

POPULAR COMMUNICATIONS

Sky-High Signals: Tune In Military Planes

Also in this issue:

- Is Ham Radio An Alternative For Cellular?
- Winter Shortwave English Language Broadcasts
- We Review: A Motorola Business Radio
- Confusion In Broadcasting's Early Days

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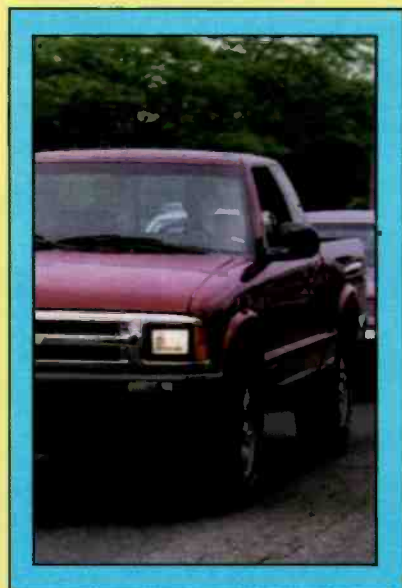
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This month's cover: The command post for North American Aerospace Defense, or NORAD, is buried under 1,800 feet of solid granite in hollowed-out Cheyenne Mountain in Colorado Springs, Colo. NORAD aircraft can be monitored on the UHF military aviation band from 225-400 MHz. Photo by Larry Muluehill, WB2ZPI.

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◆ Universal M-400 Reader



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BY CHUÇK GYSI, N2DUP

Thoughtwaves

AN EDITORIAL

Help! I'm Running Under Radio Control!

I t's taken me awhile to realize this, but I am running under radio control. No, not remote control, which I suppose might be similar, but under radio control.

I've taken stock of the matter and discovered that I rely on radio signals around the house to carry out so many tasks. When my work phone rings, radio signals go out on the 46-MHz band, and on a discreet UHF business frequency, where I have a repeater with telephone interconnect. If I'm in the car, these beeps sounds on the two-way radio signal me to answer the phone. Or, if I'm busy around the house or yard, the 46-MHz transmitter makes enough noise to remind me a cordless phone that needs attention.

When the family phone rings, another 46-MHz transmitter kicks in. That means I need to jump on that signal, too, whether I choose to answer it on a voice-inversion scrambling handset or via the twisted pair.

But it doesn't stop there. For instance, I can retrieve messages from my answering machine via radio control. By pushing a few buttons on my cordless handset, I don't have to run off to my office to check messages. The messages are played back, even if I am in the yard or somewhere else in the house (that's handy when I am on the tractor and don't hear the phone ring, but a flashing light on the handset indicates I have waiting messages!).

Whenever I am away from home, I carry a cellular handset. It doesn't matter whether I am shopping, eating out or looking for bargains in the flea market at the Dayton HamVention. If I get a message on my office phone, my answering machine dials my cellular phone and by radio remote control—no matter where I am north of the Texas border—I push a few buttons and retrieve my phone messages. I've received phone messages in the Appalachian Mountains, on the highways of Canada, at the state Capitol in Des Moines...all kinds of places. There are few places where a radio signal on the cellular band can't reach me to alert me of an important message. I discovered such a place in New Hampshire while on vacation last summer—I kept running off to a pay phone a few miles away every day just to check messages.

I'd be remiss if I didn't mention the entertainment remotes, too. Let's face it, how can you operate without remote controls to deal with the TV and VCR? I have a TV in my office to follow breaking news events

and I have a remote control at each work station. I don't even have to play hunt-for-the-remote. If news breaks, all I need to do is pick up a remote and click on the TV.

Here's a kicker, though! While I bought several remotes to scatter around my office to make life easier, I learned something. By clicking in a certain sequence with one of these remotes, it will turn on my Macintosh computer, too! Wow! So, when I am sitting at the PC and decide I need to move over to the Mac to do some work, I pick up the remote marked "Mac" at my PC and push the proper buttons. By the time I shuffle over to my Mac workstation, it's already booted up and running. I don't have to wait for the programs to load. Talk about the ultimate!

I've got remotes for my two Icom receivers, too, but don't use them a lot. I can be sitting at the desk and dialing up the BBC or a certain police frequency if I want. I used to do that a lot more. Having remotes for the radios also means being able to control things like the audio level, which is helpful for incoming phone calls.

But, let's not stop there on the radio control circuit. During the summer, I try to keep an eye on my sons playing outside while I am busy at work. That's not always an easy job. But I found a way to accomplish it by radio control, believe it or not. I picked up a used baby monitor system at a garage sale and when the boys are outside playing, I place the 49-MHz transmitter in either the front or back yard and plug in the receiver in my office. The boys' voices can be easily heard almost anywhere in the yard and I am comforted knowing I can keep tab on their activity. I suppose the ultimate trick in this case would be to install a video camera and transmit signals via the 900-MHz band to watch them, too, but heck—they need to feel responsible, too!

I don't use it too much, but I also can control appliances and lights around the home with a radio signal. Both the lights on the front of my home and the spotlights on the back of my home are tied in to special switches that I installed. With the simple push of a remote control switch, I can turn those lights on or off, or better yet—I can dim or brighten them! If I don't want the lights full tilt, all I need to do is push a button on the 300-MHz remote. I also have remote transmitters that plug into the

(Continued on page 84)

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Mailbag

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons 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 Mailbag. Address letters to: Chuck Gysi, N2DUP, Editor, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909, or send e-mail via Internet to POPCOMM@aol.com.

The Life of KLIF

Being a native Texan, I really enjoyed the article in the October issue about the unique frequency swapping between WFAA and WBAP. In addition to giving both stations access to a clear channel, it gave listeners to one frequency coverage of both Dallas and Fort Worth, which was not as common as it is today. WBAP is now a radio legend, known to truckers and DXers everywhere.

But the article said very little about KLIF. I think you'll find another great story there, although it may not have all the frequency shifting common to the other stations. KLIF came on the air in 1947, and was the brainchild of radio programming legend Gordon McClendon. It was possibly the first station to use the Top 40 format. Now, the legendary 1190 frequency is the home of KGBS, a Talknet affiliate, after several years of relaying CNN Headline News.

By the way, the recent article about WWJ here in Detroit helped me a lot in learning more about the local market. I'm a news producer at WDIV, Channel 4, which was known as WWJ-TV until The Detroit News was forced to sell/swap its broadcast properties in the late 1970s. The new CBS O&O in Detroit, Channel 62, is waiting for approval to revive the WWJ-TV callsign.

Mark Shepherd
Detroit, Mich.
(via America Online)

How Far Can You Go?

I read with great interest the response to Mr. Moriarty's letter (December 1995) regarding the "Forbidden Zone." I immediately went to work on a mod for my BS4U

scanner. I proceeded to file down the wide blade on the AC plug so that it would fit upside down in the wall socket and presto! I now can receive the NegaHertz (NHZ) portion of the spectrum.

Suddenly something amazing happened. At -100.01 NHZ, I was receiving what I perceived to be alien transmissions! No wonder why there is government legislation pending to restrict, as of April 1, 1996, the import or manufacture of radios capable of receiving this band.

M.J. Molnar
Troy, Mich.
(via the Internet)

We also understand that the Environmental Protection Agency is looking into the harmful effects of NHZ signals. They are said to have effects similar to 800-MHz radio signals, as well as causing birth defects in farm animals in three Midwest states.—Editor.

Corrections

In Alice Brannigan's fine article, "The Road to Radioville" (December 1995), there is an error. On Page 19, it refers to the Portage (Indiana) Amateur Radio Club. This should read: the Porter County Amateur Radio Club.

Bill Young, N9QLS
Vice President
Porter County Amateur Radio Club
Merrillville, Ind.
(via America Online)

On Page 2 of the December 1995 issue, the comments about the cover photograph contain incorrect information.

Trans World Radio no longer operates shortwave transmitters from Bonaire. It probably has been a couple years since they ceased the shortwave operations on the island. Of course, the mediumwave transmitter pictured on the cover still is very much on the air, and they operate a satellite network that feeds programming into local AM and FM stations in several Latin American metropolitan areas. It is known as ALAS, or America Latina via Satellite.

I always enjoy POP'COMM. Keep up the good work.

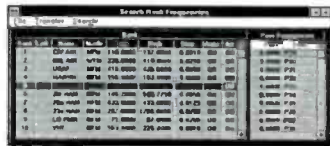
Wes Linscott, N11Y
Bangor, Maine
(via Genie)

The Latest Software Available At Your Favorite Dealer!

Remote Computer Scanning System

The RCSS, Windows '95 compatible Software significantly enhances the AOR AR8000 receiver's capabilities by providing automate Personal Computer control over the receiver's scanning, logging and memory functions! These features and many more make this software a great choice for Windows use:

- Auto detection and storage of active frequencies and add'l. info while scanning
- Scan user specified tuning steps from 10Hz - 100 MHz
- Scan by mode, class of service, or type of unit
- True signal detection allows scanning upon loss of carrier with user supplied delay
- Max scan rate, user adjustable
- Scan by radio or computer
- Unattended frequency monitoring by time and date
- Lockout unwanted signals
- Rearrange all freq. in any combination by click/drag or entry

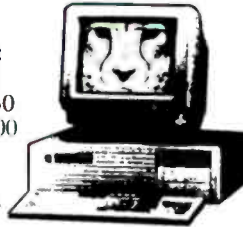


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presently supports:

- **AOR** 3000/3000(A) & AOR2500, AR3030 HF receiver, AR8000 (Newest handheld)
- **Drake** R-8
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- **LOWE** HF-150m
- **Watkins Johnson** HF-1000
- **Opto Electronics** add-on boards for **PRO** series Radio Shack Radios.



Our software allows complete control of all functions supported by these radios through the standard manufacturer's interface.

SCANCAT allows you to:

1. Enter any one frequency and increment up-down from that point.
2. Enter any two frequencies and scan between them with ANY increment, time delay or pause.
3. Scan a file of frequencies, search by description or wildcards.
4. Create Databases of frequency files. Sort by any field, and save to disk and/or send to printer.
5. Create 30 personal "Preset" frequency BANDS for SW, aircraft etc. including increment and mode. The most popular presets are included in the program.

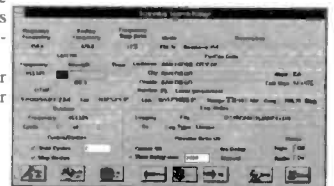
- Multiple Scanning Banks
- Multiple Scanning Diskfile Banks
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- Dual Radio Simultaneous Scanning
- Comma Delimited Conversion
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 - Automatic Birdie Lockout
 - Top Hits Table

WINDOWS™ Control for Scanners

ScannerWEAR™ SoftControl 2.0- WINDOWS 95'

compatible now supports:

- **OptoScan 456** with **Radio Shack PRO 2005/2006**
- **AOR 3000/3000A/8000** with **Radio Shack PRO 2035**
- **ICOM R7000/R7100/R9000**
- Memory banks include 100 channels per bank with frequency, description and mode.
- Search ranges include frequency, step, mode and description. New database search by service codes.
- Data logging to the file includes date and time stamp, signal strength, tone and number of hits, location (requires PerCon Database)
- Spectra analysis uses search ranges or displays logged data
- **NEW** High Speed CTCSS & DCS controlled scanning with the RS-2005/6, RS-2035 and OptoScan with 456/535.
- CTCSS & DCS controlled scanning on R7000/7100 & AOR 3000/3000A AOR 8000 with optional RC-125 Tone Interface Box
- Scan multiple groups, banks, or search ranges in the same session.
- Birdie control file. * Unlimited file size.
- Import PerCon Database and comma-delimited ASCII.
- Special Eprom support for the AOR 8000 including up and downloading of hex values, plus MODPLAN to enable lost 800-900 mhz.
- NEW database scan by service code, create memory banks from service codes.
- NEW memory bank up and downloads for ICOM R7000/R7100/R9000 and AOR 3000A/8000.
- NEW config window with support for com ports 1-8, IRQ calls on all ports, user modifiable dwell setting for all radios.
- NEW slave-master scanning with CIV protocol, scan on your receiver and all hits are transferred to the slave receiver for monitoring.
- NEW minimize window allows viewing of freq status while in any other WINDOWS or DOS application.



Computer Interface for the AR8000 & AR2700

Unlike some of the European devices sold today, this unit is smaller, lighter, and makes no power demands on your receiver. With the extra shielding and smaller size there is less chance of additional interference leaking into your radio. The AR8000INF is also the only interface that is upgradeable for use with the optional Tape recorder controller due first quarter '95.



- △ Low Power, powered by your serial port
- △ No Drain on the batteries in the radio
- △ Light weight, perfect for Laptop use
- △ Hi-Tech Surface mount design for reliability
- △ 100% Shielded cable to receiver for reduced interference
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Radio's Reckless Era

Chaos and Confusion Ruled Early Broadcasting

BY ALICE BRANNIGAN

It's hard to imagine now how much of a mess things were at the dawn of broadcasting. Rearranging and regulating the growing service so that stations didn't fight one another with interfering signals was a job and a half for the government. Call letters also were federally regulated, but many stations were issued call letters inconsistent with the government's own mandatory east-west prefix regulations!

Riding a Wave

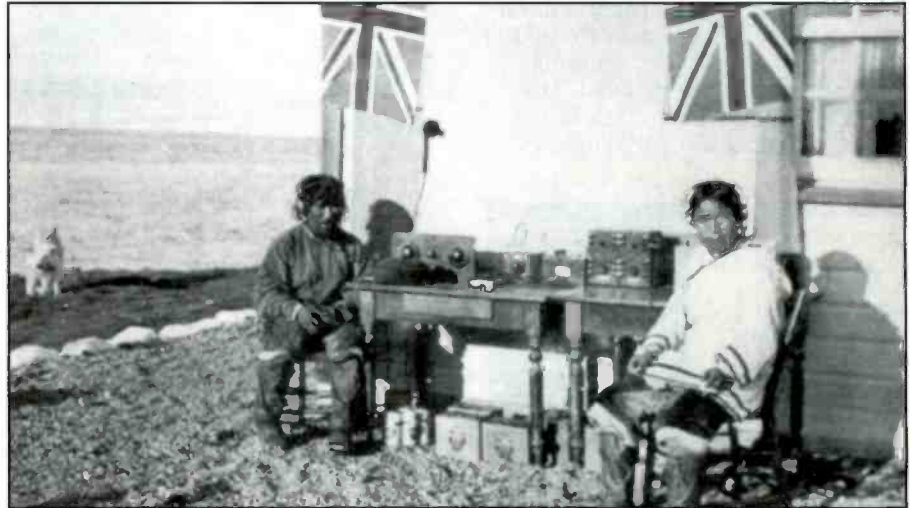
Every radio signal has a characteristic dimension that is expressed in terms relevant to space (its wavelength, in meters), as well as relevant to time (its frequency, in Hertz, or cycles per second). For example, according to formula, a signal having the wavelength of 228.9 meters, also is said to have a frequency of 1310 kHz.

When wireless telegraphy began, all stations used spark communications. By designing a transmitter and its antenna system to certain specifications, that transmitter could emit signals while having its maximum power output peak at a predetermined length of the carrier wave. This became known as a station's operating wavelength.

Apparently knowing a station's wavelength alone was sufficient for spark telegraphy's tuned circuit technology. Early wireless literature never mentioned operating frequencies. Perhaps that designation didn't become relevant until later as sophisticated radiotelephony and piezoelectric crystal technologies came into wider general use.

Yet, the use of wavelengths alone carried over into the early broadcasting era. Most of the first broadcasters were assigned to a common wavelength of 360 meters (which is on 833 kHz). Radio magazines, books, and station lists of the early 1920s invariably referred only to broadcasters' wavelengths.

Broadcasting began to expand quickly in 1922, and it became apparent that there were too many stations to comfortably fit on 360 meters. The Department of Commerce recommended spreading stations out onto an orderly band of newly created channels consisting of frequencies at 10-kHz intervals. The idea of using channels made from rounded-off wavelengths in the band was discarded because they usually



This 1928 photo from KDKA shows some of its audience at the RCMP outpost at Pond's Inlet, northern Baffin Island, Canada.

translated into awkward split frequencies—like 833 kHz.

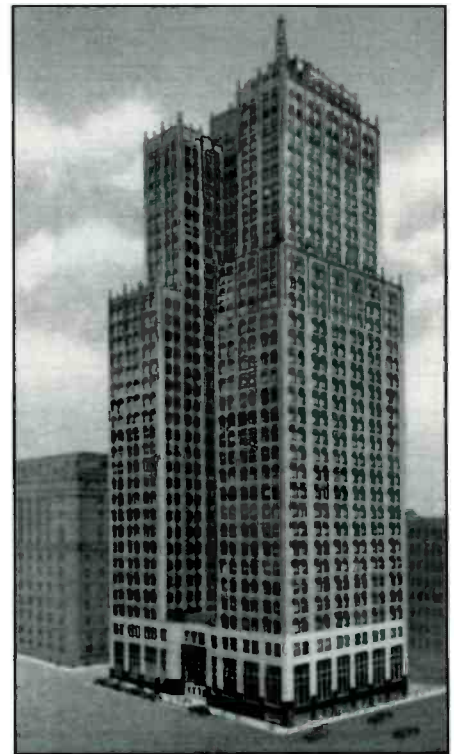
We don't know exactly when AM stations started receiving licenses designating frequencies, but official 1924 Department of Commerce station lists show broadcasting stations with their wavelengths and frequencies. Clearly, things were in a transition stage.

A few years later, the Radio Act of 1927 was passed to reorganize, standardize and control the chaotic broadcasting service. The Federal Radio Commission (FRC) was the agency formed to accomplish this mission—the predecessor to today's Federal Communications Commission.

At that time, there were 733 stations fighting to be heard on the 90 channels available for use without any limitations on frequency assignment, power and time of operation necessary for satisfactory operation.

The Department of Commerce's earlier recommendation for the technical need of channels to be assigned in orderly multiples of 10 kHz looked fine on paper. Obviously, they never had done much to put the idea into motion. Their orderly official records hardly revealed the actual disarray and cacophony on the band.

When the FRC was formed, its engineers were horrified to discover 129 stations operating on unauthorized split channels. That included some still lingering on



Here's KDKA's home when it was located in Pittsburgh's Grant Building at Third Avenue and Grant Street. That tower on the roof wasn't an antenna; it was a 3.2-million candlepower aviation beacon.



Station KYW has had no less than three broadcast venues east of the Mississippi River. Here's the KYW Building at 815 Superior Ave., N.E., Cleveland, Ohio, where it spent a little time in the 1960s.



**The Fort Worth Star-Telegram
and
Record-Telegram**

We wish to thank you for your report
on our broadcast.

This card will serve as verification of
your reception of our station.

RADIO STATION WBAP:
Bileen Flake
Secretary.

SCHEDULE

Central Standard Time
100 Lc. 489.7 Meters
5,000 Watts
National Wave

Monday, Wed., Thurs.
Saturday: 6 p. m. to
9 p. m.
Tuesday, Friday: 9 p.
m. to Midnight
Sunday: 1 p. m. to 3
p. m., 7:30 to 8:00 p.
m., 10 p. m. to Mid-
night.

Home of WBAP

WBAP sent out this QSL in 1928, showing its digs at the Fort Worth newspaper plant.

WDAF

**THE KANSAS CITY STAR'S
NIGHTHAWKS**

"The Enemies of Sleep"

This is to certify that
Baron Whifflepoofle
*is a member of The Kansas City Star's
NIGHTHAWKS and has been granted an official
charter from WDAF.*

Signed 
Earl Nighthawk - The Kansas City



Kansas City's WDAF loved the DX hobby and sent out these 1920s membership cards to its "Nighthawks" club, dedicated to "The Enemies of Sleep" who stayed up at night to listen. This card was issued to a DXer with the nickname "Baron Whifflepoofle."

broadcasting's original discontinued 833 kHz "360-meter common wavelength." There were another 41 stations operating on, or overlapping, the six channels set aside for the exclusive use of Canada. Some stations had simply taken it upon themselves to shift to a frequency of their own preference, rather than use the one assigned to them.

In addition, in the same geographic area where at least a 50-kHz separation was desirable to avoid interference in the primitive receivers of the era, stations were operating with 20-, 10-, 5- and even 2-kHz separations. Finally, roving portable broadcast stations were creating problems for established stations, perhaps intentionally at times.

The FRC made a study of the situation and reallocated broadcast facilities from coast to coast on June 15, 1927, in an effort to reduce interference. All stations were required to operate on channels of even multiples of 10 kHz, and the Cana-

dian channels were cleared. The transmitting power a station could use, its hours on the air, and other factors, were taken into account.

The reorganization had several benefits. On Nov. 14, 1927, all frequencies from 600 to 1000 kHz were established as clear channels. This was for the benefit of rural listeners, and allowed for operation of only one station on each frequency during night hours.

This was the first FRC reorganization of the broadcast band, in an effort to repair the five chaotic previous years when stations virtually ran rampant. It was a start.

East Meets West

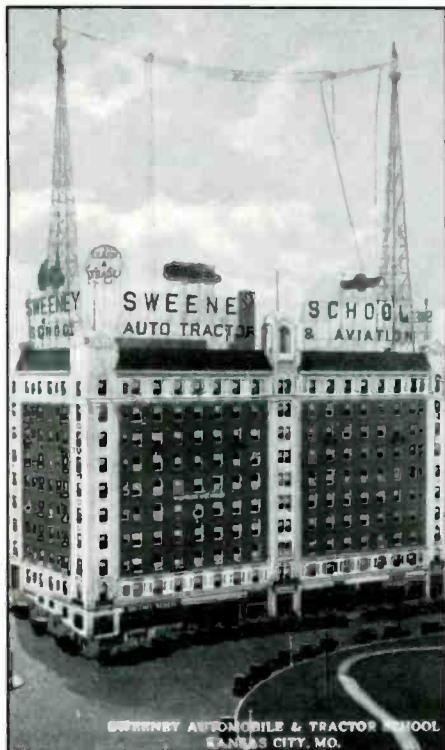
Do you think the frequencies were weird? Early broadcast call letter assignments were a mysterious mix of customs, regulations and anomalies.

How about those curious broadcast east-west callsigns, and the variations to that

theme? Does any reader know the westernmost broadcast station ever assigned "W" eastern-states call letters? What about the one easternmost with "K" western-states call letters? In the FRC's orderly and structured world, how odd that some stations ended up with misplaced call letters, like Pittsburgh's KDKA and Oklahoma City's WKY.

What's behind the different prefixes for eastern and western broadcasters? Also, what about rumors the FCC may soon end this practice, allowing western broadcasters to use "W" call letters?

The practice of various nations being allocated blocks of letters for wireless identification purposes resulted from the London Radiotelegraph Conference of 1912. This was necessary to eliminate the chaotic situation created after the world's ship and coastal wireless stations began making up their own unofficial callsigns, many of which were being duplicated. The U.S. eventually was awarded exclusive use of all possible



The Sweeney School in Kansas City, Mo., was the original site of station WHB, with its eastern-states call letters.

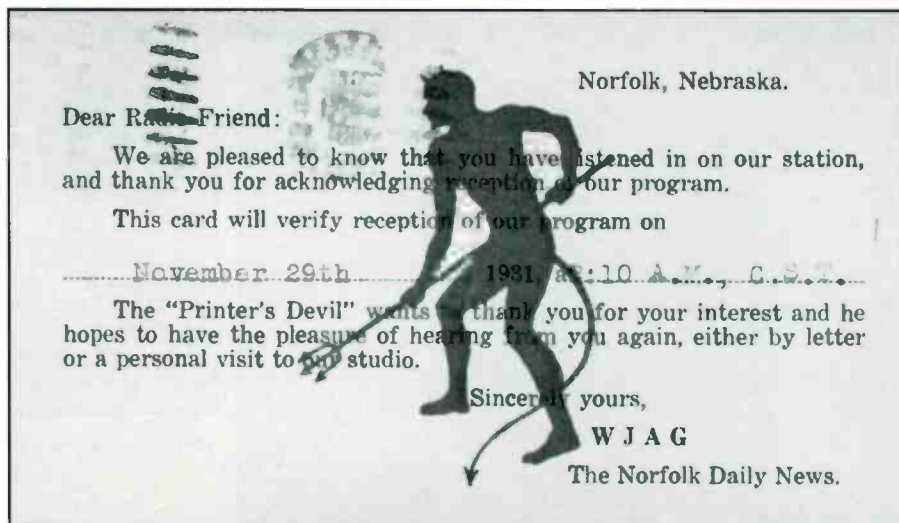
alphanumeric combinations commencing with the initial letters K, N and W, as well as partial access to the initial letter A.

According to custom, then later per actual 1933 regulation, no U.S. broadcasters west of the Mississippi River may be assigned "W" call letters. FCC Regulation 73.3550(e) also stipulates that no "K" prefixed call letters will be granted to stations east of the Big Muddy. There have been exceptions, especially a large number of Midwest stations that received "W" eastern call letters. Most misplaced call letters were issued before mid-1923, though the practice continued in abundance throughout the 1920s. No stations in the far west ever were assigned "W" call letters.

When station KYW was moved from Chicago, Ill., to Philadelphia, Pa., it made KYW the easternmost "K" prefixed broadcaster. The westernmost "W" callsign back in the 1920s surely must have been El Paso, Texas' 100-watt WDAH.

More than 70 years after the practice began, today there seems no definitive explanation as to why the issuance of differing east-west broadcast callsigns was started. Perhaps it was thought easier to keep track of the station's records in government files. Or maybe it was to let listeners more readily determine when they were hearing transcontinental DX.

One wonders why so many misplaced "W" eastern states call letter assignments turned up on Midwest stations. Did those stations request eastern-state call letters



WJAG, a misplaced call letters station in Norfolk, Neb., sent out this friendly QSL in 1931. It invited listeners to visit the station.

because they felt they would benefit from an image tied to the eastern states? Misplaced "W" stations included many that went on to number among AM radio's greatest and most familiar voices from the nation's heartland.

Let's get capsule views of the roots of several famous historic stations having anomalous call letters. Each of the following stations still can be heard.

- KDKA, Pittsburgh, Pa., began operating in September 1916 as Dr. Frank Conrad's 8XK. It claims to have presented the world's first scheduled broadcast when it was owned by Westinghouse and began using the call letters KDKA in November 1920. In the 1920s, KDKA had relay transmitters in Massachusetts, Illinois and Nebraska, and was easily heard across North America.

- KQV, Pittsburgh, Pa., began in November 1919 as ham station 8ZAE. It obtained its commercial broadcast license as KQV in January 1922.

- KYW, Philadelphia, Pa., began as a Westinghouse station in Chicago in November 1921, but was moved to Philadelphia in 1934. In 1956, the call letters were moved to Cleveland, but were returned to Philadelphia.

- WACO, Waco, Texas, started up in July 1922 under the call letters WJAD. The call letters WACO were assigned in 1927.

- WBAP, Fort Worth, Texas, began in May 1922 with a 10-watt transmitter.

- WDAF, Kansas City, Mo., has been operating since February 1922. The station had catered to the DX hobby with special late-night programming.

- WHB, Kansas City, Mo., originally was put on the air in April 1922 by Sweeney Automotive and Electric School.

- WHO, Des Moines, Iowa, first went on the air in April 1924 under the auspices of Bankers Life Co.

- WIL, St. Louis, Mo., commenced in February 1922. It claims to be the "oldest station west of the Mississippi River."

- WJAG, Norfolk, Neb., was given its license in June 1922, and was put on the air by the *Norfolk Daily News*.

- WKY, Oklahoma City, Okla., began as parlor and garage station 5XT in January 1920, then grew and received its commercial license in April 1921.

- WMT, Cedar Rapids, Iowa, took to the airwaves from someone's garage in July 1922 with 20 watts and the call letters WJAM. In 1928, WJAM's owner moved the station to Waterloo, changing WJAM's call letters to WMT. In 1934, new owners returned the station to Cedar Rapids.

- WNAX, Yankton, S.D., first hit the airwaves in November 1922 with a home-brewed transmitter. In 1943, the station erected a 927-foot tower, which was claimed at the time to be the world's tallest.

- WOAI, San Antonio, Texas, was born in September 1922 as a 500-watt station.

- WOC, Davenport, Iowa, originally was a 5-watt ham station in Rock Island, Ill., with the call letters 9BY. It received a commercial license in February 1922. In May 1922, it was purchased by Palmer School of Chiropractic, and moved a very short distance across the Mississippi River to Davenport, Iowa.

- WOW, Omaha, Neb., originally was known as WOAW when it began in April 1922. The station was put on the air by the Woodmen of the World fraternal organization.

- WRR, Dallas, Texas, began at some point in 1920 as a 20-watt station dispatching municipal fire trucks. Someone at the firehouse came up with the idea that between fire calls they could tell jokes, give the weather, read the newspaper, kid around and play music. The station became popular. In 1921, the city took control of

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Leading Edge Technology has now become affordable.

The answer to every receiver need. Prior to the AR5000, it took two, three or even four receivers to cover this range, plus the small size and low power demands make the AR5000 ideal for field use, remote control radio, and local & remote computer control. Every circuit and component is state-of-the-art, surface mount technology. Low noise circuits and devices assure wide dynamic range and great sensitivity.

- Totally computer controllable.
- Local and remote control of all functions.
- 7 I.F. Band width filters
- Triple conversion to reduce imaging.
- Multi-Receiving modes covers today's data and voice communications.
- High speed scan and search modes
- 1000 memory channels (10 Banks x 100ch)
- 2 antenna inputs computer/front panel control.
- Varactor RF tuning .5 - 500MHz for low cross talk and intermod
- Switchable attenuator for high RF environments.
- Power 13.8VDC at <1amp, AC Adaptor included
- Small, lightweight (approx. 8.5"W x 3.5"H x 10"Deep)
- SDU5000 compatible

AR5000 Specifications

Frequency Range:
10kHz - 2,600MHz
Receiving Mode:
FM, AM, LSB, USB, CW, Special
I.F. Bandwidth: 3kHz, 6kHz, 15kHz, 40kHz, 110kHz, 220kHz, 0.5kHz (Opt.)
Triple Conversion: I.F.
622.2, 10.7 & .455MHz
Frequency Stability:
±1ppm (0 to 50C) ext OSC jack
Antenna Impedance:
50-Ohm (N, BNC)
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1Hz to 999.999kHz
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50 steps/second (less than 100kHz steps)
Power Supply:
DC 12V, (<1A) 120VAC adaptor incl.



AR 3000A
Compact,
professional
quality, wide range
monitor receiver



AR8000 shocks the market. AOR made every effort to incorporate the latest technology in to this new scanner.

