Brazilian pops. (Miller, WA)

CANADA-CFRX/CFRB, **6070** at 1430 with news and discussion. (Wallesen, IL) BBC Relay, **9515** at 1340 with "Newshour." Radio Canada Int'l, **9755** at 2229 with "The World This Weekend" and **11940** at 1450. (Tucker, AL)

CHINA-China Radio Int'l, **9730** (via French Guiana) at 1455 with frequency info, address and off at 0456. (Tucker, AL)

COSTA RICA-Radio For Peace Int'l, **7385**



Like all the German stations, Bayerischer Rundfunk is known for its very attractive QSLs.

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

at 0201 with ID, also at 0303. (Tucker, AL)
 New **7575 USB** at 0220. (Rausch, NJ)
 Adventist World Radio, **9725** at 0417 in SS.
 (Tucker, AL) **13750** in SS to Central America
 at 1450-1600, EE 1600-1700. (Silvi, OH)
CROATIA—Croatian Radio (presumed) on
11635 at 2105 in unidentified language with
 music, interview segment, more music. No ID.
 Off suddenly at 2152. (Jeffery, NY)
CUBA—Radio Havana Cuba, **9830** heard at
 0325 with Cuban music. (Tucker, AL) **13680**
 at 2249 in SS with music, IS, ID and anthem.
 (Jeffery, NY)
ECUADOR—Radio Nacional Espejo,
4879.75 at 0310 in SS with ballads, commer-
 cials, ID at 0315 "Radio Nacional Espejo
 desde Quito, Ecuador. la señal mas potente en
 todo el pais. (Rausch, NJ) HCJB, **9745** at 0100
 with news, into "Studio 9" at 0106, then "Ham
 Radio Today." (Calhoun, CA) 0328 with "The
 World Today" and 0458 with "You Should
 Know." (Tucker, AL)
EGYPT (presumed)—Radio Cairo, **9475** at
 0312 in unidentified language with Middle
 Eastern music, then what appeared to be news.
 Very distorted signal. (Jeffery, NY)
ENGLAND—BBC, **5975** (via Antigua) at
 0500 with "Newsday" and some QRM from
 WYFR-5985. (Tucker, AL) **9590** via WYFR
 at 0108. (Miller, WA) 9915 with "English by
 Radio" at 0247. Into SS at 0259. **17715** via
 Delano, CA at 2124 with "Caribbean Report."
 (Jeffery, NY)
EQUATORIAL GUINEA—Radio Africa,
15185 at 1912 with religious programming.
 (Jeffery, NY)
FRENCH GUIANA—Radio France Int'l
 relay, **13625** at 1201 to 1258 with EE to
 Central America. (Silvi, OH)
GERMANY—Radio Deutsche Welle, **6045**
 at 0500 with time pips, "this is the English ser-
 vice of Deutsche Welle, Germany's interna-
 tional broadcasting service" and frequency
 information, news. (Tucker, AL) **6185** moni-
 tored at 0617 and **11865** via Portugal at 2344
 in PP. (Miller, WA) 11810 at 1800 to West

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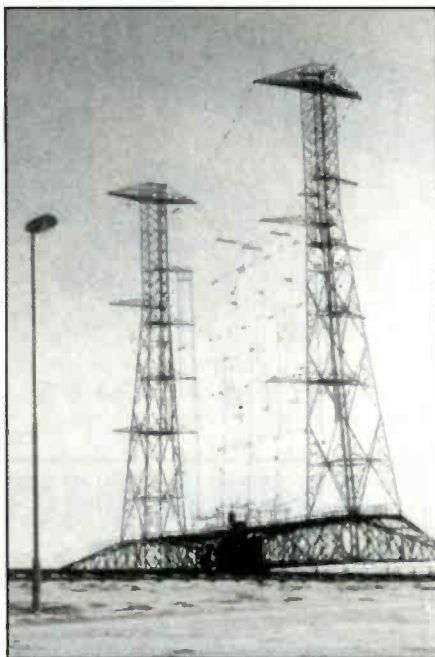
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*Antennas at Radio Norway International's
Kvitsoy transmitting site.*

Africa, probably in Hausa language. Music and talk. (Ziegner, MA)

HAWAII—KWHR. 17510 at 0244 with religious programming. ID. (Jeffery, NY)

ICELAND—Ríkisutvarpid (that's a fun one to key in!) aka Icelandic National Broadcasting Service. 11492 at 2302 in Icelandic. Man and woman with news to closing at 2322. (Miller, WA)

INDIA—All India Radio. 11585 heard at 1646 to 1730 in possible Bengali. Mostly music. (Ziegner, MA)

ITALY—RAI-Radio Roma. 11800 at 2354 in II with folk music. (Miller, WA)

INDONESIA—Radio Republik Indonesia, Jakarta. 9520 at 1127 and 9565 at 1132 both in II. (Miller, WA)

KAZAKHSTAN—Kazak Radio. 9660 at 2300-0000 with in Kazak. (Ziegner, MA)

KUWAIT—(presumed) Radio Kuwait. 15495 heard at 0409 with continuous Middle Eastern music. Weak and no ID heard. (Jeffery, NY)

MEXICO—Radio Mexico Int'l. 9705 at 1400 in EE with "Antenna Message Summary." Back into SS at 1430. (Calhoun, CA) 0300 in SS with folk music. (Miller, WA) 0307 with news in EE. ID and frequency information. (Jeffery, NY) Radio Educacion. 6185 at 0430 with "La Hora Nacional" (Mexican National Hour). (Calhoun, CA)

MOROCCO—RTV Marocaine (presumed). 11920 at 0419 with Middle Eastern music. Poor and faded by 0422. (Jeffery, NY) Voice of America relay. 11925 at 1900 to 1959 to Tatarstan in Tatar/bushkir languages. (Ziegner, MA)

NETHERLANDS ANTILLES—Radio Netherlands via Bonaire. 6165 at 0351 with "Newline" and ID. (Tucker, AL) 9720 at

1153 in an African language. (Miller, WA) 15315 at 2316 in SS with music, ID, sports. (Jeffery, NY)

NEW ZEALAND—Radio New Zealand Int'l. 15115 at 0240 with "In Touch With New Zealand." (Jeffery, NY) 0257 with a Count Basie number, news at 0300 and closing on this frequency. (Calhoun, CA)

NIGERIA—Radio Nigeria, Kaduna. 4770 at 0502 with news in EE. (Jeffery, NY)

PAPUA NEW GUINEA—NBC. 4890 at 1208 with pops. EE. (Miller, WA)

RUSSIA—Magadan Radio. 9530 at 1201 in RR with what appeared to be a newscast. Also 9600 at 1223 with talk, music. (Jeffery, NY) 1139. (Miller, WA) Voice of Russia World Service. 15455 at 0254 in RR with music, announcements and IS. Into EE at 0300 with ID, news. This frequency is not listed in their English sked. (Jeffery, NY)

SINGAPORE—BBC relay for Asia. 15360 monitored at 0227 with "Newsday," "Assignment." (Jeffery, NY)

SPAIN—Radio Exterior de Espana. 9540 at 0100 with classical music. (Walleesen, IL)

9620 (via China) in SS at 1141. (Miller, WA) 15110 at 2211 in SS with music and IDs. (Jeffery, NY)

SRI LANKA—Voice of America relay. 15250 heard at 0217 with interview program and ID. (Jeffery, NY)

SWAZILAND—Trans World Radio. 4775 at 0414 in GG with religious music, female announcer, religious talk and IS. Off at 0430. (Jeffery, NY)

SWITZERLAND—Swiss Radio Int'l. 9885 at 0405 with "Newsnet." (Tucker, AL)

TAIWAN—Voice of Free China via WYFR. 9680 monitored at 1231 with address, music and "Reflections." Also at 0331 with mailbag show. (Tucker, AL) 15600 heard at 2245 with music, then "Advanced Spoken Chinese." (Jeffery, NY)

THAILAND—Radio Thailand. 9680 in Thai at 2105 with news. IS. EE ID at 2115 sign off. (Rausch, NJ)

UKRAINE—Radio Ukraine Int'l. 9550 at 0321 with news features. Also 12040 at 2121 with ID. "Close Up" about Ukrainian holidays. (Jeffery, NY)

VATICAN CITY—Vatican radio. 11625 at 2022 with "News For Young People," ID and IS. Into FF at 2030. (Jeffery, NY)

YUGOSLAVIA—Radio Yugoslavia. 11780 heard at 2358 with EE. IS. frequency info. (Miller, WA)

That's it, folks! Let's holler "Thank you!" real loud to the following who did the good deeds this month: Ed Rausch, Cedar Grove, NJ; Lee Silvi, Mentor, OH; Tricia Ziegner, Westford, MA; Michael J. Miller, Issaquah, WA; Michael D. Tucker, Cullman, AL; Elmer Walleesen, LaGrange, IL; Eric Calhoun, Inglewood, CA and Dave Jeffery, Niagara Falls, NY.

Thanks to each of you!

Until next month—good listening! ■

The Pirate's Den

FOCUS ON FREE RADIO BROADCASTING

More Strange Radio Happenings, Including Two-Way Comms!

Radio Metallica continues to be widely heard. Jim Bailey in Wisconsin heard them "many" times, "including weekdays" on **6955 USB**—one at 0215 saying they would have a test broadcast at 0230, which proved to be very short and in the AM mode. Host Dr. Tornado offered a special QSL for reception reports accompanied by an SASE. Robert Lewis in South Carolina had them at 0200 in AM and on several other days, at such times as 0030, 0235, 2220, 0120, always with a strong signal and featuring hard rock, cartoon themes, Spyro Gyra and such. He gives the Blue Ridge Summit address for reports (P.O. Box 109, BRS, PA 17214). Doug Jarrard in New Mexico found them at 0130 filling a music request. Mark Rabka heard them in Tennessee at 0200 with classic rock and blues and on another occasion at 0000. Mark notes that Dr. Tornado has a "bit of a Dr. Demento twang to his voice."

Kenny Love in South Carolina had them at 0013 saying they were broadcasting towards Europe. Still claiming to run 10 kW and Kenny notes they have a knock out signal. He had them on another day at 0218, another day at 0245. On one broadcast they plugged WJDI, saying it would be back on in the winter. Kenny says he believes Metallica, as well as KRAP, are using the same transmitter as WJDI. Brandon Artman in Pennsylvania had them at 0200 with old time rock and roll and then new age selections.

Marina Pappas in South Dakota had them at 0044 and 0233 with pirate QSOs and rock. The next day she had them from 0019 tune in to 0022 close. Jon near Washington, D.C. says he found them 2320 with profanity-laden heavy metal. Benton Owsley of California picked up Metallica at 0145.

KRAP was logged by several. Pappas had them on **6955** at 0022 with rock, many IDs and a mention of the Blue Ridge Summit address. Kenny Love found them at 0258 hosted by Fred Flinstone with rock to closing at 0356. Rabka had them at 0100 with dance music and on air thanks for those who sent reports and mentioning the



Eric Hudgins in Virginia got this special QSL certificate from Radio KAOS.

different models of receivers used. Lewis had them at 2140.

Owsley had **Radio Tellus on 6955 USB** at 0300. Benton says this wasn't an actual broadcast, but more of a QSO with another station: "This is Radio Tellus—who we got out there?" Then: "Sorry, your signal is too weak."

Love heard **Mystery Radio on 6955 USB** at 0430 with a repeat of an earlier show. Kenny says the audio was very good. He also had them at 0514 with strictly instrumental music and closed with the sound of a baby laughing. Hosted by "The Shadow."

Bailey heard **Radio Eclipse** with DJ Steven Man on **6955 USB** at 0205. Jim heard various selections including the "Foo Fighters."

Owsley had **WREC on 6955 USB** at 0232 to 0250 with an ad for the Master Blaster—"the best thing you could ask for that comes in a box." Benton says that right after sign off the Spanish speaking "ute" stations started, by which I take it he means a "numbers" station?

Love had **WARR on 6955 USB** at 0425 with rock music.

Anteater Radio was another Love log on **6955 USB** at 0508 doing some rebroadcasting and then talking with other pirate operators.

Rocket 99 was also heard by Kenny, on **6955 USB** at 0426 to 0512 airing comedy commercials, rock, "Back in Black," AC/DC and someone asking about getting some coke, a phone ringing, someone wanting Jack Daniels, talk about Indians, an interview with a female singer, played "Heartache by the Numbers," and thanked listeners. The host said they'll QSL reports through the A*C*E bulletin. Good signal, says Kenny, but it was sometimes hard to make out what was being said.

Grateful Dead Radio was another one Love found in action on **6955 USB**—at 0245 to 0330 playing Grateful Dead songs with a good signal and nice audio.

Love heard **Big Johnson Radio on 6955 USB** at 0330 to 0400 with comedy and rock music. Kenny notes that the audio sounded the same as that of Grateful Dead Radio (both may use the same transmitter).

(Continued on page 67)

Product Spotlight

BY CHUCK GYSI, N2DUP
<Scan911@aol.com>

POP'COMM REVIEWS PRODUCTS OF INTEREST

Relm's HS 200 Handheld Scanner: A New Scanner With Some Very Unique Features . . .

When Relm announced that they were manufacturing scanners, it was a welcome sign. After all, Uniden has a good chunk of the market for handheld scanners. Besides RadioShack and a few amateur equipment manufacturers, there isn't much choice. At least, the competition at one time was between Uniden's Bearcat line and Regency. Other names have come and gone over the years; Midland, Sears, Robyn, Craig, Tenelec, RCA, and Lafayette.

Well, Regency had sold its line of scanners to Uniden in the mid-1980s and spun off its land-mobile line of two-way equipment into a new company called RELM Communications (RELM stands for Regency Electronics Land Mobile). Now, a decade or so later, RELM has come out with a new line of scanners and is hitting the street pretty hard with some uniqueness. One of its first two scanners out, the RELM HS 200 handheld, decodes not only CTCSS tones, but also digital channel squelch, also known as Digital Private Line (DPL). This is a real bonus for those in major metropolitan areas who wish to screen out users in their listening. At present, this is the only scanner capable of decoding DCS tones.

Because there are only 38 standard CTCSS tones, two-way radio users in larger areas are now starting to use DCS more to alleviate finding someone else with the same tone on their frequency, which isn't that uncommon, especially during periods of inversion. In addition to decoding 38 standard CTCSS tones and DCS tones, this scanner will decode a dozen non-standard tones, too. While you won't find too many users using 229.1 Hz, except perhaps some hams, it would have been nice had RELM included 150.0 Hz, which is used extensively by the military. It might have been nice if it were capable of decoding DTMF, or Touch-Tone tones, too. For instance, many hams monitor their repeaters with devices that will let the audio pass only when someone transmits a "long zero" on the frequency.



The new RELM HS 200 scanner.

Out of the box, the RELM HS 200 scanner that we reviewed for *Pop'Comm*, is impressive. It almost looks like a two-way radio. It would be easy for the uninitiated to mistake this receiver for a business handheld operating on VHF. There even is a piece of plastic on the side of the scanner that would be about where a push-to-talk (PTT) switch for the microphone would be located, if it were a two-way radio. That might make it easier to get it into various venues where scanners might be frowned upon. However, if you were thinking of attaching a speaker-mic to the unit, forget it because the jack is on the side of the scanner.

Super Fast!

The RELM HS 200 is one of the fastest scanners I have used. If you need a scanner that can chug through the channels with lightning speed, this is the one you

"... RELM has come out with a new line of scanners and is hitting the street pretty hard with some uniqueness."

want. The HS 200 scans at a rate of up to 100 channels per second! And it will search at 100 increments per second, too! I had to time this speed and found that even though it stopped a few times while searching the entire UHF band from 450–470 MHz, it still got through the entire 20 MHz segment in 15 seconds! If you're searching for channels and you don't want to miss the possibility of finding a frequency in use, the HS 200 will get you there.

Bands Covered

The RELM HS 200 covers all the standard scanner bands with the addition of the HF segment from 26–29 MHz in the AM mode (so you can tune in CBers). It tunes up as high as 520 MHz for UHF T-band (which only goes to 512 MHz) and up to 960 MHz on the upper stretch.

One mistake made by RELM's engineers with this receiver, however, is they used some old information in setting up the AM aircraft band. Because you cannot toggle from AM to narrowband FM reception, you are stuck if you want to monitor aircraft using the 136–137 MHz segment. This 1 MHz chunk was reallocated to aero communications not too long ago, however, the HS 200 defaults to narrowband FM reception instead of remaining at AM as through the rest of the aircraft band.

Power

One drawback is that this radio doesn't come with batteries. I've become accustomed to a radio being equipped with a rechargeable battery pack these days. However, if you want to run this unit on batteries, you'll have to buy four "AA"

RELM HS200 Specifications

Number of channels: 200, in 10 20-channel banks

Frequency ranges (MHz):

CB/HF (AM) 26–28.995

10-meter ham 29–29.700

VHF low 29.7–50

6-meter ham 50–54

Aircraft (AM) 118–136

Military 136.005–144

2-meter ham 144–148

Military/VHF high 148–174

UHF federal gov't 406–420

70-cm ham 420–450

UHF 450–470

UHF T-band (metro) 470–520

800/900 bands 806–824.0375, 848.975–869.0385, and 893.975–960

Sensitivity (12 dB SINAD): 26–29 MHz 0.5 microvolts max. (10 dB S/N)

29–54 0.5 microvolts max.

118–136 0.7 microvolts max. (10 db S/N)

136–174 0.5 microvolts max.

406–520 0.5 microvolts max.

806–960 0.5 microvolts max.

Selectivity (adjacent channel): –50 dB, minimum

Audio output @ 10% THD: 300 milliwatts per minute, with batteries

450 milliwatts per minute, with AC adapter

Scan speed: Up to 100 channels per second

Search speed: 100 increments per second

Search lockouts (for birdies): 100

Priority sampling rate: Once every two seconds

Earphone impedance: 8 Ohms, minimum

Antenna impedance: 50 Ohms, BNC connector

Power requirements: 4 "AA" cells, or AC adapter

Manufactured: Japan

alkaline batteries or RELM's optional NiCd pack. And you can't have the AC adapter plugged into the radio if you have regular or alkaline batteries installed because of the potential for the batteries to explode.

How's Reception?

In a nutshell, the RELM HS 200 is a hot scanner, except for one thing. Cellular images are all over the 800 MHz band. I have trouble listening to the 800 MHz trunked public safety system in my city because of cellular overload. I live two blocks from the nearest cell site (which isn't tall either), but it still causes problems all over the 800 MHz band. I know the receiver is hot because I heard a 900 MHz cordless signal (and kept on scanning through that ham band, obviously!) for the first time ever.

UHF and VHF reception is excellent and I received almost no image problems outside of the 800 MHz band. While searching, however, the scanner had a tendency to hang up on adjacent frequencies without zeroing in on the exact frequency where the signal was. This was more predominant on paging signals.

Other Features

The RELM HS 200 offers some nice features outside of those already mentioned. Moving through the programmed channels and frequency searches can be done manually with a rotary dial on the top of the scanner. This is a real nice touch for those quick frequency searches.

The scanner has a 200-channel memory that is divided into 10 banks of 20 channels each. Priority channels are the first channel in each bank and are sampled

every two seconds. Channel 1 has the highest priority, and Channel 21 has the second highest priority, etc. You cannot lockout Channel 1 from priority scanning, however you can lock out the other channels. The scan delay feature on this scanner is either "all or none," or in other words, you cannot choose which channels have the two-second delay.

If you like to have instant access for National Weather Service broadcasts, pushing the WX button on the HS 200's keypad automatically searches eight pre-programmed frequencies (including 161.650 for Canada) for a signal. The HS 200 also offers something many scanners don't: a signal-strength indicator. A five-bar indicator on the LCD display gives one an indication of signal strength for frequencies being monitored.

If you wish, you could lock out frequencies with birdies on them while you are searching between two limits, the HS 200 will allow you to lock out up to 100 frequencies that are causing you fits. Once you lock out 100 frequencies from search ranges, the scanner's display will indicate "FULL."

The HS 200 comes with a rubber antenna, AC adapter, earphone, metal belt clip, carrying strap, and a well-done instruction manual. Although the manual could be organized better, you won't have trouble understanding the radio's features if you read through it.

The display light remains lit for only three seconds when lit. A longer display for the light would be good.

The HS 100

While we've primarily focused on the RELM HS 200 receiver here, the HS 100 is similar, except it offers only 100 channels and does not have 800 MHz coverage. The HS 100 also does not offer CTCSS/DCS capability.

Where Can You Get One?

The RELM scanners are being sold by many scanner dealers. RELM's current dealer network and a newly established distributor network also are getting these radios onto shelves. The company also has plans to introduce mobile scanners to its handheld lineup.

For information about RELM's new scanners, write to RELM Communications Inc., 7707 Records St., Indianapolis IN 46226, or call 800-821-2900.

ARCRON-ZEIT Desktop Alarm Clock

By Harold Ort, N2RLL, Editor

Few things in life are “guaranteed,” but I’ll guarantee that you’ll *always* have the exact no-doubt-about-it time with this clock in your shack! For as long as I can remember, keeping accurate time in the shack has been a real dilemma. You can buy all types of wallclocks, deskclocks and wristwatches; and our radios themselves have internal clocks, but guess what? All of them typically lose a few seconds a month—not good news when you need split-second accuracy. And if you’re like most folks, re-setting the clock to WWV can be a real pain in the neck.

The answer is the ARCRON-ZEIT Executive desktop clock that receives time signals from the U.S. atomic clock over WWVB in Colorado. It automatically synchronizes its time by receiving the powerful 40 kW, 60 kHz signal from Fort Collins, making internal adjustments based on the latest signal readings wherever you are in the U.S. This clock is so impressive that it doesn’t even lose time when changing the “AA” batteries or when the power gets low!

Radio-controlled time keeping is really nothing new. Some European nations and Japan already have such broadcasts where the public is more aware of the convenience of the radio-control technology than in North America.

ARCRON’s product literature provides some insight into the technology; for example German station DCF-77 transmits a signal that has been used for years in that country keeping Germans on time. Generally speaking, standard quartz clock accuracy is, according to ARCRON, “. . . to be a deviation of around one second over three to five days . . .” The radio-controlled clocks continuously calibrate the quartz crystal oscillator, keeping the RC clocks at exactly the right time.

The Clock’s Operation

The modular design of the ARCRON desktop clock is a compliment to any listening post. It’s constructed of black plastic and the multi-function display shows the time in approximately half-inch size numerals. It operates on two “AA” alkaline batteries.



The ARCRON-ZEIT radio-controlled desktop clock gives you split-second accuracy in your radio room.

Setting the initial time to your local time zone requires the pressing of one button three times (if you’re not in the Eastern time zone) and pressing another button for the appropriate time zone. This clock automatically adjusts for daylight savings time—not that it’s the daylight savings time that’s important for us, it’s the *world time* that’ll knock your socks off. Here’s the scoop. With a couple of button presses you’re at world time, which is displayed on the bottom of the window, and your local time (hour, minutes, and seconds) on the top portion.

The radio-control system in the clock needs good reception of the WWVB signal, so it makes sense to place the clock near a window or away from the computer which could interfere with reception. Every day at 1 a.m. the clock “checks” for the WWVB signal and automatically adjusts the already super-accurate clock. If the signal was received, a small radio tower symbol shows in the display window. If no successful reception takes place at that time the tower symbol will flash.