• SPECIFICATIONS •

- **Range:** .5 - 1900MHz* usable to 100kHz
- **Modes:** AM/NFM/WFM/USB/LSB/CW
- **Stepsize:** 50Mz to 999.995kHz
- **Sensitivity(μV):** 30 to 1000MHz
SSB .2 AM 1.0 NFM .35 WFM 1.0
- **Filters:** (kHz) SSB 4 AM/NFM 12
WFM 180
- **Memories:** 50 ch. x 20 banks=
1000 total
- **Size/Wt.:** 6.1 x 2.8 x 1.6 inch.
20 oz. batt. incl.

* Cell blocked for all, but Approved agencies.

- Ferrite Rod antenna below 2MHz
- Only portable scanner on U.S. market to have true SSB, both LSB & USB.
- Others attempt SSB using a BFO, but are difficult to tune and produce poor SSB audio.
- 4 level alpha numeric LCD read out frequency, mode, signal strength, band scope spectral display, battery low, remote and more.
- Computer control up/down load data, will add a new dimension to the world of scanning.
- Clone your memory banks with a friend, load 1000 memory channels in seconds



"The New Star" AR 2700...Out of this world Wideband Scanner

The new AR 2700 from AOR is another break-through for general coverage scanners at an affordable price.

• FEATURES •

Wide frequency range: 500kHz to 1,300MHz with various step size, 5, 6.25, 9, 10, 12.5, 20, 25, 30, 50, & 100kHz (wide FM only).

Auto Mode tuning: Comprehensive band plan has been pre-programmed to simplify the operation. The AR 2700 will automatically select the appropriate mode and channel step.

Great flexibility in programming: for Scan and Search mode. Delay, Pause and Priority intervals can be set to a specific value. Program search, Manual search, Bank link, Delay, Pause, Pass, Scan, Bank delete, Priority are provided.

High Capacity: 500 channels into 10 banks and 10 search banks.

Optional Digital Voice Recording:

20 seconds of digitized recorded conversation and playback through the use of the RU-2700 option.

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Incredibly wide continuous coverage from 100kHz all the way up to 2036MHz* • Receives all modes • FM, AM, FMW, LSB, USB, and CW - so you'll hear everything! • Superb R.F. performance thru the use of 15 switched discreet band-pass filters with GaAs FET R.F. amplifier, delivers high sensitivity, wide dynamic range and excellent intermodulation rejection • Tuning rates are continuously selectable from 50Hz to 1MHz steps • True professional's choice!



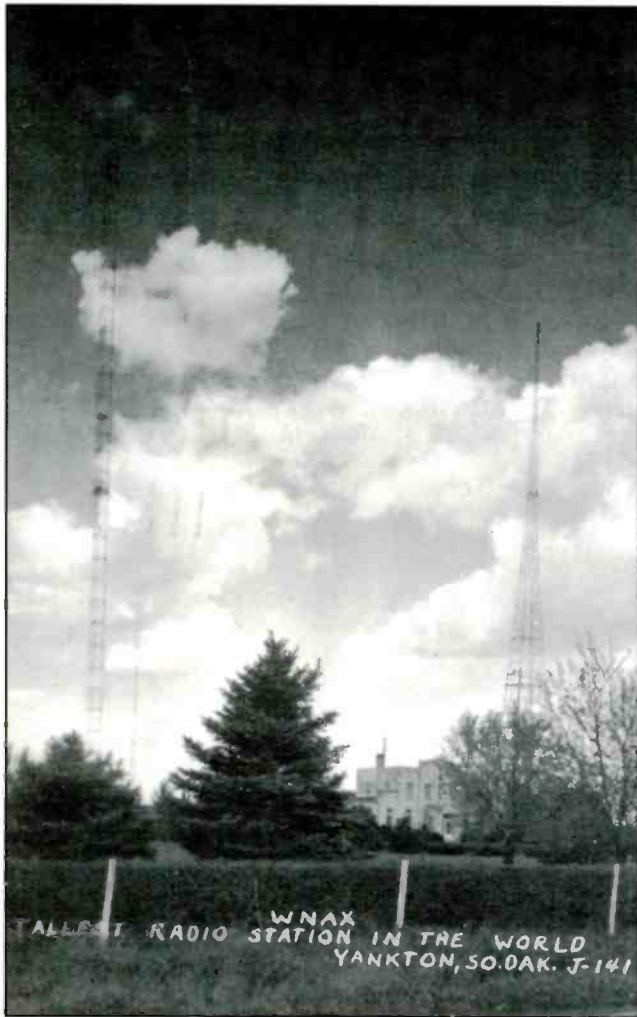
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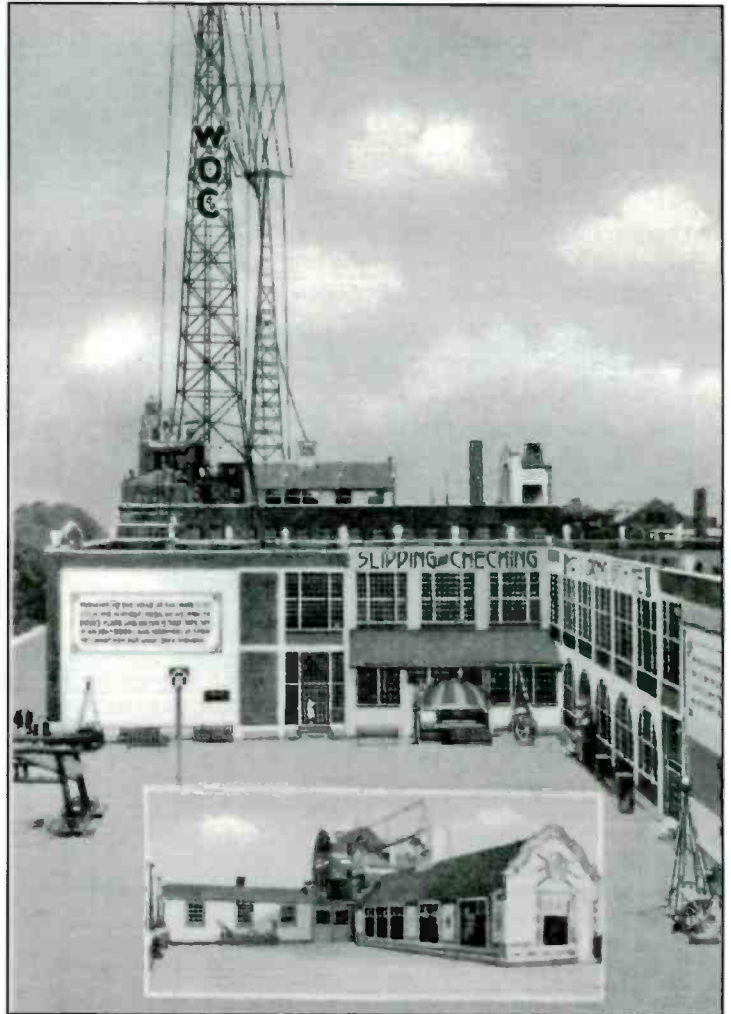
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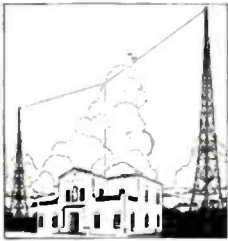




"The world's tallest radio station" was the record set by WMAX, Yankton, S.D. That's not as interesting as the call letters because WMAX is hundreds of miles west of the Mississippi River.



Station WOC of Davenport, Iowa, shows its towers in this early postcard view.



WOAI's new 50,000 Watt Transmitter, Located 18 miles north of San Antonio at Selma, Texas.

**50,000 WATTS
FULL TIME**

WOAI

CLEAR CHANNEL

**1190 KILOCYCLES
252 METERS**

THE SOUTHERN EQUIPMENT COMPANY STATION
IN SAN ANTONIO

Thank you for your comment on reception from WOAI. We are always glad to hear from our listeners, and invite suggestions and criticism as well as your applause.

We want you to feel that WOAI is your station all the time, and when you're in San Antonio . . . Come to see us.

WOAI

This verifies reception as you requested

2-19-31 - Gunter Hotel Breakfast

In 1931, San Antonio's WOAI sent this veri to a listener. The clear-channel 50-kW station sent these cards to listeners throughout North America.

the station from the firehouse, and by 1927 was selling commercial time. Its present owners renamed this historic station KAAM.

This gives you a flavor of some of the presently active pioneer stations' given call letters that didn't fit the federal blueprint. Of course, there are others.

So far as is known, the FCC is not planning to change its long-standing east-west call-letter policy. Even so, stations near the Mississippi River seem to be granted some leeway to flip-flop between the two prefixes. For example, within recent months, Louisiana's KLEB-FM became WTIX-FM, while WUFM turned into KAFL. Minnesota's KNOW changed into WMNN, KTCO became WAKX, and KREV switched to the call letters WTCX. Missouri's KRAM became known as WKBQ.

The material presented this month was wholly developed because of inquiries and correspondence from our readers. Reader participation is what these pages are about.

Please pass along any old-time radio or wireless QSLs (originals or good copies), station lists, anecdotes, memories, news clippings, station photos, picture postcards, ideas or questions. It's all appreciated. Let's meet here again next month on the road to Radioville. ■



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The Drake SW8 – Finally, Professional Desktop Performance In An Affordable, Portable World Band Shortwave.

The company that has been setting the standards in premium-quality world band shortwave performance now puts top-of-the-line features and technology at your fingertips with the SW8... wherever you want to take it. Designed for both desktop use and easy portability, the

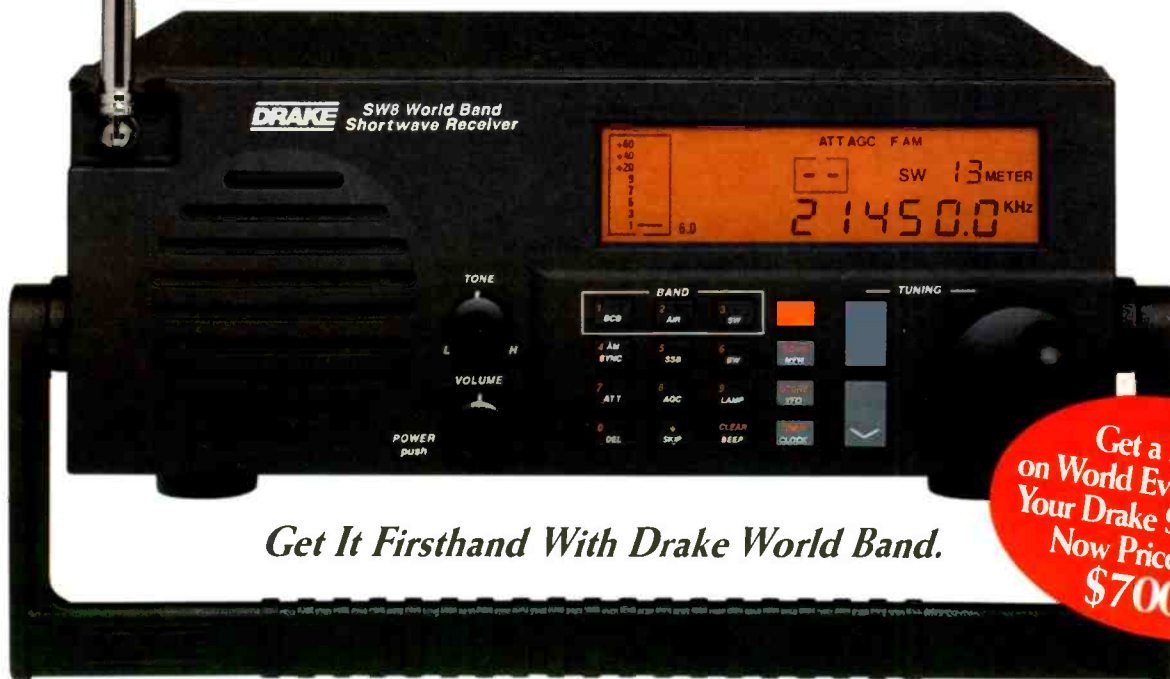
Drake SW8 includes many of the same features that have made Drake a perennial favorite of experts – superb audio, versatility, and the unique combination of professional quality and functional simplicity. So tune in the world and get the best of all worlds – quality and affordability, desktop

technology and portability.

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Get a Handle
on World Events... Order
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Motorola's Radius SP10 Business Handheld

BY CHUCK GYSI, N2DUP/WYH960, EDITOR

Last month, POP'COMM took a look at RadioShack's PRS-101 GMRS handheld radio that families can use to keep in touch via two-way radio. However, we recognize that not all radio users are families and may not qualify for a license in the General Mobile Radio Service.

Thus, this month we're looking at a business two-way walkie that could be used in much the same way the GMRS radios can be used, but for someone in business. While business communications aren't totally banned from GMRS, the only way you can get a license is as an individual. If you have a small business that involves family members only, then GMRS might very well work for you.

However, if you have employees or associates, or you even work for a company, you've got to look at a radio that can be licensed in the business radio service. The Federal Communications Commission will license businesses on a multitude of frequencies on VHF low band, 151- and 154-MHz on VHF high band, 460.650 to 465.000 and 465.650 to 470.000 MHz on UHF, as well as frequencies on the UHF-T band ranges in the largest metro areas, and the 800- and 900-MHz bands.

For most businesses, radios that operate in the VHF high or UHF ranges can prove the most inexpensive and the most readily available. You might be surprised to find business handheld radios for sale right next to GMRS HTs in a sporting goods or automotive supply shop, for instance.

Checking Out Motorola

Perhaps the most popular brand of inexpensive business handheld radio is made by Motorola and is sold under its Radius label. The radios are in use all over the world and show up at just about any major event or disaster.

For our review, POP'COMM obtained a pair of Motorola Radius SP10 VHF business radio handhelds. But we didn't buy them new! We picked up a pair of used radios that had been in service for several weeks. And here's why: GMRS radios, as we reviewed last month, usually aren't subjected to a lot of wear and tear. The family spending several hundred dollars for a pair of UHF radios most likely is going to



The Motorola Radius SP10 VHF transceiver is even more versatile with the accessory speaker-microphone. (Photo by Chuck Gysi, N2DUP)

take care of the walkie-talkies. That's different in business applications, where the radio becomes an essential tool in everyday work. The radio is going to be used more often and will be under more stress.

Thus, we let another radio user break in these Radius SP10s for several weeks before we obtained them for the purposes of this review. If anything wasn't going to hold up to the rigors of business usage, we'd surely spot it!

When we received the radios, they appeared to be in great shape. After a half-hour of cleaning with a simple chemical spray solution, the radios looked brand new! Nothing worn, cracked or busted on either HT., everything was in working order. We're convinced these inexpensive handhelds will hold up to a lot of usage.

Dot Comm

When you buy a Radius SP10, it's likely you'll do so preprogrammed to the frequency you desire, most often 151.625, 154.570 or 154.600 MHz. The pair we picked up were "green dot" programmed for 154.600.

However, with the local McDonalds restaurants operating order boards on 154.570, we decided to change to this "blue dot" frequency to test the sensitivity of the radios' receivers while driving around town. It proved to be a good test.

But first, we were surprised at how easy it was to reprogram these radios without paper work or manuals of any kind. In fact, while one ad we saw for the SP10s showed them capable of operating on only 15 available frequencies, we found a 16th frequency, too. It's as easy as sliding a few switches inside the radio!

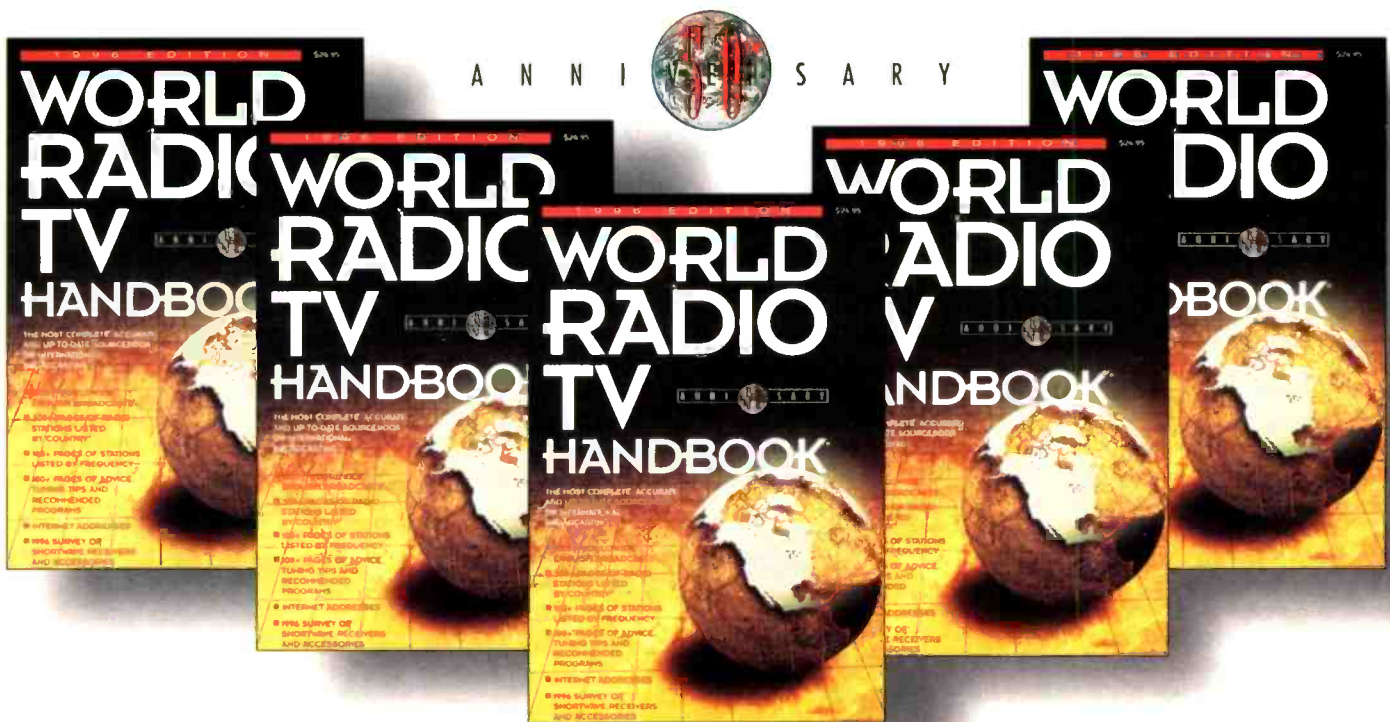
Having radios capable of operation on various frequencies with easy programming makes them valuable to emergency communicators or businesses that have a unique need for flexibility. We're pleased the SP10 has this flexibility built in without the need for crystals or programming cables or software. While the feature isn't touted by Motorola from its hallowed halls in Schaumburg, Ill., we'll fill you in.

Getting Programmed

Here's the first steps you'll need to

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Get the Most Out of Your Radio

CIRCLE 134 ON READER SERVICE CARD



This is how you can reprogram the operating frequency of a Motorola Radius SP10 VHF handheld. With the battery compartment cover removed, lift out the rechargeable battery and the thin plastic cover underneath the battery. Notice the programming dipswitches inside the bottom righthand side of the radio. (Photo by Chuck Gysi, N2DUP)

undertake to change the operating frequency of an SP10. First, remove the front battery cover. You'll get used to this procedure, because you need to remove the battery to charge it in the charging base. After removing the front cover, pop out the rechargeable battery.

Underneath the battery is a thin piece of black plastic that sits on top of the circuit board and provides a buffer between the battery and the components. Carefully lift out this piece of plastic by prying it from the sides. Remember which direction it goes so it's easy to replace.

When the thin plastic cover is removed, you'll notice a row of four dipswitches in the lower righthand side of the radio (while looking at the radio from the front). By changing the dipswitches around, you can reprogram the radio to any of 16 available frequencies. In doing this, we learned that the SP10 can be programmed to any of 14 business frequencies in the 151- and 154-MHz ranges, as well as two special industrial frequencies, 154.490 and itinerant-use 158.400! The Special Industrial Radio Service is used by farmers, road contractors, blasters, mines, pipelines and heavy construction firms.

The accompanying chart tells you how to reprogram an SP10. If you are licensed on 151.625, and the store has only "green dot" radios in stock...it's not a problem! Just open up the radio and reprogram it. Likewise, if you are licensed on both 151.625 for nationwide operations and 154.600 for local operations, you can change the frequency easily while leaving or coming into your local operating area.

There is yet one more advantage to these radios. There are a lot of businesses that are licensed for base stations and mobile radios in the 151- and 154-MHz bands on routine Business Radio Service frequencies. Perhaps those businesses have radios installed in their company vehicles only, and once the worker leaves the truck or car, they no longer have contact



The optional quick charger base for the Radius SP10 can recharge the Motorola battery in three hours, or the standard 16 hours. (Photo by Chuck Gysi, N2DUP)

with the individual. Enter the Radius SP10. For an inexpensive additional cost, the business can keep in contact with their workers. With optional CTCSS encoder/decoder boards available for installation inside these radios, they can be set up on the right frequency and CTCSS tone quickly—all at a minimum price and no special ordering requirements.

Just one thing: Keep in mind that unless you are licensed on a specific business or special industrial frequency, you cannot use the frequency. The Federal Communications Commission has stringent fines for those who choose to violate licensing re-

Motorola Radius SP10 VHF Transceiver

Channels: 1

Frequencies available by dipswitch programming: 151.625 (business itinerant), 151.655 (business), 151.685 (business), 151.715 (business), 151.775 (business), 151.805 (business), 151.835 (business), 151.895 (business), 151.925 (business), 151.955 (business), 154.490 (special industrial), 154.515 (business), 154.540 (business), 154.570 (business low power), 154.600 (business low power), 158.400 (special industrial itinerant)

Power output: 1 watt

Battery: Removable, 7.5 volts

Dimensions: 2.5 by 1.25 by 5.25 inches

Weight: Approximately 11 ounces

Antenna length: 6 inches

Antenna connector: Screw-in

Jacks: Side-mounted for earphone and/or microphone, especially a headset or speaker-mic combination

Miscellaneous controls: push-to-talk switch, battery compartment door releases (2), volume/on-off, squelch pushbutton (to monitor channel before transmitting, especially when CTCSS is used)

Accessories included: Standard-rate wall charging adapter, rechargeable battery, plastic belt clip, flexible antenna, audio accessory connector

Warranty: one year, limited

License: Business or Special Industrial Radio Service license required from Federal Communications Commission to operate. Cost varies because of possible associated coordination costs depending on frequency and radio service selected.

Place of manufacture: Mount Pleasant, Iowa

Programming the Motorola Radius SP10 VHF Radio

As described in the review, you can reprogram the SP10 VHF radio to any of 16 frequencies. By setting the dipswitches, you program the operating transmit and receive frequency.

In the following list by frequency, we tell you what position you need to set the switches. If you look at the dipswitch programming component inside the SP10, you'll see two things you need to know. At the top, it's marked "ON" and at the bottom, the numbers 1-2-3-4 are shown for each of the four dipswitches.

In the following list, "0" means setting the switch in the ON position; in other words, slide the switch to the "ON" side, or to the top of the component. A "1" means setting the switch to the "off" position, or the side where numbers 1-2-3-4 are shown. The programming is shown from left to right. For example, 151.685 is shown as 0101. That means switch "1" should be set as ON, switch "2" should be off, switch "3" should be ON and switch "4" should be off.

Frequency (MHz)	Usage	Dipswitches
151.625	business itinerant	0011
151.655	business	1000
151.685	business	0101
151.715	business	1010
151.775	business	1001
151.805	business	0110
151.835	business	0010
151.895	business	1101
151.925	business	0001
151.955	business	1100
154.490	special industrial	1011
154.515	business	0111
154.540	business	1110
154.570	business low power	1111
154.600	business low power	0000
158.400	special industrial itinerant	0100

quirements. And they especially come down on those who cause interference to licensed stations!

Moto Quality

For quite some time, Motorola radios have been known for their quality. These low-end Radius SP10s are no exception. The radios are solidly built and hold up well. They won't hold up to the abuse a police officer may put a radio through, but they're not designed for that usage.

I've toured the Motorola Radius factory and distribution/service center located on opposite sides of Mount Pleasant, Iowa. The facilities not only make the radios, but also ship them all over the world. Imagine what a warehouse of two-way radios looks like! Quite tempting, to say the least.

The service department technicians I spoke with are top-notch. And the workers in the factory are interesting to observe as they operate the complex robotic machinery that makes each radio what it is. The quality control is very evident at the facility. I would not hesitate to send my radios there for repair, if necessary.

Testing, Testing

We tested these radios and for compar-

ison's sake, will use last month's GMRS radios for one test. We got about a mile or two easily out of the UHF 2-watt radios. However, these 1-watt VHF handhelds had extended range in a combination rural-urban setting. The Radius SP10s reached at least an extra mile in the same test we performed on the GMRS radios. In other words, we could get up to almost three miles range with these VHF radios.

We also checked out the Radius handhelds' sensitivity. The point of this test is that handheld radio signals are weaker and they need to be able to respond to low-power communications. Driving around town, we used both a Ranger Communications RCI-1001 low-end VHF handheld and the SP10. Both were clipped to the sun visor in the car and tuned to the local McDonalds order board frequency, 154.570 MHz. In all instances, the SP10 always heard the McDonalds transmissions first and for the most distance. At times when the RCI-1001 wasn't hearing anything, the SP10 was crackling with teen worker banter and orders for Big Macs and Diet Cokes.

The audio quality of these radios on receive and transmit is quite fine. We listened on radios costing much more and transmitted on radios costing much more while using these radios. You'd be hard

pressed to tell which radio you were hearing on the air.

Accessories, Please

There are many accessories available for the SP10 that will make radio usage a treat. As you can see in the picture, we obtained speaker-mics for each of the radios tested for this review. The speaker-mics are very professional looking (much like you'd see clipped to a police officer's shirt or jacket) and appear very rugged. We liked the feel of these Motorola speaker mics, however, the plug configuration is slightly off from what we're used to on other common radios such as RadioShack, Icom, Standard, Yaesu and Alinco. The rotating clip on the back of the mic makes it easy to clip it in any desired position.

Other readily available options for this radio include stubby antennas, CTCSS encoder/decoder retrofit kits, earpiece, headset with swivel boom microphone (these look nice; a local home center store uses these), earpiece with microphone, external antenna adapter, rapid battery charger, drop-in charger converter kit, leather carrying case, leather holster with regular or swivel belt loop, chest-pack carry holder, waterproof bag, spare batteries and spare belt clips. Most full Motorola Radius dealers should be able to order any of the accessories for you.

UHF Version

We should note that there is a UHF version of the SP10 available, too. While we didn't test it, the UHF version is 2 watts.

It is available on the following frequencies, and presumably can be programmed in the same manner as the VHF SP10: 462.575 (GMRS), 462.625 (GMRS), 462.675 (GMRS), 464.500 (business itinerant), 464.550 (business itinerant), 464.325 (business), 464.825 (business), 467.7625 (business low power), 467.8125 (business low power), 467.850 (business low power), 467.875 (business low power), 467.900 (business low power), 467.925 (business low power), 469.500 (business itinerant) and 469.550 (business itinerant).

Summary

If you have a unique need for two-way commercial communications, the Motorola Radius SP10 transceiver may be low-end, but it's top-notch on delivery. Price range can vary greatly, however, you can expect to pay about \$240. If CTCSS encode/decode privacy is added, expect to pay about \$50 more. For the UHF version SP10, expect to pay about \$270. The handy speaker-mic averages about \$55. The radios are available from most Motorola and Motorola Radius dealers (check your local telephone directory) and many general retail and office-supply stores. ■



Selected English Language Broadcasts

Winter 1996

BY GERRY L. DEXTER

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

Time	Station	Frequency	Time	Station	Frequency	
0000:	Radio Thailand	15370		Radio Romania Int'l	5990, 6155, 9510, 9570, 11940	
	(30) HCJB, Ecuador	9745		Voice of Free China, Taiwan	5950, 9680, 11825, 15345	
	Radio Exterior Espana	9540	(30) Radio Portugal Int'l	6075, 9570		
	Radio Bulgaria	7480, 9700	0300:	Radio Thailand	15370	
	Voice of Russia	7105, 7125, 7180		Voz Evangelica, Honduras	4820	
	China Radio Int'l	9710, 11715		Deutsche Welle, Germany	6045, 6085, 6120, 9535, 9650	
	Monitor Radio, USA	7535, 9430		China Radio Int'l	9690, 9710, 11715	
	Radio Ukraine Int'l	9750, 11780, 11875, 11950		Radio Ukraine Int'l	9685, 9835, 9860, 11875	
	(30) Radio Netherlands	9860, 11655		Channel Africa, South Africa	5955	
	V of People of Kampuchea	11938		Faro del Caribe, Costa Rica	5055	
	AWR, Costa Rica	5030, 6150, 7375, 9725, 13750		Radio Cultural, Guatemala	3300	
	Radio Prague, Czech Rep.	7345, 9405		Radio Japan	11840, 11895, 17810	
	Radio Pyongyang, N. Korea	11335, 13760, 15130		(30) UAE Radio, Dubai	11945, 13675, 15400, 17890	
	Radio Yugoslavia	9580, 11870		(40) Voice of Greece	9420, 9935	
	(30) VOIRI, Iran	7180, 7260, 9022		0400:	Voice of Turkey	9445
(50) RAI, Italy	9645, 11800	(30) Radio Netherlands			6165, 9590	
0100:	Radio Moldova	9540			Radio Bulgaria	9700, 11710
	Deutsche Welle, Germany	6040, 6085, 6145, 9555, 9640, 9670			Radio Romania	5990, 6155, 9510, 9570, 11940
	(Su) Radio Norway	6010, 6120	Swiss Radio Int'l		6135, 9885, 9905	
	Radio Slovakia Int'l	5930, 7300	(30) Radio Yugoslavia		9580, 11870	
	(30) Radio Austria Int'l	9655	0500:		(30) Radio Finland	9635, 11755
	Voice of Vietnam	7250			Radio Lesotho	4800
	(30) Radio Netherlands	9860, 9890, 11655			Swiss Radio Int'l	6165, 9535
	(40) Vatican Radio	9650, 11935			Kol Israel	5885, 7465
	(30) Voice of Greece	9420, 9935			Voice of Nigeria	7255
	Radio Canada Int'l	9755			(M-F) R. New Zealand Int'l	11900
	Radio Havana Cuba	6000, 9830			HCJB, Ecuador	9745
	BBC	5975, 6175, 6180, 6195, 7325, 9590, 9915, 11750, 11955, 15360			Radio Exterior Espana	9540
	Radio Budapest, Hungary	6010, 9835, 11910			(30) Radio Austria Int'l	6015
	Radio Japan	5980, 11840, 11860, 11910, 17810, 17845		Vatican Radio	5860	
	Radio Korea, South Korea	11810, 15575		Channel Africa, South Africa	5995, 9695	
Swiss Radio Int'l	6135, 9905	0600:		(30) R. Vlaanderen Int'l, Belgium	9925	
Voice of America	5995, 6130, 7405, 9455, 9775, 13740			Voice of Russia	5905, 5920, 5930, 7175, 7270, 7330, 7345, 9825	
0200:	Radio New Zealand Int'l			15115	(30) Radio Austria Int'l	6015
	Voice of Russia			5920, 7105, 7270, 7345, 9580, 12030, 12050	Vatican Radio	5860, 7250, 9645, 11740, 15215
	(30) Radio Austria Int'l		9655	BBC	6005, 7160, 9410, 9600	
	RAE, Argentina		11710	V of Mediterranean, Malta	9765	
	Croatian Radio		5895, 7370, 11635, 13830	Voice of America	6040, 9630	
	Radio Cairo, Egypt		9475	GBC, Ghana	4915	
	(50) Vatican Radio		7305, 9605	Radio Kiribati	9825	
	Radio Sweden		9695			

Time	Station	Frequency	
0700:	(03) Croatian Radio	5920, 7370, 9830, 13830	
	Voice of Free China, Taiwan	5950	
	HCJB, Ecuador	5900, 6050	
	(40) Trans World Radio, Monaco	7110	
	Monitor Radio, USA	7535	
	(30) Radio Netherlands	9700, 9720	
	Radio Australia	5995, 6020, 6080, 9580, 9710, 9860, 15415	
	Solomon Islands BC Service	5020, 9545	
	0800:	Radio Finland	9760, 15330
		(M-F) Radio New Zealand Int'l	9700
KNLS, Alaska		6150	
Radio Korea, South Korea		7550	
King of Hope, Lebanon		6280	
0900:	CKZN, Canada	6160	
	(30) FEBC, Philippines	11635	
	Deutsche Welle, Germany	6160, 7380, 11715, 11725, 15145, 17780	
	CFRX, Canada	6070	
	(10) Radio Vlaanderen Int'l	9960, 12000	
	BBC	9410, 15070, 15280, 15575	
	AWR, Guam	9530	
1000:	Radio Australia	7240, 9580, 9860	
	All India Radio	15050, 17387	
	Voice of Vietnam	7250, 9840, 15010	
	(30) Radio Korea, South Korea	11715	
	UAE Radio, Dubai	13675, 15395, 17825	
1100:	AWR, Costa Rica	5030, 6150, 9725, 13750	
	Radio Jordan	11970	
	HCJB, Ecuador	12005	
	(30) HCJB, Ecuador	15115	
	NBC, Papua New Guinea	4890	
	Radio Singapore	9530	
	(30) Radio Sweden	13740, 15120, 15240	
	(30) VOIRI, Iran	11745, 11790, 11875, 11930, 17750	
	Radio Bulgaria	15635, 17625	
	Voice of Vietnam	7250, 9840, 15010	
1200:	Radio Finland	11735, 15400	
	Radio Tashkent, Uzbek	7285, 9715, 15295, 17815	
	Radio Australia	5995, 9560, 9580, 9615, 11800, 15530	
	Radiobras, Brazil	15445	
	V of People of Kampuchea	11938	
	Radio France Int'l	9805, 11615, 13625, 15115, 15195, 15325, 15530	
	(30) Radio Bangladesh	7185, 9650	
	Polish Radio	95215, 11815	
	(30) R. Vlaanderen Int'l, Belgium	13670	
	(30) Radio Sweden	11650, 15240	
1300:	Radio Pyongyang, N. Korea	9630, 9640, 11740, 13670	
	(Su) Radio Norway	11840	
	Radio Moldova	15315	
	Monitor Radio, USA	6095, 9455	
	Radio Tashkent, Uzbek	7285, 9715, 15295, 17815	
	KNLS, Alaska	7365	
	(30) UAE Radio, Dubai	13675, 15395, 17825, 21605	
	Radio Canada Int'l	11955, 17820	
(30) All India Radio	13732, 15120		
1400:	Radio Jordan	11970	
	(30) Radio Moldova Int'l	11580	
	SLBC, Sri Lanka	9720	
	(Su) Radio Norway	11840	
	China Radio Int'l	7405	
	RTM, Morocco	17595	
	Radio France Int'l	15405, 17560	
	Voice of Mediterranean	11925	

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PS-120



RS-300



PS-400X



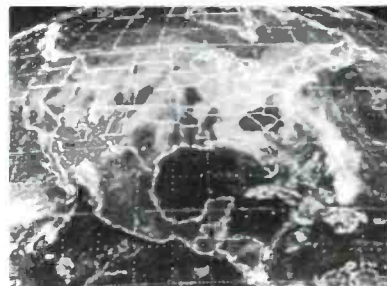
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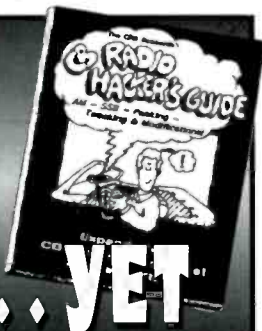


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Time	Station	Frequency	
1500:	(Su) Radio Norway	11840	
	Trans World Radio, Guam	11580	
	FEBA, Seychelles	9810, 11870	
	(30) Radio Finland Int'l	11900, 15400	
	(30) VOIRI, Iran	11875, 15260, 17750	
	Swiss Radio Int'l	12075, 13635, 15545	
	Radio Japan	11955, 15355	
1600:	(30) Radio Finland	9680, 11755	
	Channel Africa, South Africa	9695	
	Radio Australia	9580, 9615, 9860, 11660, 11695, 11880	
	Voice of Ethiopia	9560	
	Radio France Int'l	11615, 11700, 12015, 15210, 15460, 15530	
	Radio Pakistan	9485, 11670	
	Radio Canada Int'l	9555, 11935, 15325, 17820	
	Vatican Radio	9645, 11645	
	1700:	HCJB, Ecuador	15490
		(45) Voice of Armenia	7480, 9875
WRMI, Florida		9955	
Radio Pakistan		7485, 11570, 15675	
Radio Prague, Czech Rep.		15640	
(30) Radio Romania		11830, 15340, 15385, 17805	
1800:	Radiobras, Brazil	15265	
	Radio Algiers, Algeria	11715, 15160	
	Radio Kuwait	11990	
	All India Radio	9950, 11620, 13750, 15075	
	Voice of America	17895	
	(15) Radio Bangladesh	15520	
1900:	(30) Radio Moldova	11580	
	AWR, Costa Rica	13750, 15460	
	VOIRI, Iran	7260, 9022	
	(Sat) R. Copan Int'l, Honduras	15675	
	RAE, Argentina	15345	
	Radio Bulgaria	9700, 11720	
	BBC	9410, 11955, 15070, 15400, 17830	
2000:	(05) Radio Damascus, Syria	12085, 15095	
	Kol Israel	7465, 9435, 9835	
	Radio Algiers, Algeria	11715, 15160	
	(30) R. Dniester Int'l, Moldova	11750	
	Radio Canada Int'l	15150, 15325, 17820	
	Monitor Radio, USA	7510, 9355	
	Voice of America	11855, 17725, 17755	
	(30) Radio Cairo, Egypt	15375	
2100:	Radio Havana Cuba	11705	
	Radio Canada Int'l	11690	
	(10) Radio Damascus, Syria	12085, 15095	
	(30) Radio Sweden	9665	
	WRMI, Florida	9955 (part)	
2200:	Radio Bulgaria	7105, 9700	
	Croatian Radio	5895, 7370, 11635, 13830	
	Radio Havana Cuba	6180, 11960	
	Voice of Free China, Taiwan	17750, 21720	
	Voice of UAE	9605, 9770, 11885	
2300:	Deutsche Welle, Germany	6000, 6160, 7150	
	Voice of Turkey	9445	
	Voice of Russia	5940, 7105, 7125, 7180	
	(Sa/Su) Radio Vilnius, Lithuania	7360	
	(30) Radio Netherlands	6020, 6165, 9845	
	Radio Bulgaria	9700, 11720	
	Radio Pyongyang, N. Korea	11700, 13670	
	Radio Vlaanderen Int'l, Belgium	13800	
	(30) Voice of Vietnam	7250, 9840, 15010	

How I Got Started

Popular Communications invites readers to submit in about 150 words how they got started in the communications hobby. They preferably should be typewritten, or otherwise easily readable. If possible, your photo should be included.

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

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

Address all entries to: How I Got Started, *Popular Communications*, 76 North Broadway, Hicksville, NY 11801-2909, or e-mail to POPCOMM@aol.com.

Our February Winner

This month's winner is from Winter Springs, Fla. Meet Marc Manis, K5NO:

"As a youngster growing up in Fond du Lac, Wis., I loved getting up early to tune in test patterns from distant TV signals. I think I could recite the sign-on scripts of those stations better than I could remember my brother's and sister's names!

"After years as an SWL, I passed my novice ham test in 1967 at the age of 12. As I upgraded, I plowed deep into CW and phone on the HF bands, and eventually into 2-meter FM. Soon I obtained my first-class phone operator's license and spent nearly 20 years in commercial radio and television. I'm now an audio-visual technician at Walt Disney World, which, as you might imagine, is 'scanner heaven.'

"For me, portability is the name of the game. My trip to work takes close to an hour, but my Kenwood TM-731A 2-meter/440 MHz transceiver makes the trek go a lot faster. I almost never go anywhere without my trusty Uniden Bearcat BC2500XLT scanner. And for SWLing, my Sony 2001 (circa 1984) makes a terrific traveling companion. All these work quite well at the home QTH, too.

"In my 40 years, I've never found an activity quite like radio. It's unparalleled!"



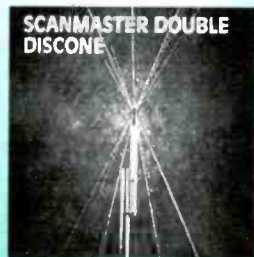
Here's Marc's natural habitat. Pictured are some of his possessions: a Uniden Bearcat BC2500XLT (in hand), an Icom IC-2AT transceiver, a Sony 2001 receiver and a Sherwood S7900A AM/FM receiver.

NEVADA 1300 DISCONE

If you've been looking for a superior wide band omnidirectional antenna covering 25-1300MHz, this is it! The SE1300 is the ultimate wideband omni-directional antenna for hours of listening pleasure.

Double Discone

This super high performance, ultra wide band (25 to 1300MHz) double discone offers substantially higher gain and lower radiation angle compared with conventional designs. Same low VSWR, wideband transmit capability and heavy-duty stainless steel construction for superior performance!



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CIRCLE 60 ON READER SERVICE CARD

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W-889 41cms Tele-Gainer gives you the advantage of adjustable length with swivel knuckle joint
W-801 21cms Regular-Gainer provides a big improvement over the "standard" flexible whip
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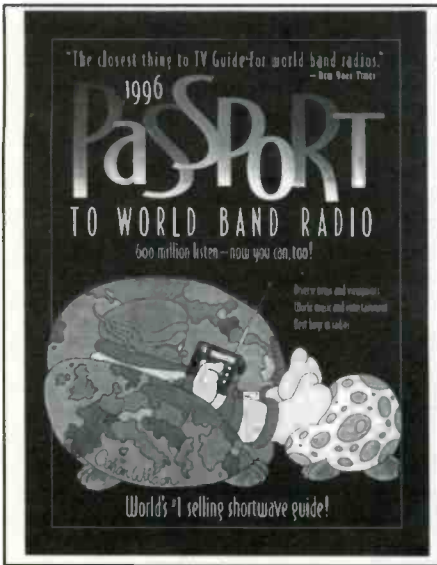


CIRCLE 61 ON READER SERVICE CARD

February 1996 / POPULAR COMMUNICATIONS / 21

Books You'll Like

BY R.L. SLATTERY



Your Magic Passport

Passport to World Band Radio has carved itself an important niche in the world of international shortwave broadcast listening. It has become such an influential reference source that it's difficult to imagine pursuing the hobby without the latest updated annual edition.

That means it's good news to learn the new 1996 edition is out and continues to be a rich source of schedules, frequencies, equipment reviews, and assorted useful information for dial twirlers. This edition runs 528 pages.

The famous "blue pages" section is what always has made *Passport* unique. Here are 180 pages of highly detailed charts, showing the 24-hour status of every active shortwave broadcasting frequency between 2 and 22 MHz. Every hour a frequency is in use, the station is identified on the chart, along with information advising the language, if seasonal, if jammed, etc.

Other specialized listings include nightly programs, programs in English, and programs in languages other than English.

There's a big directory of the mailing addresses of international broadcasters, along with information about their verification policies. General information about getting started in the SWL hobby is included in this edition.

There's plenty about the current crop of tabletop, portable and "portatop" receivers that pick up shortwave broadcasts. They have provided tests done on more than a hundred models.

As usual, Larry Magne and his staff have done a fine job with *Passport*. It well deserves all the success it has received, and the place of honor on the reference shelves of DX hounds the world over. It's become the world's best-selling shortwave guide.

The 1996 edition of *Passport to World Band Radio* carries a cover price of \$19.95. The book is distributed by most dealers in communications books and equipment.

Caught in The Web?

Getting into the World Wide Web with a Macintosh computer doesn't have to be an adventure of Homeric proportions. With *The Macintosh Web Browser Kit*, Mac owners can set up a Serial Line Internet Protocol or Point-to-Point Protocol graphical client account (SLIP/PPP). You can go from confusion to communication, and to navigating the web in a single day, if not a few hours.

This 322-page illustrated book and CD-ROM construction kit has all the tools and expert information needed. It lets you know how to order a SLIP/PPP connection from a service provider. You learn how to install web browsers and SLIP/PPP software on the Mac, and build a multimedia web page using Hyper Text Markup Language (HTML). You'll find out how to troubleshoot the SLIP/PPP connection and web browser. Best of all, you'll cruise the Internet, using Mosaic, Netscape, Lynx and MacWEB.

The kit's CD-ROM includes more than 300 MB of software and tutorials, including Internet communications utilities. It has web browser utilities for video, graphics and sound. It includes multiplayer Internet games and Apple Remote Access software.

The Macintosh Web Browser Kit is a complete communicator's tool kit for exploring the World Wide Web. It's a worthwhile and essential guide for the Internet newbie and techno-wizard alike.

It's \$29.95 from John Wiley and Sons Inc., 605 Third Ave., New York, NY 10158-0012. Phone orders: (800) 225-5945; Canadian orders: (800) 567-4797.

Clearing Things Up

It didn't seem possible, but someone actually has written a book that clearly explains electricity and basic electronics in terms straightforward and uncomplicated enough for the average person to understand. Not only that, it is possible to enjoy every minute of the experience.

That's Kenn Amdahl's big 322-page book, *There Are No Electrons: Electronics for Earthlings*. It's hard to adequately describe Amdahl's unusual book. His approach and style is clever, witty, unconventional, perceptive, and amazingly effective in penetrating those mysteries of electricity and basic electronics that manage to confound so many people.

It's hard to believe how easily these things can be adequately explained without using intimidating techno-babble. Amdahl takes on one enigma after another. When he's finished, you realize you truly have painlessly

obtained a firm grasp upon the basic concept behind each.

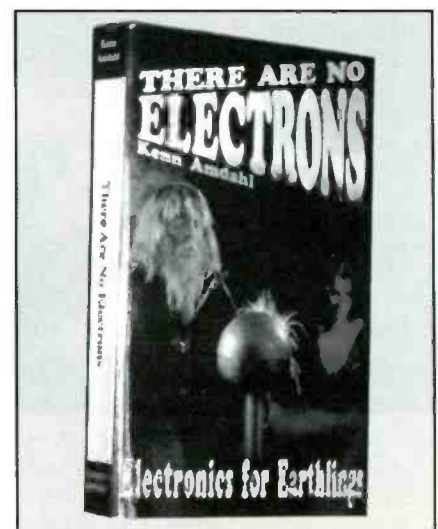
This is good, solid information, including chapters on voltage, current, resistance, magnetism, mutual inductance, self-induction, capacitance, DC, AC, series and parallel circuits, generating electricity, schematics, formulas, coils, transformers, radio, diodes, crystals, filters, a radio transmitter with no parts, a spark-gap transmitter, superconductors, semiconductors, junction diodes, transistors, triodes, amplifiers, bias voltage, oscillators and much more.

Is it dry and boring? Never! Amdahl's material is as lively and entertaining as it is highly informative. If something like this had been required reading in my high school science class, I certainly would have shown up there regularly. Here's the book recommended for every person who has tried in the past to grasp what it's all about, but just couldn't get it.

There Are No Electrons, by Kenn Amdahl, is \$12.95, plus \$5 shipping and handling (\$6 to Canada) from CRB Research Books Inc., P.O. Box 56, Commack, NY 11725-0056. Residents of N.Y. State should add \$1.48 tax. VISA/MC accepted. Toll-free phone orders: (800) 656-0056. Canadian/AK/HI orders: (516) 543-9169.

In Addition ...

We were sent only a news release, so we can't offer an opinion of *The Crystal Set Handbook*, by Philip N. Anderson. It looks as though it covers everything western civilization knows about radio crystal sets, right on up to what the author describes as "advanced chapters." Your guess is as good as mine as to what advanced crystal technology might consist of. It says there's a simple oat box project included in the book's introduction. The book is \$10.95, plus \$2 shipping, from the Xtal Set Society, P.O. Box 3026, St. Louis, MO 63130.



Scanners/CB/Weather Stations

New Scanner Products Available

Now it's easy to purchase communications, emergency management supplies, weather forecasting equipment and more directly from Communications Electronics Inc. Your free fax-on-demand catalog including unadvertised specials is instantly available by calling 313-663-8888 from your fax machine.

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Monitor police, fire, marine, aircraft, emergency medical transmissions and more with a Bearcat scanner.

Bearcat 9000XLT-U base/mobile	\$369.95
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Bearcat 860XLT-U 100 channel base	\$154.95
Bearcat 760XLT-U base/mobile	\$189.95
Bearcat 700A-U information mobile	\$144.95
Bearcat 560XLA-U base/mobile	\$76.95
Bearcat 220XLT-U handheld/SPECIAL	\$207.95
Bearcat 178XLT-U base with weather alert	\$124.95
Sportcat 150-U handheld with 800 MHz	\$158.95
Bearcat 148XLT-U base with weather alert	\$83.95
Bearcat 120XLT-U handheld	\$129.95
Bearcat 80XLT-U handheld with 800 MHz	\$144.95
Bearcat BC17-U information mobile	\$168.95

Weather Stations

Now you can be your own weather reporter with the Davis Weather Monitor II. Our top-of-the-line weather station combines the most advanced weather monitoring technologies available into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Push a button, and read indoor and outdoor temperature, wind chill, humidity and barometric pressure. Our package deal includes the new ultra high resolution 1/100 inch rain collector part #7852-U, and the external temperature/humidity sensor part #7859-U. The package deal is order #DAV1-U for \$479.95 plus \$15.00 shipping. If you have a personal computer, when you order the optional Weatherlink computer software for \$139.95, you'll have a powerful computerized weather station at an incredible price. For the IBM PC or equivalent order part #7862-U. Apple Mac Plus or higher including PowerBook, order part number 7866-U.

The Weather Monitor II (7440) comes complete with anemometer with 40 feet of cable, external temperature sensor with 25 feet of cable, junction box with 8 feet of cable, AC power adapter, detailed instruction booklet and one year limited factory warranty.



Davis Weather Monitor II 7440-U	\$334.95
Davis Weather Wizard III 7425-U	\$154.95
Davis Perception II Indoor stand-alone weather monitor 7400-U	\$124.95
Davis Remote Display Unit 7815-U	\$84.95
Davis Rain Collector II 0.01" 7852-U	\$59.95
Davis Rain Collector II 0.2 mm 7852METRIC-U	\$59.95
Davis Rain Gauge Stand alone 0.01" 7520-U	\$79.95
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Davis Anemometer Mast Mount 7890-U	\$115.95
Weatherlink Software for IBM PC/Version 3.0 7862-U	\$139.95
Weatherlink Software for Apple/Version 3.0 7866-U	\$139.95
4-Conductor 40' (12.2 m) extension cable 7876-U	\$17.95
6-Conductor 40' (12.2 m) extension cable 7878-U	\$21.95
8-Conductor 25' (7.6 m) junction box cable 7880-U	\$14.95
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Weatherlink language disks: Francaise, Deutsche, Italiana, Espanola 7863-U	\$24.95
Barometer, Indoor Hygrometer & Thermometer, Clock/Calendar RA888-U	\$69.95
Barometer, Indoor Hygrometer & Hygrometer by OSI BA213-U	\$79.95
Thermometer with transparent calendar & clock display by OSI TC188-U	\$19.95
Thermometer with AM/FM clock radio by Oregon Scientific CR388-U	\$39.95
Indoor/Outdoor Thermometer with Jumbo Display by OSI JBH09X-U	\$24.95



Bearcat® 9000XLT-U Radio Scanner

Mfg. suggested list price \$769.95/CE Special \$369.95
 500 Channels • 20 banks • Alpha numeric display
 Turbo Scan • VFO Control • 10 Priority channels
 Auto Store • Auto Recording • Reception counter
 Frequency step resolution 5, 12.5 & 25 KHz.
 Size: 10-1/2" Wide x 7-1/2" Deep x 3-3/8" High

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 849,0125-868,995 MHz., 894,0125-1,300,000 MHz.

The Bearcat 9000XLT gives you pure scanning satisfaction with amazing features like TurboSearch™ to search VHF channels at 300 steps per second. This base and mobile scanner is ideal for surveillance professionals because it has a selectable attenuator to help eliminate annoying intermodulation from adjacent frequencies in highly populated areas and selectable AM, Wide FM and Narrow FM modes that allow you to change the default receiving mode of the BC9000XLT. Other features include **Auto Store** - Automatically stores all active frequencies within the specified bank(s). **Auto Recording** - This feature lets you record channel activity from the scanner onto a tape recorder. **Hi-Cut filter** to help eliminate unwanted static noise. You can even get an optional **CTCSS Tone Board** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: **PS001 Cigarette lighter power cord** for temporary operation from your vehicle's cigarette lighter \$14.95; **PS002 DC power cord** - enables permanent operation from your vehicle's fuse box \$14.95; **MB001 Mobile mounting bracket** \$14.95; **RC005 CTCSS Tone Board** \$54.95; **EX711 External speaker** with mounting bracket & 10 feet of cable with plug attached \$19.95. The BC9000XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited warranty from Uniden.

CB/GMRS Radios



The Maxon GMRS 210+3 transceiver is a PLL synthesized 10 channel radio on General Mobile Radio Service frequencies. It's the ideal radio for long range communications. Two repeater channels are programmable and one channel (462.675 MHz) is set aside for emergency and safety communications. The seven remaining interstitial frequencies 462.5625, 462.5875, 462.6125, 462.6375, 462.6625 & 462.7125 MHz are all-purpose GMRS radio channels. 2 watts of RF power for exceptional transmitting range. Up to 5 watts when used with the supplied 12 volt vehicular DC power cord. CTCSS built-in. Includes 450mAh Ni-cad rechargeable battery pack, AC/DC wall battery charger, owner's manual, FCC license application, belt clip, antenna. Call 1-800-USA-SCAN to order.

Maxon GMRS210+3-U GMRS transceiver	\$188.95
SPECIAL Buy 2 or more GMR210+3 at \$174.95 each	
WTA3DT-U Ni-cad battery charger for WTA6GN4 & WTA6GN2	\$58.95
WTA6GN4-U Ni-cad pack gives 4 watts power with 210+3	\$55.95
WTA6GN2-U Ni-cad pack gives 2 watts power with 210+3	\$29.95
WTA6GA-U Alkaline battery case - requires 6 AA batteries	\$9.95
WTA8GA-U Carrying case for Maxon GMR210+3	\$29.95
WTA10G-U Speaker/microphone for Maxon GMR210+3	\$18.95
WTA13G-U Push-to-talk mini-VOX headset for GMR210+3	\$47.95
WTA14-U Antenna adapter/screw-in male to BNC connector	\$9.95
ANT4GM-U 1/4 wave UHF magnetic mount mobile antenna	\$29.95
Cobra 2010GLTWX-U SSB base with weather alert	\$379.95
Cobra 148FGTL-U CB with frequency counter	\$209.95
Cobra 29LTDWX-U CB with weather alert	\$114.95
Cobra HH40-U CB 40 channel handheld transceiver	\$99.95
Ranger RC12950-U 25 watt 10 meter ham radio transceiver	\$239.95
Uniden GMR100-U GMRS handheld transceiver	\$144.95
Uniden WASHINGTON-U SSB CB Base (incl \$25.00 shipping)	\$199.95
Uniden GRANTX-U SSB CB Mobile	\$139.95
Uniden PRO538W-U CB & Weather	\$59.95



VHF Transceiver

RELM® WHS150-U Transceiver/SPECIAL

Mfg. suggested list price \$481.67/CE price \$299.95
 Police and fire departments depend on the RELM WHS150 transceiver for direct two-way communications with their police, fire department, civil defense agency or ham radio repeater. The WHS150 is our most popular programmable five watt, 16 channel handheld transceiver that has built-in CTCSS, which may be programmed for any 39 standard EIA tones. Frequency range 148.000 to 174.000 MHz. Will also work 144.000-148.000 with slightly reduced performance. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode and programmable ANI. Weighing only 15.5 oz., it features dealer programmable synthesized frequencies either simplex or half duplex in both 5.0 and 6.25 KHz. Increments. Other features include scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time-out timer and much more. When you order the WHS150 from Communications Electronics Inc., you'll get a complete package deal including antenna, battery, belt clip and user operating instructions. Other accessories are available. A leather carrying case with swivel belt loop part #LCWHIS is \$49.95; rapid charge battery charger, part #BCWHIS is \$69.95; speaker/microphone, part #SMWHIS is \$54.95; extra ni-cad battery pack, part #PB007 is \$59.95. The radio technician maintaining your radio system must order programming instructions part #PL150 for \$18.00 to activate this radio. FCC license required for United States operation.

Other neat stuff

PH5000-U Waber 500VA/340 Watt computer uninterruptible power supply	\$199.95
WX70-U weather radio with National Weather Service storm alert	\$29.95
WB-USA Today The Weather Book, Guide to USA weather by Jack Williams	\$15.95
PSUN-U Partly Sunny, Weather Junkie's Guide to Weather by Alan Fields	\$11.95
Grundig Yacht Boy 400-U digital portable shortwave - 40 memory	\$179.95
Grundig Yacht Boy 230-U portable shortwave receiver	\$109.95
Sangean AT5800-U portable 20 memory shortwave receiver	\$69.95
Sangean AT5804-U portable shortwave w/AC adapter - 9 memory	\$129.95
Sangean AT5806-U portable 45 memory shortwave receiver	\$129.95
Uniden EXP9200-U 900 MHz, 1 or 2 line spread spectrum cordless phone	\$289.95
Uniden EXP9100-U 900 MHz, 1 line cordless spread spectrum telephone	\$224.95
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SNI ID200-U Bouncer name/number caller ID, call reject, forward	\$89.95
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RELM WHS150-U VHF handheld 5 watt, 16 channel transceiver	\$239.95
RELM RH256NB-U VHF 25 watt, 16 channel synthesized transceiver	\$289.95
Ranger RC12950-U 25 watt 10 meter ham radio transceiver	\$239.95
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ANTMMOT-U magnet mount scan antenna w/Motorola plug	\$29.95
ANTMPLU-U magnet mount scan antenna with PL259 connector	\$29.95
ANTGBNC-U glass mount scanner antenna with BNC connector	\$29.95
ANTSGMOT-U glass mount scanner antenna with Motorola jack	\$29.95

Buy with confidence

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Amateur Radio Vs. Cellular

Are Ham HTs an Alternative for Handheld Phones?

BY JOE LYNCH, N6CL

While at a social gathering recently, Georgia McReynolds, KA5VIL, needed to place a phone call. There was no phone nearby, so she pulled out her handheld amateur radio transceiver, accessed the local repeater and completed the call. Afterward, a curious bystander asked her how much she had to pay each month for her "cellular" telephone.

Georgia replied that she essentially paid nothing—her membership in the local radio club (at a nominal fee) allowed her unlimited access to the telephone system tied in with her handheld radio. His curiosity now piqued, the man responded by saying that his cellular telephone was costing upward of \$100 per month.

Georgia then explained that what she was using was not a cellular telephone but an amateur radio handheld transceiver, a very viable alternative to cellular telephone service.

Georgia is one of the thousands of amateur radio operators who regularly communicate over telephone lines via their ham radio sets. While there are some differences and restrictions in using ham radio for telephone conversations, there are remarkable similarities. This stands to reason because the cellular telephone concept was started by ham radio operators.

To understand these differences and restrictions, let's examine each service. Cellular telephone got its name from the way the system works. The cellular telephone actually is a transceiver that operates in the 800 MHz band. It has the capability of quickly switching frequencies. This is a critical feature because it communicates through very low-power repeaters that cover small areas or "cells."

When a cellular telephone senses a strong signal from one of these repeaters, it switches frequencies to that repeater. When another signal from another repeater is stronger, the cellular telephone then switches to the new frequency. All this switching is done in milliseconds of time.

Cellphone users actually rent air time on these repeaters. You are assigned a telephone number and an account is set up for billing you for your air time and toll calls.

There is no license requirement, and thus, no test to take to operate the radio transceiver part of the cellular telephone. A ham radio operator, by contrast, must hold a license to operate on any of the airwaves assigned to the amateur radio service. More on the licensing requirements later in this article.

Ham radio operations that use the telephone lines also use repeaters. These repeaters usually are single frequency and generally cover a much wider area than a multifrequency cellular telephone repeater. Some ham repeaters also have slave receivers that are located at various points around a geographic location in order to extend the receive coverage of the repeater.

While your conversations on a cellular telephone are supposed to be private (FCC regulations restrict the sale of new receivers capable of covering the cellular telephone service frequencies), conversations over a ham radio repeater almost always are public. Additionally, because several members of the same club are allowed to use the same repeater, the service available is shared with all the other members. Because of this, use of the repeater, by gentlemen's agreement, is restricted in time.

The repeater also generally has restrictions placed in the making of toll calls. Because the club, organization or individual spon-



Hams often have the capability to place telephone calls over local VHF and UHF repeaters. Using a Touch-Tone pad on the radio or its microphone, both mobile and handheld amateur gear can become "mobile phones." (Photo courtesy of American Radio Relay League)

soring the repeater does not want to bear the expense of everyone's long-distance calls, access to the repeater via "1" or "0" numbers often is barred.

The major difference between the two services, however, is in the nature of the conversations taking place over the services. With cellular, any legal transaction may take place over the service. However, with amateur radio, only personal and a very few business-type conversations may take place over that service.

While the FCC has made changes that allow some business communications such as ordering a pizza from your car, you cannot make business calls that result in a financial gain for you. For example, say you are on your way to work in your car and it breaks down. You can call a towing service to pick up your car. You also can call your boss and tell him that you will be late. However, you cannot call your secretary and have her rearrange your business appointments.

As mentioned above, ham radio operators are required to be licensed. The most popular repeaters are in the 2-meter ham band at 144-148 MHz. The license requirement for this band is a technician class or higher license. RadioShack and the American Radio Relay League (ARRL) sell a number of study materials that will help you prepare for the exams.