You can manually check reception of the WWVB signal any time of day by pressing a couple of buttons; the tower symbol will flash and an indicator bar will indicate the quality of reception—the more bars, the better the signal. Rotate the clock in 1/8 turns, holding each position for about 20 seconds. After a good signal is received the clock will adjust to the correct time. If no reception occurs after 15 minutes, the tower sym-

“The modular design of the ARCRON desktop clock is a compliment to any listening post.”

bol will stop flashing and the bars will disappear. The clock will remain in this mode until 1 a.m. when it searches for the WWVB signal again.

Wouldn’t you know it—in the location where I want to keep the clock, the WWVB signal isn’t receivable, so following the directions to locate the signal, I found placing the 3” x 5” x 4 1/2” clock on a small shelf about two feet from a southwest-facing window produced a whopping signal as indicated by the bargraph meter. So now I keep the clock on the shelf—easily visible and highly accurate. Using the alarm—yes, this clock has not one, but *two* independent alarms, and the display light will run down your batteries sooner.

Traveling? You can use the clock on the “standard display” to show current local time and date. When you return home to your listening post, push a small button twice to return to the world (UTC) time display.

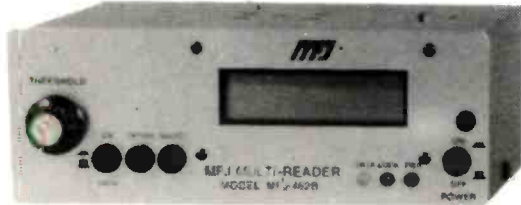
“. . . this clock should be at the very top of your ‘must have’ list.”

This is the one item that I don’t consider an “accessory” in a radio room. Where split-second accuracy is a must; logging stations and contacts, this clock should be at the very top of your “must have” list. I wouldn’t be without this clock!

The ZEIT by ARCRON Radio-Controlled Desktop Clock Executive WWVB sells for \$79.95 and can be obtained directly from ARCRON-ZEIT at 800-985-TIME (8463). International callers should dial 630-472-9999. They’re also on the Web at <<http://www.arctime.com>>. The company also sells 12-inch diameter radio-controlled wall clocks for \$79.95. Second day delivery is available. Tell the folks at ARCRON-ZEIT you read about it in *Pop Comm*. ■

Tap into secret Shortwave Signals

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



MFJ-462B Plug this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.

\$169⁹⁵ Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR(FEC) turn into exciting text messages as they scroll across your easy-to-read LCD display.

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

Eavesdrop on the World

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

Super Active Antenna

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

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

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. remote has 54 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with MFJ-1024 MFJ-1312, \$12.95.

\$129⁹⁵ MFJ-1024 MFJ-1312, \$12.95.

Indoor Active Antenna

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

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

\$79⁹⁵ MFJ-1020B

Compact Active Antenna

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

Also improves scanner radio reception on VHF high and low bands. Detachable 20 in. telescoping antenna. 9 volt battery or 110 VAC with MFJ-1312B, \$12.95. 3 1/4x1 1/4x4 in.

\$39⁹⁵ MFJ-1022

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

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

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

Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

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

High Performance Modem

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

improves copy on CW and other modes.

Easy to use, tune and read

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

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

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

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

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

No Matter What Guarantee

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

Try it for 30 Days

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

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

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

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

MFJ-1214PC **\$149⁹⁵**

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

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

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

Super Hi-Q Loop™ Antenna

The Super Hi-Q Loop™ is a professional quality remotely tuned 10-30 MHz high-Q antenna. It's very quiet and has a very narrow bandwidth that reduces receiver overloading and out-of-band interference.

\$269⁹⁵ MFJ-1782

High-Q Passive Preselector

MFJ-956 **\$39⁹⁵**

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

Mobile Scanner Ant.

Cellular look-a-like. Covers 25-1300 MHz. Highest gain on 406-512 and 108-174 MHz, 19 in. Magnet mount. MFJ-1824BB has BNC/UHF plug; MFJ-1824BM has Motorola plug. **\$19⁹⁵**

MFJ Antenna Matcher

MFJ-959B **\$99⁹⁵**

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

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

High-Gain Preselector

MFJ-1045C **\$69⁹⁵**

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

Dual Tunable Audio Filter

MFJ-752C **\$99⁹⁵**

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

Easy Up Antennas Book

How to build and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before. **\$16⁹⁵** MFJ-38

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

MFJ 12/24 Hour LCD Clocks

MFJ-107B **\$9⁹⁵** MFJ-108B **\$19⁹⁵** MFJ-105B **\$19⁹⁵**

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

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

MFJ Antenna Switches

MFJ-1704 **\$59⁹⁵** MFJ-1702B **\$21⁹⁵**

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

World Band Radio Kit

MFJ-8100K **\$59⁹⁵ kit** MFJ-8100W **\$79⁹⁵ wired**

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

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

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Pop'Comm's World Band Tuning Tips

November 1997

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	5077	Caracol Colombia, Colombia	SS	0300	5025	Radio Rebelde, Cuba	SS
0000	13845	Caribbean Beacon, Anguilla		0300	4830	Radio Tachira, Venezuela	SS
0000	9705	R. Mexico Int'l	SS	0300	7150	Radio Ukraine Int'l	
0000	11990	Radio Kuwait		0300	9550	Radio Ukraine Int'l	
0000	11870	Radio Yugoslavia		0300	3240	Trans World Radio, Swaziland	local
0028	5900	Radio Vlaanderen Int'l, Belgium	EE/Flem	0300	7280	Voice of Turkey	
0030	9655	Radio Austria Int'l		0330	5030	Adventist World Radio, Costa Rica	
0030	6020	Radio Netherlands		0330	3255	BBC via South Africa	
0030	9022	VOIRI, Iran		0330	3955	Channel Africa, South Africa	local
0100	13670	Radio Canada Int'l		0400	3330	Christian Voice, Zambia	
0100	5012	Radio Cristal, Dominican Republic	SS	0400	9435	Israel Broadcast Authority	EE
0100	3365	Radio Cultura, Brazil	PP	0400	4819	La Voz de Evangelica, Honduras	SS
0100	4449	Radio Frontera, Bolivia	SS	0400	3270	Namibian Broadcasting Corp.	
0100	5019	Radio Horizonte, Peru	SS	0400	11720	Radio Bulgaria	
0100	4832	Radio Reloj, Costa Rica	SS	0400	4765	Radio TV Congolaise, Congo-Brazzaville	FF
0100	9580	Radio Yugoslavia		0400	6135	Swiss Radio Int'l	
0100	4805	Radiodifusora Amazonas, Brazil	PP	0430	9485	Radio Bulgaria	
0100	6135	Swiss Radio Int'l		0500	9580	Africa No. One, Gabon	FF
0100	7260	Voice of Vietnam, via Russia	EE	0500	9675	Channel Africa, South Africa	
0130	7290	Radio Sweden		0500	5020	La Voix du Sahel, Niger	FF
0200	6150	Adventist World Radio, Costa Rica	SS	0500	7480	R. Bulgaria	
0200	6045	Deutsche Welle, Germany		0500	6185	R. Educacion, Mexico	SS/EE
0200	9735	R. Nacional Paraguay	SS	0500	6055	Radio Exterior de Espana, Spain	
0200	6090	Radio Bandeirantes, Brazil	PP	0500	7305	Radio France Int'l, via Gabon	FF
0200	5045	Radio Clube do Para, Brazil	PP	0500	3222	Radio Kara, Togo	FF
0200	6000	Radio Havana Cuba	EE	0500	5047	Radio Lome, Togo	FF
0200	4919	Radio Quito, Ecuador	SS	0500	9795	Radio New Zealand Int'l	
0200	6155	Radio Romania Int'l	EE	0500	4770	Radio Nigeria, Kaduna	
0200	6997	Radio San Ignacio, Peru	SS	0500	6105	Radio Universidad, Costa Rica	SS
0230	7160	Radio Tirana, Albania		0500	4904.5	Radiodifusion Nationale, Chad	FF
0300	9690	China Radio International, via Spain		0500	7270	RTV Gabonaise, Gabon	FF
0300	4980	Ecos del Torbes, Venezuela	SS	0500	7255	Voice of Nigeria	
0300	9495	Hrvatski Radio, Croatia	EE	0600	3290	GBC Radio, Guyana	SS
0300	4985	Radio Brazil Central	PP	0600	3366	Ghana Broadcasting Corp Radio One	
0300	9700	Radio Bulgaria		0600	4870	ORTB, Benin	FF
0300	4914	Radio Cora, Peru	SS	0600	6090	Radio Esperanza, Chile	SS
0300	3300	Radio Cultural, Guatemala	SS/EE	0600	7295	Radio Norway Int'l	NN/EE
0300	4955	Radio Nacional, Colombia	SS	0600	4815	RadioTV Burkina, Burkina Faso	FF
0300	15115	Radio New Zealand Int'l					

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0630	6015	R. Austria Int'l, via Canada		1430	9355	Herald Broadcasting—KHBI, Saipan	
0630	15570	Vatican Radio		1430	9535	Radio Japan NHK World	
0700	9860	Radio Australia		1430	21645	Radio Portugal Int'l	
0700	9830	Radio Havana Cuba	USB	1430	9485	Radio Sweden	
0700	4783	Radio TV Maliene, Mali	FF	1430	9680	Radio Veritas Asia, Philippines	various
0700	6115	Radio Union, Peru	SS	1500	9910	All India Radio	
0700	6165	Swiss Radio Int'l		1500	9785	China Radio Int'l	
0700	9755	Trans World Radio, Monaco		1500	9880	Radio Kuwait	AA
0700	7430	Voice of Greece		1500	9985	Radio Norway Int'l	NN/EE
0800	4885	Radio Clube do Para, Brazil	PP	1500	13785	Radio Pyongyang, North Korea	
0800	7180	Radio Norway	NN	1500	13635	Swiss Radio Int'l	
0800	9500	Trans World Radio, Swaziland	EE	1530	12120	Voice of Hope via Georgia Rep.	
0830	6100	Radio New Zealand Int'l		1600	11900	Channel Africa, South Africa	Swahili
0900	9930	KHBI, Hawaii		1600	21560	Deutsche Welle, Germany	GG
0900	4755	Radio Educacao Rural, Brazil	PP	1600	11615	Radio France Int'l	
0900	6010	Radio Mil, Mexico	SS	1600	17465	Radio Prague, Czech Republic	
0900	6060	Radio Nacional, Argentina	SS	1700	11715	Radio Algiers, Algeria	FF
0900	3925	Radio Tampa, Japan	JJ	1700	15210	Radio France International	
0900	6035	Radio Vlaanderen Int'l, Belgium		1700	11690	Radio Jordan	
0900	9885	Swiss Radio Int'l	II	1700	11625	Vatican Radio	
1000	6115	La Voz del Llano, Colombia	SS	1700	9765	Voice of Russia	
1000	4996	Radio Andina, Peru	SS	1800	11785	Qatar Broadcasting Service	AA
1000	4790	Radio Atlantida, Peru	SS	1800	15265	Radiobras/Radio Nacional, Brazil	PP
1000	6135	Radio Santa Cruz, Bolivia	SS	1800	15450	RTT Tunisia	AA
1000	21605	UAE Radio, Dubai		1800	11710	UAE Radio, Abu Dhabi	AA
1030	11715	Radio Korea via Canada		1830	13695	Voice of Turkey	
1030	5995	Radio Melodia, Peru	SS	1900	7465	Kol Israel	
1100	6175	Faro del Caribe, Costa Rica	SS	1900	11605	Kol Israel	
1100	4890	NBC, Papua New Guinea	Pidgin	1900	15345	RAE, Argentina	
1100	3340	Radio Altura, Peru	SS	1900	17785	VOA, via Morocco	
1100	4800	Radio Buenas Nuevas, Guatemala	SS	1930	15505	Radio Kuwait	AA
1100	4845	Radio Fides, Bolivia	SS	2030	11960	HCJB, Ecuador	
1100	5890	Radio Marti, USA	SS	2030	13610	Radio Damascus, Syria	
1100	17760	UAE Radio, Abu Dhabi	AA	2030	15185	Radio East Africa, Eq. Guinea	
1100	12085	Voice of Mongolia	various	2030	9510	Trans World Radio via South Africa	EE, others
1130	6120	R. Japan, via Canada		2030	9965	Voice of Armenia	
1130	9650	R. Korea, S. Korea, via Canada		2100	12015	HCJB, Ecuador	
1130	9540	Radio Nacional, Venezuela	SS	2100	21455	HCJB, Ecuador	USB mode
1200	13790	R. Bulgaria		2100	17820	Radio Canada Int'l	
1200	9590	R. Norway	NN/EE	2100	17815	Radio Cultura, Brazil	PP
1200	15125	Radio Republik Indonesia	II	2100	6290	World Music Radio, South Africa	Sat/Sun
1200	15445	Radiobras/Radio Nacional, Brazil		2100	6245	Voice of Greece	GG/EE
1200	4900	Voice of the Strait, China	CC	2130	6180	La Voz de Guatemala	SS
1230	9525	Polish Radio		2200	9570	R. Portugal	PP
1230	15240	Radio Finland Int'l		2200	7520	Radio Moldova Int'l	
1230	9715	Radio Tashkent, Uzbekistan	Urdu	2200	11815	RAI, Italy	
1300	7365	KNLS, Alaska		2200	9445	Voice of Turkey	TT/EE
1300	13715	Radio Slovakia Int'l	RR	2200	9655	Voice of Turkey	
1300	15630	Voice of Greece		2230	5945	Radio Austria Int'l	
1300	15460	Voice of Russia		2245	9600	Vatican Radio	
1330	13730	Radio Austria Int'l		2300	9725	Adventist World Radio, Costa Rica	
1330	12045	Radio Japan via Sri Lanka	EE, others	2300	5975	BBC via Antigua	
1330	21515	Radio Portugal Int'l		2300	5895	Croatian Radio	
1330	11655	Radio Sweden		2300	9755	Radio Canada Int'l	
1330	15295	Radio Tashkent, Uzbekistan	Uzbek	2300	11700	Radio Pyongyang, North Korea	
1400	11865	BBC via WYFR		2300	7475	RTV Tunisienne, Tunisia	AA
1400	6840	China Peoples Broadcasting Station, China	CC	2300	7125	Voice of Russia	
1400	17830	Qatar Broadcasting Service	AA	2330	5960	Radio Canada Int'l	
1400	17780	RAI, Italy	II	2330	6165	Radio Netherlands via Bonaire	
1400	11985	Voice of Russia		2330	9510	Radio Romania Int'l	■

Product Parade

BY NANCY BARRY
AND R.L. SLATTERY

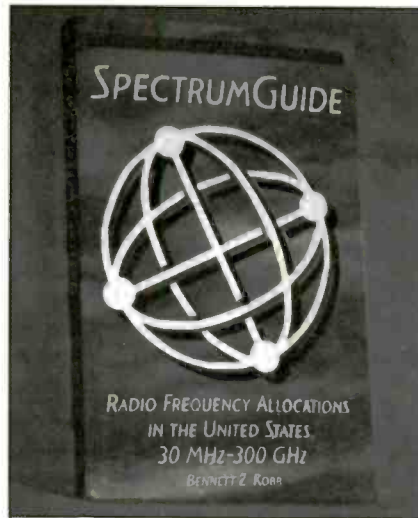
REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

Spectrum Guide: New Third Edition!

The new Third Edition of *Spectrum Guide* by Bennett Z. Kobb is now out. This authoritative source for data about radio frequency allocations above 30 MHz in the United States is greatly updated and has considerably more pages than its predecessor edition and continues to provide the latest in valuable communications information.

Not everyone realizes that all sources intentionally radiating RF above 30 MHz must do so only within the confines of a highly structured and precisely delineated frequency bands designated for specific users.

For instance, there are bands designated for public safety, federal and military, unlicensed services, business and industrial, cellular and PCS, maritime and aviation, GMRS and Family Radio, land



transportation, FM and TV broadcast, beepers, broadcast links, amateur, satellites, telemetry, radar, DAB and MDS, fixed microwave, radio control links, space exploration, interactive video, new

technologies, and many other services.

What Kobb has done in his 373-page Third Edition, is provide a highly-detailed reference guide to each one of more than 300 bands. The book begins at 30 MHz, then continues, band-by-band, each in turn until the entire RF spectrum ends at 300,000 MHz (300 GHz).

Kobb identifies and explains each of the bands, often going on to reveal a considerable amount of valuable and fascinating background information. These bands have their own stories to tell. Some of Kobb's information relates to really unusual or strange (to say the very least) experimental authorizations he has learned about while doing his extensive research for the book.

Kobb is adept at explaining interesting sidelights on how a particular band's allocation evolved, how much activity is there now, and what it's future may hold. The information for each band is supple-

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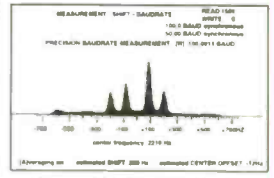
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- SWED-ARQ-ARQ-SWE
- ARQ-E/ARQ1000 Duplex
- ARQ-N-ARQ1000 Duplex Variant
- ARQ-E3-CCIR519 Varlan
- POL-ARQ 100 Baud Duplex ARQ
- TDM242/ARQ-M2/4-242

- TDM342/ARQ-M2/4
- FEC-A FEC100A/FEC101
- FEC-S * FEC1000 Simplex
- Sports info 300 baud ASCII
- Hellsreiber-Synch/Asynch *
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mented by official data from the U.S. Table of Frequency Allocations. The book also contains a detailed subject index, and an index to all of the bands.

Spectrum Guide, Third Edition is a book that should be of interest to anyone interested in VHF/UHF communications, such as hobbyists, comms engineers and techs, teachers, and scientists.

Spectrum Guide, Third Edition is available for \$29.95, plus \$5 shipping/handling (\$7 to Canada), from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. NY State add \$2.88 tax. MC/VISA welcomed. Phone orders 516-543-9169; FAX orders to 516-543-7486; e-mail orders <CRBbooks@aol.com>.

New HH-45WX Handheld CB Radio

Cobra Electronics Corp. has introduced a new full-power, 40-channel handheld citizens band radio. The HH-45WX is 5 1/4 inches in height and is equipped to receive 10 National Weather Service channels. The CB offers full 4-watt power capabilities and is still small enough to fit into a shirt pocket.

The Cobra HH-45WX comes with a

removable battery pack that allows convenient replacement and charging of batteries. The power-saving feature includes a high/low power switch and battery-saver circuitry. The unit's dual-watch feature provides simultaneous monitoring of any two channels, while its full scan feature allows scanning of all 40 channels with the push of a button.

Other product features include instant access to emergency channels 9 and 19 as well as an eight-channel memory setting to access a user's favorite channels. A 12-volt power adapter is included to allow active consumers to stay in touch while they're on the road or on the trail.

For more information, contact Cobra Electronics Corp., 6500 W. Cortland St., Chicago, IL 60707; phone 773-889-8870; fax 773-794-1930.

GMRS National Repeater Guide

The 10th edition of the GMRS (General Mobile Radio Service) *National Repeater Guide* is now available from the Personal Radio Steering Group, Inc. The new edition describes all known or licensed GMRS repeaters.

The 270-page *Guide* assists the GMRS traveler in obtaining local travel assistance or to report local highway emergencies. GMRS users can also use the *Guide* to assist with resolution of local interference problems.

Listings in the *Guide* are organized by state and major urban or regional areas. For each repeater, information on operating channel, station address, coverage range, and contact person mailing address and phone is listed. The *Guide* includes a cross-reference by operational names. These specialized names are often used to identify local user groups and cooperatives. There is also an extended discussion of the desired GMRS operating procedures developed over many years by the national GMRS user community.

Information for the *Guide* was collected from the FCC licensing database, and supplemented by input from FCC licensees and repeater operators.

For further information, contact Corwin D. Moore, Jr., Personal Radio Steering Group, Inc., P.O. Box 2851, Ann Arbor, MI 48106; phone 313-662-4533; fax 313-995-0228; computer bulletin board 313-995-2100; or e-mail <73016.163@compuserve.com>.

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Radio Resources

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Try Your Local Radio Store!

The sales of ham radio equipment are dramatically down over what they were a few years ago. Most new hams entering the amateur service via the no-code license are starting out with relatively inexpensive dual-band 2-meter/440 MHz handheld gear. Their total purchase amounts to under \$500, and that little handheld might serve their ham radio needs for many years to come.

Upgrading from a no-code Technician class license to the General class ticket has reached an all-time low. The incentive of knuckling down and learning a few more hundred General class theory questions, and then spending months on learning the Morse Code to a rate of 13 wpm, turn off all but the most dedicated new amateur operator. Too bad—the Technician class license, without the code, is only giving you a sample of all of the neat worldwide things you can do with the General class license and higher.

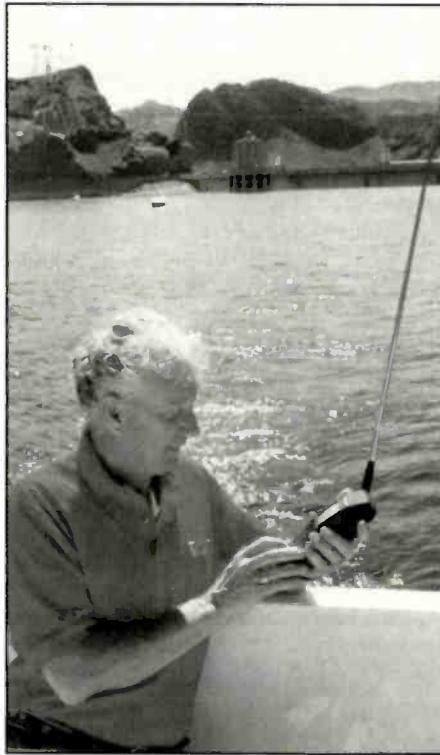
But maybe not. Just the other day a classroom of no-code Technician amateur operators talked for over 30 minutes to a ham station in London, England. The QSO went something like this:

"My name is Bob, and I'm here in Seattle, Washington, operating through the W7SRZ repeater system. My rig is an ICOM IC-T7A dual-band handheld, and your signal is coming into the repeater full quieting. Go ahead, Julian."

And the response went like this:

"Hi, Bob, this is Julian, and my QTH is just south of London, England. The rig here is a Packard Bell Pentium 200 MHz with a 16X CD-ROM drive and the 16-bit SRS 3-D amphitheater sound card, along with the I-phone audio program and my trusty RadioShack crystal mike..."

Licensed amateur radio operators throughout the world are going "on the air" over the internet, and their signals ultimately are tied into a local repeater system, and General class type DX is now possible by the no-code Technician and



Gordon tests Magellan's GSC-100 data Satellite Transmitter/Receiver VHF/UHF Communicator on Lake Mead.

other computer-based hams throughout the world. Who needs to upgrade?

Amateur satellites, plus the long-awaited AMSAT Phase 3D satellite program can also give no-code Technician class hams a big boost for worldwide DX. With a \$1,000 investment in weak signal SSB VHF/UHF equipment, the no-code operator can really get caught up in working the world from a satellite station. Again, no General class code requirements are needed.