Testing for these licenses is via volunteer examiners. Two of the more popular volunteer exam coordinators (VECs) are the ARRL VEC and the W5YI VEC. To contact the ARRL VEC, write to 225 Main St., Newington, CT 06111, or phone (860) 594-0200. To contact W5YI VEC, write to P.O. Box 565101, Dallas, TX 75356, or phone (817) 461-6443.

Once in the hobby, you soon will discover that there is much more than telephone communications. Through the use of your radio, you can meet new friends, become involved in new social activities and even discover other forms of communications on other ham radio frequencies. You can become involved in communicating with other hams via satellites, your television set and computers. For more information on these types of communications, you may want to purchase the videotape *Getting Started on VHF* or the book *The VHF "How To" Book*, both available from CQ Communications Inc., 76 N. Broadway, Hicksville, NY 11801-2909, or phone (800) 853-9797.

Who knows, you might even get so hooked that you will want to upgrade to a higher class of license. Study materials for higher classes of licenses are also available for purchase from RadioShack, the ARRL, W5YI and CQ Communications.

So, while there are some limitations and restrictions to using ham radio as an alternative to cellular telephone, the benefits far outweigh the restrictions. You soon may discover that becoming a ham radio operator could be just a phone call away.

ICOM™ IC-R7100 Sweeping 1800 Channels/Minute

DELTACOMM™ I-7100 communication manager and your MS-DOS computer gives you a custom interface integrated with optimized software that will not just control but will maximize the potential of your R7100. Here are a few (there are many more) examples of the advanced features DELTACOMM™ I-7100 has to offer.

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DELTACOMM™ I-7100 communication manager comes complete with Delta Research custom (C-I-V) communication interface, UL listed power supply, manual and receiver interface cable for \$349.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H. Contact us for additional information on DELTACOMM™ communication managers for ICOM™ R7000, R71A, R72 and IC735. Performance is proportional to video card, type of computer and receiver squelch detection method.



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CIRCLE 65 ON READER SERVICE CARD

Safe Cellphoning

Here Are Some Tips to Avoid Accidents While On the Phone

BY CHUCK GYSI, N2DUP, EDITOR

If you've purchased a cellular phone for the safety aspect, don't wait until an emergency to learn how to use your phone. The cellular industry recommends that you learn how to use the phone and keep in practice of using it.

- Familiarize yourself with all the features and operations of the phone. Ask the salesperson who sold you the phone to demonstrate its operation and be sure to read the owner's manual.

- Learn how to operate your phone without looking at it. Practice while your car is parked and memorize the location of the buttons before you start driving and using the phone.

Buying Tips

If you haven't purchased a cellular phone yet, but you are considering one for the safety it offers, keep these tips in mind:

- Purchase a hands-free or speakerphone unit. This allows you to keep both hands on the steering wheel and your eyes on the road while talking on the phone. The phone's microphone can be installed on the sun visor above your line of vision.

- Use the memory dialing feature on your phone. This allows you to dial frequently called phone numbers with a minimal amount of keystrokes.

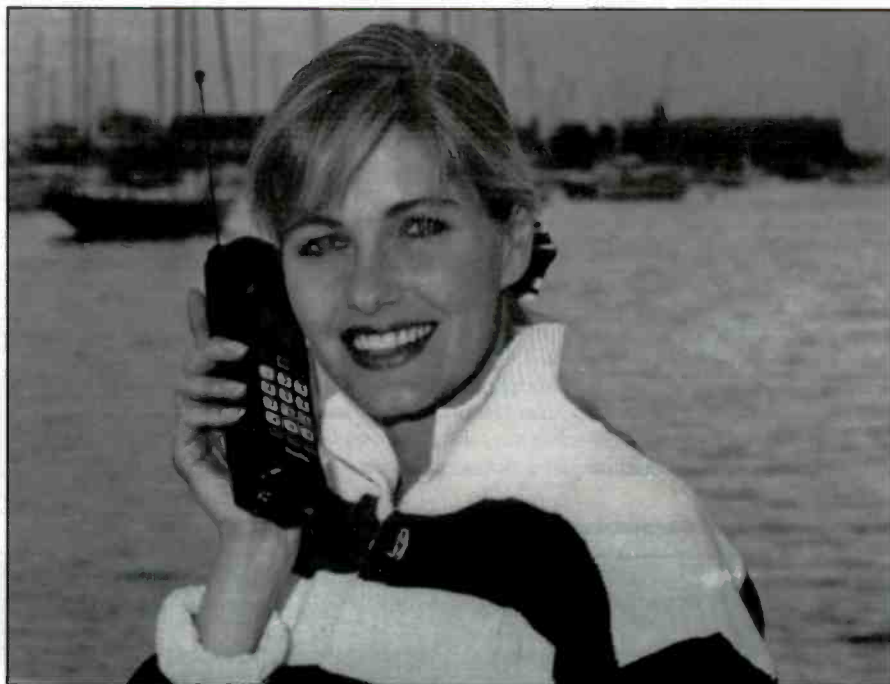
- Make sure your phone is positioned where you can reach it easily without having to move your body while driving. It is recommended to install the phone on the dashboard—within the range of your peripheral vision—rather than on the center console, which requires you to look down when using the phone.

Putting Your Finger On It

If you need to make a call while driving, especially an emergency call, consider these tips:

- If you have a passenger with you, ask him or her to place the call for you while you are driving.

- If driving in hazardous conditions, such as severe weather or heavy traffic, allow incoming calls to be answered by a voice mail option, or forward your calls to another number. Retrieve your messages later when it is safe to talk on the phone.



A handheld cellular phone allows the user to use it while in the car or anywhere else. While cellular phones allow the instant reporting of emergencies, keep in mind that 911 dispatchers may not know your location when you call them. Be sure to describe your location adequately.



When traffic gets heavy, you're better off paying attention to the road instead of the cellular phone. Let voice mail answer your cell phone or forward your calls to another number.

• When possible, try to make your telephone calls while you aren't actually driving, such as in traffic jams.

• Anticipate traffic conditions ahead of you before answering or placing a call. If conditions become hazardous, terminate your call and return the call later.

• Reduce your driving speed while phoning without leaving the flow of traffic. Stay in the slow lane on highways and pay attention to traffic conditions. Don't let phone calls keep you from driving defensively.

• Dial, pause, dial: There is no need to dial the entire phone number at one time. Enter only a few digits at a time, assess the traffic situation, then return to dialing. The number you enter won't be transmitted until you hit the SEND button.

Be Alert

Don't get distracted while you are using your cellular phone while driving.

• If the conversation requires note-taking or extensive thinking, stop your car in a safe location or offer to return the call as soon as you can from a safer, stationary location. If this is impractical, use a tape recorder to record your comments or notes.

• Use the phone's "electronic scratch pad" to record certain telephone numbers in your phone's memory.

• If the conversation is complicated or emotional, park the car in a safe location.

Emergency Calls

When placing a call for emergency assistance, keep in mind that while the 911 dispatcher may have access to your phone number, they typically don't have any idea where you are calling from.

Because of the nature of cellular being a mobile service, emergency dispatchers have no idea where you are when placing a request for emergency service. Be sure of your location. If you aren't sure exactly where you are, be sure to describe to the dispatcher surrounding landmarks and signs to help them figure out where you are. Stay on the line and provide as much information as necessary.

It's not too unusual for callers not to know their exact location. The National Emergency Number Association says that 10 percent of all 911 calls in major urban areas now are made by wireless telephones (including non-cellular radio telephones). In 1992, for instance, 600,000 wireless 911 calls were placed in Los Angeles County, Calif., and about 25 percent of those callers — a mind-boggling 150,000 callers — were unable to identify their location.

The industry, meanwhile, is studying the situation to see what obligation wireless providers have in handling 911 calls. ■

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CIRCLE 82 ON READER SERVICE CARD

Product Parade

REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

Police Call Plus Is Something New

Here's a novel idea for those scanner listeners who last year bought both their regional volume of *Police Call* and the first edition of *Beyond Police Call*. Well, the idea of making available sorted commercial frequencies available in the same basic scheme of *Police Call* proved very successful, according to Publisher Gene Hughes.

So, when you trek into your local RadioShack or scanner shop this year for a copy of the 1996 edition of *Police Call*, forget about any new editions of *Beyond Police Call*. That's right, *Beyond Police Call* has been killed off by its own success, and the data that was in that guide will be included in regional doses in the various volumes of *Police Call*. And to observe the major change, the guide now is known as *Police Call Plus*.

True, it will cost you \$3 more than *Police Call* did last year, but you won't have to pay an additional \$9.99 for the nationwide *Beyond Police Call* volume. Quite frankly, how can you go wrong in paying

an additional \$3 to get exciting local frequencies for malls, sports, amusement parks, news media, colleges, resorts, utilities and more? While many hobbyists have reached out to high-tech CD-ROMs and databases, the nice thing about *Police Call Plus* is it is low-tech. It's portable, which is handy if you are traveling. Even those who use electronic databases would be silly not to have a current copy of *Police Call Plus* on hand for instant searches.

For more information, check with any RadioShack store or almost any scanner dealer, or write to the publisher, Hollins Radio Data, P.O. Box 35002, Los Angeles, CA 90035.

Button Down That Pager, Cellphone or Radio

Have a hang-up with portable radios, cellphones, handheld scanners, walkie-talkies, pagers or even portable stereos? The Quick Draw Clip System enables you to put any of these devices on a belt or fanny pack quickly.

Using the firm's Universal Button is a

good solution for those needing to carry portable electronics without the fear of having the devices slip out of a pocket or falling off a belt. And with just one finger, the device can be released by pressing the upper half of the Quick Draw Clip.

The aluminum button can be attached using two-sided tape that comes with the Quick Draw Clip and the Universal Button. Included with the Universal Button is two-sided tape to attach the button and the clip.

The Quick Draw Clip System sells for \$29.95 plus \$3.95 shipping and handling. Visa and MasterCard are accepted. For more information, contact Quick Draw & Machining Inc., 4869 McGrath St., Suite 130, Ventura, CA 93003; phone (805) 644-7882; fax (805) 644-7884.

AEA's PK-232MBX and PK-900 Have New GPS Firmware

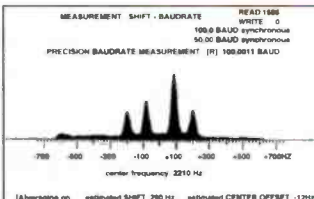
Advanced Electronic Applications' PK-232MBX and PK-900 multimode data controllers are shipping now with Global Positioning System (GPS) firmware.

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"The Standard Against Which All Future Decoders Will Be Compared"

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There are some well known CW/RTTY Decoders but there is CODE-3. It's up to you to make the choice, but it will be easy once you see CODE-3. CODE-3 has an exclusive auto-classification module that tells YOU what you're listening to AND automatically sets you up to start decoding. No other decoder can do this on ALL the modes listed below - and most more expensive decoders have no means of identifying ANY received signals! Why spend more money for other decoders with FEWER features? CODE-3 works on any IBM-compatible computer with MS-DOS with at least 640kb of RAM, and a CGA monitor. CODE-3 includes software, a complete audio to digital FSK converter with built-in 115V ac power supply, and a RS-232 cable, ready to use.



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The new GPS firmware incorporated in both data controllers automatically detects whether there is a GPS receiver connected when powered up. If a GPS receiver is detected, an initialization string will be sent and the TNC will be ready for GPS work. If a GPS receiver isn't detected, the TNC will be ready to operate on packet. It's as simple as that!

The biggest new feature of AEA's PK-232MBX and PK-900 is that the GPS commands can be remotely programmed. This allows GPS parameters to be remotely changed in stand-alone tracking applications where a TNC, GPS receiver and radio without computer are installed in a vehicle. The unit doesn't need to be removed and connected to a computer to change the GPS parameters. The data controllers automatically transmit their position information at user-defined intervals and also can be remotely polled for GPS location information at any time.

Remote polling is great for those who use the TNCs in a Pete Bros. Ultimeer-II weather setup. Hams in a region can set up weather stations in their yards and each participating ham can poll at any time each of the various weather stations for data. Doing this forms a picture of the region's weather on an Automatic Packet Reporting System (APRS) map.

Other new GPS firmware features include time and date setting from the GPS



AEA's popular PK-232MBX multimode data controller now has Global Positioning System (GPS) firmware.

receiver, remote programming of the GPS receiver itself via the data controller, and the ability to operate as a WIDE and RELAY digipeater. Exact time and date information can be extracted from the GPS receivers to set the PK-232MBX's and PK-900's internal clocks. Operating as a WIDE and RELAY digipeater means that mobile packet users can be transmitting their position information in a stand-alone tracking configuration and still act as a message-for-wandering mailbox while mobile.

Both data controllers work with AEA's APRS adapter cable, which saves a communications port on the computer. The

cable connects a data controller and GPS receiver to a single computer COM port. The cable is important with laptop and notebook computers because usually there is only one free COM port available.

For upgrade cost and ordering information, call AEA's upgrade hotline at (206) 774-1722. AEA's product line is carried by many amateur radio dealers. Information about any of AEA's products can be obtained by calling the company's literature line at (800) 432-8873, or faxing a request to (206) 775-2340. Their address is: Advanced Electronic Applications Inc., P.O. Box C2160, Lynnwood, WA 98036.

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Near the bottom of the UHF band is a 175-MHz-wide swath of frequencies where some of the most exciting scanner listening can be found. I'm talking about the military aircraft band from 225 to 400 MHz. Military satellites also can be found in this band and yes, they can be monitored with some scanners when equipped with a proper antenna.

Not all scanners can receive the military aircraft UHF band. Current models that do include the Uniden Bearcat 890XLT, 3000XLT and 9000XLT.

RadioShack also sells several mil-air capable scanners, including the Pro-26 and Pro-60 handhelds and the Pro-2042 table model scanner.

For those with deeper pockets, the AOR AR8000 handheld is an excellent radio with mil-air and much more. The Icom R100 mobile receiver and the R7100 table model receiver both receive mil-air, as does the premium AOR AR5000 general coverage receiver.

On the used market, look for Uniden's Bearcat 2500XLT handheld, RadioShack's Pro-43 handheld and the Pro-2004, Pro-2005, Pro-2006 and Pro-2035 table models.

Listeners not in the market for a new scanner, but who would like to monitor military aircraft, may want to consider the Grove Scanner. This add-on unit converts the 225-400 MHz range into signals in the 118-136 MHz VHF aircraft band. I've heard mixed reviews on this product but it might be worth a try.

You don't have to live near a military airfield to hear some pretty exciting communications in this band. The military has low-level training routes and aerial refueling routes that crisscross the entire nation. Military training areas cover thousands of square miles, particularly in the southeast and southwest parts of the nation. And because aircraft radio signals can travel hundreds of miles, depending upon the altitude of the aircraft, these comms can be heard at great distances.

What can you hear? How about fighter pilots practicing aerial intercepts and "dog-fighting" with other aircraft. Or A-10 Thunderbolt II pilots making strafing or



Military aircraft such as this KC-135/R Stratotanker, shown here landing at MacDill Air Force Base, can be monitored with scanners that include the 225-400 MHz range in their frequency coverage.

bombing runs on plywood "tank" targets at a gunnery range.

From my Florida home, I've monitored communications from an F-117 Night-hawk stealth fighter, a B-2 stealth bomber, several B-1 bombers, Navy F-14 Tomcats, even NASA jets carrying space shuttle astronauts to Kennedy Space Center.

Although it's easy to find the frequencies for military base control towers, weather stations, dispatchers and command posts in the many frequency guides being published, locating the really good stuff—the air-to-air frequencies used during training and actual missions—is not as easy.

I recently purchased a new Uniden Bearcat 9000XLT, and despite a tendency to receive cellular telephone images in the upper part of the mil-air band, I've found it to be an excellent radio for searching out new and unpublished frequencies.

Using the radio's search and auto-store capabilities, I search a range of 5 MHz at a time, usually letting the radio run for a full 24 hours before moving up the band.

The Bearcat 9000XLT, the new RadioShack Pro-2042 and a few other radios will automatically store active frequencies into memory channels.

Here are the dispatch and/or command post UHF frequencies for most of the military aviation bases in Florida. An asterisk (*) indicates a confirmed active frequency: 381.300*, MacDill Air Force Base; 372.200*, MacDill Air Force Base; 338.000*, Key West Naval Air Station; 252.800, Homestead Air Force Reserve Base; 383.000, Patrick Air Force Base; 364.000, Homestead Air Force Reserve Base; 138.300, Patrick Air Force Base; 280.500, Homestead Air Force Reserve Base; 241.000, Lakeland Air National Guard; 361.900*, Cecil Field Naval Air Station; 40.90, Lakeland Air National Guard; 310.200, Jacksonville Naval Air Station; 301.300, Mayport Naval Air Station; 140.400, Hurlburt Air Force Base; 233.700, Whiting Field Naval Air Station; 320.700, Hurlburt Air Force Base; 286.700, Tyndall Air Force Base;

312.100, Pensacola Naval Air Station; 381.800*, U.S. Coast Guard Air Station Clearwater; 372.800, Eglin Air Force Base; and 390.900, Eglin Air Force Base.

In addition, here are the primary air route traffic control center UHF frequencies in use in Florida. Again, an asterisk (*) indicates a confirmed active frequency: 360.800, 285.500, 370.900, 381.400, 352.800, 256.700, 360.700, 290.500, 377.100*, 307.300*, 317.500, 360.900, 236.700, 288.100, 359.900, 385.600, 360.800, 307.200, 343.800, 269.300*, 364.800, 319.000, 370.900, 343.700, 398.900, 353.600, 261.100, 307.800, 277.400, 290.400, 323.100*, 348.700, 335.550*, 353.500, 278.500, 323.200, 380.300*, 257.700, 349.000*, 363.200, 343.900, 377.200, 323.200, 360.600, 346.400, 338.300, 350.200, 299.200, 371.900, 352.000, 281.500*, 291.600, 357.100, 321.400, 322.500, 251.100, 335.500, 323.000, 319.100, 270.300, 281.500, 298.900, 306.900, 307.200, 307.800, 307.900, 385.600, 291.700, 327.100, 251.100 and 317.400.

The maps and charts listed below contain valuable information for the mil-air scanning enthusiast, including where low-level training routes and military practice areas (AP1A, AP1B and AP1BCHTS are especially useful) are located, plus the frequencies in use at many military airfields. Many thanks to Tim Tyler for turning me on to this great source of information.

In these listings, first is shown the publication name, then its ordering code and price: IFR Supplement, IFRUSSUP, \$4.90; VFR Supplement, VFRUSSUP, \$6.70; Flight Information Handbook, FHB, \$1.55; Area Planning, AP1, \$5.70; Area Planning—Special Use Airspace, AP1A, \$5.70; Area Planning—training routes (book), AP1B, \$5.45; Area Planning—training routes (charts), AP1BCHTS, \$1.30; Low Altitude Instrument approach plates, TLUSSET, \$37.20.

At a price of \$3.10 each, here are the Low Altitude IAPs (individual volumes) and ordering codes: Volume 1 (ID, MT, OR, WA), TLUS1; Volume 2 (CA), TLUS2; Volume 3 (AZ, CO, NM, NV, UT), TLUS3; Volume 4 (IA, MN, ND, NE, SD), TLUS4; Volume 5 (AR, KS, MO, OK), TLUS5; Volume 6 (LA, TX), TLUS6; Volume 7 (IL, MI, WI), TLUS7; Volume 8 (IN, KY, OH, WV), TLUS8; Volume 9 (CT, MA, ME, NH, NY, RI, VT), TLUS9; Volume 10 (DE, MD, NJ, PA, VA), TLUS10; Volume 11 (GA, NC, SC, TN), TLUS11; Volume 12 (AL, FL, MS), TLUS12.

To order the mil-air publications, specify the name of the publication and its code number. Send an itemized list and indicate that it's a one-time purchase. Payment must be included with orders. Checks,

money orders or MasterCard/Visa numbers are accepted. Write to: NOAA Distribution Branch, National Ocean Service, Riverdale, MD 20737-1199, or call (301) 436-6990, 8 a.m. to 4:30 p.m. Eastern Time weekdays.

I'd be very interested in hearing from readers in other parts of the nation describing your successful military monitoring techniques.

Cordless Conundrum

Now, on to this month's mailbag.

H. Hirsch wants to know where the new 900-MHz cordless telephones transmit. He'd also like to know how to listen to phones with digital capability.

First I've got to point out that monitoring cordless and cellular telephones is illegal under federal law and many states have passed similar ordinances.

That said, the 900-MHz cordless telephones can show up just about anywhere between 902 and 928 MHz. Each cordless manufacturer seems to have its own frequency scheme in this band. And, there are no scanners currently capable of monitoring digital transmissions.

Base Basics

Ryan J. McCarthy wants to inexpensively improve reception on a base scanner without erecting an outside antenna.

Ryan, you've hit upon one of the great challenges facing many scanner listeners. For less than \$100, you can purchase a signal amplifier (several models are available) that connects to your radio and to which you attach an indoor whip antenna.

As its name suggests, the amplifier increases the signal strength coming from the antenna. However, if you're already having intermod problems from nearby AM, FM and TV broadcasters, or from pager transmitters, the amplifier may make the problem even worse. If you decide to try it, make sure the retailer will allow you to return the amplifier if it doesn't work for you.

If an amplifier isn't the answer, you might try a mobile whip antenna hidden behind some drapes and connected to the radio with a short piece of coax cable. I've also heard reports that some scanner listeners are having success using the new through-the-glass mount mobile antennas by attaching the antenna (which is small, black and nearly invisible) to the outside of a (preferably second-floor) window and the transducer to the inside of the window.

Ryan, be sure to write and let us know how your experiments work out.

Fair Question

Reader Aaron Mahnken is looking for

frequencies for the Los Angeles County Fairgrounds.

Aaron, I'm going to throw your question open to our readers. Can someone out there give Aaron a hand? If you have a list of frequencies for the Los Angeles County Fairgrounds, mail them to the address listed at the end of this column and I'll include them in a future issue. (*Editor's note: One frequency licensed to the fair is 464.675.*)

Beating BFO

Michel De Lannoy of Curacao, Netherlands Antilles, wants to know how to add single-sideband reception to his Icom IC-R1 handheld scanner.

Michel, several POP'COMM advertisers offer BFO kits that may work with your scanner. On the other hand, you might consider trading the R1 in for a new AR8000, Yupiteru 7100 or other scanner with built-in SSB capability.

Signal Sleuthing

Now, for you long-time monitors out there, here's a real puzzle.

About 20 years ago, reader Lawrence Earl noticed a bunch of dead carriers between 30 and 50 MHz.

"There were about 25 of them. They were not birdies. They came on at erratic intervals with no apparent pattern. They were on from 20 minutes to four hours. They had no modulation, not even ultrasonic," Lawrence says.

"About 10 years later, I found that they had moved to 150-174 MHz with the same mode of operation. Both times, I wrote to whatever the popular scanner mag was at the time only to have my letters ignored. I checked the other day and found that they have disappeared from all the commonly scanned frequencies.

"My question used to be 'What are they?'," but now it's "Why the cover-up? Why won't anyone talk about them?" They never ID'd, so it looks like a government operation. Whatever they were, they evidently have moved somewhere else or quit operation. Is it possible that the Puget Sound area is the only place that had this?"

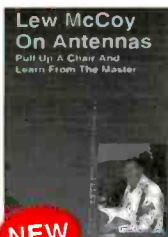
Lawrence stumped me on this one. Perhaps one of our more experienced monitors can offer a solution to this puzzle.

Write In

That's all for this month, folks. Keep cards, letters, pictures and e-mail coming to J.T. Ward, Scanning VHF/UHF, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909. GENie subscribers may contact me directly by addressing e-mail to JTWard, and Internet users may send e-mail to JTWard@genie.com.



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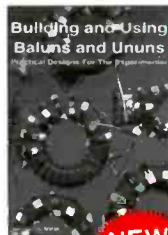
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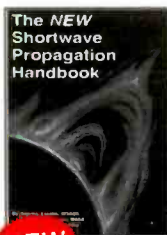
Written by world-renowned expert Jerry Sevick, W2FMI, this volume is the definitive source for his latest practical information and designs on transmission line transformer theory. W2FMI has unraveled the technological mysteries with designs that are simple and work. Discover new applications for dipoles, yagis, log periodics, beverages, antenna tuners, and countless other examples. **Order No. BALUN.....\$19.95**



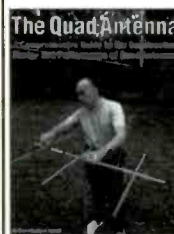
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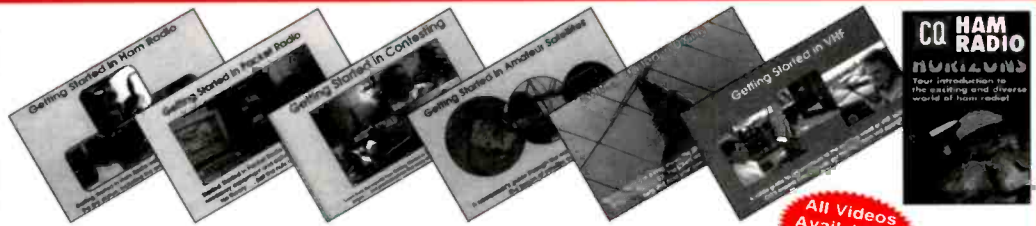
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The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Buying Your First Rig

In the high-tech '90s, unlike the "golden age of radio," choosing your first rig can be very confusing! Instead of choosing between a homebrew one-tube transmitter or a Heathkit/Johnson "assemble-it-yourself" project, the vast array of rigs—new and used—confronting beginning hams is bewildering at best.

Should you dig deep into your wallet and buy a brand-new whiz-bang rig with bells, whistles, 1-Hz digital readout and oodles of fancy features? Perhaps you should purchase something in a more-comfortable midrange, that cozy 4- to 8-year-old span where the rigs still are "awesome enough," yet much more affordable?

You also could choose to buy a brand-new "beginner's rig," a relatively affordable modern radio that sports only the most essential functions. Or, if your budget is really tight, you could get lucky and come up with a well-cared-for older rig from the 1970s through the mid-1980s.

Beyond the hundreds of transceivers to choose from, there are additional considerations. Do you even want a transceiver? Or will a separate transmitter-receiver pair be more to your liking? Are tubes OK, or do you need "solid state all the way?" Can you "dip that plate circuit," or are you firmly entrenched in the "no-tune" era? Will the wall socket always power your rig, or is DC power desirable?

And what about size? Big, small or in between? Warranty? Service? It's not always an easy choice!

This month's column has a few tips to help you choose a first rig that's right for you (or a second or third rig, as needed!).

Radio Buying Tips

- First, think long and hard about what you'll actually be doing with your shiny new (or lovingly used) radio. Analyze your interests, the bands you'll be using, the modes you'll be using, the power output you require (or can afford), and so on. If you're always using SSB, buying a rig with full break-in CW or a nifty CW filter in the IF section may be a total waste of time and money. You get the idea—match the radio to your requirements before you shell out your hard-earned cash!

- In a similar light, put on some dark sunglasses to shield your vulnerable eyes from the glare of hundreds of shiny, beckoning

pushbuttons and gizmo switches. "Creeping feature-itis" can strike anyone, anywhere! The truth of the matter is that thousands of hams have radios with many more features and functions than they ever use. Your first rig won't be your last, so go easy until you've had a chance to explore your new hobby a bit further. Then, with some experience under your belt, go for the gusto if you need more radio.

- Before buying anything, talk to your Elmer, your radio club buddies, your upgrade class instructor—anyone who has been a ham for a while. You practically can set your watch by the fact that hams love to talk about equipment. Operators have their favorites, of course, but by talking to every ham you can get your hands on and grilling them for information and recommendations, you increase the likelihood of coming up with a winner.

- One nice feature about Elmers and ham buddies is that they often have a radio or two sitting around that you can use for a while. Dealers also sometimes have demo rigs that you can try out. What's the best way to decide whether a certain radio is right for you? Actually using it on the air, of course! This variation of the "oral tradition"—passing a certain brand of ham radio down (via loaner radios) to successive generations—is a profound promoter of brand loyalty. More than one ham has been a "Kenwood man" for life simply because he started with a borrowed TS-520 (or whatever!).

- Another great way to become familiar with a wide variety of radios is to check out the Product Review column in *QST*. Nearly every mainstream radio made since the late 1960s is reviewed there. You'll also get performance specs, features, a look at the controls and connectors—the whole nine yards. *QST*'s annual index lists the rigs reviewed in a particular year. A cumulative Product Review index going back to 1976 is available for \$3 and an SASE from ARRL Technical Secretary, 225 Main St., Newington, CT 06111.

ARRL's *Radio Buyer's Sourcebook, Volumes 1 (1981-1991) and 2 (1991-1993)*, available from your local amateur radio dealer or from the ARRL (\$15 list), saves you the trouble of looking for all those back issues. Each features the most popular rigs and accessories reviewed in *QST* throughout the years.

- Buying from a dealer—whether the rig's new or used—can be safer than buying from an individual. In addition to hardware, dealers offer information, service and a bit of security. Make sure the dealer you choose has a reasonable return period (a modest restocking fee is acceptable), and try to purchase your rig with a credit card, if possible. You'll be protected if the rig turns out to be a lemon.

- Buying from individuals or from flea markets is where the bargains can be found—but only if you are an experienced buyer, skillful in ham radio service or repair, or know someone who's willing to assist you!

As any longtime flea market wheeler-dealer will tell you, it's possible to find fabulous deals at such gatherings—but it's also possible to come home with wretched doorstops that look great on the outside.

When the seller says, "Oh, that radio works great!" he might be telling the truth or he also might be pulling your leg. If you're inexperienced or you can't fix the rig's "little problem," you could be stuck with the thing.

Caveat emptor applies even to ham radio! Generally you get what you pay for.

As you gain experience, the process of choosing a rig will become less mysterious—but no less frustrating! New gear is introduced every year, and most hams trade their stuff in for newer versions every few years. You probably will, too—it's all part of the fun!

Used Rigs to Consider

If you've decided to buy a used rig (for whatever reason), the radios listed here (far from comprehensive) are as affordable as any radio you'll find, work well on today's crowded bands, and can handle most specialty modes (check carefully to be sure they'll meet your needs):

- Icom: Models IC-701, IC-720, IC-730, IC-740, IC-745 and IC-751(A). Prices range from \$250 for the IC-701 to about \$600 for the IC-751 or IC-751A. They're all solid state and have many built-in features.

- Kenwood: Models TS-120, TS-130, TS-140, TS-180 and TS-430. Prices range from \$300 to \$600. They're all solid state and have many built-in features. Kenwood rigs with at least one tube: Models TS-520,

TS-530 and TS-820. These are older and may require some "tweaking."