As the solar cycle 23 begins to pick up, the trickle of hams to the General class upgrade ladder is beginning to form up. A few percent of no-coders are learning the code, and going onto the 13 wpm test. But why 13 wpm, rather than a slower code speed that is more easily obtained? Old-timers say we need to retain the same code requirement to weed out the unde-

sirables. Maybe. I listen down on 14,313 kHz, and also down on 75 meters, and I find plenty of the undesirables with a license higher than General.

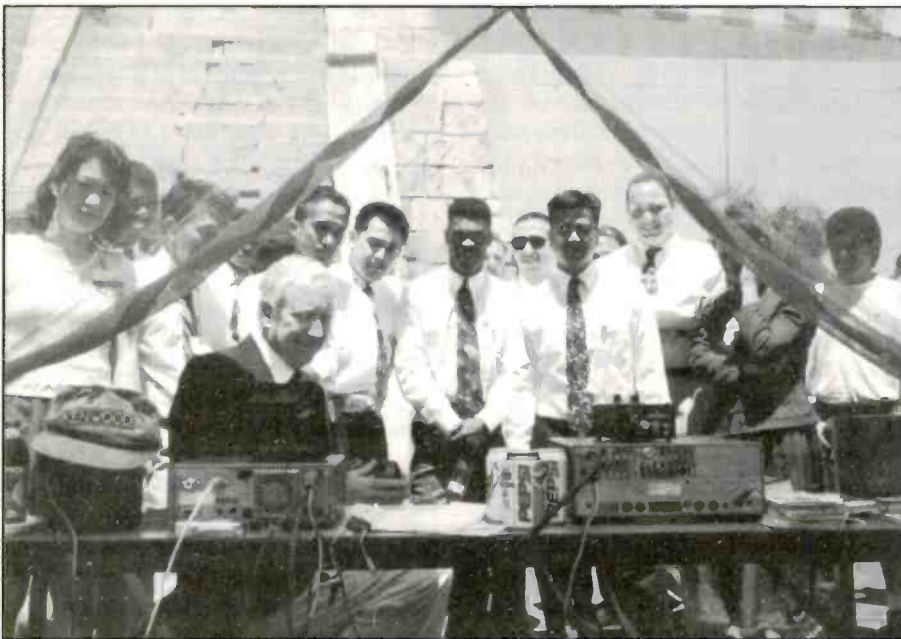
The American Radio Relay League claims their membership finds the present 13 wpm code requirement perfectly satisfactory. But if you ask the equipment manufacturers, all of them will tell you that high-frequency worldwide transceiver sales are way off, and about the only thing in sight that could really cause a jump in HF equipment sales would be the reduction of the 13 wpm code requirement. I agree. I think the individual ham stores agree, too, but both manufacturers and the dealers are keeping quiet on the subject because they wouldn't want the old-time hams to think that they are for the reduction of the code requirement simply to sell more sets.

But the ham manufacturers are looking for innovative ways to get more no-coders upgrading to General class, and to get more outsiders into the inside world of ham radio. Ham radio dealers are just trying to stay alive competing against single-digit mark-ups and 800 phone number pricing.

"Why should I stock more than one or two ham radio sets in the back when customers will come in, spend all day playing with our equipment, and then order it through an out-of-state 800 number to save the tax," comments one local ham dealer. They have a point.

Kenwood Corporation, one of the largest amateur radio equipment manufacturers in the world, recently went around traditional distribution of ham equipment to local ham stores, and began selling ham equipment to the big electronics chain store Fry's. Everyone was quick to criticize. Heavens, ham radio sold by a store not dedicated to ham radio?

But soon ham radio organizations like the American Radio Relay League were quick to join in, selling ham radio materials to a general electronics outlet. Then other companies joined in with well-recognized names like Fluke, Valor, Larsen, and scores of scanner, Family Radio



The outside ham demo attracted many non-ham radio enthusiasts. (Photo by Julian, N3IF).

Service, CB radio, and personal radio suppliers, too.

During amateur radio Field Day last summer, we took our new amateur radio communications van and parked it out front of one of the Fry's super stores and wanted to see just how many Fry's customers going into the store to buy hi-fis, cordless phones, and computer products would have any interest in stopping by the comm-van to learn more about ham radio. Surprise, surprise. The mobs we drew to learn more about how to get into ham radio were constant, well-qualified, and resulted in much of Fry's ham radio training materials being sold that same day. Local clubs were excited with the new prospects for their local classes. At the end of the two days, our Field Day radio contacts weren't many, but the number of new potential hams we reached was a record. Everybody was excited, except the local ham radio dealer, the same one who turned down opportunities for the same type of ham demonstration in their own parking lot.

Guess what? All of the exposure of ham radio to these "newbies" going into Fry's has now spilled over back to the individual ham dealer level, and they are enjoying a new customer base. I guess exposure is a good thing if any company is willing to take a little heat at first to get the word out.

Good decision, Kenwood! We need to reach more non-hams in order to help our ranks grow, and to get more people into our hobby and experience more than

local repeater contacts on a handheld 2-meter transceiver.

Satellite Phones Come Down To Earth

Satellite telephone and data systems have recently undergone some dramatic pricing breakthroughs. Just last weekend I took two portable satellite phone-home systems out on a lake with absolutely zero cellular phone coverage, and I was able to instantly make phone calls home from

a briefcase-sized \$4,000 Magellan "World Phone," and I was able to send a \$1 e-mail message back to the staff at *Popular Communications* magazine from an under-\$1,000 Magellan handheld GSC-100 data transceiver. About an hour later, I even got a reply!

Two-way satellite messaging can take place on three distinctively different satellite systems in three distinctly separated orbital planes. The geosynchronous satellites, up at 22,500 miles above the equator, can "see" as much as a quarter of the earth's surface. With as few as four satellites, a geosynchronous system can cover the entire world.

The International Maritime Satellite Organization (Inmarsat) offers customers worldwide electronic mail, FAX, data, direct-dial telephone, and telex communications anywhere in the world, except for the North and South Poles.

The big white dome that you see on large ocean-going vessels is part of the Inmarsat-A system. Calling ashore from a cruise ship costs about \$5 a minute, but the call goes through crystal clear, except for the delay in your conversation which is caused by the communications path going up 22,000+ miles, back 22,000+ miles, an additional second for the calling party to think about what you asked them, and then another total 44,000 mile path for the response. The best way to make a geostationary satellite call is to say "over" after you have said your message and you are waiting for a response. Never try to interrupt on a geostationary satellite contact. It will really screw up



The spot beam coverage of AMSC allows for very small uplink antenna systems.



The Fry's class home-studied for weeks before the big weekend.

the conversation and cost you valuable air-time money.

Inmarsat also offers "mini-M" spot-beam coverage. The spot-beam coverage intensifies transmit and receive signals to specific regions of the world, and decreases the necessity of that huge white dome covering the major-sized parabolic dish. There is still a small parabolic dish required for "mini-M", but now things are down to the manageable size of a basketball when it comes to where to put the antenna. And the prices are also lower for

the equipment—typically under \$5,000 with automatic antenna tracking. American Mobile Satellite Corporation (AMSC) has been offering skycell service for nearly two years, and their briefcase-sized terminals are priced near \$3,000. The calling charge ranges from about \$1.50 to \$3 per minute. AMSC is among the most affordable of today's geosynchronous satellite services, but their spot-beam coverage can find your operating range to no more than a couple hundreds miles offshore. You must also put up with that short time delay during speech communications.

We wanted to test the coverage of Inmarsat mini-M, so we took a computer-sized Magellan World Phone out on the lake, and once we opened up our briefcase communicator, we were in instant touch with anyone with a regular telephone or any e-mail contact. The package weighs only five pounds and is priced under \$3,995. Calling charges are \$3 per minute. The set-up is relatively straightforward: open up the briefcase, read the compass and rotate the briefcase system in the general direction of the satellite, raise or lower the antenna, and then watch your signal strength meter go full tilt. This is just like how you would set up a portable direct satellite system dish antenna on your RV at the campground, except this system is two-way, whereas your TV reception is only one-way.

But the latest in inexpensive phone-homing is the new constellation of low-earth-orbit satellites operating on the 137 MHz band downlink, and the 400 MHz band uplink. Communications to these low-earth-orbit satellites are 2400 bps transmit, and 4800 bps receive.

The low-earth-orbit satellite system is the one that amateur operators are all up in arms about because there was concern that the "LEOs" might take over the ham radio 144 MHz—148 MHz band. The

hams made their concern loud and clear to the LEO industry, and I believe the imminent threat of the loss of the 2-meter ham band is well over. And same thing for UHF—we hope that LEOs will stay well below our 70 cm ham bands.

There are several great advantages to low-earth orbit two-way communication satellites: it's cheaper to put a satellite into space at a lower altitude (under 1,000 miles), and there is no noticeable time delay in a full-duplex two-way conversation over a digital LEO satellite phone.

It will take big LEOs to offer voice capabilities. LEOs are a several billion dollar proposition from Iridium which presently has 12 big LEOs in orbit, and has a launch schedule that calls for the fully completed 66 satellite orbit by 1999. This will provide worldwide voice, FAX, and data service communications via handset-sized transceivers.

There is planned a \$2 billion Globalstar system from Loral Qualcomm's 48-satellite, low-earth-orbit deployment. When this system comes on line, you will operate a cellular phone apparatus that works exactly like a real cellular phone to local cell sites. When your cell site disappears and no others on earth are around, it will then switch up to the skies for more expensive satellite comms. Look for this service to begin operation in a couple more years.

But on the air right now is Orbcomm, co-owned by Orbital Sciences Corporation of Dulles, Virginia, and Teleglobe, Inc., of Canada. Orbcomm is a global two-way digital messaging, data communications, and geo-positioning service using narrow-band VHF and UHF digital communications to satellites up 775 kilometers above the earth. We tested the initial trial service of Orbcomm, and our digital messaging goes through ground relay links presently found (only) in North America. But we had only two satellites to run our Magellan GSC-100 through. An additional 36 space vehicles are soon to go up and complete the entire low-earth-orbit Orbcomm system within two years.

Orbcomm represents an economical approach to satellite system development. Satellites built by Orbital Sciences weigh just 95 pounds, and are air-launched on Orbital's Pegasus XL launch missiles dropped from an L-1011 aircraft. Orbcomm is focusing on digital messaging and data only through its entire 36-satellite Orbcomm system. It won't offer voice, but will offer automatic and manual data sending and receiving at about a

Magellan Systems.....	909-394-5000
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Westinghouse Wave Talk	800-851-4807
KVH Satellite Antennas	401-847-3327
Orbcomm Web Site	< http://www.orbcomm.net/ >
Ocean Cell	800-566-9600
Trimble	800-827-2424
Hughes Magna Phone.....	310-517-6031
Comsat	800-424-9152
Iridium	202-326-5600
Orbcomm	703-406-6000
SEA Inmarsat-C.....	425-771-2182
Magellan e-mail.....	< http://www.magellangps.com >

"Another nice thing about the Orbcomm system is its compact size and easy operation."

penny a character. For under a buck, you can key-enter a relatively complete message, and then a few minutes or hours later, get a response.

Examples of Orbcomm applications include real-time monitoring of fixed assets, such as pipelines and irrigation equipment, tracking of vehicles and ocean-going vessels, routing delivery vehicles, and personal communications if you should find yourself out of the range of cellular and wanting to send an e-mail message home that you finally arrived at that distant campsite on the hidden lake.

The self-contained Orbcomm unit I operated during our tests on Lake Mead weighed in at only 37 ounces, and operated all day on rechargeable batteries. It had enough memory for 100 messages, 150 e-mail addresses, and 200 stored waypoints. You see, built into the transceiver is a powerful Magellan GPS satellite receiver that not only indicates your position, but can also *send* your position automatically in case of an emergency.

Another nice thing about the Orbcomm system is its compact size and easy operation. Just turn the unit on, pull out the telescopic whip, wait for the unit to detect a passing low-earth-orbit Orbcomm satellite, and presto, your unit sends your position to the satellite, and downloads any messages that might it be holding. The unit will also give you a ready indicator if there is a satellite in view to immediately transmit a message.

In our case, we loaded our message into a buffer, put it on auto-up, and then went swimming while the unit faithfully waited for one of the two new Orbcomm satellites to come into view, exchange communications, and then indicate that the message had been sent. About an hour later, in came in a new message from another magazine staff writer, and we were now staying in almost constant touch without needing an external computer to keep our datastreams going. Best of all, this is an under \$999 investment with all sorts of interesting monthly usage plans to suit how you plan to operate this new communications equipment.

Want more information about satellite signaling? Here are some hot numbers to call for SATCOM systems under \$5,000:

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In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 3000 watts of power.

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

We have completed relative gain measurements of your model 1000 antenna using the K40 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	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

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November 1997 / POPULAR COMMUNICATIONS / 47

Antennas & Things

SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

Radio Astronomy Resources

Normally this column is dedicated exclusively to radio antennas from DC to daylight. This month, however, I would like to make a small digression. Many readers have contacted me about my occasional radio astronomy or radioscience observing columns, so there seems to be quite a bit of interest in the topic. I thought I would share some resources, and point you to a VHF/UHF DXing opportunity.

Radio astronomy books are not exactly all over the major chain bookstores, so enthusiasts have to look far and wide. But there is a specialist publisher who can supply a number of interesting titles (I have several, and found all of them quite decent). Contact Radio-Sky Publishing at P.O. Box 3552, Louisville, KY, 40201-3552; E-mail <radiosky@radiosky.win.net>; Web site <http://www.win.net/~radiosky> if you want to obtain more information on radio astronomy texts.

One of the books is Dr. Bill Lonc's Radio Astronomy Projects. This book is especially good if you like the technical aspects of radio astronomy. Bill Lonc's Web page can be seen on the St. Mary's University (Halifax, Nova Scotia) Web site. The URL is <http://apwww.stmarys.ca/~lonc/lonc.html>. You can also leave an E-mail for Dr. Bill at the Web site.

One of the items on the Web site is a page on the beacons operated by Bill Lonc and his students. They are low-powered, and difficult to receive in the USA, so they represent a choice DXing opportunity. He would like to receive QSL cards, or signal reports (E-mail OK), of reception. **Table 1** shows the frequencies for these beacons. In addition, *CQ VHF* magazine recently ran an article on the Sable Island beacons (it seems that they are at risk because of Canadian government plans about a weather station on the island).

(These beacons are operated on: Sable Island (S) Eastern Passage (A), Wynacht Point (B), and St. Mary's University (C), (all in Nova Scotia). The 2304.40 MHz beacon operates using narrow-band FM, but all the others use keyed CW for their ID. Also, the transmitters are all low power (0.5 to 10 watts, except 50.001 MHz (25-watts) and 144.290 MHz (100-watts).

Another source of radio astronomy books and other supplies

is Radio Astronomy Supplies, operated by Jeff Lichtman. They can be reached at 190 Jade Cove Drive, Roswell, GA 30075, or via e-mail at <jmlras@juno.com>. Jeff republishes the material of Bob Sickles, who passed away of cancer a couple years back after a long career as an amateur radio astronomer. He also has a number of interesting hardware items that appeal to radio astronomy enthusiasts.

[**Note:** "RadioScience Observing" is a word I coined to denote the whole range of amateur scientific observations of natural and man-made radio signals, including radio astronomy, solar monitoring for flares, and whistler/spheric hunting. I am writing a book for Howard W. Sams, Inc. on this topic. Look for it in early 1998.]

RF Preamplicator Chips

Mini-Circuits (P.O. Box 350166, Brooklyn, NY; Phone 718-934-4500) offers some interesting chips for RF preamplicator design. The MAR-x series is well known. They operate from near-DC to either 1,000 MHz or 2,000 MHz, depending on the type. A low-noise version, MAR-6, is also available and has been widely used in radio astronomy projects. A new series of VHF/UHF/Microwave chips is also now available. These are shown in **Tables 2** and **3**.

Mini-Circuits

Type No.	Frequency Range (MHz)	Gain (dB)
ERA-1	8,000	11.6
ERA-2	6,000	14.9
ERA-3	3,000	20.2
ERA-4	4,000	13.9
ERA-5	4,000	19.0

(**Note:** There are some minor gain differences between ERA-x and ERA-xSM in some cases).

Table 2

VE1SMU Beacon Frequencies

144.277 MHz (S)	222.059 MHz (A)
220.055 MHz (S)	432.350 MHz (A)
222.055 MHz (S)	432.398 MHz (B)
432.40 MHz (S)	902.302 MHz (A)
902.345 MHz (S)	902.358 MHz (B)
1296.344 MHz (S)	1296.302 MHz (A)
50.001 MHz (A)	1296.385 MHz (B)
144.29 MHz (A)	1296.398 MHz (A)
220.058 MHz (A)	2304.40 MHz (C)
222.051 MHz (B)	

Table 1

Mini-Circuits

Type No.	-1 dB Comp (dBm)	NF (dB)	IP3 (dBm)
ERA-1	13	7	+26
ERA-2	14	6	+27
ERA-3	11	4.5	+23
ERA-4	19.1	5.2	+36
ERA-5	19.6	4	+36

Table 3

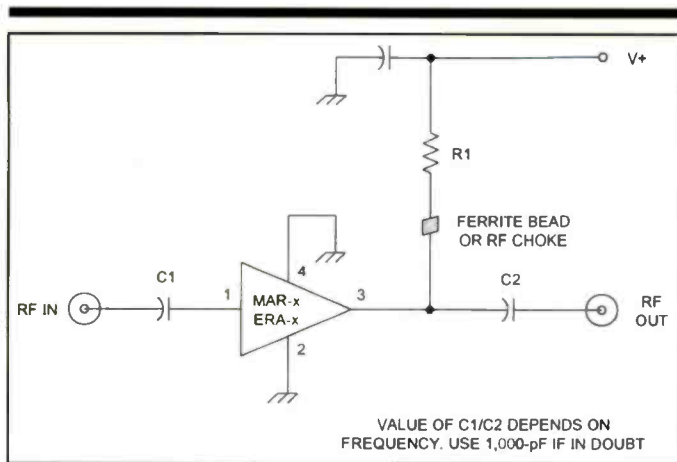


Figure 1. Basic circuit for MAR-x and ERA-x RF preamplifiers.

In larger quantities (e.g. 10 each) the prices of these amplifiers are as low as \$1.80 and as high as \$4.15, depending on type number. Dealers will charge considerably more, but that is the price of buying small quantities; you can buy just one if you want it. Mini-Circuits will accept credit card orders, but may have a minimum order that may be more than you want to pay. In that case, the price the dealers charge is not all that bad.

Mini-Circuits has several kits available for those who would like to experiment with all of the ERA-x devices. These kits are:

K1-ERA \$49.95 Ten each of ERA-1, -2 and -3
 K2-ERA \$69.95 Ten each of ERA-4, -5

The surface mount version the prices are the same, but the kit numbers become K1-ERASM and K2-ERASM.

Figure 1 shows the basic circuit for the ERA-x and MAR-x preamplifiers. The value of R1 is determined by the difference between the DC supply voltage and the terminal voltage required at the output (pin no. 3).

Connections

It can be reached at P.O. Box 1099, Falls Church, VA 22041, or via E-mail at <carrjj@aol.com>. Your ideas, photos and letters for this column are always welcome.

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CIRCLE 65 ON READER SERVICE CARD

The Old CB Shack

BY DON PATRICK

GIVING LIFE TO YESTERDAY'S RELICS

Restoring the Heathkit GW-10D

This month, we are going to restore a Heathkit Model GW-10D to full operation. The Heath Company was a subsidiary of the Daystrom Corporation located in Benton Harbor, Michigan. This radio was a "kit." The Heath Company provided you with all the necessary parts along with an easy to read set of instructions.

Electronic products manufactured in the 1950s and '60s were tube type equipment with metal chassis, wires and lots of parts and pieces. Each part had to be mounted to the chassis: bolted, screwed or soldered into place, then all the wires, resistors, condensers and were installed. Each part had to be run through a termi-

nal or to a tube socket and soldered. A Heathkit contained more than 500 pieces (parts, wires, etc.) It sounds like a formidable task, but wasn't as hard as you might think. Keep in mind that this was a simple radio by today's standards with no bells and whistles.

Why would anyone build their own radio? Remember that yesterdays electronic equipment was all made by hand. This included TV sets, your car radio and home hi-fi sets. It made no difference if it was the top of the line, high quality brand, or the inexpensive brand, they were all assembled, wired, soldered and tested by hand. Each part was installed one at a time.

Each person on the assembly line only installed a few parts before passing the unit on to the next person. The only difference between a cheap piece of equipment and a top-of-the-line unit was the quality of the parts and the design. Today's electronic marvels have *far* fewer individual parts and each of these are installed by robots. Once all of the parts are "in place," they are all soldered at the same time by another machine. Integrated circuits (IC's) have many parts inside and installing one IC results in actually installing whole circuits in many cases.

The cost of manufacturing yesterday's electronics was more than 70% labor. Therefore, you could purchase a piece of

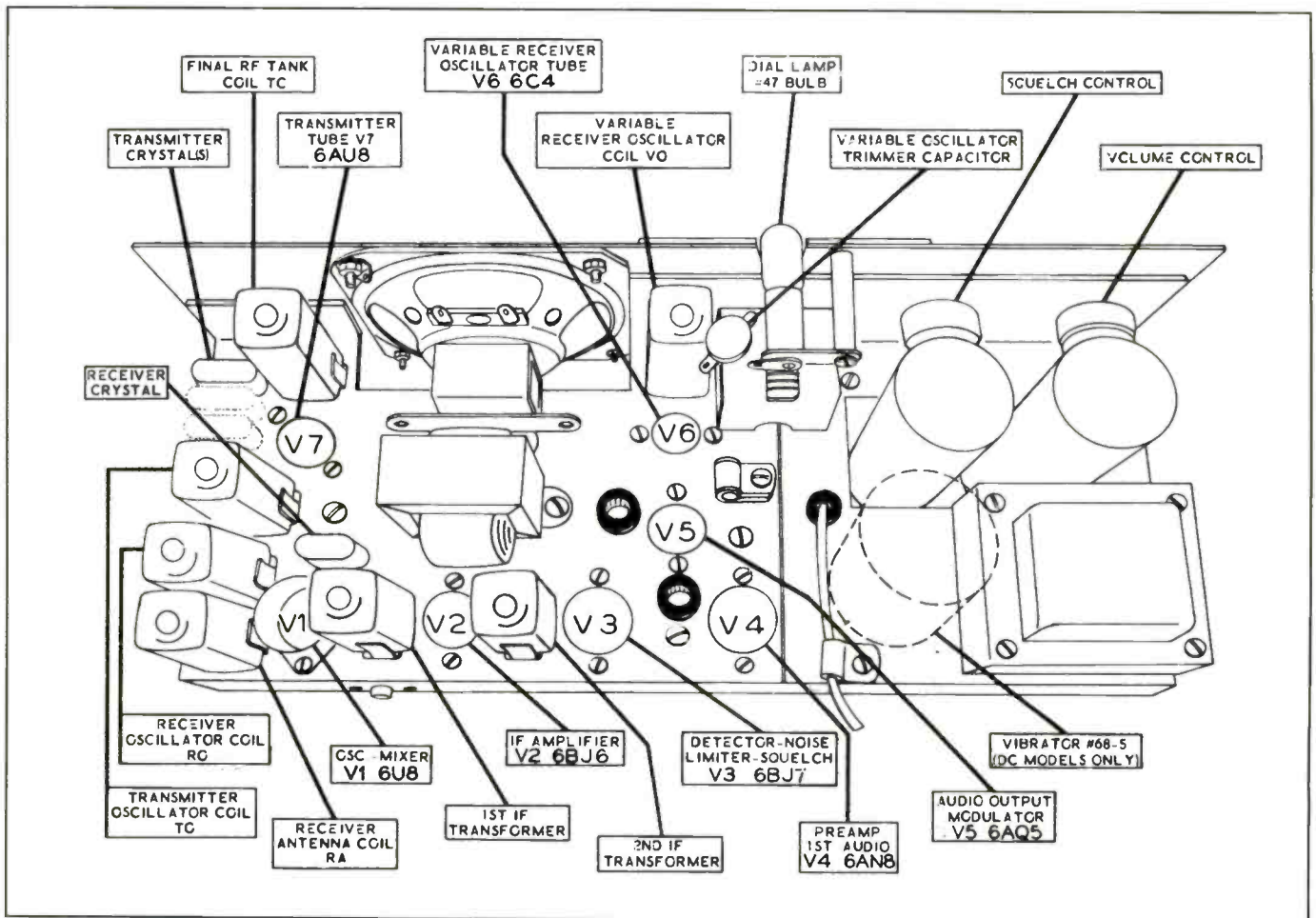


Figure 1. Topside tube and component layout of the GW-10D.