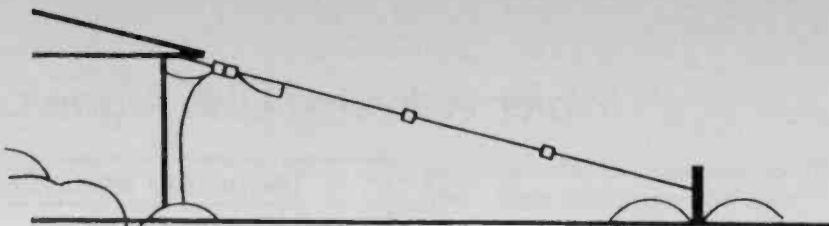
•Ten-Tec: Models 540, 544, Argosy, Argonaut (QRP, 5-watt output), Omni series, Century 21 and 22 (Morse code only) and the Scout (compact beginner's radio; frequency limited, but a nice performer). Ten-Tec radios all are solid state, made in the United States and feature smooth, full break-in CW keying. Prices range from \$100 to \$500.

•Yaesu: Models FT-102, FT-107, FT-301, FT-707, FT-901DM, FT-980 and FT-747. All solid state. Tube models: the popular FT-101 series (older, may need "tweaking"). Prices: \$200-\$700.

•Older rigs: These tube-type radios still can offer good performance—if they're working properly—although some operating flexibility is sacrificed. Look for Drake's TR-4 transceiver and the T4/R4 series transmitter-receiver combo, Heathkit's HW and SB series (likely will need "fixing") and Henry Radio's Tempo One and Tempo 2020 (both made by Yaesu and imported by Henry), among others.

Happy hunting! Send your photos, letters and column suggestions to me at American Radio Relay League, Department PCN, 225 Main St., Newington, CT 06111, or send e-mail to kirk@uslink.net.

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Water-Activated UHF Alarm Can Save Lives

Every year, water-related emergencies claim lives when there may be help within feet to aid in a quick rescue. In cold-water drownings, many victims may lose their ability to yell for help, but continue to stay afloat for several minutes before hypothermia builds up and causes them to ultimately lose consciousness. In other cases, high noise levels like rivers and waterfalls can cover the sounds of someone yelling for help, making nearby rescuers unaware someone is in the water that needs fast assistance.

One solution is a water-activated transmitter that sends out a signal to a nearby receiver that in turn sounds off an internal piezoelectric "Sonalert," or trips a relay for a horn or siren. More and more rescue agencies that deploy personnel for river, lake or ocean rescues are looking to this new type of technology to save lives from drownings.

A relatively inexpensive product designed for the general commercial and marine industry from a company called Emerald Marine Products in Seattle, Wash., (800) 426-4201, is a water-activated transmitter and receiver on the license-free 418-MHz band. The receiver is a 12-volt, single-conversion, superheterodyne unit that draws 100 milliamps when turned on and armed. A squelch control plus an audio passband filter keep the receiver muted until a signal from a nearby water-activated transmitter causes the control unit to latch on. A 98-dB Sonalert goes off, and relays on the rear of the unit can open or close accessory alerting devices.

The device is known as the Automatic Lifesaving Emergency Radio Transmitter, or ALERT.

The heart of the ALERT system is a submersible water-activated 418-MHz transmitter that can withstand 10 feet of water depth without leaking. The transmitter runs on two common AAA alkaline batteries that are easily removed by unscrewing a water-tight battery compartment access plug. The top of the transmitter features a small strobe. The strobe and transmitter can run continuously for up to one hour and can be manually activated for "dry" rescue emergencies.

On the bottom of the floatable transmitter are two tiny pins that sense water contact. As soon as water is detected across the pins, the unit latches on and continues to send out an alert signal until man-

Technical Specifications	
AT100 Transmitter :	
Weight:	8 oz. with batteries
Dimensions:	1.3"x 2.3"x 5.3" high impact polycarbonate case
Watertight integrity:	10 feet water depth minimum
Power supply:	Two AAA alkaline batteries
Controls:	Manual On/Off/Armed
Attachment:	Nylon mesh pouch
FCC:	No license required
Frequency:	418 MHz
Range:	2000 feet minimum
Strobe output:	10 flashes/minute
Antenna:	Internal
Operating life:	1 hour minimum
Battery replacement:	Annual or upon emergency use
Operating Temp:	-4°F to 130°F (-20 C to 55 C)
Storage Temp:	-40°F to 158°F (-40C to 70C)
AR100 Receiver:	
Power supply:	12 volt, 100 mA external
Controls:	On/Off/Alarm Silence
Dimensions:	6" x 5" x 1.5"
Weight:	12 oz.
Mounting:	Bracket, vertical or horizontal
Antenna:	External flex
Internal alarm:	95 dB, front panel mounted
Remote alarm/GPS:	Relay contacts: normally open, and normally closed 1A max
Operating Temp:	-4°F to 130°F (-20 C to 55 C)
Storage Temp:	-40°F to 158°F (-40C to 70C)
Specifications subject to change without notice	

Technical specifications of the Automatic Lifesaving Emergency Radio Transmitter (ALERT).

ually cycled off. The flashing strobe confirms an activated transmitter.

But with 10 milliwatts output at 418 MHz, signals don't travel very far—and they don't travel from under water at all. This means the transmitter should be worn at shoulder level on a personal floatation device, or the transmitter must be held just above the water in order to be received. At 10 milliwatts output to a built-in antenna, the transmitter must be held an inch or so above water level.

During several on-the-water tests, the system worked perfectly when attached to the shoulder of a life preserver. If you carry the unit in a pouch on your belt and accidentally slip overboard, immediately pull the unit out of the pouch and hold it above

the water in order to activate the nearby receiver. If the receiver is employed aboard a steel-hull or aluminum rescue boat, an external UHF antenna will dramatically increase reception range.

The relatively inexpensive 10-milliwatt transmitter also may be activated manually. I see opportunities for this unit to work for avalanche victims covered with snow; they could manually activate it in an emergency. Melting snow certainly would self-activate the unit, but to be positive, manual activation will assure the unit is cycled on. The receiving device is easily battery operated and could pick up the proximity of an activated transmitter by search crews.

Yes, there are avalanche and water rescue emergency beacons on the market, but



The ALERT 418-MHz receiver utilizes digital processing to minimize false sound-offs.



The 418-MHz, 10-milliwatt transmitter also can be manually activated by a toggle switch on the top.



Author Gordon West takes the ALERT transmitter on a lifeguard boat for a sea test.



These two contact points will trigger the transmitter to "on" when moisture or melting snow make contact.

Maximum range to a collinear 6-dB omnidirectional antenna was an amazing 1,500 feet over packed snow.

these are extremely expensive—as much as \$1,500 and more. This man-overboard alarm system for both commercial and pleasure boats is less than \$500 for a receiver and transmitter, and could be an inexpensive way to protect emergency personnel who need to send out a proximity signal for help.

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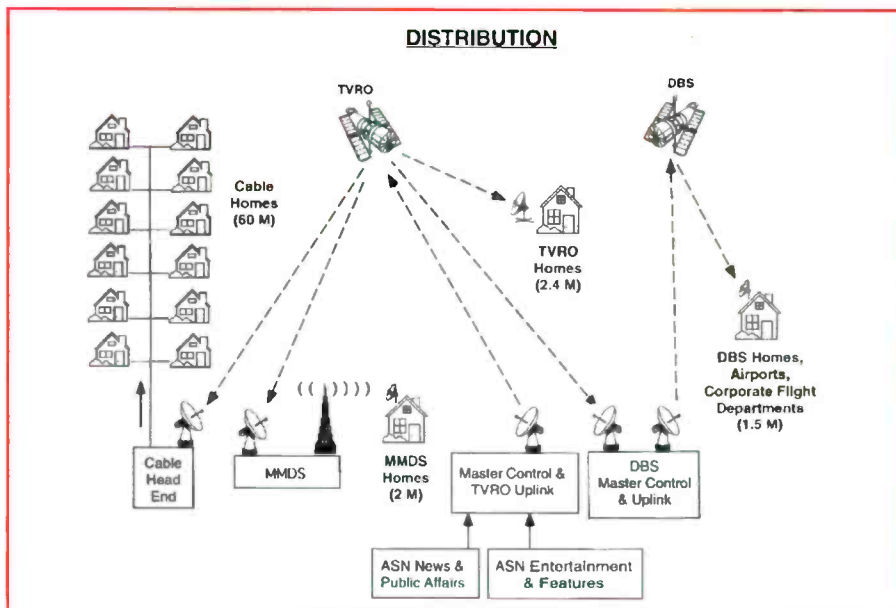
BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Air and Space Network Taking Off

Air and space enthusiasts, hold on to your hats! The new Air and Space Network is set to air in the first quarter of 1996 with its new global affinity premium subscription satellite programming service. ASN Venture Corp. initially will operate domestically, broadcasting a variety of educational, informative programs relating to aviation and space flight, then hopes to broadcast internationally through satellite and cable distribution. The network plans to acquire and produce thousands of hours of television programming on aviation and space topics.

The Air and Space Network is dedicated to people who love flying, from kites to space travel. Surveys show millions of viewers want to further their knowledge of aviation. Viewers will travel through time and meet aviation's pioneers, explore space, witness construction of new missions, even sit in the cockpits commanded by many of the world's greatest pilots.



SAMPLE PROGRAMMING SCHEDULE

Sample 6-Hour AM Information Service Programming for the Aviation/Aerospace Communities

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
5 AM EST	<i>Air University</i>	<i>Air University</i>	<i>Air University</i>	<i>Air University</i>	<i>Air University</i>	<i>Air University</i>	<i>Air University</i>
4 AM CST	Professional Pilot 363:	Air Carrier 206:	Maintenance 350:	Engineering 310:	Management A06:	Ground School 102:	Ground School 117:
3 AM MST	"Non-precision GPS Approaches"	"High Density Traffic Management"	"Prop & Governor Overhauls"	"Transonic Design Considerations"	"Airport Fire Suppression Techniques"	"Understanding Fog"	"Navigation by Pilotage"
2 AM PST							
6 AM EST	<i>Avionics Report:</i>	The Challenge of International Scheduled Route Structures	Authorized Maintenance For the General Aviation Aircraft Owner	<i>Combat Edge</i>	<i>This Week in Space:</i>	Paris Air Show Highlights	Reno National Air Races Highlights
5 AM CST	"TCAS Systems"						
4 AM MST				"The F-16: Global Firepower"	"Live Coverage of Shuttle/Mir Approach & Dock"		
3 AM PST	<i>Software Digest:</i>						
7 AM EST	<i>Plane Talk:</i>	<i>Plane Talk:</i>	<i>Plane Talk:</i>	<i>Plane Talk:</i>	<i>Plane Talk:</i>	AOPA	EAA World
6 AM CST	Guest: Jack Olcott	Guest: Robert Crandall	Guest: David Hinson	Guest: Mark Miller	Guest: Eugene Cernan		
5 AM MST							
4 AM PST	Aviation News/Wx Business News	Aviation News/Wx Commercial News	Aviation News/Wx FAA Report	Aviation News/Wx Military News	Aviation News/Wx Space News	Aviation News/Wx General Aviation	Aviation News/Wx Sports Aviation
8 AM EST		<i>The World Traveler:</i>	<i>The Kit Builder:</i>				
7 AM CST		"The Bahamas, Trinidad & Tobago, Jamaica"	"Lancair IV"	<i>US Air Force Weapons School:</i>	<i>The Astronomers with Carl Sagan</i>	America's Funniest Aircraft For Sale Videos	<i>Sporty's Pilot Shop</i>
6 AM MST	<i>The Flight Dept.:</i>		911-NTSB	"A Cut Above"			
5 AM PST	"Coca Cola's Innovative Approach"						
9 AM EST	<i>Avionics Report:</i>	The Challenge of International Scheduled Route Structures	Authorized Maintenance for the General Aviation Aircraft Owner	<i>Combat Edge:</i>	<i>This Week In Space:</i>	Paris Air Show Highlights	Reno National Air Races Highlights
8 AM CST	"TCAS Systems"						
7 AM MST				"The F-16: Global Firepower"	Shuttle/Mir Docking Live Coverage Cont.		
6 AM PST	<i>Software Digest:</i>						
10 AM EST	<i>Plane Talk:</i>	<i>Plane Talk:</i>	<i>Plane Talk:</i>	<i>Plane Talk:</i>	<i>Plane Talk:</i>	AOPA	EAA World
9 AM CST	Guest: Jack Olcott	Guest: Robert Crandall	Guest: David Hinson	Guest: Mark Miller	Guest: Eugene Cernan		
8 AM MST							
7 AM PST	Aviation News/Wx Business News	Aviation News/Wx Commercial News	Aviation News/Wx FAA Report	Aviation News/Wx Military News	Aviation News/Wx Space News	Aviation News/Wx General Aviation	Aviation News/Wx Sports Aviation

OVERALL SUBSCRIBER SURVEY RESULTS

	1. The History Channel
	2. Turner Classic Movies
	3. ESPN II
	4. The Cartoon Network
	5. Home and Garden TV
	6. CNN International
1st: Proposed New Premium Network	7. The Air & Space Network
	8. Cable Health Club
	9. Jones Computer Network
	10. Romance Classics
	11. TV Food Network
	12. The Military Channel
	13. Mind Extension University
	14. Ovation (Fine Arts)
	15. Classic Sports Network
	16. Encore
	17. The Golf Channel
	18. fX
	19. BET on Jazz
	20. Z-Music
	21. News Talk

Viewers worldwide will be treated to dramatic live pictures from space, classic aviation feature films, documentaries, biographies of legendary aviators and space pioneers, international air and space activities, military aviation, ballooning, commercial air travel, aviation business news, experimental aircraft, gliding, air shows, conventions, skydiving, museums, daily aviation weather and more.

ASN hopes to bring its programming to viewers through direct broadcast satellites (DBS) on analog C-band transponders. As its audience grows, ASN will expand service through TVRO, cable systems, wireless cable and traditional broadcasting stations. Each broadcast day will begin with an aviation news broadcast, talk shows and daily weather. *Plane Talk* will be its aviation call-in show.

In addition to the television programming service, ASN may offer up to four additional services through subcarrier transmissions and datastream broadcasting: 24-hour aviation weather charts, call-in talk shows, guides to products and services and a calendar of events. The network also will provide computer interactive services via telephone lines, perhaps including entertainment games for aviation enthusiasts, continuous aviation weather, information including weather fax services and software, chat lines, bulletin boards, Notices to Airmen (NOTAMS), merchandise catalogs and other space-related activities.

ASN Chairman Matthew Simek feels that, "by offering a full range of program-



ming with appeal to all aviation and space exploration enthusiasts, we're confident that the Air and Space Network is destined to become one of the most successful new global broadcasting ventures of the decade."

My advice is keep your eyes open for this one. If you are interested in what the customers of TVRO, DBS and cable systems like to watch, ASN's survey of 25,000 cable subscribers is available for review from their offices in San Diego.

Further News

Global Access was awarded a 10-year contract to provide satellite space to broadcast BBC programming to the Middle East and Africa. The company will provide 9 MHz of satellite transponder capacity on Intelsat 702 to relay programming to the BBC's Asiasat 2 uplink in Cyprus.

OrbComm has placed an order for 34 new satellites for its low-earth orbit system, raising the number of data-relaying spacecraft designed for low-cost business communications and radiolocation to 36.

That's a wrap. Drop us a line! ■

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You Should Know

BY CAPT. WILLIAM MAULDIN, WG4R

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Preview of Atlanta 1996 Olympics

June, July and August promise lots of radio activity on frequencies in and around Atlanta. Anyone who has passed through the frequently traveled Atlanta Hartsfield International Airport already is aware that the southern city is making plans for people—lots of them. Although the events actually will take place during just a couple of weeks in July, the activity and influx of people will start during May. High energy will continue until all the people have left the city and gone home.

In addition to hundreds of thousands of visitors, there will be massive numbers of law enforcement and security personnel, broadcasters, news reporters and others crowding into the Atlanta area. An advance estimate says more than 160,000 people will pass through the Atlanta airport daily.

Engineers, manufacturers, members of the Federal Communications Commission, radio users and others concerned with the radio use already are working on frequency coordination.

Meetings are being held as you read these words. The committee working on the possible problems has an official name, like everything else related to the Olympics. The OFCC, short for Olympics Frequency Coordination Commission, is the main body concerned with making sure the radios work and interference is at a minimum. Other committees also are working on areas concerning communications. The OBFCC, Olympic Broadcast Frequency Coordination Committee, is just one of many other groups working on preventing problems before the games begin. It will be too late if they wait until the last minute.

How Many Radios?

Planners estimate that the airwaves will have to accommodate more than 500 wireless microphones, more than 25,000 two-way radios, and more cellular telephones ever to be in one area at one time. There also will be broadcast feeds, audio links, video links, satellite signals (both downlink and uplink), shortwave remotes and hundreds of thousands of beepers. There will be more than 3,000 hours of planned event coverage, if all is added together! That is impressive and does present some problems to say the least.

One trade publication mentioned the extensive lengths that Motorola is going to



as they ready both rental and temporary systems. Much to the dislike of scanner buffs and news media people, the extensive system planned by Motorola will use digital radios. As you probably already know, digital signals are not understandable on scanners. Most of the systems also will be of the very latest design and trunked. This system probably will be like modern systems in use, and construction already is in progress. Extensive use of 800 MHz is expected.

Tests are being run to determine the problems on the mixing of hundreds of signals. Spurious emissions are of concern, too. Engineers can be seen running all around town with signal testers and other technical gear. In an event like the Olympics, coverage always centers on events in progress. News media is there, many broadcasting at once. Security will be at the maximum, and routine maintenance and housekeeping communications also will peak just before and after an event.

The grouping of antennas, satellite dishes and other multifrequency transmitter antennas at these planned events will cause all kinds of problems. As the

probability of receiver intermod increases, the challenges of good engineering increases, too. One thing that engineers are working on to combat the intermod problem is a common ground for all antennas grouped together. This could be interesting, too, in that July is a high thunderstorm activity month for Georgia. That means lots of lightning, all seeking a ground point.

Central Control

At this point in the planning, a common repeater and control center staffed by well-trained engineers will be in action around the clock. This single frequency will guide, control and direct solutions to the intermod and interference problems as they occur. If not digital, this single frequency, probably UHF, will be one of the most interesting to monitor.

Broadcasters have been working with Motorola and other manufacturers on the dedicated 800-MHz trunked digital system for communication and coordination. Plans are being made to make radios on this system available to all broadcasters so everyone will have a common working sys-

Tap into secret Shortwave Signals

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



MFJ-462B **\$169⁹⁵** Plug this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.

Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR 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, Tanjung 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

\$129⁹⁵ MFJ-1024 MFJ-1312, \$129.95.

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. 4x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312B, \$129.95.

Compact Active Antenna

MFJ-1022 **\$39⁹⁵**

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, \$129.95. 3 1/2 x 1 1/4 x 4 in.

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 to 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 1/4 x 2 1/2 x 5 1/4 inches.

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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 MFJ-1782 Loop™ is a **\$269⁹⁵** professional quality remotely tuned 10-30 MHz high-Q antenna.

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

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 MFJ-1824BB/BM **\$19⁹⁵**

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

MFJ Antenna Matcher

MFJ-959B **\$89⁹⁵**

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 Proselector

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-1312B, \$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 MFJ-38 **\$16⁹⁵**

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

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

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

February 1996

This POP'COMM feature is designed to help you hear more shortwave stations. Each month this handy, pullout guide shows you when and where to tune to hear a wide variety of local and international broadcasters on the shortwave bands. The list includes broadcasts in languages other than English. Most of the transmissions are not beamed to North America. Keep in mind that stations make frequent changes in their broadcasting times and frequencies.

Changes in propagation conditions may make some stations difficult or impossible to receive. Your equipment and receiving location also will have a bearing on what you are able to hear.

Note: EE, FF, PP, etc., are abbreviations for English, French, Portuguese, and so on. Some frequencies may vary slightly. All times are in UTC, which is five hours ahead of Eastern Standard Time (i.e., 0000 UTC equals 7 p.m. EST).

Freq.	County/Station	UTC	Notes	Freq.	County/Station	UTC	Notes
3210	Radio Mozambique	0250	s/on PP	5770	Radio Miskut, Nicaragua	2345	s/off
3220	Channel Africa, South Africa	0300		5850	Monitor Radio, USA	0500	
3225	Radio Maya de Barillas, Guatemala	0200	SS/local	5860	Vatican Radio	0600	
3280	La Voz del Napo, Ecuador	1000	SS	5930	Radio Prague, Czech Rep., via Slovakia	0230	
3300	Radio Cultural, Guatemala	0300		5955	Channel Africa, South Africa	0400	
3306	ZBC Radio 2, Zimbabwe	0400	vern	5965	BBC, via Canada	1100	
3325	Radio Maya, Guatemala	1100	SS	5970	Radio Exterior Espana, via Costa Rica	0300	SS
3330	CHU, Canada	0200		6005	Deutschland Radio, Germany (ex-RIAS)	0230	GG
3360	La Voz de Nahuala, Guatemala	1100		6015	Radio Austria Int'l, via Canada	0530	
3366	GBC, Ghana	0600		6020	Radio Australia	0800	
3380	MBC, Malawi	0330	vern/EE	6025	Radio Amanecer, Dominican Republic	0200	SS
3925	Radio Tampa, Japan	1000	JJ	6050	Radio Nigeria	0600	
3945	Radio Vanuatu	1030	Pidgin/EE	6060	Radio Nacional, Argentina	0900	SS
4005	Vatican Radio	0500	FF/EE	6075	Deutsche Welle, Germany	2200	GG
4450	Estacion Frontera, Bolivia	0100	SS	6095	Vatican Radio	0250	
4505	Radio Horizonte, Peru	0300	SS	6100	Radio New Zealand	0800	
4615	Republic of Iraq Radio	0150	s/on, AA	6105	Radio Universidad, Costa Rica	0100	SS
4725	Radio Myanmar, Burma	1200	Burmese	6110	Radio Japan, via Canada	1100	
4753	RRI Ujung Pandang	1100	II	6115v	La Voz del Llano, Colombia	0100	SS
4770	Radio Nigeria, Kaduna	0430		6120	Radio Canada Int'l	0200	
4779	Radio Cultural, Coatan, Guatemala	0100	SS	6135	Swiss Radio Int'l	0100	
4785	Ecos del Combeima, Colombia	0200	SS	6150	KNLS, Alaska	0900	
4795	La Voz de las Caras, Ecuador	1000	SS	6150	AWR, Costa Rica	2300	
4805	Radio Amazonas, Brazil	2300	PP	6175	BBC, via Canada	0000	
4820	La Voz Evangelica, Honduras	0300		6565	Republic of Iraq Radio	0200	AA
4840	Radio Valera, Venezuela	0300	SS	7020	Voice of Broad Masses, Eritrea	0325	s/on
4845	ORTM, Mauritania	0630	FF	7070	VOIRI, Iran	0130	SS
4865	La Voz del Cinaruco, Colombia	0100	SS	7105	Voice of Russia	0200	
4875	Rdf. Roraima, Brazil	0100	PP	7110	Radio Ethiopia	0329	Amharic
4890	NBC, Papua New Guinea	1100	EE	7180	Voice of Russia	0000	
4890	Radio France Int'l, via Gabon	0500	FF	7215	Voice of UAE, Abu Dhabi	0200	s/on AA
4915	GBC, Ghana	0600		7250	Voice of Vietnam, via Russia	0200	
4920	Radio Quito, Ecuador	0200	SS	7260	VOIRI, Iran	0030	
4930	Radio Internacional, Honduras	0200	SS	7300	Radio Slovakia Int'l	0100	
4934	Radio Tropical, Peru	0400	SS	7345	Radio Prague, Czech Republic	0600	
4950	Voice of Puijiang, China	1200	CC	7360	Radio Vilnius, Lithuania	2300	
4960	HRET, Honduras	0230	SS	7480	Radio Norway	0100	
4985	Radio Brazil Central, Honduras	0900	PP	7560	Radio Altura, Peru	0000	SS
5010	Escuelas Radiofonicas, Ecuador	1000	SS	9390	RFPI, Costa Rica	0300	
5020	SIBC, Solomon Islands	1000	EE	9410	BBC	2200	
5040	La Voz del Upano, Ecuador	0130	SS	9445	Voice of Turkey	2330	TT
5045	Radio Cultura do Para, Brazil	0230	PP	9455	Voice of America	0000	
5055	TIFC, Costa Rica	0400		9475	Radio Cairo, Egypt	0200	
5097	Radio Eco, Peru	0400	SS	9510	Radio Australia	1300	

Freq.	County/Station	UTC	Notes	Freq.	County/Station	UTC	Notes
9525	Voice of Indonesia	1200	II	11990	Radio Kuwait	1900	AA
9535	Swiss Radio Int'l	0500		12005	RTV Tunisienne, Tunisia	1900	AA
9535	Radio Japan	0500		12015	HCJB, Ecuador	0530	
9540	Radio Espana Exterior, Spain	0100		12060	Radio Mayak, Russia	0900	RR
9560	Radio Norway	0100		12085	Radio Damascus, Syria	2030	
9560	China Radio Int'l, via Canada	0400		13605	Golos Rossi, Russia	0230	RR
9570	Radio Portugal	0230		13625	Radio Atlantika, Russia	1200	RR
9580	Africa Number One, Gabon	1900	FF	13635	Swiss Radio Int'l, via French Guiana	0030	
9580	Radio Yugoslavia	0000		13670	Radio Vlaanderen Int'l, Belgium	1300	
9595	Radio Tampa, Japan	1300	JJ	13675	UAE Radio, Dubai	1630	
9600	Vatican Radio	2230	various	13700	All India Radio	0212	s/on unid
9615	KNLS, Alaska	0800		13740	Radio Sweden	1130	
9625	CBC Northern Quebec Service	2200		13760	Radio Pyongyang, North Korea	0000	
9650	KSDA, Guam	1200		13860	INBS, Iceland	2300	Icelandic
9665	Radio Finland	2230		15009	Voice of Vietnam	1330	
9675	Spanish National Radio	2200		15095	Radio Damascus, Syria	2030	
9675	Radio Cancao Nova, Brazil	1100	PP	15115	Radio New Zealand	0030	
9690	China Radio Int'l, via Spain	0300		15160	Radio Algiers, Algeria	1800	
9695	Channel Africa, South Africa	0500		15170	Radio Jordan	1100	
9700	Radio Bulgaria	0000		15180	Voice of Russia	0300	
9710v	Radio Vilnius, Lithuania	2130		15190	Radio France Int'l	2300	SS
9725	RAI, Italy	0100		15235	Voice of Great Homeland, Libya	2000	AA
9735	Radio Nacional, Paraguay	0100	SS	15240	Radio Australia	0400	
9750	Radio Japan	1400		15240	Radio Sweden	1330	
9755	Radio Canada Int'l	0000		15244	La Voix du Zaire	1800	
9760	Cyprus Bc Corp., via BBC Cyprus	2215	wknds	15265	Radiobras, Brazil	1700	
9770	Voice of UAE, Abu Dhabi	2300		15295	Radio Tashkent, Uzbekistan	1330	
9779	Republic of Yemen Radio	0300	AA	15315	Radio Netherlands, via Bonaire	1830	
9805	Radio France Int'l	1200		15345	RTV Moroccan, Morocco	1800	AA
9820	Radio Havana Cuba	0100	USB	15350	Voice of Turkey	1330	s/on TT
9825	Radio Kiribati	0600		15365	Radio France Int'l	1230	
9835	Radio Budapest, Hungary	0100		15400	Radio Finland Int'l	1330	
9840	Radio Kuwait	0500	AA	15405	Radio France Int'l	1400	
9850	Radio Sweden	1100	Swedish	15415	Radio Jamahiriya, Libya	0230	AA
9870	Radio Austria Int'l	0130		15445	Radiobras, Brazil	1200	
9900	Radio Cairo, Egypt	2300		15475	Radio Atlantika, Russia	1300	RR, Tu-Fr
9905	Swiss Radio Int'l, via French Guiana	0500		15475	Africa Number One, Gabon	2100	FF
9950	Radio Ulaanbaator, Mongolia	1445		15505	Swiss Radio Int'l	2000	AA
9977	Radio Pyongyang, North Korea	1130		15530	RAI, Italy	2200	
11580	Radio Moldova Int'l	1400		15540	HCJB, Ecuador	0800	USB
11603	Kol Israel	1900		15565	Radio Australia	1200	
11620	All India Radio	1900		15570	Vatican Radio	1745	
11635	Croatian Radio	2200		15575	Radio Korea, South Korea	0030	
11650	Radio Sweden	1200		15590	Vatican Radio	1345	
11670	Radio France Int'l, via French Guiana	0130	SS	15640	Kol Israel	1515	
11685	Kol Israel	1900		15650	Voice of Greece	1400	GG/EE
11705	Radio Havana Cuba	2100		15665	Monitor Radio, USA	1800	
11710	RAE, Argentina	0200	EE	15675	Radio Copan Int'l, Honduras	2300	SS
11715	China Radio Int'l, via Mali	0300		17500	RTT, Tunisia	1330	AA
11715	Radio Veritas Asia, Philippines	1500		17525	Voice of Greece	1330	GG/EE
11720	Radio Bulgaria	2100		17550	Vatican Radio	1200	
11740	Radio Jordan	1930	AA	17620	Radio France Int'l	1600	
11755	Radio Finland	1630		17625	Radio Bulgaria	1200	
11780	Radio Nacional Amazonia, Brazil	0000	PP	17630	Africa Number One, Gabon	1430	FF
11785	Qatar Broadcasting Service	0300	AA	17655	Radio Ukraine Int'l	2330	
11790	Radio Japan	0100		17670	Swiss Radio Int'l	1500	
11800	RAI, Italy	0050		17740	Radio Finland Int'l	1430	
11830	Vatican Radio	2250		17800	Deutsche Welle, Germany	1600	
11830	Radio Veritas Asia, Philippines	1500		17810	Radio Japan	2300	
11840	Radio Portugal Int'l	0130		17820	Radio Canada Int'l	1300	
11865	BBC, via Canada	1400		17825	UAE Radio	1300	
11870	Radio Yugoslavia	0430		17870	RAI, Italy	1730	II
11885	UAE Radio, Abu Dhabi	2300		17895	Qatar Broadcasting Service	1400	AA
11890	Voice of Russia	1500		17900	Radio Portugal	2000	PP
11895	Radio Japan, via French Guiana	0300		21605	UAE Radio, Dubai	1600	AA
11940	Radio Romania Int'l	0400					
11970	Voice of UAE, Abu Dhabi	2200					
11970	Radio Kuwait	1300	AA				

tem. Of course, as I mentioned, this system will be digital, trunked and impossible to monitor on the common scanner.