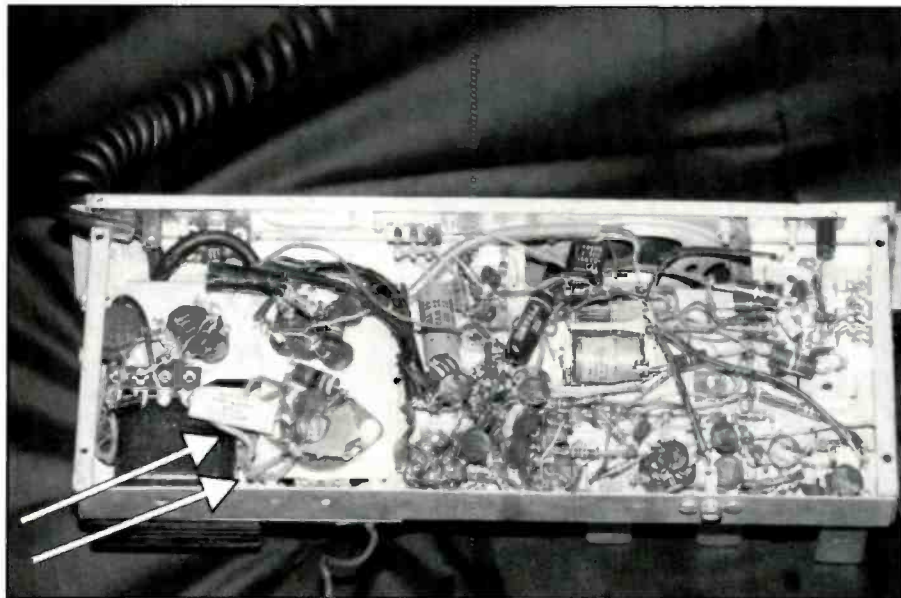


Photo A. The green and red-black transformer leads connect to the far right terminal on the strip.

About the best you could say for it was that it worked, sort of! However, the GW-10 was a *real* radio. You could have crystals for any three of the 23 channels on transmit with a slide switch to select which one to use. You could only receive on one channel. To receive on the other 22 channels, you used the tunable receive section. Plus this modern wonder had a squelch circuit to keep it quiet between calls and even a microphone with push-to-talk (PTT) instead of a lever on the unit to push with one hand, while you held the microphone with the other hand. Those who tried to talk while driving before the PTT microphone did a lot of "weaving."

I'm not going into a lot of detail on the preliminary steps to re-construct an old CB. We did this step by step last year while re-building a Polycorn.

In brief, remove the tubes and clean the chassis top and bottom using an air hose and a 1 inch soft paint brush. Remove all "mud-dauber" nests! Keep the air hose away from the speaker! Get a can of good, safe for all plastics, tuner cleaner from your local electronics supply house and clean the relay contacts and the transmit channel selector switch. Then spray into the tube socket holes, and while they are wet, gently insert the tube and remove it two or three times. This should restore good contact to the tube pins. Give all of the parts a good visual inspection, looking for any signs of over-heating, and check to make sure parts are not broken or bent together. Have your tubes checked by a shop with a tube tester. Check to make

equipment; put it together yourself over the course of a weekend or two and save a lot of money! In 1958, I was just starting business and built some of my first test equipment, a scope, an audio generator, a signal tracer and such. I've still got them and they still work quite well. Two companies were by far the dominant manufacturers of kit equipment. Eico made mainly test equipment and the Heath Company made some test equipment, but was more into home entertainment things such as hi-fi music systems. Both companies jumped onto the CB bandwagon in 1959 and 1960.

Besides, you had the pride of having built your radio from scratch.

The Heathkit GW-10 was a very popular radio nationwide. It came out in 1960 with the "A" version 110 volts and the "D" version for 6 or 12 volts, depending on how the power supply was wired. If you are building one, be sure to check *before* you apply DC power, since 12 volts connected to one wired for 6 volts isn't good. This model Heathkit was a big step up from their first model, the GW-1 "lunchbox." That unit was a single channel radio with a super regen receive.

The Plot Thickens

Since this is where I came into the picture some 40 years ago, having just begun an electronics repair business with hungry children, I would work on anything that paid a dollar or two. At the time, I worked at a local TV station as the full time transmitter engineer and my new side business the rest of the time. After you purchased and constructed your new kit form CB radio, you needed it to be tuned up and have the frequency set in order to get full performance. This is assuming that in the hundreds of connections, you didn't put a green wire where the red one should have gone or have a diode turned the wrong way or just a poor solder connection. If you did, I would trace down all of your problems for a slight fee. You still saved a lot of money if you had done a reasonably careful job.

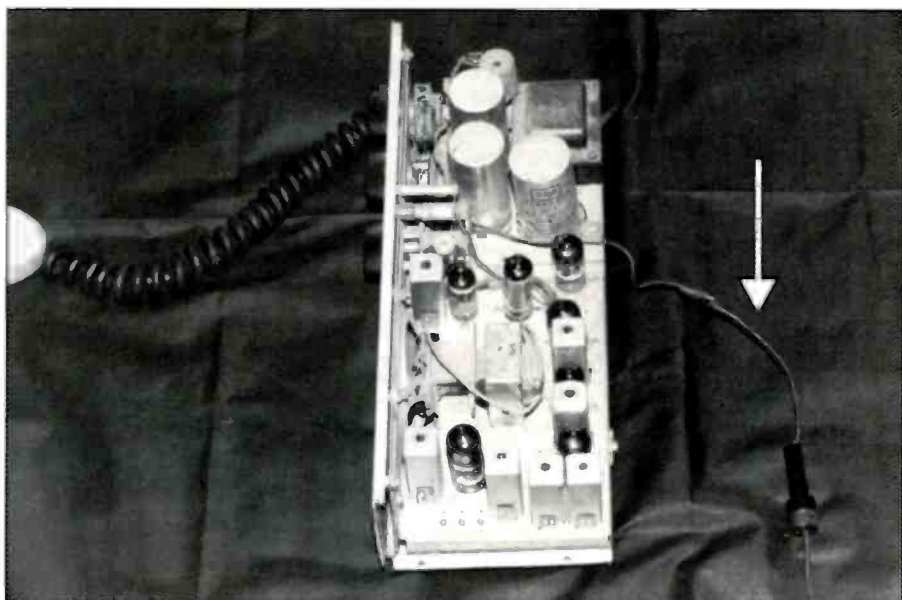


Photo B. The GW-10D's inline 9-amp mobile fuse.

"The Heathkit GW-10 was a very popular radio nationwide."

sure your unit has the correct tubes by looking at the tube layout, **Figure 1**. (If you have any problem finding old tubes at a fair price, write me with an SASE and I will send you the name and address of a good source.)

Danger, High Voltage!

Before you apply power, check to see if your set is wired for 6 or 12 volts DC, if you are working on a mobile version. The mobile units have an in-line fuse holder coming out the back and the 110 volt units had a cord with a wall plug on them. You *cannot* change a DC unit into an AC one. Use a 110 to 12 volt power supply. Most likely, the easiest way to tell which unit you have is to locate the two leads coming off the power transformer color-coded "green-yellow and black-yellow." If they are not connected to anything and are just "taped up" at the ends, you have a 12 volt unit. Also in this case, both the green and the black-red transformer leads go to the right hand most terminal of the terminal strip shown in **Photo A**. If on the other hand, the two leads (green-yellow and black-yellow) are connected to this right hand terminal strip, and the black-red and green wires go to the vibrator socket, you have one wired for 6 volts. There are a few other changes, but this will tell you what you have. If you need to change one from 6 to 12 volts (or the other way around) write me for a full list of the changes. Be careful working on this radio. There are high voltages exposed and easy to touch that can harm or even kill you. Keep your fingers out of the unit and refer to a qualified service person if you don't know what you are doing!

Check the fuse in the in-line fuse holder to see if it's the correct size. It should be a 9 amp fuse. Mine had a 20 amp fuse in it when I checked it. So, out with the 20 and in with the 9 amp one. If someone has done away with your fuse holder as shown in **Photo B**, get one at your electronics supply house or RadioShack.

Crystals

Before you can do much testing, you will have to obtain at least one transmit crystal and one receive crystal. You can get these from a number of places. One

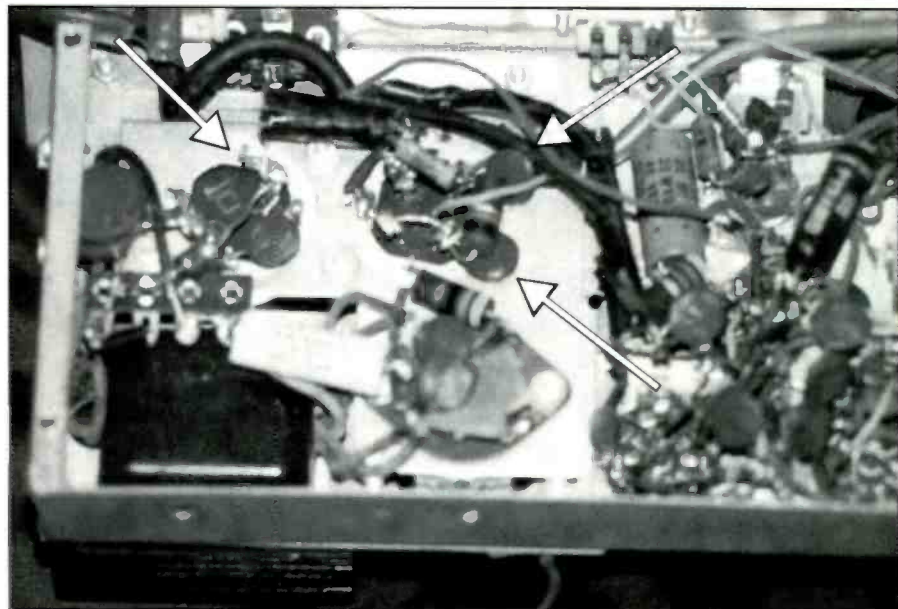


Photo C. Check for proper B-Plus voltage at these points.

of the best is International Crystal Company, 10 North Lee, Oklahoma City, Oklahoma and will cost you about \$10-12 each and take some three weeks to obtain without paying extra for faster delivery. The transmit crystal is a 1U20 and the receive is a 8U20 crystal type. For the test and tune procedures, we are going to refer to applying 12 volt DC. If your unit is a 110 volt unit or one that has been wired for 6 volts, read 12 volts as 6 or 110 volts for your purposes.

Remove all the tubes and set them to one side. If you first apply power with

them out, it will be much easier to locate any short should you have one. If the fuse blows, you have a problem with the vibrator, power transformer, diode, filter or a short (mechanical or electrical) on the B+ line or filament circuit somewhere. A trusty volt-ohm meter should lead you or your technician to it in short order. If on the other hand, the vibrator just hums it's normal song, check and see if you have about 300 volts positive at point "A" in **Photo C**. It's high due to the tubes being removed. If you do, removed power and re-insert the tubes with each in it's prop-



A 1960-'61 homemade vintage tube-type CB.

"Keep your fingers out of the unit and refer to a qualified service person if you don't know what you are doing!"

er socket per the layout shown. Turn the power back on. If you blow a fuse after 5 to 15 seconds, you have a tube pulling too much power and it's most likely due to a shorted or leaky grid capacitor. If the unit comes on and makes noise, check the voltage at points "B" and "C" on either side of the 10K, 2 watt resistor (coded brown-black-orange-silver). You should find about 255 volts on receive at point "B" and about 135 volts at point "C" on receive. *Remember, this is a tube unit and there are voltages present and exposed that are dangerous. They can be lethal! Call in a qualified person if you don't know what you are doing!*

If at this point all is well but you don't hear any noise, remove power and test your speaker. Place your ohmmeter in the RX1 scale and put one lead to chassis ground and touch the other lead to the speaker terminal that's not grounded. If the speaker is good enough to make noise, it should make a slight "pop" when you do this. If the speaker is OK, then you have a problem in the Modulation-Audio output section that could be as simple as a dirty relay or inexpensive part or as bad as a defective output transformer. Depending on your level of skill and meters available, it may be time to call in help.

If you did get noise, it's time to test to see what level of performance your unit will provide. After all these years, it will most likely need a full tune-up. This is easy to do, BUT you will need a meter or two plus a full alignment procedures manual. Your best source is from Sam's and will cost your \$25 plus freight. I will provide you with copies of the applicable pages out of the Heathkit book if you send an SASE and \$10 to pay for the copies of about six to eight pages of the manual. I would rather you get the full Sam's package as it has more information and pictures, but it's your choice.

Well, I'm about out of time and space and have not touched on the transmitter. The GW-10 used a single tube (6AU8) and it is a very simple but effective design. You tune the oscillator coil (L-7) on the highest channel you have (clockwise) until it quits. Then while still holding the PTT down, turn it back counter-clock-

wise until the oscillator starts again. Tune L-8 on a middle channel for maximum output. The microphone used on the GW-10 was a Turner 350C. Don't try to use one off of a modern radio as they are all of the low impedance, dynamic type cartridge. This radio was designed for a high impedance, ceramic cartridge. The set could be modified and a power mic used if you didn't care about keeping it original. If you have the original mic, a replacement cartridge can be obtained.

If you have any questions about this

project or any other old CB radio, write to me, Don Patrick, 3701 Old Jenny Lind, Fort Smith, Arkansas 72901. Don't ask for values of old sets as I cannot help you there. I can tell you about the radio in most cases, it's good or bad features, and how to fix it; but not how much it's worth. By the way, my unit is wired for 6 volts and I'm going to leave it that way and install it in my restored 1954 Chevy. How about that for three antiques—me, my car and the GW-10!

'till next time—this is the Old Timer!



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S.608 Gaining Momentum

In the September CB Scene, I alerted you to a bill before Congress, S.608 that if passed, would give local governments the power to enforce some of the FCC regulations that pertain to CB radio. That power, some fear, could mean the death of CB. Others see S.608 as the savior of the service. Most, however, realize that something must be done to restrain CB's problem operators, but are unsure if S.608 is the answer.

Be it blessing or curse, one thing is clear, S.608 is gaining momentum. By the time Congress recessed for the summer in early August, S.608 had attracted two co-sponsors. They are Michigan's Senators Carl Levin and Spencer Abraham. Senator Abraham is a member of the Senate's Commerce, Science, and Transportation Committee, which is currently reviewing the bill. By the time you read this, Congress will be back in session and quite possibly working on S.608. Whether you're for or against S.608, the time for you to act is NOW! Contact your Senators and let them know what you think. Your input is especially important if your Senator is on the Commerce, Science, and Transportation Committee. The members of the committee are: McCain (R-AZ), Stevens (R-AK), Burns (R-MT), Gorton (R-WA), Lott (R-MS), Hutchinson (R-TX), Snowe (R-ME), Ashcroft (R-MO), Frist (R-TN), Abraham (R-MI), Brownback (R-KS), Hollings (D-SC), Inouye (D-HI), Ford (D-KY), Rockefeller (D-WV), Kerry (D-MA), Breaux (D-LA), Bryan (D-NV), Dorgan (D-ND), Wyden (D-OR).

Readers of *Pop'Com's* CB Scene have been quick to react. Allow me to let you look over my shoulder as I reply to some of the e-mail I have received. Perhaps the insights they provide can help you make up your mind about where you stand.

Lee Agness <PRONG@webtv.net> of Paulding, Ohio writes "I've been a CBer for 25 years and have had no problem with TVI, because I run a "clean" station. I e-mailed Senator Feingold and told him what I thought about his bill. Little good it will do right? But thanks for letting

everyone know what's going on." Lee, thanks for taking the time to write the Senator and myself. By the way, what DO you think of the bill?

Mike "mdull" <mdull@dave-world.net>, location unknown, wrote, "I have read *Pop'Comm* for the last year or so. Started out with scanners then CB and now tech class ham all in the last year or so. I agree with you. I would like to see this bill pass, but it is too vague on language. Like everybody else, we have people who are running excess power and out of band. I think this would be a step in cleaning up CB so we all can have less interference. I'm tired of Joe Blow down the street pushing his 220-watt amplifier to talk to his friend across town wiping out the whole band. If there was some enforcement, things would improve for everyone. Right now its like Tombstone. The guy with the biggest amp rules. It's time to bring in Wyatt Earp and the local marshals and bring some order to this band." Mike, the vagueness of the bill is the single biggest concern the bill's supporters have. Our editor, Harold Ort, has also written the Senator. He suggests adding the following line, "Upon receipt of at least two independent complaints of radio frequency interference (RFI)," to (f) (1) prior to the words "a state or local government." I hope we can get the line added. Not the perfect answer, but it should help keep frivolous complaints (and investigations) to a minimum.

If anyone needs a little historical **pro**-**spective** on just why preserving the integrity of the CB service is important and just how aggravating over-regulation can be, a note from Donald A. Jeffrey, <boallan@aol.com>, an R.F. Engineer from Monrovia, California may be just what the doctor ordered. He writes, "I just put down your article, "Death of CB Predicted", in the September issue of *Popular Communications*. I thought I would hit you with a few thoughts of mine (no doubt you are getting everyone's "two cents"). As a licensed Ham, in the Southern California area, I FOUGHT the loss of the 11-meter segment of the ham bands

"By the time Congress recessed for the summer in early August, S.608 had attracted two co-sponsors."

back in the mid to late 1950s. However I found that I soon became a licensed citizens band station operator (11W3626), although I did not tell my fellow ham friends for fear of being laughed at. I never thought I would ever renew the CB license (then KFA3559) at the end of its term, but I had found that the 27 MHz spectrum so well regulated the band was a real joy to operate on. For the Jeep Club I was a member of, CB was a valued addition to our trail gear. The soft low hum of these vibrator powered, close range radios gave us a real sense of safety while our group was in remote areas. We formed the first REACT Unit in the area in 1963, the San Bernardino Valley REACT. All of the CB operators of the late '50s and early '60s were aware of the FCC's monitoring program. A simple infraction such as "... we will see you tomorrow. KFA3559, this is KFA1082 clear, have a good evening" and three days later KFA1082 was served with a "Notice of Violation," a Pink Slip. The violation? Saying, "have a good evening" AFTER stating "CLEAR." True story. The notice required a written response as to how the violation would be avoided in the future and a certificate from a local radio shop showing that the transmitter, a brand new Johnson Messenger (Black Face), had been checked for frequency, power output and modulation. Sound kind of picky? Well, it does, BUT it kept us all on our toes, and in later years we now wish the FCC was back enforcing the bands as it used to. We sure could have used them in the '70s and '80s.

Present day CB has many faults with all of the jokers and would-be clowns on the air. HOWEVER, the 2-meter ham band has turned into disaster in the Southern California and San Francisco areas. I

find that I am recommending CB to several groups who require low cost, small size, short range communications. Typically these groups are off road, automobile touring and military vehicle collector clubs.

Many of these folks have tried GMRS, itinerant frequencies, ham bands, and 49 MHz communicators. Off roaders have even taken their cell phones along with them on caravans and wondered why they couldn't communicate in the back country. Yes Ed, there is still a need for CB, and if used properly it brings part hobby and peace of mind to many. I agree, S.608 could be a good thing. A slight modification or two wouldn't hurt. You never know what a good thing is until it's taken away from you."

From another perspective, the perspective that I may be way out of line (oh oh, I've been discovered). Greg Sparacino, <gmspara@harborside.com> from Bandon, Oregon writes, "I, like many others do not like to give the government any more powers than they have now. If Congress would quit avoiding their responsibilities and take care of the REAL needs of the country, the FCC (as an example) would have the funding they need to carry out their job. The Congress is too busy selling off OUR (the peoples) spectrum rather than protecting it from the abusers. Instead, they push off their responsibilities on local government (with no funding).

There are, however, a couple of places I think you have "gone off the track," so to speak. You are worried that the law could be used against the folks who don't cause interference or bother anyone. They just work a little skip and possibly run a clean linear. Unfortunately, they are still breaking the law. Good or bad as the laws may be, we are a society run by the "rule of law." If we pick and choose which laws we want to obey or not obey, the fabric of society will break down—maybe not from working skip or using a linear, but if it's OK to ignore those laws then why not others. What's a little burglary if the victim is rich? I think you get the idea (and no I'm not saying CBers are bad people or burglars, etc.). If it's a bad law, work to get it changed or removed.

To expect any law enforcement agency to only enforce some laws is not realistic. That would be like a guy living in a quiet residential neighborhood calling the police and saying "there a few idiots in this area who are constantly speeding up and down the streets at 60 and 70 mph and don't have any mufflers. They are



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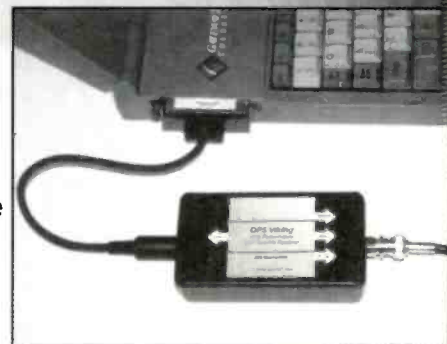
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"If Congress would quit avoiding their responsibilities and take care of the REAL needs of the country, the FCC (as an example) would have the funding they need to carry out their job."

going to run over the kids in the area, not to mention the noise problem. Oh, and by the way, please don't bother anyone else in the area. Some of us don't ever stop at stop signs, but no one minds. We only want you to stop the speeders. SORRY CHARLIE, AIN'T GONNA HAPPEN! They are going to enforce ALL the laws. No matter what the field if interest, it's always a few "bad apples" who spoil it for everyone else."

Greg, you have hit the mark there. Moreover, you are not alone. Take a look at the two following notes and then I'll try to address all three together.