Broadcast Links

The broadcasters have asked the FCC to suspend Section 74.24 of the FCC rules. This rule covers short-term operations. Section 74.24 allows anyone with a Part 73 license to operate within certain guidelines up to 720 hours without prior notification. Considering the possible interference problems if this uncoordinated, unplanned operation takes place, requests have been made to the FCC for prohibition of 74.24 operation during the Olympics.

The 2-GHz band is especially crowded in Atlanta. It is the most widely used spectrum for video links, according to engineering reports. Electronic news gathering, or ENG, system users have gone to great lengths to look into video transmissions on frequencies outside the normal 2-GHz band. Extensive testing is taking place daily using 2-GHz split channels in an effort to overcome these problems. The one thing that engineers have not been able to duplicate is the heat and humidity. Both will be there at the maximum during the July events. This will test both equipment and engineers, as well as those taking place in the competition.

The 1996 Olympic Games in Atlanta certainly will be the largest single RF event ever held in a single city. The FCC already is warning those planning to come that all radio equipment in use must be FCC-type accepted. The FCC Enforcement Division is planning to watch for equipment that is not type accepted, and enforcement can be expected. The FCC and Olympics committees are dealing with foreign applications for radio use, which can present problems if noncompliance radios are planned for event use.

Tuning In

Some of the most interesting listening for scanner users will be the wireless microphone frequencies. Activity on cellular and cordless phones also will be at the maximum. It is a shame that this was outlawed by the Electronic Communications Privacy Act. There will be some interesting activity there ranging from normal users to law enforcement.

The Sky magazine of Delta Air Lines notes that VHF scanners can be legally used on board their planes except during take-off, climb, descent and approach phases of flight. Enjoy the listening if you fly by during this period. Delta is the primary carrier into and out of Atlanta. An earlier edition of this column carried an update on

using your scanner in flight, depending on the airline you are flying. Not all allow scanner use on board.

This is a good time to consider membership in one or more scanner clubs. Frequency lists for law enforcement, aviation, event use and others already are appearing in club publications such as RCMA as well as other local area radio and scanner club publications. Amateur groups and local scanner clubs probably will be offering frequency listings in the near future.

One radio service that will be active and clearly readable on your scanner will be the amateur radio service. Ham repeaters in the Atlanta area are expected to be used extensively. Although some will carry only normal ham conversations, others will be used to assist in crowd control, traffic reports and other public service assistance projects. There also should be some mention on these frequencies of other radio service activity, with perhaps hints as to what is going on. Check out the ham repeaters by all means!

The 1996 Olympics in Atlanta and events planned for Salt Lake City in a few years certainly will challenge electronics, two-way radio, manufacturers and those that control and coordinate such activities. To be there, sharing the events electronically will be fun and rewarding to everyone. Here's hoping the planning pays off! ■

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Communications Accessibility Under Study

Hello again, and happy leap year! This is going to be another grab-bag session—a sort of New Year's inventory clearance—so here goes.

The first item is a news release from the Annenberg Washington Program for Communication Policy Studies of Northwestern University—a group headed by former FCC Chairman Newton Minow, which assesses the relationship between communications technology and public policy. Timed to mark the fifth anniversary of the passage of the Americans with Disabilities Act, the headline reads, "Empowering Persons with Disabilities in Times of Disaster." More than 2,000 deaf or hearing-impaired people have been killed in disasters within the last four years—a shocking example of the high cost of inadequate preparation or lack of timely information. Similarly, a prolonged loss of AC power, while a nuisance for most of us, can prove critical to someone on a respirator.

One key to addressing the problem is ensuring that disaster relief workers are aware of the special needs of the physically challenged. To meet this need, the Annenberg Washington Program and the President's Committee on the Employment of People with Disabilities have released a report entitled: *Disaster Mitigation for Persons with Disabilities: Fostering a New Dialogue*. Compiled by Annenberg Senior Fellow Peter Blanck, the report postulates seven key principles for creating and guiding a dialogue among disaster organizations, the media and disability organizations. They include accessible disaster facilities and services; accessible communications and assistance; accessible and reliable rescue communications; partnerships with the media; partnerships with the disability community; disaster preparation, education and training; and universal design and implementation strategies.

According to the release, this report represents merely the latest in an ongoing series of attempts by the center to translate the language of the ADA into a series of practical guidelines for daily living. Any or all of the organization's publications may be obtained by calling (202) 393-7100, or faxing a request to (202) 638-2745. Those with Internet accounts can send e-mail to awp@nwu.edu. (In a similar

vein, readers of the October 1994 Handi-Chat may recall reading about a Washington, D.C., television station's implementation of the TOBI system—allowing viewers of closed-captioning TV to view the on-screen "crawls" that convey emergency weather information.)

Also in conjunction with ADA's fifth anniversary last year, FCC Chairman Reed E. Hundt, in the company of then-current Miss America, Heather Whitestone (who has been profoundly deaf since infancy), launched a public awareness campaign for the nationwide Telecommunications Relay Service (TRS), which facilitates landline communication between TDY users and those using regular telephones. Hundt further used the occasion to announce the appointment of Linda Dubroof to the directorship of the commission's Disability Issues Task Force (see the October 1995 HandiChat column on the formation of the task force). As deputy chief of the Common Carrier Bureau's Domestic Facilities Division, Dubroof earned a reputation as a specialist in the area of telecommunications for the deaf and hearing impaired, including an award from Telecommunications for the Deaf Inc. for her work in establishing TRS. In announcing the appointment, Hundt again stressed this group's role in ensuring the dissemination of information to all citizens. Dubroof's Internet address is ldubroof@fcc.gov.

One further bit of news from the commission is that—by the time you read this—there should be a new set of rules in place mandating hearing-aid compatibility for telephones in the work place, as well as hotels, motels and medical facilities—in accordance with the terms and restrictions set forth in the ADA. Ironically, the small electromagnetic coil that facilitates hearing-aid compatibility was a standard feature of all telephones until the 1970s, when it was removed as part of an industrywide effort to make telephones lighter and more streamlined—demonstrating once again that the more things change, the more they stay the same.

Looking At Products

We heard from Drew and Diane of Pinnell Park, Fla. They report enjoying this

column, especially the June 1995 profile of Tim Cranmer. Their attention was especially drawn to my reference to Ten-Tec, and they requested more information. Located in Sevierville, Tenn., Ten-Tec is one of the few remaining domestic manufacturers of amateur radio equipment. Although I have no first-hand experience with their radios, they seem to make only HF equipment.

Within these limits, however, their product line is extensive—including single-band and multiband transceivers—some of the latter incorporating general coverage—QRP rigs, and accessories such as power supplies and antenna tuners. In fact, their legal-limit tuners (units that can accept a full 1,500 watts of RF output) are highly regarded by those who can afford them. For further information, contact Ten-Tec Inc., Sevier County Industrial Park, Sevierville, TN 37862, or phone (615) 453-7172. It should be noted in passing, however, that if you are in the market for a radio with digitized speech, there are alternatives. Both Icom and Kenwood now offer digitized speech on several models.

Here are a couple of follow-up notes to the August 1995 column on telecommunications. DataStorm has updated its modem list for ProComm Plus 2.01. Distributed online, the update should be available on well-stocked bulletin boards nationwide, as well as directly from DataStorm. Look for the self-extracting file *modems.exe*, with a time-date stamp of 11-11-94, 10:58 p.m. The resulting *modems.dat* file should bear a stamp of 10-31-94, 12:46 p.m. As with the initial installation, reconfiguring your modem with the new file may require sighted assistance for speech users.

Also within the past few weeks, I have had the opportunity to test yet another shareware package that, had it been reviewed in time for the August column, would have been rated alongside top-ranked ProComm and QModem. Telix is a trademark of DeltaComm Development of Cary, N.C. It offers a full array of features and solid—although not toll-free—product support. Special features include two script languages—SALT (Script Application Language for Telix), a C look-alike, and SIMPLE (SALT Implementa-

(Continued on page 84)

Telephones Enroute

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Surprise Packages With Strings Attached

This month's column could be a money saver for you or someone in your family.

Lately a growing number of offers appear in newspapers describing discounted portable cellphones. Typically, the cellphones can be had for as little as \$15 to \$40 each upon agreement to sign a service contract, although I've even seen "free" phones offered. The monthly basic service access charge may be about \$15 for customers who sign up for two years, or \$18 per month for a one-year contract. One of these offers had a 95-cent phone tied to a monthly basic service access charge of \$30. These are package offers that usually include a little air time.

Discount packages are aimed at and appeal to many people, but they're not for everyone. Their value depends upon the customer's needs and intended uses for a portable cellphone. Unfortunately, what we have here is a failure to communicate. That's because details of the offers are insufficiently explained by those making them. Therefore, they aren't understood by the public. People don't know what questions to ask when considering them. Let's explore what's involved.

These offers are discounted promotions of cellular providers seeking to greatly increase the number of customers they serve. Service providers now are successfully using the low-cost packages to attract persons of modest and average means. They wisely wish to expand cellphones beyond their image as the exclusive tool of celebrities, executives, professionals, jet setters, drug dealers and the affluent. Can't blame them for that. High-profile people brought cellphones initial success, made the phones a status symbol and gave them media attention. While snob appeal served a purpose, cellular's real success can come about only when it goes into routine daily use by the public at large.

A particular service provider's local dealers and service resellers are authorized to offer specific cellphones as part of a complete package, including incentive concessions. A concession might consist of waiving the one-time \$50 or so "service activation charge" if a customer agrees to allow the company to bill all future monthly charges directly to their credit card account. A concession may mean providing detailed billing, granting limited air time at no additional cost over a basic monthly fee, or including special services such as no-answer call transfer.



The JRC Model PTR-829 is a newly designed cellphone. It is low cost, small, easy to operate and attractive. This is the type of cellphone that seeks mass appeal to the general public. That's cellular's real potential.

The cellphones offered in some discount packages seen are not the latest, smallest, nor most feature-packed models available. Indeed, I've spotted a few bulky, ugly and even discontinued models. Several issues back, this column ran information about one large company in the business of purchasing and refurbishing used cellphones for sale to others to use in promotions. This confirms my suspicions that at least some promos are making use of recycled cellphones. Customers should ask whether the promo equipment is brand new or refurbished.

Certainly, all promo offer cellphones aren't refurbished; most probably are new, and some are very attractive. Even so, plenty look really dorky. Upon eyeballing such a unit, it may quickly be deemed too unattractive, clunky or is lacking in features to be appealing. Customers are free to consider substituting—at higher prices—many

other cellphones better suited to their aesthetic sensitivities, need for more features and smaller size.

But wait! People who respond to discount promo offers are most often getting a cellphone because they have been lured by the apparent cheap prices. They may not have thought out that even an appealing lowball \$30 monthly phone and air time fee adds up to \$360 per year. That might equal a week's take-home pay, or a half-month's budget for persons on a fixed income. Do people understand that new customers are put through a stringent check of their credit? Do they know that customers with shaky credit may be required to post a security deposit? Fact is, right from the get-go some folks should rethink their priorities, and how much they actually need a cellphone.

My point is that the majority of those who respond to bargain promos are not people who require a cellphone for extensive daily business or personal use. These are people who plan to use it only occasionally, such as for road emergencies, or instead of having to hunt down a working pay phone at night, in rotten weather or a rough neighborhood. That's fine! These people should accept the most inexpensive, entry-level, no-frills cellphone offered in the package. It will do them just fine, and be the easiest to operate.

When a person responds to a newspaper ad for an attractive discount package offered by a particular local service provider, that's the one the salesperson automatically registers the customer with. Customers seldom think to ask the salesperson whether the competing local service provider also offers a promo package, and what's in it. Dealers often sell both services. It could be the competing provider offers a better deal or service to meet a customer's needs and budget.

In my own area, for instance, both companies offer packages, but one of the two service providers has better cell site placement and signal coverage than the other. That can be determined with a scanner. So, ask which company offers best local signal coverage. Maybe the salesperson can match the customer's needs with the best service. It's good to ask.

There are other things people need to think about that will not be sufficiently understood when they sign up. For instance, discount users must carefully watch the amount of use the phone gets. Many folks could consider the first bill they receive as

a reason to reach for the Roloids; especially when the cost of the cellphone, a one-time \$50 or so service activation charge, and taxes are included in that total.

"Free" air time is like being given a single tantalizing and enticing Lay's Potato Chip (Bet you can't eat just one!). The remaining chips in the bag aren't free. The purpose of "free" air time is to entice and encourage customers to actively use their cellphones. It provokes people to spend more time talking, thus converting their cellphones into necessities for daily living rather than emergency equipment.

Thirty minutes of air time a month included in the basic access fee sounds impressive, but it's a piddling one minute a day. When a specified amount of monthly air time is included, talking longer than the allotted time means paying extra. This might be about 40 to 65 cents per minute (or fraction), depending on the time of day.

Unless incoming and outgoing calls are rarely made, and kept painfully brief, a free air-time allotment is quickly eaten up when the clock starts running. At 65 cents per minute, a quick local chat of five minutes and three seconds costs a stupefying \$3.90, plus several layers of tax. That's a pocketful of quarters more than a call from a pay phone.

Air-time costs would be a nightmare to any person who held off buying a cell-

phone, but finally gave in when they felt one was offered as a genuine bargain that fit so neatly into their tight budget. Service providers know we are all world-class yakkers. You can't blame them for trying to convince us to blab via their cellphones as readily as we chat over the landline.

One costly thing nobody explains well to new customers is service providers' monthly billing cycles. Any free air time included is tied to a monthly billing cycle. The month a person first signs up, it's obviously going to be at some point in the midst of one of their billing cycles. This has potentially costly ramifications.

What this means is that until they enter the first full billing cycle, new customers aren't yet entitled to a full month's worth of "free" air time. Their free time for that first few weeks is prorated to that portion of the billing cycle they had service.

Let's say a person has 30 minutes of monthly air time coming, but signed up with only one week remaining in a billing cycle. Until the first full billing cycle starts, the customer is entitled to only seven free minutes before they start paying for air time. Unless they knew this, the other 23 "free" minutes they thought they had—at 65 cents each—will cost them \$15. Ask about this.

Here are other important things many people don't know about the one- or two-

year service contracts. In the event customers decide during the term of these contracts that they can't afford the cellphone, or don't want or don't need the service for any other reasons, they're in for a reality check. They can't terminate the contract unless they pay a service cancellation fee of about \$200 or more. Otherwise, they are required to continue paying the full amount until the end of the contract term.

That's not all. Has anyone ever wondered what might happen in the event they lost their cellphone, or it's stolen, while participating in a discount package? At that point, they become unable to use the service any longer. No matter, they are still obligated to pay monthly right to the end of the contract. You say, "Then, get another cheap cellphone." Read on!

When they seek to replace the bargain price phone without buying another service contract, that's when they get the sad news that the original \$1 to \$40 cost of their phone was a special introductory discount package offer price. Replacement cellphones come at full price, with the least expensive models starting at about \$150. It's wise to ask about this before signing up, as this information never is volunteered.

Car insurance will pay for a stolen cellphone, only if it's factory installed in a car. If a portable is lost, a homeowner's insurance policy might cover the cost. However,

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CIRCLE 71 ON READER SERVICE CARD
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February 1996 / POPULAR COMMUNICATIONS / 49

because the deductible probably is \$500, which is more than the cost of the phone, the victim still ends up paying for a replacement. You can get cellphone insurance, but many companies will drop you after you make the first claim. What's worse, you never will be able to get a new policy.

People who find discount package offers appealing must understand what's involved before signing up. Read the small print on the back of the contract. Ask a lot of questions. For whatever it is worth, ask the salesperson to provide more concessions, such as additional monthly air time, or a better cellphone at no extra cost. Providers want to increase their customer base, and until they get a prospect's name on the dotted line, everything is negotiable. Once the deal is signed, it's too late to ask questions, seek concessions or wriggle out.

Discount packages attract and well-serve many people on average, modest or fixed incomes. That's why they are offered regularly. Also, folks paying close to \$30 per month for one-way voice-pager service might consider replacing it with a two-way cellphone for about the same monthly base rate.

Still, depending upon a person's resources and needs for cellphone service, everyone isn't a likely candidate for a bargain package. Many cellphone users simply come out ahead by shopping around

for the particular model they prefer, purchasing it outright and signing up for service they like best with the company of their choice. Different strokes for different folks.

Straightforward

I hope the foregoing comments didn't scare you into thinking that all entry-level or simplified cellulars are awkward behemoths, or else as ugly as a mud fence. Some are quite attractive and well-suited to persons who don't need a lot of bells and whistles. These are the types of units that eventually will catch the general public's fancy.

For instance, look at the basic cellphone recently announced by JRC. It is low cost, weighs only 10 ounces, boasts straightforward features, and simplified programming for accessing the safety and security services. This is the JRC Model PTR-829 portable.

This cellphone has essential features, like two-number memory and 911 dialing. Interestingly, instead of a display, a series of audible tones and visible LED alerts prompts and guides the user easily through the phone's operations.

Convenience and security features include a preprogrammed 911 speed-dial that can be dialed automatically, even if the keyboard is locked to prevent unauthorized use. The PTR-829 has an any-key-answer

feature to allow operation with a minimum of distraction.

The unit's design includes a convenience that permits the user to send data files over the cellular by means of a modem. The PTR-829 allows the user to control the volume of the earpiece, ringer and keypad tones. A low battery causes audible and visible alerts.

The cellphone operates from either an alkaline battery pack or an optional integrated rechargeable battery pack and adapter. Numerous accessories are available, including battery eliminator and chargers, extended-life batteries, carrying case, etc.

For more information about the JRC PTR-829, contact JRC International Inc., 3800 Sandshell Drive, Suite 100, Fort Worth, TX 76137; phone (817) 847-2100. For information in Canada, contact JRC Canada Inc., 450 31st St., Lethbridge, Alberta, T1H 3Z3; phone: (403) 380-1600.

Your input to Telephones Enroute is encouraged in the form of comments, news clippings, questions and opinions relating to cellulars, beepers and all personal wireless services. We also seek new product information and photos, as well as information from service providers. Please indicate "For Telephones Enroute" in the address of all material directed to this column. ■



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Broadcast DXing

BY TIM KRIDEL

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Flawed Data Puts AM Station Moves On Hold

Blaming flawed data used to rank stations applying for slots in the expanded AM band, the Federal Communications Commission has scrapped its October 1994 allotment plan. A revised list of allocations for the spectrum between 1605 and 1705 kHz isn't expected to be released until late March, leaving 78 of the 79 stations chosen to migrate in limbo. Except for WJDM in Elizabeth, N.J., none of the stations is guaranteed an expanded-band frequency.

The commission's mea culpa follows nearly a year of protests by several of the 609 stations whose applications to migrate to the expanded band were denied. After reviewing 19 petitions for reconsideration, the commission concluded that errors did exist in its AM engineering database used to calculate interference improvement factors and rank stations in the allotment plan. Because every correction potentially could alter the improvement factors, the commission rescinded the allotment plan.

Each of the 688 stations applying for slots in the expanded band was ranked according to the degree to which its new allotment would reduce interference in the existing band. The October 1994 plan drew fire because some highly ranked stations did not receive allocations, while lower ranked ones did. The commission responded by identifying seven "preclusion factors" that determined which stations could move.

A broadcasting treaty with Canada was one preclusion factor that resulted in lower-ranking stations receiving allocations. Under the agreement, Canada can assign stations on 1610 kHz, 1630 kHz, 1650 kHz, 1670 kHz and 1690 kHz without concern for co-channel interference to or from U.S. stations; the U.S. has priority on the other five channels. Another preclusion factor was the potential for second-harmonic relationships with existing stations. For example, a station wouldn't be allowed to move to 1620 kHz if a nearby station already was operating on 810 kHz because of the potential for a second harmonic.

A third preclusion factor was travelers information stations already operating above 1600 kHz. Although federal travelers information stations operating on 1610 kHz will continue to be protected in the revised database, the FCC plans to move the stations to "an alternative fre-



London's "Virgin 1215" often reaches to the U.S. East Coast. This is one-half of their QSL card, which asks listeners which songs they want to hear. (Courtesy R.C. Watts, Louisville, Ky.)

quency to be determined in a future proceeding," probably 1710 kHz.

Although the commission maintained that "the standards used to implement (the 1994 plan) were proper and appropriate," it admitted that the database omitted two federal travelers information stations and that the computer software was too strin-

gent in using broadcast treaties to preclude stations. The corrected database will be used by a computer to calculate a new ranking. Then, a second computer program will determine the potential for interference that could result from the allocations, a process said to take the computer two weeks of 'round-the-clock' calculations. Once complete, the new list will be open to comments and petitions for reconsideration for 30 days before a final list is released and licenses are issued.

New Jersey's WJDM is the only station from the October 1994 list granted a special temporary authority to move to the expanded band. WJDM also is the only station guaranteed a channel in the revised allocation plan, but whether it will be 1660 kHz and not some other frequency is uncertain now.

Since the FCC first announced plans to expand the AM band, how to develop the new spectrum has been a source of constant debate. In the late 1980s, national licensing was briefly considered, whereby each top-end channel would be assigned to a single licensee, who would set up a nationwide network of stations on that frequency. Some non-commercial broadcasters, citing overcrowding in the educational FM spectrum, argued that non-commercial educational stations should be given preference in the band. "Homesteading"



South Bend, Ind., FMer WRBR showed off its "klubhouse" at the city's Ethnic Festival last summer. (Courtesy Sue Wilden, KIN9GK, Columbus, Ind.)

was another proposal, whereby the FCC would grant allocations to broadcasters who would use state-of-the-art equipment. The commission eventually settled on an allotment process that it said would improve the AM band overall by reducing interference caused by overcrowding.

Love of God and Radio

WODC-FM has a lot going against it—not only does it run a mere 300 watts on an annual operating budget of less than \$35,000, it also competes with six other religious-format stations for a piece of the Virginia Beach, Va., radio audience. In spite of that, there's no lack of faith among the some 60 volunteers who keep "The Lighthouse" on 88.5 MHz. Although the staff comes from all walks of life—among them a career Navy man, an interior decorator and students—it has two things in common: a love of both God and radio.

"I wanted to do radio since high school. I've been interested in it all my life," said John Vinson, a retired postal worker who moved from Michigan to man the boards at WODC. "Forty-some years later, God sent me over. I had to come 800 miles to get in radio."

Station manager Anne Verebely volunteers her time for similar reasons: "When I was growing up, I used to listen to those AM stations in the middle of the night. I've always been a radio buff. ...Delight in him and he will give you the desires of your heart. This is my ministry."

Donations of time by the staff aren't the only thing that's kept the station going since it signed on in February 1989. Listeners have supplied everything from money to food to a CD player. The station's close relationship with the community has helped keep it debt-free. And while WODC takes its calls from its affiliation with the Open Door Chapel ministry, it isn't heavy-handed in its approach.

"We're not out to stuff doctrine down people's throats," one staffer was quoted as saying in an article in *The Virginian-Pilot* and *The Ledger-Star* of Norfolk, Va., sent to us by G. Stewart Tyler, WA4JUO, of Suffolk, Va. "We just want to share the word of God."

The majority of WODC's programming is Christian music, but the genres often range from country to contemporary to Southern gospel.

Where To Start?

Longtime POP'COMM reader—but newcomer to Broadcast DXing—John R. Mathews, KE6LAW, checks in seeking advice for beginners, such as how to choose a receiver.

Selecting the radio best suited to your listening habits and needs—and you—is no small task. With dozens and dozens of makes and models on the market ranging

Applied for Permits to Construct New FM Stations

AK	Houston	88.7 MHz	285 watts
AK	Ketchikan	99.9 MHz	
AL	Dora	92.5 MHz	
AR	Marvell	91.5 MHz	50 kW
AZ	Bagdad	103.1 MHz	6 kW
AZ	Lake Havasu City	96.7 MHz	
CA	Cambria	103.5 MHz	6 kW
CA	Laguna Hills	88.3 MHz	28 watts (KEZY booster)
CA	Mariposa	91.1 MHz	450 watts
GA	Sparta	102.7 MHz	6 kW
HI	Honolulu	91.5 MHz	50 kW
KS	Arkansas City	102.5 MHz	6 kW
KS	Ingalls	105.9 MHz	
MD	Annapolis	99.1 MHz	10 kW
MD	Bethesda	94.7 MHz	20.5 kW
ME	Old Orchard Beach	88.1 MHz	
MI	Baraga	104.3 MHz	100 kW
MO	Bismark	99.5 MHz	25 kW
MP	Garapan, Saipan	101.1 MHz	3.2 kW
MS	Belzoni	106.3 MHz	6 kW
MS	Clarksdale	92.1 MHz	6 kW
MS	Grenada	92.3 MHz	
MS	Yazoo City	93.1 MHz	4.1 kW
MT	W. Yellowstone	96.5 MHz	6 kW
NC	Aurora	91.1 MHz	9 kW
NH	Lancaster	102.3 MHz	
NM	Carlsbad	106.1 MHz	50 kW
NM	Texico	96.5 MHz	4 kW
NV	Sun Valley	93.7 MHz	
NY	Ogdensburg	98.7 MHz	3 kW
OR	Klamath Falls	104.7 MHz	9 kW
PR	Santa Isabel	98.1 MHz	
PR	Vieques	98.9 MHz	320 watts
SD	Rapid City	95.9 MHz	63 watts (KZZI booster)
SD	Spearfish	95.9 MHz	63 watts (KZZI booster)
TX	Clarendon	99.3 MHz	50 kW
TX	Hallettsville	99.9 MHz	6 kW
TX	Hereford	103.5 MHz	50 kW
TX	Hudson	96.3 MHz	
TX	Ingram	90.1 MHz	50 kW
TX	Madisonville	100.5 MHz	6 kW
TX	Palacios	93.7 MHz	50 kW
TX	Tahoka	95.3 MHz	3 kW
VA	Farmville	92.9 MHz	6 kW
WA	Walla Walla	99.1 MHz	
WI	DePere	95.9 MHz	4.5 kW
WV	Beckley	88.1 MHz	1 kW
WV	Williamstown	96.9 MHz	
WY	Diamonville	105.3 MHz	50 kW

Issued Permits to Construct New FM Stations

FL	Carabelle	106.5 MHz	100 kW
GA	Warrenton	93.1 MHz	25 kW
ID	Twin Falls	88.9 MHz	3 kW
IL	Danville	88.5 MHz	500 watts
LA	Alexandria	91.7 MHz	1 kW
PA	Lewiston	90.9 MHz	100 watts
WA	Moses Lake	88.3 MHz	4 kW

FM Construction Permits Reinstated

KAKJ	Marianna, FL	105.3 MHz	
KHWY	Santa Rosa, NM	95.9 MHz	3 kW
KTAO	Taos, NM	101.5 MHz	

in price from \$40 to \$4,000, the quest can be bewildering. Quality certainly is important, but the most expensive radio isn't necessarily the best. Think of them as you would automobiles: Where do you want to go? What do you have to go through to get there? What creature comforts do you want to make the trip a pleasant one? Some people prefer the latest high-tech equipment that's available, while others will swear by their 50-year-old military-surplus vacuum-tube receivers.

The best advice I can give you is don't buy the first radio that strikes your fancy. Even if you have very deep pockets, an ill-chosen piece of equipment—one that doesn't suit your needs—can turn you off from the whole hobby. Why? If you're easily intimidated by rows of knobs and buttons and features such as notch filters and passband offset, you might become frustrated and just give up, thinking, "I'll never understand all of this." Unless you're already a ham or shortwave DXer, you'd probably be better off starting with a less-complex receiver and chances are you already own a basic AM-FM radio. (An exception to this rule is the frequency display—a digital readout is a must. It can be very frustrating trying to ID a station when you're not even sure exactly what frequency you're on because all you have is an analog sliding dial.)

For a novice, a few months with a basic AM-FM portable is the easiest and cheapest way to get an idea of what you can—and cannot—hear, which will help you determine your later purchases. The facility to hook up an external antenna should be at the top of your list, but some other decisions are less clear-cut and depend on your location and listening needs. For example: Should your next receiver have a built-in noise blanker? For AM DX, that can be a major aid, especially if you're DXing from an apartment building full of light dimmers. What about passband offset? While the casual DXer who lives in a rural area and wants to listen only to programs on clear-channel stations, it might not be necessary. But if you want to go after Germany on 1269 kHz and you have a strong local station on 1260 kHz, you might find that having a receiver with passband offset can make the difference.

The next step is to go through POP'COMM and call or write the various dealers. Not only will their catalogs give you an idea what sort of equipment is available, but you'll also find books geared toward newcomers, as well as books that contain reviews of receivers. You'd do well to study them before making a purchase.

There also are a handful of clubs that focus on various aspects of the hobby, and most publish their own newsletters on a regular basis. These are excellent places to meet other hobbyists, from novices to veterans, and get an idea of what sort of

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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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Aug. 21, 1987

Wilson Antenna Company Inc.
 3 Sunset Way Unit A-10
 Green Valley Commerce Center
 Henderson, Nevada 89015

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

We have completed relative gain measurements of your model 1000 antenna using the 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 (%)
26.985	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
27.406	2.00	58



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 LAS VEGAS, NV 89119

Applied for Permit to Construct New AM Station

CO	Gunnison	1490 kHz	1 kW
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Applied to Reinstate AM Construction Permit

KCCF	Cave Creek, AZ	1100 kHz	
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Issued Permit to Construct New AM Station

FL	Kendall	1020 kHz	8.98 kW/980 watts
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Canceled

KEEN	Palmer, AK	95.5 MHz	51 kW
KWQN	Arcadia, LA	92.5 MHz	3 kW
KZUD	Wilburton, OK	103.7 MHz	6 kW
WJRZ	Toms River, NJ	1550 kHz	
WRLJ	Freehold Township, NJ	89.7 MHz	1.26 kW
WVZC	Montauk, NY	94.9 MHz	3 kW

Applied to Modify AM Facilities

KFCC	Bay City, TX	1270 kHz	Seeks 2.5 kW/850 watts.
KHNC	Johnstown, CO	1360 kHz	Seeks day increase to 4 kW.
KPXE	Liberty, TX	1050 kHz	Seeks move to Brookshire, TX.
KVCI	Mineola, TX	1510 kHz	Seeks move to Canton, TX.
WAEB	Allentown, PA	790 kHz	Seeks night increase to 1.5 kW.
WBAJ	Blythewood, SC	880 kHz	Seeks shift to 890 kHz, 11 kW.
WBZT	West Pam Beach, FL	1290 kHz	Seeks increase to 10/4.9 kW.
WGIL	Galesburg, IL	1400 kHz	Seeks drop to 740 watts.
WSLI	Jackson, MS	930 kHz	Seeks night drop to 3.6 kW.
WTCM	Traverse City, MI	580 kHz	Seeks increase to 15 kW/800 watts.

Modified AM Facilities

WBYY	Rockford, MI	810 kHz	Increased days to 3.5 kW.
WKCVC	Kingsport, TN	1090 kHz	Became non-commercial.

Applied to Modify FM Facilities

KBSZ	Wickenburg, AZ	93.7 MHz	Seeks 94.1 MHz, 6.4 kW.
WRSD	Sioux Falls, SD	88.1 MHz	Seeks to relocate.
WWHS-FM	Hampton-Sidney, VA	92.1 MHz	Seeks to change frequency.

Modified FM Facilities

WGTM-FM	Andrews, SC	100.9 MHz	Proposed frequency change canceled.
WPLS-FM	Greenville, SC	96.5 MHz	Shifted to 96.7 MHz.
WTPS	Quincy, FL	100.7 MHz	Moved to Midway, FL.

Changed AM Call Letters

New	Was	
KCIB	KOFK	Milan, NM
KKSL	KPHP	Lake Oswego, OR
KLDC	KMVP	Commerce City, CO
KNNS	KJQI	San Fernandibo, CA
KOOK	KDBS	Eugene, OR
KTIC	KWPN	West Point, NE
KTXC	KQRO	Cuero, TX
WGBF	WWOK	Evansville, IN
WJKN	WJCO	Jackson, MI
WKPP	WTIM	Elizabethton, TN
WMNN	KNOW	St. Paul, MN
WNTA	WRRR	Rockford, IL
WPVL	WTOQ	Platteville, WI
WRBN	WRCC	Warner Robins, GA
WRRR	WNTA	Rockford, IL

New FM Call Letters Issued

KAKA	Franklinton, IA
KAMJ	Gosnell, AR
KANJ	Giddings, TX
KANP	St. Charles, MN
KANQ	Grand Marais, MN
KBTN-FM	Neosho, MO
KCYN	Moab, UT
KGNN-FM	Cuba, MO
KJOV	Woodward, OK
KZZP	Winner, SD
WAKN	Winter Harbor, ME
WANU	Lewiston, PA
WANX	Holly Hill, FL
WANZ	State College, PA
WAOF	Mount Juliet, TN
WAOG	Virginia, IL
WETR	Chenango Bridge, NY

Pending FM Call Letter Change

New	Old	
WEBX	WKTW	Tuscola, GA

Changed FM Call Letters

New	Was	
KBCT	KANF	Waco, TX
KCMA	KHJA	Holdenville, OK
KEYH-FM	KRTK	Cleveland, TX
KFAY-FM	KOLZ	Bentonville, AR
KHZL	KCFM	Shingletown, CA
KKBA	KNGV	Kingsville, TX
KOLK	KOOO	Onawa, IA
KOSJ	KNBQ	Nebraska City, NE
KRBV	KJMZ	Dallas, TX
KRRY	KRRR	Canton, MO
KTUN	KQMT	Eagle, CO
KUPR	KKOS	Carlsbad, CA
KVCQ	KQRO-FM	Cuero, TX
KXXM	KQCR	Cedar Rapids, IA
KYKM	KYOC	Yokum, TX
KZOW	KAMK	Forest City, IA
KZZC	KQYZ	Tipton, CA
WAGO	WANH	Snow Hill, NC
WCOM	WLDI	Bayamon, PR
WCUP	WAAE	L'Anse, MI
WEZO	WZRO	Farmer City, IL
WETZ-FM	WNMR	New Martinsville, WV
WGNN	WAGQ	Fisher, IL
WJLH	WAJU	Flagler Beach, FL
WLYT	WEZC	Charlotte, NC
WPEK	WBFM	Seneca, SC
WPMX	WUUF	Statesburg, GA
WPVL-FM	WKPL	Platteville, WI
WRBG	WRCC-FM	Warner Robins, GA
WTIX-FM	KLEB-FM	Galliano, LA
WXPB	WHPN	Harrisburg, PA
WZSK	WJTI	Bethany Beach, DE



Baltimore, Md., is home to WRBS-FM. The 50-kW religious broadcaster is owned by Peter and John Radio Fellowship Inc. (Courtesy Earl Gray, WDX3IBX, Manchester, Md.)

receivers, antennas and tricks they are using. If you're interested in AM only, you might consider the International Radio Club of America, P.O. Box 1831, Perris, CA 92572-1831, or the National Radio Club, P.O. Box 5711, Topeka, KS 66605-0711. Budding FM DXers can write to the Worldwide TV/FM DXers Association, P.O. Box 514, Buffalo, NY 14205-0514.

Next month, we'll offer more tips on getting started in broadcast DXing, including QSLs and reception reports.

In Brief

- Two southern Maine radio stations have fallen silent, *POP'COMM* reader Lee Rand reports. WHMX, 105.7 MHz, of Lincoln, left the air on Aug. 12, 1995, nearly a year after its sister station in Bangor, WTOX, 1450 kHz, was shuttered by their parent company, Northland Communications Corp.

- Retired CBS correspondent Charles Kuralt has purchased WELY-AM/FM, in Ely, Minn. The former host of "On the Road" bought the combo out of receivership for \$37,000. The 1-kW AM and 6-kW FM are the first and only stations owned by Boundary Waters Broadcasters, of which Kuralt is president, CFO and director.

- Is he worth the trouble? That may be what officials at Infinity Broadcasting are asking about Howard Stern. Last September, Stern's on-air antics cost his syndicator a record \$1.715 million in fines for what the FCC alleged were indecent broadcasts aired between 1988 and 1994. Now rumors are flying that Stern may jump ship to rival SW Networks when his contract with Infinity runs out.

Thanks

News clippings, station and shack photos, bumper stickers and QSLs are always welcome. Just a reminder—because this column is prepared well over a month in advance of when you read it, don't be dismayed if you send something in and don't see it the next issue. ■

Communications Confidential

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Is the Navy Pulling Out of Antarctica?

If you like to monitor transmissions from Antarctica's three U.S. stations, you might want to check your local library for a copy of the October 1995 issue of *Proceedings* magazine, published by the U.S. Naval Institute.

The *Ice Follies* article on page 109 indicates a possibility of remaining Navy billets being given up to a civilian contractor. It discusses the possibility that we may be seeking QSLs from a communications provider in Antarctica other than the U.S. Navy in the future.

The magazine also reported that the U.S. Army placed another vehicle landing ship, the Spc. 4 James A. Loux, (LSV-6), into service this past summer. It was commissioned at Fort Eustis, Va., on July 5, 1995, and joined other vessels of the Army Corps of Transportation located there.

The LSV-6 is 272 feet long and has a full load displacement of 4,199 tons, about the same weight as the World War II LST. The LSV can carry up to 1,815 metric tons of vehicles or containerized cargo.

Wes Linscott in Maine reports that the *Bangor* (Maine) *Daily News* printed an article in August 1995 indicating the Bangor, Moscow and Columbia Falls OTH (over-the-horizon) backscatter radar system closed. When a new radar facility was completed in Virginia, the Maine system became unnecessary. There is another such system in Idaho, but the article did not specify what its future status would be.

Questions continue to come from readers regarding U.S. Air Force E4B and U.S. Navy E6A activities. I used two publications as references, the *Guide to World Military Aviation 1995* and *Ships and Aircraft of the U.S. Fleet, 15th Edition*. Both contain pertinent background material.

Four E4Bs are used by the Air Force as National Emergency Airborne Command Posts (NEACPs). The table of organization shows they are in the Air Combat Command, 55th Wing, First ACC Squadron, located at Offut Air Force Base in Nebraska. They are under the control of the Defense Airborne Reconnaissance Office (DARO).

Manning data shows a crew of 94 can be accommodated, including a battle staff of 30. Rest and galley areas are sized for air-refueled operations lasting up to 72 hours. Callsigns Nightwatch 01 and 04 are believed to be assigned to these E4B aircraft.

MEMORANDUM:

The Defense Mapping Agency Hydrographic/Topographic Center of the US Government issues a publication called "Radio Navigational Aids", primarily for use by mariners world-wide. It includes information which may be helpful to utility listeners. Here is a summary of chapter headings and indexes:

1. Radio Direction Finder and Radar Stations
2. Radio Time Signals
3. Radio Navigational Warnings
4. Distress, Emergency and Safety Traffic
5. Stations Transmitting Medical Advice
6. Long Range Navigational Aids
7. Automated Mutual-Assistance Vessel Rescue System (AMVER)
8. Interim Emergency Procedures and Communication Instructions for U.S. Merchant Ships

Index I - Radio Aids to Navigation by Country

Index II - Index of Radio Navigational Aids by Station

Index III - Cross Reference-International vs. U.S. Radio Aids

The most useful chapters for utility listeners are "Radio Time Signals" and "Radio Navigational Warnings"; they show stations, times, and frequencies for these services. Various modes of transmission are included: CW, RTTY (including NAVTEX), Fax, SSB, and FM; frequencies include MF, HF and VHF. In each chapter, stations around the world are listed by area.

The chapter "Distress, Emergency and Safety Traffic" describes the Global Marine Distress and Safety System (GMDSS), which started to become operational beginning February 1, 1992. Full implementation is scheduled for February 1, 1999. Its features include satellite as well as HF facilities. This chapter also includes a list of USAP, Navy, Coast Guard, and Commercial Stations guarding channels assigned to this type of traffic.

The 1995 edition of "Radio Navigational Aids" may be ordered from the following office:

NOAA Distribution Division
N/ACC3
Riverdale, MD 20737-1199

Please specify PUB. 117, Radio Navigational Aids, (DMA Stock No. RAPUB117), and include a check or money order for \$16.75 payable to NOAA Distribution Division. Delivery will be handled by Roadway Package System.

Perry Crabill Jr. of Virginia sends this information for readers.


The E6A aircraft initially replaced the EC-130 Hercules for the Navy's TACAMO (Take Charge And Move Out) function of VLF radio relay to strategic missile submarines. There was a 1987 E6A prototype that was later upgraded to full operational capability. This and the 15 production aircraft were delivered by the end of 1992. The E6A originally was named Hermes (Greek mythology), then changed in 1991 to Mercury (Roman mythology) to avoid confusion with the disease herpes.

The two references have a difference in manning data. One indicates a flight crew of four, mission crew of six and a relief crew of eight persons. The other lists a flight

crew of four and a mission crew of seven persons with no mention of a relief crew.

The E6A has two very long trailing wire-type antennas. One is almost 5,000 feet, while the other is about 25,000 feet. Only the shorter wire is electrically charged, with energy reradiated off the longer wire. Squadron VQ-3, formerly at Barbers Point Naval Air Station, and Squadron VQ-4, formerly at Patuxent River Naval Air Station; both were relocated to Tinker Air Force Base in Oklahoma, where they became part of U.S. Strategic Communications Wing 1, established May 1, 1992. The squadrons have a total of 16 E6As.

The plan is for the 16 Navy E6A aircraft

<h1>MC</h1>		<h1>308</h1>
BEACON		KHZ
This will verify your reception of our beacon.		
Date: <u>January 10, 1995</u>	Verified By: <u>Thomas J. Roman</u>	
Freq: <u>308 KHZ</u>	Title: <u>Electronics Technician</u>	
Time: <u>0547 UTC</u>	Date: <u>6-5-95</u>	
Elevation: <u>30 feet</u>	Remarks: <u>most distant reception report</u>	
Power: <u>25 watts</u>		
Location: <u>4302N 9320W</u>		
Antenna Type: <u>Elevated</u>		
S T A T I O N	S T A T I O N	I O W A
<u>Mason City</u>		

Allen Renner of Pennsylvania shares his beacon PFC.

S SAN DIEGO JACK MURPHY STADIUM

August 28, 1995

Mr. Kirk Wines

Dear Mr. Wines:


It was a pleasure to hear that you are enjoying our broadcast from Adelanto.

San Diego Jack Murphy Stadium is often dubbed "The Murph" by fans and broadcasters. Thus, when we acquired our Traffic Information System (TIS) about two years ago, we named it K-Murph Radio. It broadcasts continuously at 1700 AM at about 1 to 2 watts of power from a ground plane antenna. Not being a "radio person" I don't know exactly what the significance of these things are. Our official call letters are WRV829.

Our radio station has very few listeners, and yours is just the third "fan mail" we have received. We have received cards from Seaside, Oregon and Green Valley, Arizona. One individual also phoned us from somewhere in Idaho the first month that we began broadcasting. Because there are so many AM radio stations broadcasting with high power from Tijuana at the other end of the band, we have to operate at 1700 KHZ to be heard. As more vehicles are sold with digital radios, we are expecting the number of local listeners to grow. In the meantime we will continue to surprise folks like you who aren't expecting to find a radio broadcast at 1700.

Thanks for writing.

Sincerely,


Sharon Wilkinson
Stadium Business Manager

mail.tis

9440 FRIARS RD. SAN DIEGO, CA. 92108 - 1771
16191 525-8266 FAX: 16191 283-0460

This letter was received by Kirk Wines of California from Jack Murphy Stadium in San Diego.

to be utilized as airborne command posts for the U.S. Strategic Command and perform LF/VLF communications relaying.

The TACAMO airborne alert was dis-

continued in the spring of 1992. However, one reference indicated some of the E6As are being kept in a "runway alert."

Kirk Wines of California writes: "During

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CIRCLE 57 ON READER SERVICE CARD

1995, I often heard traffic information station (TIS) WRV829, located at San Diego Jack Murphy Stadium on 1700 kHz. I logged this TIS while DXing in Lake Elsinore, Calif.; Las Vegas, Nev.; Ehrenburg, Ariz.; and at my residence in Adelanto, Calif. I wrote to the station address and reported my reception and, in return, received a nice response (see letter). I also received a calendar of scheduled events along with a full-color brochure describing the history and size of the stadium. The 1700 kHz frequency is relatively clear of interference so other readers may be interested in attempting to catch this low-power AM signal."

Eric Cisar of Mississippi is a radio marketing consultant and in his free time uses his Realistic DX-390 receiver to hunt utility stations. His antenna is an inverted-V about 50 feet in length, end fed, hung at 10 feet with the ends about 6 to 12 inches off the ground. He plans to upgrade to an NRD-535, M-800 and necessary equipment. And to answer your question, Eric, SLHFM is the abbreviation for "Single-Letter High-Frequency Marker."

David Bannar of Florida informs us he uses a 1965 Lafayette Model HA-225 receiver and a 45-foot, three horizontal leg indoor antenna. He also has a 1959 Hallicrafters Model XS-62A receiver.

Tom Sevart of Kansas reports he is hearing lots of OTH radar in the HF bands. Recent observations included 5015, 5710, 8690, 10846, 10923, 11840, 12180, 12790, 14812 and 14840 at various times, on various days.

Rodney Grussling of Idaho says he uses a Kenwood R-2000 receiver with a dipole antenna up 65 feet.

James Callaway of Nevada also uses a Kenwood R-2000 receiver and has a Universal M-8000 communication terminal for RTTY readout.

Another public coast station, callsign SAB, located in Gothenburg, Sweden, has

been added to the Globe Wireless Global Radio Network. This newest HF coastal radio station extends HF communications to ships in and around Northern Europe. The new facility is provided and operated by Telia Mobitel AB under a partnership arrangement with Globe Wireless.

Traffic lists sent by the five network stations are identical and include every message on hand. Radio operators can determine whether they have traffic waiting by listening to just one broadcast. Ships at sea, therefore, can contact the most convenient station for messages, all of which are stored in a sophisticated computer system in California. For channel and frequency details of the network, see Figure 1.

Before passing to the loggings I want to remind you of the upcoming SWL convention March 14-16 at the Holiday Inn in the Philadelphia suburb of Kulpsville, Pa. For registration information, write to SWL Winterfest, P.O. Box 591, Colmar, PA 18915.

UTE Loggings: SSB/CW/SITOR/etc. All times in UTC

201: Beacon RI, Riviere du Loup, Quebec, Canada, 438 miles, at 0643; Beacon YKX, Kirkland Lake, Ontario, Canada, 623 miles, at 0910. (AH)

216: Beacon CLB, Carolina Beach, N.C., at 0435. (HS)

227: Beacon LA, Lakeland, Fla., 400-Hz mod., at 0529. (HS)

232: Beacon GP, Gaspé, Quebec, Canada, 601 miles, at 0511. Beacon GT, Grank Turk Island, British West Indies, 1,389 miles, at 0651. (AH)

241: Beacon HF, Hearst, Ontario, Canada, 820 miles, at 0658; Beacon PVG, Portsmouth, Va., 378 miles, at 1445; Beacon YGT, Igloolik, Northwest Territories, Canada, 1,960 miles, at 0656. (AH)

253: Beacon RHZ, Zephyrhills, Fla., at 0245. (HS)

257: Beacon SQT, Melbourne, Fla., 1,070 miles, at 0518. (AH)

268: Beacon VKN, Montpelier, Vt., 209 miles, at 0711. (AH)

276: Beacon LAH, Lebanon, N.H., 156 miles, at 0615. (AH)

278: Beacon BKV, Brooksville, Fla., at 0501. (HS)

311: Beacon 9Y, Pincher Creek, Alberta, Canada, at 1050. (RG)

318: Beacon HFY, Indianapolis, Ind., 786 miles, at 0742. (AH)

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)

326: Beacon BHF, Freeport, Grand Bahamas, 1,116 miles, at 0745. (AH)

329: Beacon ISM, Kissimmee Municipal Airport, Fla., at 0503. (HS)

335: Beacon LEE, Leesburg, Fla., at 0128. (HS)

339: Beacon YFT, Makkovik, Newfoundland, Canada, 1,085 miles, at 0711. (AH)

344: Beacon FCH, Fresno (Chandler Municipal Airport), Calif., hrd at 0631. (JC)

346: Beacon PCM, Plant City, Fla., at 0319. (HS)

356: Beacon AY, St. Anthony, Newfoundland, Canada, 1,003 miles, at 0637; Beacon PB, West Palm Beach, Fla., 1,145 miles, at 0752; Beacon YBG, Bagotville Canadian Forces Base, Quebec, Canada, 469 miles, at 0638. (AH)

363: Beacon RNB, Millville Municipal Airport, N.J., at 1359. (Ed.)

368: Beacon TP, Tampa (International—Cosme), Fla., at 0539. (HS)

375: Beacon 8H, St. Paul, Alberta, Canada, at 1045. (RG)

385: Beacon WL, Williams Lake, British Columbia, Canada, at 1058. (RG)

395: Beacon YL, Lynn Lake, Manitoba, Canada, at 1047. (RG)

398: Beacon YOD, Cold Lake, Alberta, Canada, at 1040. (RG)

402: Beacon C, Camaguey, Cuba, 1,442 miles, at 0546. (AH)

407: Beacon OX, Ocean City Municipal Airport, Md., at 1403. This is ex-OIK. (Ed.)

410: Beacon BA, Columbus, Ind., at 0406. (SW)

413: Beacon CBC, Anahuac, Texas, at 0402. (HS)

417: Beacon EOG, Greensboro, Ala., 1,091 miles, at 0957; Beacon HHG, Huntington, Ind., 737

VERIFICATION OF RECEPTION

CATHAY 261

Date	Time (UTC)	Frequency	Mode
17DEC94	1727	6556	USB

Aircraft Type	Approx. Xmsn Location	Aircrft Registr #
747-400	23°N 98°E	VR-HOR

Aircraft Home Base
KAI TAK, Hong Kong

Signature *A. H. Williams*



Official Stamp

VERIFICATION OF RECEPTION

CATHAY 251

Date	Time (UTC)	Frequency	Mode
17DEC94	1736	6556	USB

Aircraft Type	Approx. Xmsn Location	Aircrft Registr #
B747-400	23°N 98°E	VR-HOV

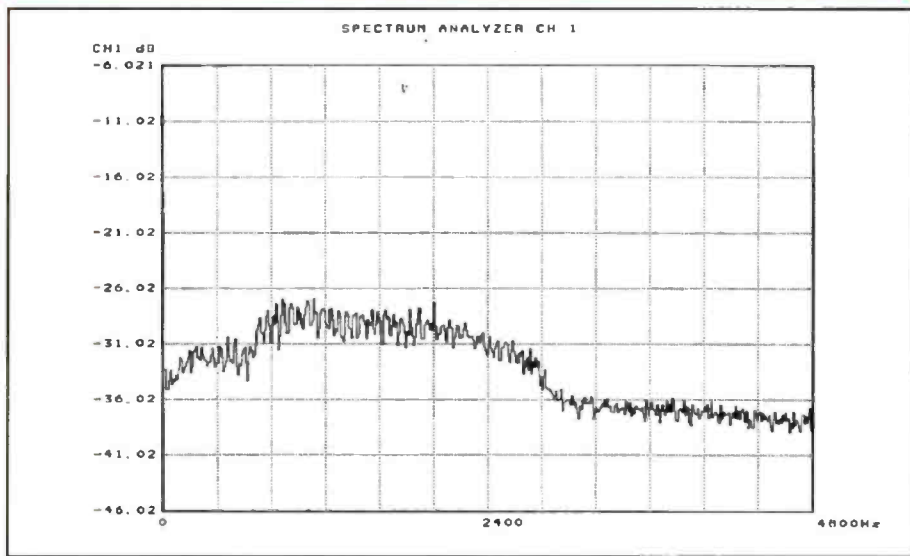
Aircraft Home Base
KAI TAK, Hong Kong

Signature *A. H. Williams*



Official Stamp

Steve McDonald of British Columbia, Canada, explains these two 747s were logged about nine minutes apart on the same morning—on the same track over Burma (Hong Kong to London Heathrow).



This analysis chart from Kevin Tubbs of Vermont shows a possible VFT-P38C signal in USB on 10870 kHz and a possible FEMA CW signal on 10869 kHz.

miles, at 0921; Beacon HQT, Coats, N.C., 581 miles, at 0839. (AH)

428: Beacon COG, Orange, Va., 425 miles, at 0838; Beacon EEJ, Sanford, N.C., 600 miles, at 0636. (AH)

435: Beacon ILY, Washington, Ga., 827 miles, at 0920. (AH)

530: Highway Advisory Station run by DELDOT (Delaware Department of Transportation) has two separate xmits on this freq, one much weaker than other. Both carry info re travel to Bethany and Fenwick Island areas. The transmissions overlap with weaker one, commencing after other has started. (Ed.)

2582: ZMB, Bermuda Harbor radio w/high seas wx local notices to mariners and update of Hurricane Felix at 0434. (ER)

2670: USCG Group Southwest Harbor Maine w/Hurricane Felix update at 0218. (ER)

2840: DLVF, German CG customs launch Glueckstadt w/Duxhaven CG, position report In SITOR-A, 100b, at 1932. (AB)

3451.5: U/i Irish navy-vessel w/callsign 21 wkg OA, Dublin at 2222; Irish navy vessel 54 wkg Dublin at 2234. (AB)

4027.6: YL/SS In AM at 1100 rptng "Atenclon 34510." Into 5F grps. (TS)

4046: Speech-inversion scrambling in USB at 0515. (TS)

4174: CW cut nbr stn at 1123 w/5F grps. (TS)

4175: WB4520, SS Calcite II, Great Lakes self-unloading bulk carrier, built 1929, in SITOR-A at 1727 w/test msg, apparently to WLC, Rogers City, Mich. (RB)

4327: Lima 6 Echo, Alfa 6 Juliet and Romeo 7 Whiskey (USN/USMC tactical calls) w/exercise. Lima 6 Echo asking re alligators in the playground—location of Juliet 1 Alfa. Informed by Romeo 7 Whiskey that "1 Alfa being Interrogated." Hrd at 0026. (RK)

4363: Computer-generated voice w/wx In USB at 0500. (EC)

4369: WLO, Mobile, Ala., w/wx in USB at 0510. (EC)

4423: M/V Imagination w/pp. OM/operator sounded Australian. (EC)

4469: Magnolla 30, Louisiana CAP stn in USB at 1148 wkg w/i CAP stn w/comms re hurricane. (TS)

4585: Kittyhawk 1, North Carolina CAP NCS at 2220 wkg Kittyhawk 100 w/report of plane crash at Hendersonville Airport w/one fatality. Relays there is request for CAP to provide security for crash site overnight. Then went into net ftc. At 2230, KPBS78, CAP Middle East Region w/net callup and check-ins. Both in USB mode. (RB)

4601.5: OA, Irish navy Dublin in SITOR-B, 100b at 2220 w/CQ DE 0A QSY Fl. Fl is 3451.5 kHz. (AB)

4625: YL/EE in AM. 513 callup w/1-0 count. At

GLOBE WIRELESS NETWORK							
ITU Chan	Call Sign	Shore Xmit	Ship Xmit	ITU Chan	Call Sign	Shore Xmit	Ship Xmit
401	WNU	4210.5	4172.5	838	VCT	8435.0	8395.0
403	KFS	4211.5	4173.5	1203	KFS	12580.5	12478.0
409	KEJ	4214.5	4176.5	1219	WNU	12588.5	12486.0
416	VCT	4217.5	4180.0	1257	WNU	12607.5	12505.0
418	SAB	4218.5	4181.0	1263	VCT	12610.5	12508.0
603	KFS	6315.5	6264.0	1265	KEJ	12611.5	12509.0
625	KEJ	6326.0	6275.0	1291	SAB	12624.0	12522.0
626	SAB	6326.5	6275.5	1347	SAB	12652.0	12555.0
627	WNU	6327.0	6281.0	1647	KFS	16829.5	16706.5
632	VCT	6329.5	6283.5	1657	WNU	16384.5	16711.5
803	KFS	8417.5	8377.5	1673	KEJ	16842.5	16719.5
819	WNU	8425.5	8385.5	1691	SAB	16851.5	16728.5
830	KEJ	8431.0	8391.0	1676	VCT	16844.0	16721.0
837	SAB	8434.5	8394.5	2203	KFS	22377.5	22285.5

NOTE: KEJ has moved from 407 to 409 and VCT has moved on two channels.

Figure 1.

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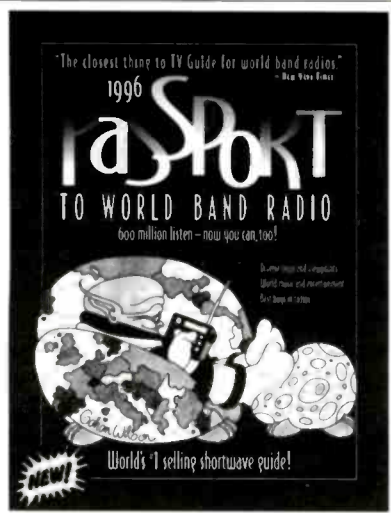
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2307 hrd 6 pips foll by 3 grps (random nbrs). At 2310 changed to 2 nbrs foll by 3F grps which ended at 2313. At 2314 1/2 sec. waterfall sound. At 2324 high-speed data. 2325-2330 waterfall sound rptd in two-second periods about every min. (DB)

5430: 5L grps in CW in progress at 1320. Went down at 1327 w/BT AR T. (Ed.)

5530: YL/EE rptng "Nancy Adam Susan" from 2000-2002. Signed off w/"Queen Thomas Charlie." (RK)

5535: Speedbird London (British Airways LDOC) at 0523 in USB w/kg Speedbird 176 re cabin noise. At 0526 w/kg w/Speedbird 226, posn 30W, selcal ck DH-FJ. At 0534, Lima Radio (SAM LDOC) w/kg American 955 w/info, selcal ck JL-PQ, and at 0545 w/kg American 905 over Bogota. (RB)

5717: Rescue 306, CanForces a/c at 1806 in USB w/kg Halifax Military w/pp RCC re ETA of assisting vessels, RCC advises 2 vls should be on scene soon, u/i SAR tlc. (RB)

6227: Container ships Tropic Night, Tropic Palm and Tropic Sun w/kg KMB, Houston, Texas, w/position reports, arrival times Trinidad, Barbados and Puerto Rico. Hrd at 1404. (ER)

6274: ELAJ6, bulk carrier M/V Rosina Topic at 0143 in SITOR-A w/kg WCC w/OP and tlc. (RB)

6376: WCC, Chatham, Mass., in CW at 1342 w/high seas wx. Concludes wx at 1355 and goes into CQ QX mkr at 1356. (Ed.)