Jim Oetting, <JOETTING@prodigy.net> writes, "I read with some interest your article in the most recent *Pop'-Comm*. I have a number of points. 1. It is a given that the FCC won't/can't enforce the current laws against such activity because of limited manpower. 2. Putting

the local government in the middle of the complainer and the FCC accomplishes little; now the local government must build a case against the problem operator. They do not have the expertise (which will cost more money), they do not have the money (no federal funding to help enforce the FCC rules) and they would end up with an opportunity/mandate to do something that FCC refuses to do. Even if they go to all the expense an effort of building a case, the problem operator simply appeals to the FCC and it will probably be overturned (however, the lawyers make out with a lot of money). If the local community successfully prosecutes its case and collects on the fine, does that mean that the FCC will automatically get it's fine roo—basically for not enforcing the laws it should be enforcing? 3. I put to you the following consideration: As with so many things in government and

lawmaking, how about we enforce the current laws (with the agency charged with enforcement) before we go about making any new ones. If the FCC can't or won't enforce it's own regulations, get rid of the agency and review the laws to see if they are necessary. If they are, charge the new federal agency with enforcing them. Just some thoughts from somebody who used to enjoy the hobby, but finally gave up because of all the "offending operators" who the FCC doesn't care about. Cheers."

Finally, we hear from <MPED7@AOL.COM>. "I enjoyed your article regarding proposed S.608. I am a fairly casual SWL with no CB background. Nonetheless, I enjoy reading about all aspects of the radio hobby found in *Pop'-Comm*, including CB. I should also mention that I am a lawyer in general practice (that is, not a specialist in FCC enforcement, etc.) I only write to point out that while CB aficionados may well have reason to fear the potential effects of the local enforcement described in the article, CBers will obviously get little sympathy outside the hobby for their concern that local authorities will move to enforce FCC regulations that are on the books (albeit not currently enforced by the feds) such as time rules, talking skip, etc. If one believes these rules to be unreasonable, should not the efforts of the hobby be directed at eliminating the offending regs instead of derailing S.608 (especially at this time when the FCC apparently has little interest in the CB spectrum)? Please keep me informed as to the progress of this legislation."

Gentlemen, I agree. If I had a magic wand, I would wave it and change several of the rules. However, the small stick I hold in my hand is but a mere twig that I grasped as I backed into the corner. I am now flailing it at the approaching leviathan in a desperate attempt to discourage the monster's attack. Sure, I would like to tame and train it, but lack the necessary resources. As I see it, our best hope is to mold and support S.608. Then, using the skills and momentum acquired, tackle the beast, and subdue it. In the meantime, HELLLLLPPPP!

Well, that's it for now. I look forward to hearing from you soon. Please send your comments, questions, suggestions, QSLs, and shack photos to me in care of the magazine. I can also be reached on the Internet where my address is <edbar-nat@global2000.net>. Better yet, if you can, catch me on the radio.

73—Ed.

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The Radio Connection

A LOOK BEHIND THE DIALS

Old Time Radio Shows, Satellites, and The "Man with a Million Friends"

Welcome back! Besides collecting and restoring old radios, the next fun thing is cornering unsuspecting visitors and demonstrating our sets. Alas, for the most part, the American AM BCB is mostly overrun with syndicated talk shows. Not the best presentation to show off your 1938 classic. It's not the best, but it does provide a timely topic for discussion in this edition of the Radio Connection! In my usual roundabout manner, I am going to suggest some unusual sources for OTR (Old Time Radio) shows.

My earliest memories of AM radio was during its twilight years—the late 1950s: a time when you could still find live variety programming being offered on the air. I vaguely remember mom listening to Arthur Godfrey's daily radio show, and to an endless litany of 15 minute soap operas. Alas, Arthur Godfrey's place at our kitchen table was cut dramatically short. It happened on the day he fired Julius LaRosa while the show was on the air. I suspect thousands of otherwise fine kitchen radios in other Italian-American households also faced a premature visit to the nearest rubbish barrel on that "darkest day" of radio broadcasting history!

I wish I could recall more about those old radio shows . . . But, that's the funny thing about nostalgia—it always seems to be for a time where memories just begin to fade, and are just out of our reach. Perhaps collector John Pelham states it best in his Webpage prologue:

"Why do I collect old radios? These old radios have a nostalgic attraction. Nostalgia for times I remember, and for times I'm too young to remember. Nostalgia for what is perceived by many to be better times. I wasn't alive, or living as an adult, in the world in the 1930s, 1940s, or 1950s, so I can't say if I agree that those times were better (I suspect they weren't). But one thing is certain: RADIO was better then. Both the broadcasts, and the sets themselves.

"Each radio is a time capsule, echoing

much about the era in which it was created and used. I can't help but imagine the lives and times of the designers, purchasers and users. I ask myself why certain design and marketing decisions were made and what programs were heard through these very radios. I think about how our culture was transformed by these devices."

"These radios are art. To their designers, appearance was as important as function. The radios I've collected appeal to me visually the way no modern appliance does . . . Each cabinet design was an artist's statement."

We will be featuring John Pelham's vintage Zenith radio collection in the near future, and tell you a bit more about his antique radio Web page.

I Remember WENN

The American Movie Classics cable network is a favorite around my household. I love watching those classic old

black-and-white movies, and having the chance to again enjoy performances by legendary actors. AMC is also producing an award winning half-hour original comedy show—"I Remember WENN".

The show depicts a "Hollywood" version of life in a small 1938 Pittsburgh radio station, station WENN. (I do wonder how the station's 1940ish vintage Zenith console time-warped back to 1938, however). Despite being a bit corny and a tad maudlin, it is worth watching, if only to watch Mr. Foley, the sound-effects man, do his bit.

The Future of AM Radio

Many nights I awake in a cold sweat. There's a lot of talk about new technologies such as digital radio these days; and whether AM or FM broadcasting as we know it will around in the next 10 or 20 years. I enjoy collecting old radios, and I very much enjoy listening to them! Unfortunately, none of them seem to cover the upcoming digital L-band



The cast and crew of station WENN. (Courtesy American Movie Classics)

microwave frequencies. So, what happens when the last American or Canadian AM broadcast station goes dark? What good are old radios if I can only look at them and not listen them?

Enter Microbroadcasting

Many vintage radio buffs use cassette tape machines, and low-powered AM transmitters to "broadcast" old radio shows to radios in their homes. Sources for these old shows advertise regularly in Antique Radio Classifieds, and Antique Electronic Supply offers a simple low-power AM transmitter kit for this purpose. I want to avoid the hassle of handling, storing and changing tapes, and the cost of maintaining a large library. There is a better way.

Tuning Into The Vast Wasteland

As I get older, I notice I wake up a lot more often during the night. So it was on one recent weekend when I ended up crashing on the sofa to catch some late-night TV. The 31" screen makes a good nitelight, and 220 channels give new meaning to the term "vast wasteland!" Surfing through the channels, I was surprised to find myself listening to a vintage radio show! I must be dreaming! Here I am, surrounded by the latest in digital video and Dolby Digital technology, listening to a 1930s radio show beaming in from a satellite orbiting 23,000 miles over the equator. A summer rerun of a WENN episode? Must be, but wait . . . who is this deep-voiced host rattling my subwoofer while wishing me a fond 73?

Radio Yesterday USA Superstation

I was listening to Radio Yesterday USA on Music Choice channel 530. Music Choice is a 31-channel music service that is offered with DirectTV's DSS satellite programming packages. Music Choice also airs a 24-hour "Big Band" music channel; another great source of program material for our vintage sets! The bad news is that Music Choice is only airing the Yesterday USA shows in two one-hour time slots per day. More on this later.

My readers who are C-band dish owners can listen to Yesterday USA on the 6.8-MHz wideband audio subcarrier for WGN, which is carried on satellite Galaxy 5 (G-5), channel 7. It is also car-



A 10-foot satellite dish is needed for C-band satellite services. The dish belongs to my friend, and fellow collector, Peter Eslinger.



Author's twin DDS Ku-band dishes. One system is for the family, the other serves Pete's radio den TV and also provides vintage radio audio for his AM microbroadcasting. Dishes are a mere 18-inches in diameter, but signals can go away during heavy downpours!

ried on the Out Door Channel 7.4 MHz wideband audio subcarrier on Galaxy 1, channel 24; and on numerous cable systems. C-band and Ku-band DDS receivers have line-level audio outputs to supply an audio source for your in-home microbroadcast AM transmitter. CATV subscribers will need a splitter feeding the signal to a low-cost FM receiver parked on the FM channel used for the YUSA broadcasts for the audio source.

Am I suggesting you run and out buy a satellite TV system just for vintage radio programs? Yes, and no. DDS satellite dishes that retailed for over \$700 a year ago are now available for under \$200 if you shop carefully. I suspect the prices will drop even more dramatically as the competition heats up between the cable TV and the satellite folks. A good-sized vintage radio show cassette tape library and cassette player can also represent a substantial investment.

The Man with a Million Friends

The deep-voiced gentleman I heard on Radio Yesterday USA was Bill Bragg. Bill is the driving force behind superstation Yesterday USA; his studios and control room are located in a converted spare bedroom in his home in suburban Richardson, Texas.

Yesterday USA (YUSA) was born in 1983, when the former Nostalgia Channel allowed Bill the use of one of their satel-

lite audio subcarriers. Bill tells me he has access to at least 100,000 vintage programs; and many more that await restoration before they are airworthy. Bill is fortunate enough to have met and worked with many of the stars and actors of those vintage shows during his career in radio broadcasting, hence his claim of being the "man with a million friends. And, his



Bill Bragg and his co-host Big-Bird Bragg.

Old Time Radios! Restoration and Repair

By: Joseph Carr
Publisher: TAB Books
ISBN: 0-8306-3342-1
Price: \$19.95

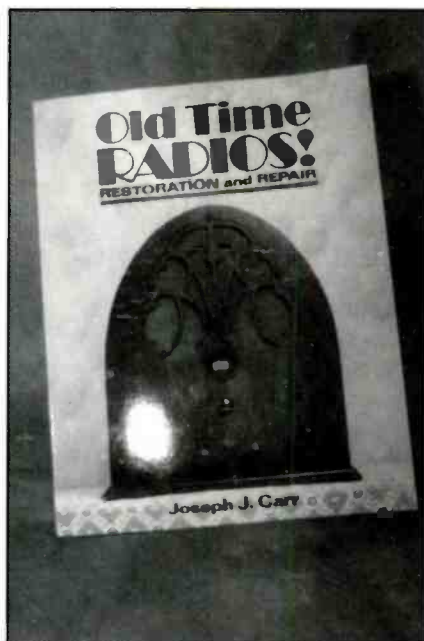
Available: Through Antique Electronics Supply and the Antique Radio Classifieds bookstore.

By Peter J. Bertini

Author and columnist Joe Carr is well-known to *Popular Communications* readers. What you probably don't know is that Joe is also an avid vintage radio collector, and that he has written an excellent book on this very subject!

Joe's book is more technical in nature than historical, dealing out strong doses of theory in easily read and digestible layman's English. In fact, while reading through the book it I was surprised by the lack of vintage radio photos. But, this is good. Joe uses the space to give the reader a good understanding of receiver power supplies, audio sections, frontends and IF's, and also covers AM detectors, AVC circuits and test equipment in the early chapters. Joe goes on to more advanced material, showing how to trouble-shoot intermittents, radio alignment techniques, electrical safety and how to repair water damaged electronics. What you won't find is chapters dealing with veneer cabinet repairs, refinishing, etc.

The book has universal appeal, both to the vintage radio and audio restorer, and also to those involved with more advanced technologies since most of the theory and troubleshooting advice is equally applicable to modern solid-state circuitry. I heartily recommend you find a space on your bookshelf for this book.



being able to relate many fascinating behind-the-scene tidbits about those OTR shows is something you won't find on cassette tapes.

The YUSA Programs

Bill does daily live shows and specials; while 15 other shows, 30 to 90 minutes in length, are produced by volunteer on-air personalities. Together they provide about 77 hours of new material for each two-week programming period. Bill has devised a clever program scheduling system that avoids having one show appear more than once in a time slot over the two-week programming period. It's even possible to hear, or tape, each show in order by listening in on select three-

hour periods on a daily schedule.

Here is a small sampling of YUSA's offerings: Ronnie Milsap's Radio Classics; The Chem Terry Show (big band music); The Randy Perry Show (country music); Frank Bresee's "All Star Western Theater" and Ed Livingstone's "Saturday Heroes" shows feature westerns and western music. The second oldest radio show in America, "Renfro Valley Sunday Morning Gatherin'" also airs! And, there is the "Crystal Set" with John Boyles; "Uncle Ed's Magnificent Time Machine," hosted by Ed Bolton, (Ed was the former lead singer with Wayne King the "Waltz King"); "When Radio Was/Mystery Playhouse"; and others, too numerous to list here.

Tragedy almost struck YUSA when

How To Contact Yesterday USA

Yesterday USA Superstation
2001 Plymouth Rock Drive
Richardson, TX 75081-3946
Information: 972-889-YUSA
Fax: 972-889-2FAX
Call-in lines: 972-889-BILL
972-889-TALK

E-mail Music Choice at <Comments@MusicChoice.com> or call 201-864-5421

Bill was diagnosed with cancer in 1992, ending his career as a broadcast engineer. While undergoing treatment and surgery (successful, we might add!) Bill aired his live Sunday night show from his hospital bed. Radio superstation Yesterday USA is not supported by commercial advertising. Its programming is provided free-of-charge to cable TV and satellite music services. Funding is provided by listener donations and by Bill reaching down deep into his own pockets. YUSA has a homepage and audio feed available on the internet at <<http://www.yesterdayusa.com>>.

Bill's internet listenership alone would place him in the top-10 in the Dallas radio market! He has put together an information packet showing how you can get your local cable company to carry his programming, but please enclose \$1.20 to cover his expenses! Station supporters receive program guides and other membership benefits. One other thing, Bill and I would appreciate it if you would drop an E-mail to the folks at Music Choice; tell'em you want YUSA programming available 24-hours-a-day! Info on contacting YUSA and Music Choice is shown at the end of this article.

Big Bird Bragg

The parrot? I almost forgot! Bill's on-air co-host is Big Bird Bragg, the talking parrot. I understand Big Bird is quite a radio celebrity on YUSA, he even has his own telephone line and FAX!

Well, that's it for this month. I hope you enjoyed the column, your suggestions for future column subjects are always welcome! Next month its back on-track with more on vintage radio repairs—when the "Radio Connection" shows how to rebuild and identify those strange Philco black block capacitors. ■

Broadcast DXing

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

BY BRUCE CONTI
e-mail: <BAConti@aol.com>

The AM Broadcast Band DX Season Is In Full Swing. Here's How To Join the Fun . . .

If you're new to the DX hobby, or just haven't listened in a while, now's the time to give it a try. There's plenty to be heard across the AM dial. Here's an AM broadcast band or mediumwave primer, to serve as an introduction to the DX opportunities available.

Domestic DX

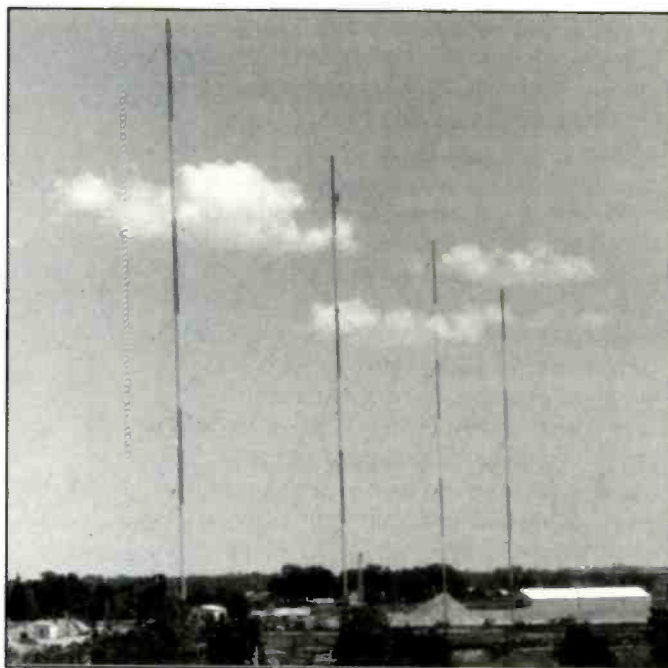
Despite the increased congestion due to the number of lower power regional stations allowed to broadcast full time on the clear channels, DXing coast-to-coast is still possible. A number of stations continue to command large listening areas. Stations like KFI on 640 kHz from Los Angeles, WOAI on 1200 from San Antonio, WWL on 870 from New Orleans, WHO on 1040 from Des Moines, WGN on 720 from Chicago, WJR on 760 from Detroit, WLW on 700 from Cincinnati, WSB on 750 from Atlanta, WCBS on 880 from New York, and WBZ on 1030 kHz from Boston among others, continue to be the mainstays of overnight AM radio listening. Note that many of these same stations have retained their three-letter calls from the early days of radio, making QSLs from these stations collectibles of historic significance.

In addition to the widely-heard clear channel stations, the regional and "graveyard" local frequencies offer their own DX challenges. These frequencies along with the clear channels can be most interesting during local sunrise and sunset periods, when stations are changing power and antenna patterns, and the ionosphere is also making adjustments with the rise or fall of the sun. On 1450 kHz for example, I can typically log stations from as many as 10 states and provinces in just a couple of sunset DX sessions. Clear channel frequencies like 1040, 1070, 1550 and 1580 kHz are popular sunset and sunrise roosts where just about anything can pop up at a moments notice, but stations may disappear just as quickly. Always have a tape recorder handy to record all the action.

International DX

Mediumwave broadcast radio stations in the Americas with few exceptions are assigned frequencies from 530 to 1700 kHz at 10 kHz intervals. The rest of the world for the most part is on a 9 kHz plan, with stations assigned frequencies from 531 to 1701 kHz at 9 kHz intervals. Thus many broadcasts from overseas can be heard between our domestic stations. While a coastal location may have an advantage over inland sites, many of the

“. . . I can typically log stations from as many as 10 states and provinces in just a couple of sunset DX sessions.”



Coast-to-coast DX is still possible on the AM broadcast band. These towers belong to an unidentified AM station in the Denver area. (Photo by Patrick Griffith, CO)

more powerful signals from Europe and Africa can be heard well into the midwest. On a recent trip to Ohio, Croatia was heard on 1134 kHz with a good signal, using phased 500-foot wires. And previously, the same station was heard in Knoxville, Tennessee, using two 50-foot wires strung out on the balcony from my hotel room. So a prime location and hundreds of feet of wire aren't always necessary to hear your first transoceanic broadcast. I've listed a number of the most often heard transatlantic stations. The best times to try for transatlantic DX are typically at local sunset and just before transmitter site dawn. Transpacific DX will be best from transmitter site sunset to your local sunrise.

Transatlantic DX

612	Morocco	RTM A network; parallel 207 kHz longwave.
621	Canary Islands	Radio Nacional de Espana "RNE I—Radio Uno".
684	Spain	Radio Nacional de Espana "RNE I—Radio Uno".
693	England	BBC Radio 5 Live; news, talk, sports, parallel 909 kHz.

711	Western Sahara	RTM network (Morocco).			
765	Switzerland	Radio Suisse Romande, in French, classical music.			
855	Spain	Radio Nacional de Espana "Radio Uno y Cinco".			
864	Egypt	Holy Koran programs often parallel 819 kHz and shortwave 12050 kHz.			
891	Algeria	Arabic and French language, parallel 153 kHz longwave.			
909	England	BBC Radio 5 Live; news, talk, sports, parallel 693 kHz.			
954	Spain	Radio Espana; independent news and talk.			
1044	Morocco	RTM network, and SPAIN Radio San Sebastian RNE network.			
1089	England	Talk Radio synchronos; telephone talk parallel 1053 kHz.			
1098	Slovakia	Slovensko 1; news, easy listening and pop music programs.			
1134	Croatia	Hrvatska Radio-Televizija; mix of local and international music, news in English.			
1215	England	Virgin Radio; pop/rock hits, music news.			
1314	Norway	NRK; news and talk, local and pop music.			
1349	Mauritania	Radio Mauritanie; Arabic programs parallel 4845 kHz shortwave.			
1422	Germany	Deutschlandradio; news, classical music, parallel 756 kHz and long wave 153 kHz.			
1512	Belgium	Radio Vlaanderen Int'l relay,			
1521	Saudi Arabia				including "Brussels Calling" in English.
1530	Sao Tome				BSKSA; parallel 9555 or 9870 kHz shortwave, 0300 UTC sign-on.
1530	Vatican				VOA relay; parallel shortwave frequencies including 7290 kHz.
1544	Algeria				Radio Vaticana; some times parallel 1611 kHz and shortwave frequencies.
1548	Kuwait				Political programs and music in Arabic and Spanish.
					VOA relay.

Many of the European stations will become more difficult to hear once cycle 23 sunspot activity begins to increase. Solar activity is presently at a minimum between cycles 22 and 23. That's when it's time to shift the focus to Caribbean and Latin American DX. Auroral conditions can knock out stations from northern latitudes, leaving frequencies open to new and interesting DX. Of course, if you live to the south or closer to the equator, then the aurora will have less of an effect on reception. In any case, mediumwave has one distinct advantage over shortwave. A goal of many shortwave DXers is to log or QSL broadcasts from as many countries as possible. But not all countries have shortwave outlets, as is the case for a number of the Caribbean island nations. Most of these countries do have readily receivable *mediumwave* stations, some with powerful signals that make it over the Rockies to the Pacific coast. And some Caribbean stations continue to operate on "split" frequencies, at the midpoint between the standard 10 kHz frequency assignments, and thus are essentially alone on their own clear channels. Again, I've listed some targets. In addition to the

Applied for Permits to Construct New FM Stations

AL	Greensboro	99.1 MHz	
AR	Dermott	105.7 MHz	
AR	Jonesville	90.5 MHz	
CA	Huron	98.3 MHz	
CA	Leemoore	88.5 MHz	
CA	Pleasanton	103.7 MHz	(KKSF booster)
CA	Ridgecrest	91.9 MHz	
CA	Santa Clara Valley	104.3 MHz	(KBIG-FM booster)
CO	Milliken	107.1 MHz	(KSIR-FM booster)
CT	Huntington	88.1 MHz	(WMNR booster)
IA	Marion	89.9 MHz	
ID	Rathdrum	90.3 MHz	
IL	Geneso	88.1 MHz	
IN	Goshen	89.9 MHz	
KS	Galena	104.3 MHz	
KS	Great Bend	89.7 MHz	
KY	Somerset	90.5 MHz	
LA	Alexandria	106.9 MHz	
LA	Ball	105.5 MHz	
LA	DeQuincy	89.1 MHz	
LA	DeRidder	91.1 MHz	
LA	Norco	91.1 MHz	

LA	Plaquemine	88.1 MHz	
MI	Rogers Hts.	88.1 MHz	
MI	Rogers Hts.	91.9 MHz	
MO	Dixon	92.1 MHz	
NE	McCook	98.5 MHz	
NJ	Cape May	88.1 MHz	
NV	Ely	96.7 MHz	
NY	Albion	95.5 MHz	
NY	Williamsville	90.7 MHz	
OH	Rushville	88.5 MHz	
TN	Brownsville	88.3 MHz	
TX	Marble Falls	88.5 MHz	
TX	Paris	89.3 MHz	
TX	Zapata	91.5 MHz	
UT	Salt Lake City	92.1 MHz	(KLTE booster)
VA	Goodland	100.5 MHz	
VI	Frederiksted	101.7 MHz	
WA	Everett	90.7 MHz	

Canceled or Revoked

KQMO	Ash Grove, MO	104.1 MHz	3 kW
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Reinstated

WCEF	Ripley, WV	98.3 MHz	
WTTY	Whiteville, NC	1540 kHz	1 kW

Applied for Permits to Construct New FM Stations

AL	Greensboro	99.1 MHz	
AR	Dermott	105.7 MHz	
AR	Jonesville	90.5 MHz	
CA	Huron	98.3 MHz	
CA	Leemoore	88.5 MHz	
CA	Pleasanton	103.7 MHz	(KKSF booster)
CA	Ridgecrest	91.9 MHz	
CA	Santa Clara Valley	104.3 MHz	(KBIG-FM booster)
CO	Milliken	107.1 MHz	(KSIR-FM booster)
CT	Huntington	88.1 MHz	(WMNR booster)
IA	Marion	89.9 MHz	
ID	Rathdrum	90.3 MHz	
IL	Geneso	88.1 MHz	
IN	Goshen	89.9 MHz	
KS	Galena	104.3 MHz	
KS	Great Bend	89.7 MHz	
KY	Somerset	90.5 MHz	
LA	Alexandria	106.9 MHz	
LA	Ball	105.5 MHz	
LA	DeQuincy	89.1 MHz	
LA	DeRidder	91.1 MHz	
LA	Norco	91.1 MHz	
LA	Plaquemine	88.1 MHz	
MI	Rogers Hts.	88.1 MHz	
MI	Rogers Hts.	91.9 MHz	
MO	Dixon	92.1 MHz	
NE	McCook	98.5 MHz	
NJ	Cape May	88.1 MHz	
NV	Ely	96.7 MHz	
NY	Albion	95.5 MHz	
NY	Williamsville	90.7 MHz	
OH	Rushville	88.5 MHz	
TN	Brownsville	88.3 MHz	
TX	Marble Falls	88.5 MHz	
TX	Paris	89.3 MHz	
TX	Zapata	91.5 MHz	
UT	Salt Lake City	92.1 MHz	(KLTE booster)
VA	Goodland	100.5 MHz	
VI	Frederiksted	101.7 MHz	
WA	Everett	90.7 MHz	

Granted Permits to Construct New FM Stations

CA	California City	106.9 MHz	3 kW
CA	Newberry Springs	103.7 MHz	
HI	Hilo	91.1 MHz	
IA	St. Ansgar	95.5 MHz	
IL	Kanakakee	88.3 MHz	
ND	Hettinger	93.5 MHz	
NY	Jeffersonville	102.1 MHz	6 kW
SD	Redfield	97.7 MHz	
TN	Elizabethton	90.5 MHz	
TX	Denver City	97.5 MHz	
TX	McCamey	95.3 MHz	

Applied for Permits to Construct New AM Stations

FL	Marco Island	1660 kHz	(WODX)
NY	Hawthorne	1090 kHz	50 kW/250 watts
NY	Waddington	670 kHz	
WA	Renton	1620 kHz	(KRIZ)
WY	Casper	1400 kHz	

Requesting to Modify AM Facilities

KUYO	Evansville, WY	830 kHz	Seeks 50 kW daytime.
WAKM	Franklin, TN	950 kHz	Seeks to change day power.
WFLA	Tampa, FL	970 kHz	Seeks power change.
WINR	Binghamton, NY	680 kHz	Seeks to change day power.
WJCM	Sebring, FL	960 kHz	Seeks to change freq., power.
WUNN	Mason, MI	1110 kHz	Seeks to operate outside community of lic.

Changed FM Call Letters

New	Old	
KABG	KTMN	Los Alamos, NM
KASK	KASZ	Fairfield, CA
KBFB	KRRW	Dallas, TX
KELT	KXEZ	Riverside, CA
KGGF-FM	KJGN	Fredonia, KS
KHFD	KAUU	Hereford, TX
KHUG	KLRA-FM	England, AR
KKMT	KCWX	Columbia Falls, MT
KKPN	KQUE	Houston, TX
KLVJ	KLVW	Julian, CA
KMLT	KNJO	Thousand Oaks, CA
KQEZ	KCYT	Houston, AK
KROW	KFXJ	Abilene, TX
KRZN	KRZQ	Santa Fe, NM
KSNA	KKNG	Laramie, WY
KWMX	KVTF	Williams, AZ
KYBB	KIXK	Canton, SD
WGCU-FM	WFSP-FM	Ft. Myers, FL
WHK-FM	WTOF-FM	Canton, OH
WHKX	WBDY-FM	Bluefield, VA
WHQX	WBBY	Cedar Bluff, VA
WKRK-FM	WYST	Detroit, MI
WKZB	WQGL	Butler, AL
WLDC	WDWT	Dwight, IL
WLZK	WMUF-FM	Paris, TN
WMXN-FM	WMXN	Stevenson, AL
WOUH-FM	WOUH	Chillicothe, OH
WPKK	WKVE	St. Mary's, PA
WPTC	WWAS	Williamsport, PA
WQEJ	WATP	Johnstown, PA
WQLB	WAOU	Tawas City, MI
WXCD	WKXK	Chicago, IL
WXLO	WXLO-FM	Fitchburg, MA
WYBA	WEJM	Lansing, MI

Changed AM Facilities

KLO Ogden, UT 1430 kHz Changed power.
WEVR River Falls, WI 1550 kHz Changed power.

Changed FM Frequency

WCUP L'Anse, MI 106.1 MHz Moved to 105.7 MHz.

New AM Call Letters Issued

KAVP Colona, CO

Pending AM Call Letter Changes

New	Old	
KAXX	KFFR	Eagle River, AK
KLMS	KMEM	Lincoln, NE
KPAD	KTNO	Hereford, TX
KQUE	KNUZ	Houston, TX
KTOD	KFCA	Conway, AR
WACA	WMDO	Wheaton, MD
WAHT	WCCP	Clemson, SC
WBDY	WHYS	Bluefield, VA
WBQB	WKYN	Florence, KY
WDAR	WDZS	Darlington, SC
WELL	WRKG	Lorraine, OH
WEOA	WJPS	Evansville, IN
WGIV	WBAV	Charlotte, NC
WJYI	WLZR	Milwaukee, WI
WKRC	WCKY	Cincinnati, OH
WLKA	WCGR	Canandaigua, NY
WMMV	WMYM	Cocoa, FL
WMXN	WFPA	Ft. Payne, AL
WNAI	WXKN	Newburg, KY
WUZZ	WCIZ	Waterton, NY
WWWJ	WBOB	Galax, VA

New FM Call Letters Issued

KAVD	Limon, CO
KAVG	Beulah, ND
KAVH	Eudora, AR
KAVJ	Sutherland, OR
KAVK	Many, LA
KAVO	Borger, TX
KEIN-FM	Conrad, MT
KESP	Payson, AZ
KFGA	Clayton, LA
KIXK	Linden, TX
KSWN	McCook, NE
KYSO	Albion, NE
KWKM	St. Johns, AZ
WAUA	Petersburg, WV
WAUE	Beaver Dam, KY
WBHR	Sauk Rapids, MN
WBMV	Mt. Vernon, IL
WOSB	Marion, OH
WPRN-FM	Lisman, AL

Pending FM Call Letter Change

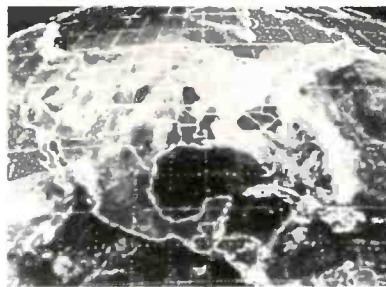
New	Old	
WCVT	WVMX	Stowe, VT

Caribbean, there are a number of Latin American stations that are commonly heard throughout North America, such as Radio Caracas Radio from Venezuela on 750 kHz, Colombia's RCN stations on 760 and 770, and of course Mexico on several frequencies including 540, 730, and 900 kHz. At my location in the northeast, Caribbean and Latin American signals have seemed to peak in the post-dusk and pre-dawn hours during this current period of minimum sunspot activity.

Caribbean DX

530	Turks & Caicos	Radio Vision Cristiana; relays WWRV-1330 New York.
535	Grenada	GBC local and British Broadcasting Corp. (BBC) & VOA news, sports, talk.
555	St. Kitts & Nevis	Radio ZIZ; island news, sports, talk, and music.
580	Puerto Rico	WKAQ; Radio Reloj news, talk.
595	Dominica	DBS; news, West Indies sports, urban contemporary and island music.
600	Cuba	Radio Rebelde; harmonics often heard on 3000 and 3600 kHz shortwave.
610	Trinidad & Tobago	ICN; relays 91.5 FM Indian music program early mornings.

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630	Puerto Rico	WSKN; "La Super Cadena" news, talk.
640	Guadeloupe	Radiodiffusion Francaise d'Outre (RFO); sometimes parallel France-Inter 162 kHz.
660	St. Lucia	Radio St. Lucia; news, sports, island music, and religious programs.
690	Anguilla	The Caribbean Beacon; often parallel Dr. Gene Scott short-wave broadcasts.
700	Jamaica	JBC Radio 1; local news, reggae, gospel, and urban contemporary music.
780	British Virgin Islands	ZBVI; local and BBC news, island music.
800	Netherlands Antilles	Radio Transmundial; religion in Spanish.
830	St. Kitts & Nevis	Trinity Broadcasting Network; parallel KTBN 7510 kHz shortwave.
860	Dominican Republic	Radio Clarin; merengue, salsa, news and sports in Spanish.
895	St. Kitts & Nevis	The Voice of Nevis (VON Radio); news, talk, soca music.
1020	Turks & Caicos	Caribbean Christian Radio, Superpower 1020.
1100	Antigua	ZDK; "Magic Radio" soca and urban contemporary music.
1160	Bermuda	VSB3; relays BBC World Service.
1505	Anguilla	Radio Anguilla; local news and music.
1610	Anguilla	The Caribbean Beacon.

Don't Forget The X-Band

The expanded band frequencies of 1610 to 1700 kHz today may closely represent what it was like in the early days of radio, when it didn't require much power to be heard coast-to-coast. Such has been the case with the two travelers information stations on 1640 and 1680 kHz from Dallas-Ft. Worth International Airport. These WQO767 stations have been heard from as far away as New Zealand, broadcasting American Airlines arrival and departure information. And then of course, there are the first two stations authorized to broadcast on the expanded band; KXBT Vallejo, California now on 1640 and WJDM Elizabeth, New Jersey on 1660 kHz.

Australia has also been quick to make use of the expanded band. On 1620 kHz you might find 2AM Radio Edge with Greek programming, 4ADR Australian Dance Music Radio, or Arabic language programs on Radio Lebanon. The Hospital Radio Network is on 1629, station 2ME Radio Lebanon is on 1638, and 2MM Greek Radio is on 1665 kHz. These were all heard by the Grayland, Washington DXpedition group (John Bryant, Jean Burnell, David Clark, John Fisher, Nick Hall-Patch, Walter Salimaw) on the Pacific coast over the summer. And Australia has been logged on mediumwave from as far away as

Massachusetts at one time or another, so these X-band stations should be quite possible to hear in many parts of North America, given the right conditions.

Getting Started

Remember, you don't need to break the bank to enter the world of mediumwave DXing. Just tuning around at night on your home stereo, clock radio, portable boom box, or car radio will reveal DX opportunities. If you live in an electrically noisy environment, then consider using a portable receiver or car radio at a remote site such as a local park or beach, and enjoy DXing under the stars. Once you've become familiar with AM broadcast band DXing, you may want to upgrade your equipment or antenna system. The next step might be to purchase a mid-priced receiver like the Sony ICF-2010 or Yaesu FRG-100B, where you can take advantage of additional features to enhance DX signals, such as synchronous tuning and a selection of IF filters that can be upgraded. Often a receiver is only as good as its antenna. If you have the room outdoors, then a wire antenna of at least 50 feet in length will do wonders for your AM broadcast band listening. A loop antenna can also improve signals by providing directional reception and nulling of interference. If your receiver doesn't have an antenna input, then loop antennas that couple to the receiver's internal ferrite bar antenna without a mechanical connection, such as Kiwa, Fala Electronics, and Select-A-Tenna models, can be effective entry-level DX tools. But transoceanic DX will be difficult using a loop antenna, unless you're lucky enough to be at a seacoast location. Outdoor wire antennas will tend to pick up less electrical noise from sources within the home, and if mounted high enough off the ground will do a better job of intercepting transoceanic signals that typically arrive at low angles off the horizon.

Once you become familiar with reception conditions at your location, then you can start experimenting with more elaborate antenna systems, such as sloping wires and Beverage antennas, along with antenna tuners, phasing units, and amplifiers, for the more challenging and rare DX catches. Eventually, you can upgrade to top-of-the-line receivers like the Drake R8A, Lowe



You don't need a top-of-the-line receiver to enjoy BCB DX. Any mid-priced receiver—even your car radio—is capable of picking up long-haul signals on the broadcast band.

“... a prime location and hundreds of feet of wire aren't always necessary to hear your first transoceanic broadcast.”

HF-225 Europa, AOR AR7030, or Japan Radio 535D for down in the dirt hard-core DXing. But the main message here is that you don't need to spend large sums of money to get started. Just turn on the radio and begin QSLing the clear channels, and you'll be well on your way to becoming a seasoned AM broadcast band DXer.

Other than equipment, it's worth obtaining basic reference materials, to assist with identification of stations. The *NRC AM Log* will provide the latest information on domestic AM stations in the United States and Canada, including format, network affiliations, hours of operation, and mailing addresses. And the *World Radio and TV Handbook* is an invaluable reference for identification of foreign broadcasts and shortwave or longwave parallels. Both are available through a number of mail-order distributors.

And finally, to further enhance your enjoyment of AM broadcast band DXing, consider joining a DX club. The two major North American clubs dedicated to mediumwave DX are the National Radio Club (NRC), P.O. Box 5711, Topeka, KS 66605-0711, and the International Radio Club of America (IRCA), P.O. Box 1831, Peris, CA 92572-1831. The Ontario DX Association (ODXA), P.O. Box 161, Station A, Willowdale, ON M2N 5S8, also covers mediumwave, along with shortwave and other aspects of the radio hobby. All three clubs publish bulletins at

regular intervals, and offer member discounts on a variety of technical and hobby-related publications. Don't forget that it's common courtesy to include a couple of stamps to cover return postage when requesting membership information.

So why not turn on your AM radio tonight and report what you're hearing to Broadcast DXing? I'm interested in hearing about your broadcast DX experiences, both AM & FM. Please feel free to share your loggings and tips, along with shack photos, QSL info, news and promotional items, and any questions and comments. If you wish to communicate direct, I can be reached via e-mail at <baconti@aol.com>. I'll be looking forward to hearing from you. 73

Editor's Note: A special welcome to our new "Broadcast DXing" columnist, Bruce Conti of New Hampshire. Bruce is an electrical engineer with a Bachelor's degree from the University of Massachusetts, Lowell. He's currently a Project and EMC/Safety Engineer at Lexicon, Inc. in Massachusetts and a part-time student at Franklin Pierce College. Bruce has been a mediumwave DXer since about 1975. He joined the National Radio Club after reading about it in an electronics magazine. He's also a member of the North American Shortwave Association, Ontario DX Association, Grupo DX Mediterraneo, and Boston Area DXers. His main interest is international mediumwave DXing, although he's active in SWLing and occasionally does some FM and TV DXing. His home DX setup consists of two noise-reduced 30-meter wires sloping south and east, with a Drake R8A as the primary receiver and a Mark Connelly-designed L-C tank antenna phasing unit used for directional mediumwave reception.

Pirates Den (from page 35)

WDTO, 6955 USB was heard by Love at 0355 playing rock, and a computerized voice talking about testing systems and mentioning the West Coast.

KAOS was heard by Love in South Carolina on **6955 USB** at 0410 talking with Captain No Beard and passing along computer information.

Chris McLees of Iowa heard **He Man Radio** on **6955 USB** at 0233 claiming to be broadcasting from somewhere in Ohio. They gave information about a t-shirt, but the signal was too hard to copy so Chris couldn't get details. They signed off with some sort of theme.

Owsley had an **unidentified station** on **6949.85 USB** at 0309 to 0320 featuring commercial parodies, a slow-speaking announcer and what sounded like '50s rock. At 0313 there was a parody of the song At the Hop. The signal faded out by 0320 UTC.

That will do it for this time. Keep those logs coming my way! And please use UTC only—don't make me try and convert your local time to UTC. Thanks! Next month—with your continued help—I'll have another batch of pirate radio logs for you.

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YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Amelia Earhart to Linda Finch

First, I'd ask readers with e-mail access to note my new e-mail address above. Good old 'snail mail' works too, you can send direct to P.O. Box 4222, Youngstown, Ohio 44515-4222 or in care of *Pop'Comm*. The last way is via *Pop'Comm's* FAX number, 516-681-2926. Feel free to send news, logs, information or questions anytime.

Readers may have been lucky enough to log the Linda Finch "Amelia Earhart Commemoration Flight" a while back during her attempt to duplicate the route taken by Earhart. Finch, along with navigator Peter Cousins, used callsign N42GT throughout most of the flight, while the photo plane accompanying her was N44RD. The Finch aircraft was heard throughout the flight on the various HF ATC route frequencies. Back in 1937, Amelia Earhart, with navigator Fred Noonan, used the callsign AKHAQQ. Interestingly enough, in doing some research on Linda Finch and the invariable links to Amelia Earhart, I discovered the frequencies used in Earhart's Lockheed Electra during her ill-fated flight. According to actual radio logs kept by the Coast Guard cutter *Itasca* (callsign NRUI), who had been tasked to provide support to the Earhart flight, only three HF frequencies were available to Earhart. These were: 3105.0 kHz, 6210.0 kHz, and 7500.0 kHz. The cutter's transmitters were arranged so that they were unable to send voice on 7500.0 kHz, so they sent weather messages over that frequency in morse code. However neither Earhart nor Noonan could copy code. It all makes for some interesting historical utility station reading. Those on the net can check these sites for more info: Deepseeker Online <<http://www.deepseeker.com/jo/earhart/aej1.html>>, TIGHAR <<http://www.tighar.org/Projects/AEdescr.html>>, National Air & Space Museum <<http://ceps.nasm.edu/GALLERIES/PHOTO1/VEGA.GIF>>, and the U.S. Navy historical information office at <<http://www.history.navy.mil/faqs/faq3-2.htm>>.

Robert Ward, in Halifax, Canada, sent



Amelia Earhart's HF-equipped Lockheed Electra (photo courtesy Deepseeker On-Line)

information about some changes for the Canadian Coast Guard that recently occurred. Robert reports that Yarmouth Coast Guard Radio, VAU, has been closed, and the operators relocated to the Coast Guard Base in Saint John, New Brunswick. Yarmouth radio and Fundy Traffic have been combined as Fundy MCTS (Marine Communications and Traffic Services). The new "Fundy Radio" uses the callsign VAR, which of old was the callsign of Saint John Coast Guard Radio, who disappeared sometime in the early 1980's. Concurrent with the move, all of Yarmouth's CW services have been taken over by Sydney CG Radio, VCO, which also took over Halifax CG Radio's CW last year. Sydney now does all the 500 kHz CW work for this area of Canada. VAR maritime ship radiotelephone channels will be 2538.0/2142.0 and 2582.0/2206.0 kHz. NAVTEX transmissions with indicators "U" and "V" have also been transferred from Yarmouth to Fundy MCTS. Also of interest during ice season is that Halifax Coast Guard Radio, VCS, now has an HF fax transmit capability on 4416.0 kHz and 6915.1 kHz. They will transmit ice charts on a request basis only, on behalf of Ice Halifax when their office is open for business. Only one of the two frequencies can be used at a time, and there is no broadcast schedule. VCS's MF scheduled voice broadcast of weather and notices to fishermen on 2749 kHz were also changed last month. Here's the station's new schedule:

0010 UTC Weather/Notices to Fishermen (old time as 2310)

0703 UTC Weather (old time was 0603)
1403 UTC Weather/Notices to Fishermen (old time was 1203)
1903 UTC Weather. (old time was 1803)

Traffic list and notices to shipping broadcast times remain the same. Also, effective the last week of September of this year, Robert will no longer be answering the listener correspondence for VCS as he has been transferred to Fundy MCTS, in Saint John, NB. Robert has answered QSL requests for VCS for a good many years, going out of his way on his own time to ensure a reply. A tip of the UTE SWL hat to Robert and I'm sure you all share my good luck wishes for him.

Reader Mail

Albert W. Hussein (FL) reports a big increase in the 81-81 digital mode activity recently, presumably mostly from Cuba, particularly the daytime transmissions. Albert noted the frequencies in use as follows: 5062 81/250 at 1145/2145; 5166 81/200 at 1350; 5306 81/250 at 1205/1245; 5322 81/200 at 0005; 5454 81/200 at 2338; 5929 81/300 at 1354; 5306 81/250 at 1205; 5929 81/300 at 2340; 6291 81/300 at 2340; 6308 81/200 at 0005; and 7633 81/200 at 2340. 81-81 is a two-channel mode favored by the Russian military, but is almost always transmitted encrypted. Few decoders have the mode yet, but it's distinguished by the more common 81 baud rate and a lesser found 73 baud format. There is also a 1-channel version that can be found in 36.5 and 40 baud rates. Albert also reports that another expedition to the Florida Keys revealed that 9830.0 kHz KAWN RTTY is also coming from the 7784.0 kHz U.S. Navy Saddlebunch Key site as first reported in the Sept. 97 column.

Dave Hixon (FL) sent an E-mail in regards to the Sept. column log of the abnormal Mossad VLB2 on 4665.0 kHz. Dave reports he has also logged that format back in 1991 on 20427.0 kHz. at 0445.

Alan Gale in the UK reports on a bub-

ble jammer that becomes strong in the UK around 1600 UTC and covers the frequency 5680.0 which is an international search and rescue frequency. Alan feels the bubble jammer is trying to cover possibly the clandestine station "Voice of the Mojahed" broadcasting from an unknown site in Iraq to listeners in Iran. But meanwhile, Kinloss and Plymouth Rescue have been instructing rescue aircraft to QSY to 4721 or 4724 kHz when interference has become too bad. Alan also noted while monitoring his favorite target of 5680 that the German Air Force stations which work Gluecksburg Rescue on 5680 kHz all use identifiers which never repeat themselves, and always seem to go up in number. Comparing calls with dates led him to work out that identifiers are issued at two calls daily on weekdays, but not at all on weekends. For example, his chart looks like:

July 1997:	Call Heard:	Predicted Call:
Tuesday	01	PC 244 PC 245
Wednesday	02	PC 246 PC 247
Thursday	03	PC 248 PC 249

and so on. So far, it appears this formula is correct.

Now, on with the show . . .

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)

UTE Logging's SSB/CW/DIGITAL

3143: WATCH FOB wkg BLOCKHEAD for meeting w/GASSR 34 (poss tanker) in USB at 0209. (RK)

3640: SYN2, Mossad, Israel, hrd at 1645 in USB, also noted on 4665/5628 kHz. (TY)

4015: AEIUSA, USAFMARS Heidelberg, D at 1804 in 300 baud PACKET msg to AEIUBF. (AB)

4271: Unid stn R5SA Rptng "V PV2S DE R5SA" at 1050 in CW. (TY)

4444.5: Spook stn P7X at 1346 in 10 wpm CW

5LG's, into new cycle heard at 1348, skipped usual prelude data burst. Also at 1715 another day. (AWH)

4527: Russian SVR, Cuba? "Fast CW" numbers station at 1122 repeating "538 538 00000", very strong. (AWH) (SVR is Slozhba Vneshnoi Razedky, or Foreign Intelligence Service—Ed.)

4580: Unid, Haitian stn? at 1113 in LSB OM/YL FF QSO, been here for years, still no idea who it is exactly. (AWH)

4645: Counting Station heard at 1508 in USB, EE/YL w/866+long count call-up, //3186. Late for such a low frequency; messages for agents visiting our neighbor to the North, or is this a new Western US site beaming to the far east? (AWH)

4665: SYN2, Mossad, Israel, hrd in USB at 1645, also on noted 3640/5628 kHz. (TY)

4724: SNIFFER DOG wkg MOTHER GOOSE, BO PEEP and BIG SAD WOLF on a net w/voice & data burst transmissions. Poss USMC net. Hrd in USB at 0145 (RK)

4868: Unid Cuban CW net at 1220, CVD wkg unid. (AWH)

5091: JSR2, Mossad, Israel, hrd in USB at 1701. (TY)

5198.5: CFH, Halifax Military, NS, CAN at 0301 in USB w/H+00 traffic list ann, has 1 routine msg for CGAA, HMCS Anticosta (MSA-110), no response hrd here. At 0517 HMCS Glace Bay (M-701) clg Halifax Military for several mins, no joy. (Ed.)

5250: BMF, Taipei Meteo, Taiwan at 1026 in 120/576 FAX wx map. (EW)

5257: Cuban CW net heard at 1330 on, 5LG traffic including "n" in character set, incl c/s PXD. (AWH)

5293.5: Cuban CW net at 1247 w/CCN clg MTA. (AWH)

5390: CDG206, Alma Radio, PQ, CAN at 2205 in USB, YL/EE w/app bush radiotelephone t/c. (Ed.)

5439.5: Unid stn L9CC Rptng "CP17 DE L9CCA UAA" in CW at 1256. (TY)

5530: "Operaciones", Guatemala? wkg Aviateca 971 at 1128 in USB w/LDOC type comms. (AWH)

5628: SYN2, Mossad, Israel, hrd in USB at 1645, also noted on 4665/3640kHz. (TY)

5643: Cuban CW net heard at 1350 w/5FG traffic. (AWH)

5649: Finnair 004 at 0040 w/selcal DE-CG wkg Gander w/ARP SCROD at 0039, F350; at 0041 Turkish 582, selcal ER-CH, wkg Gander for selcal check; at 0044 CSA 053, selcal CK-AQ wkg Gander w/ARP 48N50W, F370. All in USB. (TO)

5678: PC270 clg DHM91, German Luftwaffe Munster at 1147, called himself Pollution Report Aircraft PC270! (AG)

5680: Skylark Formation w/Kinloss at 1841. Shannon Aeradio IRL w/Plymouth Rescue in r/check at 0937, Belgian AF93 w/Koksidge Rescue BEL at 1220. Bodo Rescue NOR w/735 at 1056, GFF—Kinloss in CW clg MQK23 at 1035 (no reply sent ZGN!), Shanwick Radio 'Testing 12345' at 2237—St Anthony Radio came on & adv they were loud and clear.



Emblem for Qantas Airlines, whose name is probably the most maligned airline name in the hobby.



Qantas Airlines logo circa 1944.

Monarch 074 clg LPLA for Lajes wx at 0027? strange on this, according to my lists this is a London Gatwick/Orlando FL service at 0410! Unid. CW station sending 5N & 5LG's (hand sent w/electronic key—many word repeats!), this was accompanied by a bubble jammer, & caused Kinloss to ask stations to use 4724 kHz to avoid heavy QRM. (AG)

5685: CWL89, RAF Cranwell Training flight, w/BT9P in CW message! (AG)

5687: DHM91, German Luftwaffe Munster, wkg JGZ & JGE73 at 1546 giving them wx for Cologne. LTG clg DHM91. There has been a lot of traffic here recently—may be connected with the heavy flooding in Eastern Germany. (AG)

5688: Cuban Babblar heard at 1251 in USB mode w/SS/OM w/long counts. Continues active daily, alternating USB and USB+carrier txs. (AWH)

5696: USCGC Maui (WPB-1304) heard at 0145 in USB mode wkg CAMSLANT Chesapeake. Maui wanted SCN freqs for COMSTA New Orleans. CAMSLANT responded that New Orleans was monitoring 4, 6, 8, & 12 MHz. (DW)

5820: YHF, Mossad, Israel, hrd in USB at 1600. (TY)

5841: 3 ALPHA at 1903 in USB requesting PANTHER 400 secure their guard. (MF)

6237.5: 9HEI4, M/T Super Lady at 0440 in ARQ wkg the "Seajoy" on a non-paired & unauthorized freq. (WT)

6384: Unid Cuban at 1235 on, relay of hard-

line(?) voice ckt. same as previously noted on 6589 & elsewhere. Makes occasional appearances. Tune-in had open carrier & telco noise, into OM/SS long counts & "hola hola" on LSB. Then switched over & stayed on USB w/same. Then MOTEL clg AZUL and RAYA. Not on next day. (AWH)

6501: NRV, USGG Apra Harbour, Guam w/navigational warnings in USB heard at 0945. (TY)

6589: Unid Cuban, "the net" back here at 1250 in USB again after foray to 6384, no traffic noted but just carrier and hum, usually relays apparent headline voice circuit w/static call-signs. (AWH)

6628: LTU 435 at 0030 w/selcal HJ-GQ, wkg Santa Maria w/ARP 35N40W, FL 330, is MD-11 reg. D-AERZ; at 0040 Dominicana 263, selcal QS-EL, wkg New York for selcal check. Both in USB. (TO)

6658: KPA2, Mossad, Israel, hrd in USB at 1417. (TY)

6683: Air Force 2 at 0230 in USB, has DV-2 + 21, airborne 0220 wkg Andrews VIP re 0435 ETB Andrews AFB. (JJ) SAM 375, USAF C-20H tail 92-0375, at 1845 wkg Andy VIP w/pp SAM command re SatComm. (Ed.)

6717: SAM 971 heard at 0450 in USB checking Andrews VIP here for possible new primary. (JJ)

6761: SAM 971 at 0455 in USB wkg Andrews VIP here for new primary freq. (JJ)

6815.6: GANTSEC. USCG Greater Antilles Section San Juan, at 0230 clg unid "in the red", who then replied back "in the green" on ANDVT. CAMSPAC Point Reyes, CA at 1359 wkg "520". 520 wanted to know "if playmate can be reached in the green", also SHARK 02, HERC 20, DOLPHIN 20 on channel. (AWH) FOXTROT 1 LIMA at 1851 clg KILO 4 MIKE "in the red", F1L req VICTOR 3 LIMA's current whiskey. (MF) All in USB. (USCG comms. "whiskey" means "location"—Ed.)

6826: Emery 482 at 0034 wkg Stockholm w/pp to Emery Dispatch re ETA Bahrain 0402 & Bahrain wx; at 0130 Air France 7016, selcal GS-KQ, wkg Stockholm w/pp to Ops re ETA Libreville. Both in USB. (TO)

6855.2: North Korean Embassy, Cuba at 0230 in RTTY 50/1000, t/c, rather distinct sounding tx here. (AWH)

6868: At 1402 "Bored Man" in USB on Sun, seemed to be having a lot of problems w/frequent pauses, giggling in the background. Changed operators at 1423 off at 1430, no traffic heard. (CS)

6882.2: North Korean Embassy, Cuba at 0213 in RTTY 50/1000, 5FG t/c. (AWH)

6937: NFXM. USS McInerney (FFG-8) at 1540 in USB wkg DoD Cape w/on-scene wx report, was in support of STS-84 launch, also logged NFXM here in Feb.97 for launch of shuttle Discovery on STS-82. (Ed.)

6959: Numbers stn, YL/EE at 2231 in USB, passing figure grps. off at 2246 w/musical tones. (DB) (the Lincolnshire Poacher, which is the name of the tune you heard—Ed.)

6983: YL/SS at 0200 (Fri) in AM w/5FG. (GS) (believed to come from Cuba—Ed.)

6993: SPAR 19 wkg Andrews VIP at 0514 in USB w/periodic signal cks. (JJ)

7302: Region 4 USAF MARS at 1902 in USB w/check in. (MF)

7309.7: RFHI, French Forces Noumea, New Caledonia at 0915 in ARQ-E3 100/425 on C.I. HJ1 w/Controle de Voie. (EW)

7322: FTJ, Mossad, Israel, hrd in USB at 1502. (TY)

7367.4: Unid French Forces, Pacific at 1225 in ARQ-E 72/105, same station as normally on 7486.4, idle. Possible return link active on 7762.2. Back on 7486.4 next day. (AWH)

7540: JSR, Mossad, Israel, hrd in USB at 1530. (TY)

7582: NKW, USN Diego Garcia, at 1040 in 120/576 FAX w/wx map. (EW)

7672: FD18, French Air Force Nice, F at 1722 w/CW marker. (AB)

7761.7: Unid French Forces, Pacific at 1228 in ARQ-M2 128.5/85, idle, muxed on same tx as the E72 circuit. This tx noted previously somewhere up around 9060, though may move around a lot like the Tahiti-Muraroa link. (AWH)

7767: Aveira/Pam/Lubango at 1628 in ARQ, t/c/PP to CVRRD/PAM/ Luanda. 1st time heard! (RH)

7813: USAF, Portland Rescue Ops, Portland, Wa at 0538 in USB wkg KING 03. (JJ)

7865: SPW, Warsaw Radio, POL at 1719 in USB w/phone patch. (AB)

7918: YHF, Mossad, Israel hrd in USB at 1604. (TY)

7983.8: RFTJ, FF Dakar. SEN at 1738 in ARQ-E3 48/424 w/Controle de Voie @H+38 on circuit TIF. (RH)

8035.5: MKK, British military, at 0015 in Piccolo-6 wkg MTS, Falkland Islands, req QSY F8. (AWH)

8122: HMAS Protector (ASR-241) heard at 0955 wkg Canberra Control. Heard at 0933 another day RAN Fremantle-class Patrol Boat 204, HMAS Warrnambool, wkg CANBERA Control w/long '10' count. Both in USB mode. (DW)

8143: CIA "Counting station" at 1108 in USB w/10-count, 5FG. (AB)

8150: PBB, Dutch Navy Den Helder, HOL at 1416 in RTTY 75bd CARB. (AB)

8192: 9MR, Malaysian Navy, Johor Baharu, MLA at 1646 in RTTY 50bd w/'9MR 5/11 RMMJ MRB MRB RYRYRYRY SGSGS-GSG". (AB) Same at 1647. (RH)

8234: 3ESE9, M/S Sensation at 0141 in USB, 70,367 DWT Carnival cruiseship wkg WOM (on 8758.0) for radiotelephone t/c. (Ed.)

8240: NRPZ, USCGC Papaw (WLB-308) at 2344 in USB clg CommSta New Orleans. NMG, no joy. (Ed.)

8294: WYU2001, Tug Sea King at 0132 in USB wkg WQZ449, Tug Communications, Long Beach, w/parts request message. (DW)

8297: AADT, USAV Aldie (LCU-2004) at 1544 in USB clg AAC2, harbor master Fort Eustis, Va, who answers, but is not hrd. (Ed.)

8320: Cherry Ripe nbr stn heard in USB at 1200, also noted on 13866 kHz. (TY)

8377: GQEH, M/V Moraybank at 0620 in ARQ w/tlx, login 46406 GQEH. (WT)

8377.5: KSBG, SS Arco Juneau at 0425 in ARQ, RX only, login 10668 KSBG. (WT)

8379: KEHS, Coastal New York at 0240 in ARQ w/AMVER/SP. (WT) **8380.5:** ELKV3, M/V Pacific Runner at 0630 in ARQ w/posn, 37.12N 171.48E, login 24527 ELKV. (WT)

8382.5: WGZK, M/T Chesapeake Trader at 0540 in ARQ w/daily report, login 11167 WGZK. (WT)

8394: P3WG2, M/V Winner at 0433 in ARQ w/tlx, login 56107 P3WG2. (WT)

8403.5: URVV, BATM Meridian-1 at 0520 in RTTY 50/170 w/TG's. (WT)

8427.5: 9WW20, Kuching Radio, Malaysia at 1137 in ARQ w/msg to ship. (EW)

8493: Royal Navy, G at 1422 in RTTY 100bd Encrypted traffic. (AB)

8598: OXZ4, Lyngby Radio, DNK at 1424 in CW w/t/c list. (AB)

8641: Abnormal Mossad transmission, Rptng "MIW22B16P56" in phonetics at 1445 in USB for more than 30 mins. Also noted on 10770/12747. (TY)

8700: 9AR, Rijeka Radio, HRV at 1427 w/CW Marker. (AB)

8722: VIS, Sydney Radio, AUS heard at 1233 in USB wkg S. Korean fishing vsl 6NPW (unid) requesting they QST to ch.829 for R/T t/c. (Ed.)

8746: EAD, Madrid Radio, Spain at 2206 in USB w/conclusion of traffic list, call signs in phonetics. (MT)

8764: NEXY, USCGC Anacapa (WPB-1335) at 0303 in USB wkg "Command Center" simplex re intercepted vessel, normally duplex w/8240.0 kHz. (Ed.)

8776: SVN48, Athens Radio, Greece at 2221 in USB wkg vsl SYXB, M/V Polykratis, fol by SWYH, M/T GL Panorama. (MT)

8788: HEB28, Berne Radio, SWZ at 2320 in USB, YL/EE w/voice marker ann "this is Berne Radio . . ." (MT)

8825: KLM 750 wkg New York at 2031 in USB reporting on frequency, 6660 is secondary. (BJB)

8903: Sabena 551 at 2338 wkg Bangui w/ARP FLU, FL 330, KOBLA 0010; at 2339 Springbok 232 wkg Kano w/ARP OBUDU, FL 350. Both in USB. (TO)

8930: Emery 485 at 0106 w/selcal AJ-GM, wkg Stockholm w/pp to Dispatch ETA BRU 0220; at 0123 Sabena 502 wkg Stockholm w/ARP SAMAR, est 0214 ETA BRU 0520. Both in USB. (TO)

8971: BANGER 01 at 1903 in USB passing track info to BLUESTAR. (MF)

8983: RESCUE 1713, USCG HC-130H7, at 1905 in USB wkg RESCUE 2139, HU-25C, w/relay of t/c from 2139 to CAMSLANT. 2139 requested that CAMSLANT pass to District 7 that another Falcon (HU-25) be launched, req it be equipped a 'Drop Can' w/a strobe light, food, water, blankets and instructions in Spanish. (DW)

9007: RESCUE 333, CanForces a/c heard at 1540 in USB w/kg Trenton Military re pass RCC Halifax they have dropped their SAR-Tech. (Ed.)

9023: BLUE CRAB, 701st Air Defense Squadron, Tyndall AFB at 0039 w/kg OKIE SAM, SE Sector NORAD HQ, Tyndall AFB, for a radio check. Went 'Green' at 0040 with enciphered speech (speech inversion). At 0041, went to SatComm. At 0306, DEER-HUNTER (NORAD) w/kg BLUE CRAB, at 0308, no joy w/green comms, switched to NORAD SatComm. Both in USB. (DW)

9041: 5YE, Nairobi Meteo at 1701 in RTTY 100/852 w/aero t/c. (RH) **9126.7:** RFTJD, French Forces, Libreville, GAB at 2242 in ARQ-E3 192/337 w/controle de voie reflecting "DE PARIS" on C.I. HAI (to Paris). (Ed.)

9227: PWX33, Brazilian Navy, Brasilia at 0026 in RTTY in 75/796 w/R/Y's and 'ZRH1 de PWX33'. (DW)

9234: Unid OM/SS at 1503 in USB, 526 clg 529, then gone. (AWH)

9263: Cherry Ripe nbr stn hrd at 1130 in USB, also noted on 13866/14469 kHz. (TY)

9357: YL/American accent in USB at 1107, w/3-2 cnt, hrd while flying over southern France & Northern Spain, ended w/"ALL" at 1121. Same stn, same time, a few days later w/123 call up, cnt 1-0. (GS) (CIA "Counting Station"—Ed.)

9395: YL/SS at 0200 (Thur) in AM, sounds like that CIA counting station. (GS)

10000: OM, outbander over WWV time sigs sn w/rude noises in AM & snide comments

like "2337? Watch is slow, man!" Hrd fm 2337-0000. (RK)

10452: Cherry Ripe nbr stn hrd in USB at 1010, also on 17449 kHz. (TY)

10470.3: RFFA, MoD Paris, F monitored at 2206 in ARQ-E3 200/313 w/non- protege & diffusion restricted t/c on circuit FDX to RFF-VAE. (Ed.)

10536: CFH, Canadian Forces, Halifax, CAN at 1051 in 75/850 RTTY wx info for Canadian locations. (EW)

10551.3: GFL23, Bracknell Meteo, G at 0920 in RTTY 75bd synops. (AB)

10655: EE/YL at 1428 in AM w/3-2FG. (BJB)

10780: JOLLY I, USAF Rescue Helo, at 1436 in USB w/kg Cape Radio re shuttle support freqs for launch of STS-84, QSY'ed to 6937.0 kHz. (Ed.)

10930.4: PTT Lumumbashi at 1135 in ARQ w/banking t/c in FF. (RH) **11017.8:** GXQ, Royal Navy, Whitehall, UK at 0202 in VFT 50/170 w/R/Y, FOXES, & DE GXQ. (EW)

11153.5: KILO-WHISKEY at 0015 in USB w/kg PAPA-GOLF w/tracking net comms re: friend or foe targets in the area. (JJ)

11175: OPEN SKIES (?) w/kg OSIAH (?) via MacDill at 2215 in USB re info on 'part' at Andrews. (RK) (a Russian air force plane, escorted by a U.S. aircraft, flew over the East Coast, shooting uncensored photos of U.S. military bases in preparation for enactment of the 1992 Open Skies Treaty, this was the c/s used—Ed.)

11202: RESCUE 1703, HC-130H7, at 0329 w/kg CAMSPAC, completed first box search,

heading to last known posn of distressed vessel. Will drop a DMB (Data Marker Buoy) on last known posn. Will keep creeping north until bingo fuel & return to La Paz, Mexico. (DW) CAMSLANT at 1827 requesting posn from OSCAR 9 LIMA, at 1828 CG 6004 reqs CAMSLANT accept there guard. (MF) Both in USB mode.

11214: CASEY 01 w/kg Andrews VIP at 1813 in USB for signal chks out of various locations and pp to DSN 317-xxxx. (JJ)

11217: DIXIE 01, probable KC-135R, 117th ARW, Alabama ANG, Birmingham Municipal AP, at 1625 in USB clg DIXIE CONTROL "on HF" no joy, DIXIE CTL has also been hrd on 11234.5 kHz.

11220: Air Force 1 at 2346 w/kg Andrews VIP. SAM 300 at 1923 w/kg Andrews VIP. At 0430, SAM 974, inbound Moscow (ULLI) w/kg Andrews VIP for pp's re: 0700 arrival at Moscow. All in USB. (JJ)

11232: Trenton Military at 1927 in USB w/pp for RAZOR 33 to RAPTOR 01. At 1929 JULIETT GOLF BRAVO 09 reporting flight ops normal to Trenton Military. (MF)

11306: American 972 at 0343 in w/kg Flight Support Lima, ARP o/h Manaus F350; at 0357 American 900 w/kg same w/ARP Rio Branco, FL 370; at 0403 Suramericana 322, selcal DE-CK, w/kg same out/off Bogota 0323/48 ETA MIA 0641 relay to Atlas Air Ops JFK. All in USB. (TO)

11396: New York (CAR-A MWARA) at 2047 in USB w/kg USAir 1844 reporting HOMA at 2046, estimate CHAMP 2130. (MT)

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11415.3: RFFP, MoD Paris. F at 0015 in ARQ-M2 200/308 w/control de voie "DE PARIGI" on Ch.B, circuit FDXB. (Ed.)
 11460: SAM 971 at 0425 in USB w/kg Andrews VIP for pp traffic. EE/YL w/5 DIGIT "461-00000" for 5 min at 0500 in AM/USB. (JJ)
 11545: Lincolnshire Poacher at 1400 in USB, started very audible, but heavy jamming when the message groups started. (GS)
 12090.2: RFTJ, French Forces, Dakar, Senegal heard at 0933 in ARQ-E3 192/425 idling. (EW)
 12197: Heard at 1726 (Sun) the Counting Station in progress, very weak, //to 13450, off at 1734. (CS)

12221: Counting stn. YL/EE w/3+2FG at 1200 in AM compatible reduced carrier USB mode, also noted on 10262 kHz. (TY)
 12254: TANGO-6-WHISKEY. INDIA-1-KILO, WHISKEY-1-KILO KILO-8-FOXTROT, and TEACHER at 0259 in USB w/kg each other in clear-voice and ANDVT comms. TANGO-6-WHISKEY sounds as though he might be Canadian. (JJ)
 12486.5: JMMU. Kaiwo Maru at 0010 in ARQ w/BBXX wx report. (WT)
 12490: NRCB, USCGC Eagle (WIX-327) at 2110 in ARQ, USCG training 3-masted 'barque', "America's Tall Ship" w/kg CAMSLANT. NMN. w/UNCLAS t/c. (Ed.)
 12562.5: UYEH, Ukrainian-flagged BMRT

Dmitry Pukramuvich, 2.934 DWT Bol'shoj Morozil'nyj Rybolovnyj Trauler -BMRT, or Large Freezer Fishing Trawler, heard at 2108 in RTTY mode 50/170 w/admin t/c using hull#/ID MA-0019 from master to Murmansk Radio. (Ed.)
 12580.5: KFS in FEC heard at 2310 w/wx bdest. (TS)
 12581.5: WLO, Mobile Radio, in FEC at 2304 w/kg LAMU4 (Monarch of the Seas) re: crew members. (TS)
 12615: USU, Mariupol Radio, UKR at 1602 in ARQ w/kg vsl UTXJ, TKH Vera Khoruzhaya (also logged on 12512.5 ship freq). (Ed.)
 12660: WLO, Mobile Radio, AI, USA at 2020 in CW w/kg SWUJ, Greek- flagged vsl M/V Stella, followed by HCZR, Ecuadorian-flagged tanker M/T Esmeraldas. (Ed.)
 12727.5: LGJ, Rogaland Radio, NOR at 1438 in CW w/marker. (AB)
 12740: Unid NATO station (prob. Royal Navy) at 1440 in RTTY 100bd Encrypted traffic (16xRY VMGTCNJBH init string). (AB)
 12844.5: KFS, Palo Alto Radio, USA at 0747 in CW w/CQ DE KFS. (EW)
 12939: LZW53, Varna Radio, BUL at 1451 in CW w/marker. (AB)
 13200: DOOM 72, B-52, Barksdale AFB, La at 0157 in USB clg "Thule". (MT)
 13242: 244 w/kg Hickam Global heard at 0453 in USB mode for pp to Moffett Rescue re: picking up patient onboard w/a pulmonary embolism. (JJ)
 13247: SAM 974 w/kg Andrews VIP at 2250 in USB w/pp's re 0120 arrival at McGuire AFB. (JJ)
 13285: Guangzhou Volmet, China w/avian wx report in very distorted USB w/distinctive hum at 0515. (TY)
 13306: New York in USB at 1445 w/kg unid flt re traffic about condition of runway at Newark after FedEx crash, runways at Newark were open. (GS)
 13415.3: PCW1, MFA Den Haag, HOL at 0923 w/CW marker. (AB)
 13440: EXECUTIVE-1-FOXTROT w/kg Andrews VIP heard at 0318 in USB re write-ups. (JJ)
 13450: At 1730 the Counting Station in progress, //to 12197, off 1734. (CS)
 13533: EZI, Mossad, Israel hrd in USB at 1430. (TY)
 13645: SS numbers stn at 0040 in AM, heavy QRM from bdcst stn. (BJB)
 13866: Cherry Ripe nbr stn heard in USB at 1130, also noted on 9263/14469 kHz. (TY)
 13915: ICRC net. Guatemala et al, at 1408 in PACTOR-1 200/100, w/kg unid stn, then into dead air from both stations, no response. Disconnected 1416 & gone. (AWH)
 13948: CLP4, EMBACUBA Guinea at 1816 in RTTY 50/550 w/5FGs to Havana. (DW)
 14000: Unid station rptng "Frank Young Peter" in heavily accented EE heard at 1400 in USB mode. Poss "Nancy Adam Susan". (TY) (yes, indeed it is one of the ID's used by Nancy Adam Susan numbers stn, whose char-



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acteristics include use of the 1940's ARRL phonetics—Ed.)

14340.1: BAF4, Beijing Meteo, China at 0153 in 50/850 RTTY w/wx for southern Chinese locations. (EW)

14686: ATLAS, U.S. Customs/DEA Comms Cir. Rockwell-Collins, Cedar Rapids, Iowa at 1658 in USB w/kg 35C. Switched to SJ (19131.0). At 1701, PANTHER (DEA, Nassau) w/kg 35C re: tgt aircraft 'track'. (DW)

14926.7: RFHJ, French Forces, Papaete, Tahiti heard at 0111 in ARQ-E3 100/425 idling. (EW)

14977: OLX, Prague, Czech, w/V/CW mkr started at 1255, YL/Czech w/3FG's for 5 mins until 1305, then into 5FG's. (TY)

15016: MacDill at 1819 in USB w/pp for NAVY YANKEE HOTEL 734 to unid DNS# -GOLDENHAWK. (MF) (Op's Center, NAS Brunswick—Ed.) PROPS 03 (C-130) w/kg Hilda East (Scott AFB) re block time via MacDill. Gave posn of 57°20'W 142°20' N which put him right over the house! Hrd (literally!) at 0138 in USB (RK)

15615: AXI, Darwin Meteo, AUS at 0155 in 120/576 FAX w/wx map. (EW)

15980: EZI, Mossad, Israel hrd in USB at 1300 also on 13533 kHz. (TY)

16332: "C" repeated in CW at 1436, listed as Moscow. (JR) (yes, Russian Navy there -Ed.)

16341.8: CLP8, Conakry at 1832 in CW clg CLP1. (JR)

16355: MFA Prague at 0825 in RTTY 100/400 w/nx in Czech. (RH)

16357.4: CLP8, Conakry at 1352 in 50/425 RTTY w/5FG's & SS p/l, shifted to CW & told CLP1, MFA Havana, to QSY 18030 at 1400, found them on 18028.2 kHz. (JR)

16386: MFA Islamabad, Pakistan in FEC at 1458, very weak, lost synch. (JR)

16688: 3FWE3, M/V Cool Girl at 0540 in ARQ, RX only, login 42339 EIYO. (WT)

16706.5: SVQY, M/V Olympic Miracle at 0705 in ARQ w/AMVER/PR, login 17891 MIRA. (WT)

16791.5: Unid stn in FEC heard at 1848 w/nx from the Philippines. (TS) (Filipino crewed ship relaying Philippines nx from Bulcan Radio—Ed.)

16808: SPH, Gdynia Radio, POL at 1500 in FEC w/tfc list & lotsa tfc in Polish. (RH)

17050: 4XZ, Haifa Radio, Israel heard at 0552 in CW w/VVV DE 4XZ. (EW)

17169: A9M, Hamala Radio, Bahrain at 0527 in CW sending msg to ship in unid lang, probably Arabic. (EW)

17245: VIS, Sydney Radio, AUS at 0504 in USB clg a ship named Denison. (EW)

17550.9: RFTJ, Senegal at 2000 in ARQ-E3 192/400, CdV ckt AFL to France. (AWH)

18028.2: CLP1, MFA Havana in tfc SS p/l in 50/425 RTTY, then to CW, down 1455. (JR)

18515: Counting stn. YL/EE w/3+2FG's at 1100 in AM compatible reduced carrier USB mode, also noted on 16086 kHz. (TY)

18755.9: Interpol Wiesbaden at 1220 w/GG tfc for New Delhi. At 1244 Interpol Tehran w/EE tfc also for New Delhi. At 1256, Interpol

Rome w/EE tfc to New Delhi re wanted Indian subject. All in ARQ mode. (RH)

18864.7: ZRH, San Simonstown, RSA at 1212 in RTTY 75/175 w/test tape, RY, ID, foxes, counts, ETC. (RH)

19884: Cherry Ripe nbr stn hrd at 0100 in USB, also noted on 21866 kHz. (TY)

20856.7: RFQP, French Forces, Djibouti at 1901 in ARQ-E3 200/401 w/non-protege traf- fic on circuit "DJK". (Ed.)

26124: CLA, Havana Radio, Cuba heard at 1720 in CW w/CQ loop, weak during short- range E skip opening. Some VHF low-band stuff from the island in at the same time (33.375, 37.00). (AWH)

29637: Unid in USB at 2023 w/2 OM/EE re ground wire. (BJB)

This months contributors: (AB) Ary Boender, The Netherlands; (AG) Alan Gale, UK; (AWH) Albert W. Hussein, FL; (CS) Chris Smolinski, Md; (DB) Dean Burguss, MA; (DW) Dave Wright, TX; (EW) Eddy Waters, Australia; (GS) Gary Seven, Germany; (JBJ) J. Braxton James, NC; (JJ) Jeff Jones, CA; (JR) Joe Richards, FL; (MF) Mike Fink, FL; (MT) Matt Thompson, PA; (RH) Robert Hall, Capetown, RSA; (RK) Richard Klingman, NY; Tom Severt, KS; (TO) Tony Orr, VA; (TY) Takashi Yamaguchi, Japan; (WT) Wade Taylor, CA; and (Ed.) ye editor in Ohio. Thanks to all.

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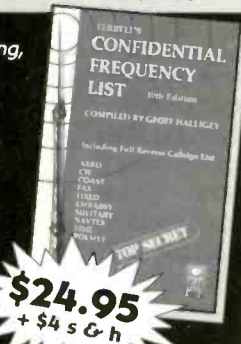
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The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ, ARRL

GETTING STARTED AS A RADIO AMATEUR

The Invisible Ham

In well-groomed suburbs across America, condo dwellers are decorating their small lawns with politically correct rock gardens, flashy yellow patio furniture and patriotic flag poles. At first glance, everything is as it should be. If neighbors, block associations and other "interested parties" looked a little closer, however, they'd see an 18-inch DBS satellite dish lurking inside the rock garden's centerpiece boulder (it's hollow and transparent to microwave signals), a five-foot C-band satellite dish cleverly disguised as a trendy patio umbrella, and a stealthy ham's vertical antenna that does double duty as a flagpole.

In the '90s, "low profile" hamming is more important than ever! And thankfully, techniques and technology can help you enjoy our hobby from the confines of your apartment, condo or any dwelling with antenna/land use restrictions. High-profile outdoor antenna farms are not necessary. With a little ham radio ingenuity and a willingness to experiment, you can have fun on the VHF/UHF ham bands and put out a decent signal on the HF bands as well. This month's column will give you a few ideas.

Indoor Radio

When operating indoors, low-power operating is strongly encouraged. Potential interference is minimized, as is your exposure to nearby RF energy fields. I (and many other stealth-mode ops) have had success running only five watts to various indoor antennas. But if you run more than 50 or 100 watts output, you're asking for trouble. Besides, cutting your output power from 100 watts to 25 watts is hardly noticeable at the other end.

Because apartments or condos are often several stories up in the air, away from dependable RF grounds, an alternative grounding technique is needed for HF operation. An effective substitute "RF ground" can be obtained by using a counterpoise. Simply connect a quarter-wavelength piece of insulated wire to the ground terminal of your transceiver; one for each band of operation, and run the

counterpoise wire(s) along the floor moldings, out of the way. Make sure the far end of each counterpoise wire is insulated (wrapped with electrical tape). For a detailed discussion of counterpoise techniques, see page 44 of November 1988 *QST*.

Don't ground your gear to water pipes, telephone lines or telephone company grounds. They may be at DC ground potential, but will probably not provide a good RF ground and may cause interference. Nowadays, most residential plumbing contains at least one run of nonconductive PVC tubing, effectively insulating the upper-level plumbing from a direct connection with the earth below.

On the Low Bands

Even in a small apartment, it's usually possible to find the space to put up a dipole for 10 and/or 15 meters (a dipole for 10 meters is only a little more than 16 feet long). You've probably tried this arrangement for SWL antennas. If space (and family cooperation) permits, a dipole may be the easiest way to get on the air. After all, it's pretty much a given that you won't be installing a full-size beam inside your apartment. (If you have access to a large, airy attic, however, a wire beam or other conventional antenna may work fine.) To keep household harmony, perhaps the best way to install an indoor dipole is to run the wire elements along the wall/ceiling juncture and run the coax up the wall in a corner.

Horizontal loops are also possible. As with the dipole, run the coax up the wall in a corner. Instead of feeding the dipole, however, run a full-wavelength loop around the perimeter of the ceiling. An antenna tuner will probably be required for both antennas. With indoor installations, having a naturally resonant antenna isn't necessary (sometimes it's not even possible). Use an antenna tuner to "work" the antenna against a counterpoise or other ground connection. Whatever the configuration, give it a try. With the sunspot cycle showing signs of perking up, you'll be pleasantly surprised.

"In the '90s, 'low profile' hamming is more important than ever!"

Ready-made indoor antennas are available from several sources. MFJ makes several mini loops and vertical antennas designed for space-restricted and indoor operation. The units generally cover 40 through 10 (or 6) meters and have been used effectively by many stealth-mode hams. MFJ also makes an "artificial ground" that can make indoor hamming a lot easier, depending on your specific situation.

Other stealthy antenna solutions are limited only to your ingenuity and your situation. Over the years I've loaded up my apartment building's downspout with a 1-watt QRP signal; worked the steel fire escape on my dormitory building against a counterpoise; tuned up an aluminum window screen with a low-power signal; put up an outdoor "invisible" end-fed wire made from 30-gauge steel wire, shirt-button insulators and monofilament line; and I've even laced full-size wire Yagis and a full-size 40-meter horizontal loop in a fourth-floor walk-up attic. Where there's a will, there's a way.

My experience with indoor antennas is certainly not unique. Other success stories come to mind. I know of a Midwestern ham who ran a successful 40-meter DX net with a kW to an attic dipole; and a Georgia ham who has worked DXCC with 5 watts using only attic-mounted wire antennas. These "hidden HFers" are out there, but they're hard to spot because they don't have any outdoor aluminum.

VHF/UHF

VHF/UHF bands are prime turf for space-restricted amateurs. At these high frequencies, antennas are physically small. Putting up a small Yagi antenna isn't out of the question. When I was getting acquainted with 440 MHz FM, I simply aimed a small beam out my third-floor window. I hit several area repeaters

with no trouble and had many simplex QSOs, too. In many metro areas, the rubber-ducky antenna that comes with VHF/UHF handhelds will be more than enough to access several local machines. Here, indoor antennas may be no sacrifice at all!

Don't give up on ham radio just because you lack the real estate for conventional antennas. There's a lot of fun to be had with indoor alternatives. Remember, practice and experimentation make perfect.

Resources

Several titles from the ARRL Publications Catalog will get you started. *Low-Profile Amateur Radio* is an excellent handbook for stealthy operators. It's full of practical information about how to get on the air without calling attention to yourself. A similar offering from the UK is the RSGB's *HF Antennas for All Locations*. For a comprehensive treatment of antennas in general, pick up a copy of *The ARRL Antenna Book*, now in its 18th edition.

Your QSL cards, letters and questions are always welcome. Contact me at ARRL, Department PCN, 225 Main Street, Newington, CT 06111. ■

How I Got Started

Congratulations to Larry Stowers, KC5SSK



November winner, Larry Stowers at his shack in Texas.

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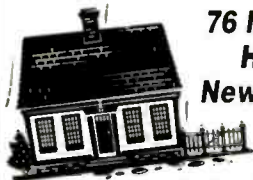


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"My first kit was a Science Fair Globe Patrol four-band radio kit."

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Our November Winner

Reader Larry Stowers of Texas says he got started in shortwave listening in 1970. He says, "My first kit was a Science Fair Globe Patrol four-band radio kit. That little kit worked quite well pulling in stations from around the world. One thing led to another and now I'm a licensed General class ham radio operator, KC5SSK. Over the years I've collected a few radios. In the photo you'll see that my listening post includes a Hammarlund HQ-180A (which no ham shack should be without), a Hallicrafters SX-130 in mint condition, Allied A-2515, Realistic DX-300, DX-394, PRO-2035, Kenwood TS-450S, Alinco DR-150, RadioShack PRO-26 and PRO-38 scanners, to name a few.

"Outside are several antennas including a GAP Titan DX, Mosley Tribander up 50 feet, a CB and scanner antenna and two-meter antenna as well. Also with a DX-160 and two scanners in the bedroom, it keeps me up late at night! You just can't have too much radio gear." ■

Tuning In (from page 4)

she says, "... I know this bill is a knee-jerk reaction to the flap over the taping of a cellular phone call made by Newt Gingrich. There are already laws which prohibit disclosing what is heard over the airwaves and they should be enforced. Criminals are ... using scanners in the commission of crimes. Instead of banning scanners or adding more restrictions to

"... you and I both know that common sense isn't one of the main ingredients listed on the resumes of our elected officials."

them, just add a stiffer sentence to those who use one while committing a crime ... any acts of Congress to restrict what one can listen to violates the spirit of the Constitution and is just plain wrong."

Sue should run for public office, don't you agree? But then again, she makes sense, and you and I both know that common sense isn't one of the main ingredients listed on the resumes of our elected officials. But there's always that something deep down in my gut that tells me that if enough people communicate intelligently with their elected officials—after all, they work for us—common sense and good will eventually triumph.

Last evening I had the distinct displeasure of speaking briefly with Congress-

man Tauzin on a WWL, New Orleans call-in program. I suppose I should consider myself blessed; the mere thought of a mortal reaching skyward to an elected official from a kneeling position should send a chill up my spine, giving me great honor, but sorry, I didn't feel the rush. Regardless, I was introduced and asked my question, "Mr. Tauzin, I have no problem with privacy for folks' cellular phone conversations, but why have you signed a proposal to put more restrictions on monitoring our Nation's public airwaves that would in essence prohibit the Saturday afternoon racefan from using his or her scanner to hear trackside race communications? What's the harm in that, Mr. Tauzin?" After a brief second he retorted that such was not the case. I interrupted him insisting that it *was* the case and he was lying to the public. Continuing to talk he insisted that it was about cellular privacy and how he champions the good fight. At least one more time I was able to inject that I had the bill in front of me and said "There's nothing there about cellular privacy..." Nonetheless, he rambled on, the radio station cut my incoming audio and prepared to go to the next caller.

I went to bed feeling good about this minor accomplishment. Look at it this way: At least he knows—and so will his cronies—that we aren't sitting back letting this nonsense pass without a fight. We've planted the seed in who-knows-how many listeners. Had there been time, I had other pointed questions for this man

"... here's a man that's going to do what he wants to do, the public be damned."

that seems Hell-bent on doing things his way, like, "What's the harm in folks helping out during severe weather by monitoring Skywarn and public safety frequencies? What's the harm in turning on a scanner in the middle of the night when the lights and sirens scream through your neighborhood?" You and I and countless thousands of monitors and other ordinary law abiding citizens know there's no harm in that, but like that bad intersection in my town that won't see a red light installed until a local politician's kid gets killed, H.R. 2369 will, unfortunately probably pass the committee and become law. Why? It's simple: Mr. Tauzin is right, you know. It IS about cellular privacy and us dirty electronic stalkers. We're the ones who, unfortunately, don't have the political clout—the bucks—for Cousin Billy's "keep me in office, I'm a great guy" campaign. As I listened to his unchallenged ramblings before the station took the next caller, I couldn't help wondering if this man thinks he's doing the country a good deal. When the lights go out at night, and the door shuts, does he think, "Man, I'm really earning my \$133,600 annual salary keeping the public from hearing what's really going on in their community." Or is he really doing something admirable that we ordinary folk can't comprehend? I doubt it, but it does make you wonder, doesn't it?

Perhaps he's been sold a bill of goods by his staff and the legal folks who are clearly steering him down the wrong path. Maybe. But the more I listened, the more he reminded me of other infamous people from our history; here's a man that's going to do what he wants to do, the public be damned. Like I told one radio station news director, if this thing passes without a re-write, it'll be a bad day for America—a bad day that most Americans won't realize until a few years down the pike when, just maybe, like in former East Bloc countries, you won't be able to legally own a radio capable of hearing the BBC or anything else except the Voice of Tauzin. A bad day, indeed.

Of course, none of this additional mound of paper helps my ever-growing electronic privacy file folder. But I've finally decided what the folder should be labeled: \$CTIA. ■

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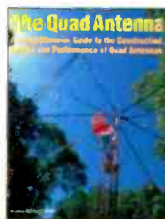
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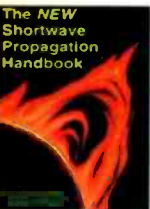
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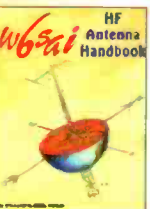


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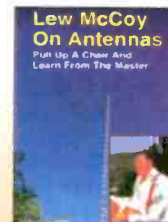
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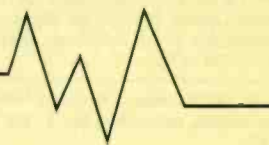
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The Loose Connection

RADIO COMMUNICATIONS HUMOR

BY BILL PRICE, N3AVY



Bill Learns a Lesson

Looking back to my youth, I had plenty of friends, but I realize now that none of them really had an interest in communication. What a strange lot. Most of them were interested in comic books, junk food, and seeing girls' underpants, all worthwhile and interesting pursuits, but none could stir the blood like a pair of Army field-phones from the dump.

“. . . no matter how many gadgets I dragged home, I never found anything that turned out to be a transmitter.”

It seemed as if all the kids on TV had neighbors living 20 feet on either side of them. They could run secret telephones to the whole neighborhood with a quarter's worth of wire. With no close neighbors, I had no one to string phones with—no one to share a hard-wired telegraph, and no one close enough to receive the signal from a “wireless broadcaster kit” I could order from the back cover of a comic book. In fact, if I'd cut down all the trees within a hundred feet of the house I grew up in, I could have only *seen* one house, and that family didn't have any kids.

My best (and nearest) friend lived over a thousand feet away, through some pretty dense woods. That distance ruled out any type of wire-communication device we could afford—and neither of us knew anyone with access to large quantities of free wire. Trips to the Upper Dublin Township dump (yes, that's where I grew up) yielded countless old cabinet-model shortwave receivers, all working perfectly, which got me interested in ham radio (and made me wonder how anyone could throw out such a treasure), but no matter how many gadgets I dragged home, I never found anything that turned out to be a transmitter. I guess that restored my faith in adults' ability to understand what was valuable, but it sure didn't help my entry into communication.

My dad never shared my interest in

communication, but he nurtured it. He would find gadgets for me during his daily travels, and although he didn't understand electronics, he knew people who did, and found answers for me which, at the time, were the secrets of the universe. My mother, seeing me drag yet another behemoth receiver into my barn-workshop would caution me against electrocuting myself, unaware that I had already passed enough voltage and current through my youthful fingers (and arms and legs) to have lit the house for a week.

Since getting a ham license would have required me to study the books my dad brought me, I searched for ways to communicate “on my own,” without relying on the family telephone. “I don't know what you want to go through all that trouble for,” my mother would say. “We've got a perfectly good telephone *right there*,” pointing to the phone sitting smack in the middle of every family activity that didn't involve plumbing. How could I talk to my friends about all the *good stuff* if everyone was sitting there listening to me? Besides, it was a *party line*. C'mon, ma!

“. . . I had already passed enough voltage and current through my youthful fingers (and arms and legs) to have lit the house for a week.”

I tried desperately to invent a substitute for the Morse code—anything to avoid learning that—but the best I ended up with was “one dot for A, two dots for B, and 26 dots for Z. When I tapped out a practice story about a grizzly bear, I knew why Morse's way worked.

That summer the dump yielded some good wheels to make a race-car, which kept us occupied when there were no fruitful communication ideas stirring in our brains. On a trip just after my 11th birthday, we struck gold. Two *perfectly good* U.S. Army field phones in olive-drab wooden cases. The cranks turned as

“. . . I don't believe I regained my desire for communication gadgetry until several years after I was happily married.”

smooth as butter, and to this day, I still believe that God took pity on an 11-year old kid that day and put them there for me to find. You'll never talk me out of that, so don't even try.

Back in the barn, the phones worked great. First at six feet, then 10, then farther and farther apart as we carefully twisted wire upon wire, until the phones were so far apart we could only hear each other through them. It was at that time I first declared I'd never want for another thing, and I felt that way for quite some time after I'd found those phones.

We gathered wire for weeks—first at the dump, then asking neighbors for any scrap wire they had lying around. Most of the farmers would give us a tangled ball of bailing wire, which we'd gratefully accept, but knew we couldn't use. We enlisted our parents to solicit wire from anyone they might know, and they sometimes came with 20-foot and even 50-foot pieces.

We never did gather enough wire to reach twice between our two houses. Winter came and with it my unrequited desire to communicate entered a dormant stage which awoke only years later in Coast Guard boot camp when I was offered a chance to attend a 26-week radio school in Groton, Connecticut.

My 12th summer brought not only dreams of secret phones and radios, but hormones. I joined my friends in the quest for the elusive underthings, and I don't believe I regained my desire for communication gadgetry until several years after I was happily married. In fact it was then that I found a whole array of ladies unmentionables drying on the guy-rope of one of my antennas, proving once again that anything you want, you can get through communication. ■

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