6384: CKN, Esquimalt Naval, British Columbia, Canada, in RTTY 75/850 at 0403 w/CQ mkr. (TS)

6683: SAM 206, USAF C-20B tail 86-0206 at 2128 in USB w/kg Andrews VIP w/comms cks. (RB)

6692: Speech-inversion scrambling in USB at 1250. (TS)

6717: Comms from AF flight FAR 65 between 1315-1415. Flight carrying diplomats to SPLIT (Croatia). PP w/Andrews AFB and some State Department staff in Washington, D.C. One of people on board was Robert Frasure, who a few days later was killed on Mount Ingman near Sarajevo from land mine explosion. (EL)

6730: Nightwatch 01 at 0107 in USB w/kg Recourse w/net on X903. (RB)

6809: WGY901, FEMA Maynard, Mass., at 2229 in USB w/kg 2VI, a stn at St. Croix, U.S. Virgin Islands re emergency tlc for governor or lieutenant governor. Comms re Hurricane Marilyn's damage there. (RB)

6813: YL/EE in USB at 1906 w/1-0 count foll by "462" 3x callup. (PS)

6854: CW cut nbr stn at 0410. 5F grps. New freq and time. Also on 6784 kHz but not // (TS)

7321.1: FDY, French Air Force, Orleans, France, in RTTY, 50/430 w/"Le Bricks" test tape. (PS)

7380: YL/EE in AM at 0205 w/5F grps. Ended w/00000. (TS)

7535: NJCS?, John C. Stennis (pre-commissioned CVN-74) at 1440 concluding cks of 17 xmtrs. Used ID of "Stennis," because ship was not commissioned "USS" not used w/name; NNJB, USS Barry (DDG-52) at 1442 for HF xmtr testing; NDIB, USS Briscoe (DD-977) at 1538 w/HF range test; NNGW, USS George Washington (CVN-73) at 1625 w/kg USS Briscoe (DD-977) re attempt to reach SESEF; at 1741 "Sea Eagle" w/kg SESEF w/series of tests over several hours; at 1758 NYQL, USS John Rodgers (DD-983) w/ANDVT tests on xmtr No. 1. Primary mode USB. (RB)

7601: Speech-inversion scrambling in USB at 0106. (TS)

7645: U/i stn w/hand-sent CW at 0242 rptng KNA KNA KNA 21761 21761. Later changed to KNA KNA KNA 23061 23061. (TS)

7836: YL/SS in AM at 0322 w/4F grps. (TS)

7858: Every Sunday at 1930 YL/GG rptng "Golf Kilo" until 1935 then into 5F grps. (SM)

7862.8: BPXL, unid stn in RTTY 75/120 at 0050 w/coded tlc then into crypto. (PS)

8026: Andrews AFB in USB at 2310 w/kg SAM 970 w/pp. (TS)

8056: YL/SS in AM at 0404 w/SF grps. (PS)

8063: YL w/"Hotel Kilo" at 2330 then into SF grps. These xmtns are, along w/"Sierra Bravo," daily at this time. ID according to this sked: Monday—HK-9325, SB-10177; Tuesday—HK-8063, SB-22545; Wednesday—HK-9325, SB-10740; Thursday—HK-9040, SB-10500; Friday—HK-9040, SB-10500;

Saturday—HK-9325, SB-10177; Sunday—HK-9040, SB-9450. All freqs in kHz. (SM)

8095: U/i stn "Pioneer" w/kg "Pioneer 7046" in USB at 0637 w/selcal check. (TS)

8105: Lena 3, M/S Song of America, Royal Caribbean Cruise Line ship at 0114 in USB w/kg cruise-ship Majesty of the Seas duplex w/6236 kHz for crew pps. (RB)

8136: YL/SS at 0300 w/5F grps. (ER)

8147.3: RTTY 50/826 at 0540 w/R/Ys foll by DE EI AAYHYX. This has been seen many times in the past. What is it? (PS)

8297: AADT, USAV Aldie (LCU-2004) at 0445 clg AAC2, Harbormaster Fort Eustis, Va., no joy. At 2116, ADMO, USAV El Caney (LCU-2017) w/kg AAC2 w/posn 38.5 miles off Flager Beach, Fla. Wkg on "Channel 5." At 2238, AAEA, USAV Chickahominy clg AAEB, USAV Chickasaw Bayou, no joy. At 2354, AAFA, USAV SP4 James A. Loux (LSV-6) w/kg AAC2, w/posn and status report. All in USB. (RB)

8300: "New Star" YL/CC in AM w/4F grps plus Chinese muslc. (TS)

8381.5: CCLY, PFG Lynch (F-07), Chilean Navy (British Leander class) frigate at 0442 in SITOR-A w/kg CBV, Valparaiso Radio, Chile, for msg tlc. Frigate was en route San Diego for port call. (RB)

8399: G6BP9, MV Forest Hills in SITOR-A, 100b, at 1834 w/msg to CTGM Lausanne. Ship arrived at Genova Port. (AB)

8405: UFOM, BMRT Nikolay Kuropatkin at 0036 in RTTY 50/170 w/admin msgs to Murmansk Radio. Vsl used hull No. MB-0023. (RB)

8453: VAI, Vancouver, British Columbia, Canada, at 1020 in CW w/CQ mkr. (RG)

8460: PPJ, Juncao, Brazil, at 1015 in CW w/CQ QX mkr. (RG)

8557: SPE41, Szczecin, Poland, in CW at 1444 w/QX. (AB)

8589: HPP, Panama Intelmar Radio at 0945 in CW w/CQ QRU mkr. (RG)

8650: ESA, Tallinn, Estonia, in CW at 1500 w/mkr. (AB)

8673: MTO, Rosyth Naval, Scotland, in RTTY 75/850 w/band availability tape. (TS)

8681.2: NMC, Comms Point Reyes, Calif., w/FAX meteo at 0348. (JC)

8690: 3DP3, Suva, Fiji, at 0952 in CW w/CQ QX mkr. (RG)

8694: PJC, Curacao, in CW at 0955 w/CQ QX mkr. (RG)

8749: Rogaland Radio, Norway, w/high seas wx for Scandinavia and Iceland in English, Norwegian and German at 2300. (ER)

8837: El Al LDOC (MID-LDOC) at 0009 in USB w/kg 2 u/i a/c in Hebrew. (RB)

8967: Reach 50241 w/kg Andrews AFB for wx at 0645 in USB. (EC)

8983: Rescue 1717, USCG HC-130H, at 1910 in USB w/kg CAMSLANT Chesapeake, NMN, pp Miami Ops, re spotted 10 rafts at posn given, also reports 7 survivors hoisted by HH-60 crews, and an additional 5 rafts spotted at posn given. Miami Ops AFB 1718 is to relieve them. Was SAR for M/V Club Royale, which sank during Hurricane Erin. (RB)

8992: NOAA 42, WP-3D Hurricane Hunter, at 0320 in USB w/xmsn "in the blind" for MacDill re 0302 posn. (RB)

9074: YL/SS in AM at 0300 rptng 685 and 1-0 count. At 0310, 10 tones and into 3/2F grps. This stn usually sends 4F grps. (TS)

9154: D4B, Sal, Cape Verde Islands, in RTTY at 0029 w/mkr and RYs. (JC)

9955.2: Bubbler jammer at 0349. (JC)

9960: YL/SS in AM at 0302 rptng 213 and 1-0 count. At 0310, 10 tones and into 4F grps. (TS)

9982.5: KVM70, Honolulu, Hawaii, at 0555 w/FAX 120/576. Fax showed significant cloud features. (JC)

10411.8: Egyptian Embassy, Paris, with tlc/AA at 1730 in SITOR-A. (RH)

10711: NRNA, USS Antrim (FFG-20) at 1614 in USB clg SESEF Norfolk, advises weak/unreadable, QSY 12315 kHz for tests. (RB)

10740: Every Saturday at 0300, YL/GG rptng "Charlie November" with electronic tones til 0305. Then 5F grps for 005. (SM)

10798.3: RFLJ, French Forces, Fort de France, at 2120 in ARQ-E3, 96/425 w/several "non-protecte" msg's, later w/EE NavArea IV bcst on circuit IRT. (RB)

11045: RFTJ, French Forces, Dakar, Senegal, in ARQ-E3 192 at 2000 w/"Controle De Voie." Circuit JDJ. (PS)

11062: LZU2, Sofia, Bulgaria, at 0625 in RTTY 50/411 w/coded aero wx. (PS)

11072: Every day at 1730, 10 tones foll by YL/EE w/4F grps. This time YL rptd 5023/5206/9657/6498/4362. Off at 1740. Also on 13465 kHz. (SM)

11155.1: RCQ47, Russian allocation, at 0636 in CW w/tfc for u/i stn. (PS)

11174: Andrews AFB w/coded alphanumeric msg for Juliet Papa Papa 6 X-ray. Heavy echo as if this was a satellite xmsn? Hrd at 0018 in USB. (RK)

11175: Croughton GHFS in USB at 1935 w/Reach 106EV, pp to Rota and Reach 7S5B, pp to Rota CP and Rota Metro. (AB)

11178: Shannon Volmet w/wx for European airports. Computerized voice. Hrd at 0018 in USB. (RK)

11202: Canadian CG flight 1504 informs Comstock Campac they are returning to Newfoundland and will monitor 121.5 MHz. Hrd at 1338. (JM)

11491: YL/EE in AM at 0033 w/3+2F grps. (PS)

11545: YL rptng "Golf Victor" from 0000-0005, then into GG 5F grps til 0020. (RK)

12122: U.S. Army Corps of Engineers. WUJ35, John Day Project Office, The Dalles, Ore., at 1543 w/unclasp equipment report to WUG. At 1548, WUJ4, Walla Walla, w/kg WUG w/equip report. At 1551, WUN, Hanover, N.H., w/kg WUG w/equip report tix. All in SITOR-B for Friday net. (RB)

12172: PWR, Brazil NavRad, Brasilia, in RTTY 75/490 at 1552 w/5L grps. (RH)

12214: CW stn at 2308 w/5F grps. Used cut zero and signed down w/AR BT 382 382 382. (TS)

12485.5: 5NOL, MV Bonny w/kg SudMaritime, Douala in SITOR-A at 1127 w/ETA, etc. (RH)

12493.5: BPPV, Da Qing 91, Chinese vsl at 1619 in SITOR-A w/posn to XSG, Shanghai Radio, log-in 20134 BPPV. (RB)

12506.5: UTSU, LK Kapitan Khlebnikov, Ukrainian icebreaker at 2105 in SITOR-A w/crew TGs to Vladivostok Radio. (RB)

12879: WSC, Tuckerton, N.J., in CW at 0025 w/CQ mkr and tfc list. (JC)

13095: PZN, Paramaribo, Suriname, w/tfc list at 2140. (ER)

13285: Continental Flight 75 in USB at 1403-1414 w/position 465 miles east of Goose Bay, Labrador, over the Atlantic. A 65-year-old female passenger has fallen and hit her head. She is vomiting and losing consciousness; on-board nurse assisting. Doctor on freq advises to divert to Goose Bay because situation could be serious. Plane en route to (Newark, N.J.?), originally scheduled land 1735. (MC)

13440: Air Force 1 at 1717 in USB w/kg Andrews w/comm cks on "646," at 1718 reports on deck at Philadelphia, Pa. (RB)

13527: At 0800, YL/GG w/522 522 522 til 0805. Then 1438 205 1438 205 and into 5F grps. (SM, Germany)

13553: At 1940 OM/RR w/519 519 519 000 and ofl at 1945. (SM, Germany)

13921: Mossad YL rptng "Charlie India Oscar 2" at 1045. Also 10125 kHz. (SM)

13964: HBD52, Swiss Embassy Rabat, MRC, at 1715 in SITOR-A w/5L grps to u/i location. Off w/"no traffic?" and ID. (RB)

14141.1: Moscow, Alis system, unable decode. Is 75b, 241 shift. Hrd at 1717. (RH)

14391.5: 8BY, u/i in CW at 1649 w/V mkr foll by 058/487/034. (PS)

1441.5: NNNØYNS, NAVMARCORMARS MARS Data System NCS at 1702 in 75/170 Afloat and Overseas Administrative Net bcst. Each Friday and Saturday at 1700. (RB)

14470: At 1315, series of long tones as if tuning up on freq than at 1330 OM/RR rptng "501" til 1335. Then 249 249 36 36 and into 5F grps. Alternative L. Poacher, the "Cherry Picker," was on 14469 kHz. (SM)

14600: U/i stn at 1142 in SITOR-A w/crypto signed "Regards J. Omar." (RH)

14820: At 1025 OM/RR in AM mode rptng 11068 over and over til 1030 and again from 1035-1040. (SM)

15878: 3MA24, CNA Taipei In Fax 120/576 at 0950 w/newspaper in Chinese. (RH)

15895: Every day at 1330, 10 tones foll by TL/EE w/4F grps. On this day, YL rptd 0158 6528 7752 til 1340, when left the air. Also on 11072/13465 kHz. (SM)

15950: RBI77, Moscow meteo, at 1247 w/Fax 60/576. Superb chart, best ever rec'd from Moscow. (RH)

16005.2: U/i RTTY stn, 75/479 at 1341 w/crypto ending with CW/SS "Direccion Puerto." (RH)

16079.7: PARIS, French Forces HQ, Paris, France, at 2105 in ARQ-E3 192 w/"Controle De Voie." Circuit IAH. (PS)

16084: YL/EE in USB at 1337 w/5F grps 2x rpt's. (RH)

16118: HBD20, MFA Berne, Switzerland, at 1540 in SITOR-A w/nx in GG. //16120 kHz. (RH)

16280.3: RFFTA, MOD Paris, at 1723 in ARQ M2 200/390 w/5L grps on Channel B. (RH)

16305.8: RFPTC, French Forces N'Djamena, at 0009 in ARQ E3 192/369 idling. (RH)

16339.7: CJL, MFA Nicosia, at 1148 in ARQ-E 96/314 w/test tape. (RH)

16446.2: KRN, Russian MFA bcst, RTTY 75/500 at 1736 w/5F grps. (TS)

16688.5: SYOC, M/V Angelic Spirit at 1718 in SITOR-A w/entry tix for Port of Long Beach, Calif. (RB)

16801.6: EOQW, SovShip TH Solnechny Bereg at 1300 in RTTY 50/170 w/kg Vladivostok. (RH)

16814.5: HEC17, Berne Radio, Switzerland, at 1641 in SITOR-A wkg u/i vsl w/manitex radio ID 27087 BNSPAB w/3.7 min tix in Swedish re installation of Windows 95. (Se)

17007.5: KLB, Seattle Radio, Wash., in CW at 2345 w/CQ QXQ OBS/AMVER/QRU? mkr. (JC)

17050: 4XZ, Haifa, Israel, in CW w/mkr. (MR) (Note that the British ENIGMA Newsletter has stated a belief that this station is not a naval station, but rather is a Mossad transmission site.—Ed.)

17076: LGW/LGB/LGJ/LGT, Rogaland, Norway, in CW at 1757 w/tfc list. (MR)

17096: SVA, Athens, Greece, in CW w/tfc list. (MR)

17445.5: 5YE, Nairobi meteo in Fax 120/576 at 1240 w/very good chart. (RH)

18345.2: DMK, MFA Bonn at 1124 in RTTY 75/499 w/5L grps. Unusual mode, normally ARQ-E! (RH)

18487.9: MFA Oslo, Twinplex, at 1227, unable decode. (RH)

18697.7: DPA Bonn at 1201 in FEC-A 96/386 w/nx in GG to South America. (RH)

19218.2: SAM, MFA Stockholm, Sweden at 1209 w/SWED ARQ 100/400, tix in Swedish w/Luanda Embassy. (RH)

Contributors this month included: AB—Ary Boender, Netherlands; DB—David Banner, Florida; RB—Richard Baker, Ohio; EC—Eric Cisar, Mississippi; JC—James Callaway, Nevada; MC—Mike Cei, Connecticut; Ed.—Don Schimmel, in Delaware; RG—Rodney Grussling, Idaho; AH—Al Hemmalin, Rhode Island; RH—Robert Hall, South Africa; RK—Richard Klingman, New York; EL—Eric Langhendries, Belgium; JM—Jack Matesevac, Ohio; SM—Simon Mason, England; ER—Ed Rausch, New Jersey; MR—Michael Regan, Wisconsin; HS—Hans Schellenberg, Florida; PS—Paul Scalzo, Quebec, Canada; TS—Tom Sevart, Kansas; SW—Susan Wilden, Indiana. ■

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Radio Denmark May Be On The Air

Gabriel Heater, a commentator during radio's golden age, used to say, "Ah, there's good news tonight!" If everything has gone according to plan, venerable Radio Denmark once again is airing English on shortwave! The station planned to begin broadcasts on the first of the year, with a hardly overwhelming schedule of one per month—the first Sunday of the month. The programs are to focus mostly on Copenhagen as the 1996 European City of Culture. Radio Denmark discontinued English on shortwave a long time ago, even before it discontinued use of its own transmitters and arranged to broadcast via Radio Norway. At this point, we are unsure of the exact schedule for English from Denmark, but check the first Sunday of the month at 0000 on 6010; 0100 on 6010 and 6020; 0200 on 6120; 0300 on 6030; 0400 on 6195; 1000 on 7295; 1300, 1400, 1500 and 1600 on 11840; and 2100 on 5960.

We urge all readers to write Radio Denmark and thank them for coming back. The address is: Radio House, DK-1999 Fredriksberg C., Denmark.

Eire Possibilities

There have been hints of happy things coming out of Ireland, too. This past fall, an organization called Irish Overseas Broadcasting Co. hired time on BBC transmitters to air Irish Radio (RTE) commentary on the All Irish Hurling Finals and then covered a second sports event a couple of weeks later. These broadcasts were supposedly an exploratory step toward the eventual resumption of shortwave broadcasting from Ireland!

Irish Overseas Broadcasting Co. is said to be working with the official Radio Telefis Eireann. RTE discontinued shortwave around 1953. Since then, the only SWBC signals from Ireland have come from the occasional pirate broadcaster. They want your comments about a possible shortwave service, so write and tell them "yes!" The address is P.O. Box 4950, Dublin 1, Ireland.

Prop Report

The experts on shortwave propagation think they see signs that the current sunspot cycle may have bottomed out. We could be in the process of a long climb back to high sunspot levels that, in turn, should

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Other Notes

- The Voice of Turkey should have its 250-kW transmitters in operation by now.

One of the new units is to transmit in single sideband.

- Time station JJY in Japan has discontinued its ionospheric forecasts and word is the station will leave shortwave before long. It possibly already has.

- Adventist World Radio continues to grow. A fourth transmitter has now been added to the complex at AWR-Asia in Guam.

RADIO DENMARK

Copenhagen, 10/15, 1957

DEAR LISTENER,

Your report of 8/19/1957 concerning our broadcast on 9530 kc/s, 34.51 m, 50 kw, call letters OZFK, at 0200-0230 GMT on 8/29/1957, beamed to North America is hereby verified.

Sincerely yours,

[Signature]
SHORTWAVE DEPT.



The English program staff at Radio Korea.



RAI, Italy, is known for its QSLs depicting fine art.

Radio Denmark may have resumed English broadcasts by the time you read this. This QSL is from 1957, when English from Denmark was on daily.

•The Canadian mediumwave station relayed by CFVP, 6030, has changed its call letters to CKMX, with a slogan of "Mix 1060" (1060 is its mediumwave frequency).

Bolivia

A new station here is Radio Eco San Borja, located in San Borja in Ballivian province, department of Beni. It operates to 0200 or later on or near 4700.

Loggings

As always, your input is very welcome. Loggings should be listed by country, with your last name and state abbreviation after each and double-spaced at a minimum. Also needed are spare QSL cards, station and shack photos for use as illustrations, station schedules and other literature—in fact, any shortwave "junk" you care to send! We appreciate your continued interest.

Here are this month's logs. All times are in UTC, which is five hours ahead of EST,

i.e. 0000 UTC equals 7 p.m. EST. Broadcasts are assumed to be in English (EE) unless otherwise indicated (SS=Spanish, AA=Arabic, etc.).

ALBANIA—Radio Tirana, 7160 at 0238 with news of Balkans and the world, ethnic music and cultural topics. (Miller, WA)

ALGERIA—Radio Algeria at 2000 on 15160. (Campbell, Iceland)

ANGOLA—Radio Nacional, 11954.8 at 2100 in PP, until 0400, then "weighty metal." (Maywoods, KY)

ANTIGUA—Deutsche Welle relay, 15140 at 0110 in GG. (Williams, TX)

ARGENTINA—Radio Nacional, 6060 in SS at 0326. (Miller, WA) 15345 at 1117 in SS. (Williams, TX)

RAE, 11710 at 0123. (Miller, WA) 15345 at 1930. (Maywoods, KY)

ASCENSION ISLAND—BBC relay, 9560 at 2326, 11750 at 0049, 11765 at 0051, 15390 at 2300 in PP, 15400 at 1916 and 17880 at 1922 to Central and West Africa in an African language. (Williams, TX)

VOA relay, 17755 at 2024 to Africa. (Williams, TX)

VL8A, Alice Springs, 2310 at 1041. (Maywoods, KY)

VL8T, Tennant Creek, 2325 at 1045 with pops. "...ABC, Tennant Creek." (Maywoods, KY)

Radio Australia, 5995 at 1315 with Oz Sounds

program. (Zamora, NM) 6020//6080 at 1100, 9580 at 1045, 9860 at 1100 and 17795 at 2309. (Williams, TX) 9560 at 1210, 9575 at 1245, 9615 at 1225. (Northrup, MO) 9580 at 1115. (Gillihan, AR) 9860 at 0643. (Wilden, IN) 13605 at 2318 in CC, 13755 at 2301. (Foss, AK) 15510 at 0030. (Dybka, TN)

AUSTRIA—Radio Austria International, 6155 at 2030 in SS. (Campbell, Iceland) 9655//9870 at 0251. Off at 0256. (Lamb, NY) 9655 at 0134. Off briefly at 0150. (Zamora, NM) 0052 in FF. (Miller, WA)

BELARUS—RS Minsk, 15180 at 2327 in presumed RR. Transmits an intermittent tone before sign-on. (Miller, WA)

BELGIUM—Radio Vlaanderen, 9925 at 2325, ID and *Belgium Calling* at 2330. (Wilden, IN) 2347 with discussion. (Williams, TX)

BENIN—Rdf. du Benin, 5025 at 0600, with anthem and flute/drum music, woman in FF with mention of Benin. (Dybka, TN)

BOLIVIA—Radio Movima, 4472 In SS at 1005 with husky male announcer, soft music. (Maywoods, KY) Radio Fides, 6155 at 0145 in SS with news, mentions of Cochabamba and Sucre. (Miller, WA)

Radio Santa Ana, 4649 at 0418 to 0435 sign-off with ballads, choir, announcements at 0430 and echo ID. (Paszkeiwicz, WI)

BRAZIL—Radio Bandeirantes, 6090//9645 at 0730 in PP with time pips, Brazilian and U.S. pops, ID, time check. (Lamb, NY) 9645 at 2335 in Italian, not PP. (Williams, TX) 11925 at 0319 in PP. (Miller, WA)

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	Religious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel Frequencies

Radio Nacional Amazonia, 11780 In PP at 0052. (Williams, TX) 0130. (Roberts, NC) 2202 In PP, co-channel with Ukraine. (Miller, WA) 2245 in PP. (Pellicciari, CT)

Radio Cultrua do Para, Belem, 5045 at 0126. Two men In PP. (Williams, TX)

Radio Marumbi, 9665 at 2338 In PP. (Williams, TX)

Radio Nacional, Macapa, presumed, 4915 at 0940, weak in PP. (Williams, TX)

Radio Marajoara, Belem, 4956, weak at 0943 In PP. (Williams, TX)

Radiodifusora Londrina, 4815 at 0922 In PP. (Williams, TX)

Radiodifusora Roralma, Boa Vista, 4875 at 1207, weak in PP. (Williams, TX) 0240 with mention of Boa Vista. (Maywoods, KY)

Radio Cabocla, presumed, 4846 at 1031 in PP. Weak. (Williams, TX)

Radiobras/Radio Nacional, 15445 at 1200 with Brazilian Panorama In EE. (Bannar, FL) 1435 In SS. (Miller, WA)

Radio Educacao Rural, 4755 with music, two men in PP, ID at 2345. (Roberts, NC) 0150 with talk, music. (Maywoods, KY)

Radio Anhanguera, 11830 at 0126 in PP with ID. (Roberts, NC)

Radio Cancao Nova, 6105//9675 at 0712 in PP with contemporary Christian music, ID, IS-like tune. (Lamb, NY)

Radio Mundial, 3325 at 0438 in PP with Brazilian pops, talks, canned echo IDs. (Lamb, NY)

BULGARIA—Radio Bulgaria, 9700 at 0100 with IS, into RR? (Wilden, IN) 11660 at 2321 in SS to South America. Also 11730 at 1951 with news. (Williams, TX)

CANADA—Radio Canada International, 5960 at 2342. (Wilden, IN) 9535//9755 in FF at 0056, 11940 at 0056 in SS, 11985 in FF at 1954, 13650//15150//15325 in FF at 1905. 13670 in SS at 0100, ID in EE/FF, into EE, 17820 in FF at 2025. (Williams, TX) 13650 at 2000. (Campbell, Iceland)

CFRX/CFRB, 6070 at 2230. (Gillihan, AR) 1020. (Williams, TX)

CHU time station, 3330 at 0937 in EE/FF. (Williams, TX)

BBC relay, 5965 at 1140, 9590 at 2339. (Williams, TX)

Radio Korea International relay, 6145 at 1108 in KK. (Williams, TX)

Radio Japan relay, 6120 at 1027 In JJ, also 11705

at 1343 and 15315 at 1357 in JJ. (Williams, TX)

CHAD—Rdf. Nationale, 4904.5 at 2154 In FF with pops, excited DJ, African Instrumentals. (Maywoods, KY)

CHINA—China Radio International, 6165 In CC at 2130. (Campbell, Iceland) 6933 at 2136. (Maywoods, KY) 9440 from Kunming, 1040 In unidentified language. 9710 at 0012 with commercial for the 505 Healthy Body Belt (Williams, TX) 9690 (via Spain) at 0300. (Bannar, FL) 11655 at 0100. (Roberts, NC)

Voice of the Strait, 6115 at 0851 in CC. (Foss, AK) CPBS, 6890 in CC at 1130. (Barton, AZ)

COLOMBIA—Ondas del Meta, 4884.9 at 0330. (Maywoods, KY) 4885 at 1034 with ballads, SS. (Williams, TX)

Armonias del Caqueta, 4916 at 1039 in SS (Williams, TX)

Caracol, 5075 at 0115 in SS with IDs, promos. (Maywoods, KY) 0957 with SS ID. (Williams, TX) 0308. (Miller, WA) 0645. (Pellicciari, CT) 0837. (Foss, AK)

Radio Nacional, 4955 at 0330 in SS with ID 0359. (Maywoods, KY) 0307 with music, news. (Miller, WA)

La Voz del Cinaruco, 4855 at 0942 In SS. (Williams, TX)

Radio Melodia, 6046 at 1145 in SS with possible exercises. (Williams, TX)

La Voz del Llano, 6115 at 1010 with ID. (Williams, TX) 0334 with music, news. (Miller, WA) 6116 at 0615 in SS with music, ID for Super Network. (Pellicciari, CT) Verification signer is Antonio Jauregui Bautista. (Paszkwicz, WI)

COSTA RICA—RFPI on 7385 at 0748. Quick sound bite and off. (Wilden, IN) 15050 at 2330 with UN report. (Pellicciari, CT)

Radio Reloj, 4832 at 0635 in SS, music. (Pellicciari, CT) 0420. (Maywoods, KY)

Faro del Caribe, 5055 at 0955 in SS, 9645 at 0007 in SS (Williams, TX) 9644.7 in SS. (Maywoods, KY)

Adventist World Radio, 5030 at 1133 in EE, 9725 at 0016 with religious music. (Williams, TX) 0212 in

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SS with Bible messages. (Miller, WA)

Radio Exterior de Espana relay, 5970 at 1141, 11815 at 2247 and 17870 at 2355, all SS. (Williams, TX)

CROATIA—Croatian Radio, 7370//13830 with IS at 0000, announcement in Croat, news in English. (Wilden, IN) 11635 at 2158 with anthem, ID, frequency info, news in EE. (Jeffery, NY) 5895//7370//11635//11830 at 2100. (Maywoods, KY)

CUBA—Radio Rebelde, 5025 at 0124 in SS. (Williams, TX)

Radio Havana Cuba, 5965 at 1009, 6000 at 1010, 6060 at 1017, 6180 in FF at 2318, 9550 at 0003, 9815 at 0028, 11875 at 0054, 11970 at 0057. (Williams, TX) 6000 at 0329. (Wilden, IN) 6180 at 2240 with DX program. (Gillihan, AR) 9550 at 1155 in SS. (Northrup, MO) 0230. (Barton, AZ) 9820 at 0537 to Pacific. (Hallenbeck, ME) 15340 at 2349 in SS. (Foss, AK)

CYPRUS—BBC relay, 6180//9605//9760 at 0301. (Lamb, NY) 9580 at 0021 in unidentified language. (Williams, TX)

CZECH REPUBLIC—Radio Prague, 15640 at 1700. (Campbell, Iceland)

DENMARK—Radio Denmark, via Norway, 7445 at 0055, NN. (Gillihan, AR) 9485 at 2253 in DD. EE. ID "You have been listening to Radio Denmark." (Williams, TX) 9590 at 2130. (Campbell, Iceland)

DOMINICAN REPUBLIC—Onda Musical, presumed, 4779 in SS at 0230, after listed sign-off time. (Miller, WA) (You meant 4779, not 9779, right?—Ed.)

ECUADOR—HCJB, 9415 at 1220 in SS, 9625 at 1250 in EE. (Northrup, MO) 9745 at 0100. (Wilden, IN) 0540, *El Mundo Futuro* in EE. (Pellicciari, CT) 9745 at 0023 in SS, 11615 at 0041 in PP, 15140 at 0107 in SS, 15270 at 1910 in AA. (Williams, TX)

Radio Jesus del Gran Poder, 5049 at 0954 with religious music, SS hymns just after coming on the air. (Williams, TX)

Radio Popular, 4800 at 1128 in SS. (Williams, TX)

Radio Quito, 4919 at 0307 in SS with easy listening, *Four Brothers* by Woody Herman, commercial for the *El Comercio* newspaper that owns the station, ID, possible news. (Lamb, NY) 0925. (Williams, TX) 0320. (Roberts, NC) 0301. (Miller, WA) 0501 with ID and into what sounded like an old-time radio show. (Maywoods, KY)

Radio Centro, 3290, presumed, at 1150 in SS. (Williams, TX) 1039 with ID, talk. (Maywoods, KY)

Radio Progreso, 5059 at 1048 with religion, music, in SS. (Williams, TX)

La Voz del Napo, 3280 at 1036 with religious program, a capella songs. (Maywoods, KY)

La Voz del Trifunfo, 3249.8 at 0107 with local music, ID. (Maywoods, KY)

EGYPT—Radio Cairo, 9900 at 0040, ID 0100. (Gillihan, AR) 0034 in AA, possibly Koran recitation. (Williams, TX) 9950 in Albanian, ID, Islamic program. (Lamb, NY)

ENGLAND—BBC, 5975 (via Antigua) at 0000. (Wilden, IN) 6195//9415 at 2130, 6195//15400 at 0630. (Campbell, Iceland) 7325 at 2250. (Hallenbeck, ME) 9515 at 1215. (Northrup, MO) 9825 at 0029 in SS, 9915 at 0035. (Williams, TX) 11680 at 2131. (Wilden, IN) 12095 at 1900 in European program stream. (Jeffery, NY) 15390 at 2115 with *Caribbean Report*. (Pellicciari, CT)

FINLAND—Radio Finland International, 9730 at 1830 in Finnish. (Campbell, Iceland) 11900 at 1113 in Finnish to North America. (Williams, TX) 11900//15400 at 1530, Nordic news, features. (Miller, WA) 1540 with ID, frequencies, news commentary. (Maywoods, KY)

FRANCE—7280 at 0555. News in FF at 0600. (Wilden, IN) 9790//9800 at 0027 in FF, 11670 at 0044 and 11660 at 0043. (Williams, TX) 9790 in FF at 2100, 13620//15530 at 1230 in EE. (Campbell, Iceland) 9790 at 0000 in FF. (Gillihan, AR) 15530 at 1600, news in EE. (Pellicciari, CT)

FRENCH GUIANA—RFI relay, 11995 at 2251 in PP, 13625 at 2254 in PP to 2257 close, 13625//13640//15515 at 1349 in FF, 13640 at 2336 in SS, 15200//17620 at 2334 in SS, 17630 at 1926 in FF. (Williams, TX)

Swiss Radio International relay, 9905 at 0027 in GG, 11650 at 2319 in II. (Williams, TX)



This VOA bicentennial QSL shows U.S. stamps celebrating the event.

Radio Japan relay, 9685 at 0847 with sports. (Williams, TX)

GABON—RTV Gabonaise, 4777 at 2219 in FF with talk, ID, talk, African pops. (Maywoods, KY)

Africa Number One, 15475 at 1722 with African pops, FF. (Miller, WA) 1834 in FF, 17630 in FF at 1356. (Williams, TX) 17630 at 1510 in FF. (Maywoods, KY)

RFI relay, 9845 (//6045 from France) at 0649 in FF. Off at 0657. (Lamb, NY)

GERMANY—Deutsche Welle, 6045//6120//9650 at 0300. (Pellicciari, CT) 6185 at 0336. (Wilden, IN) 9545 at 0002 in GG, 9700 at 0010 in SS, 9730 at 2341 in GG, 17860 in GG at 1930. (Williams, TX) 9700 at 2100, 15475 at 1700, 11800 at 0630, all in GG. (Campbell, Iceland) 9735 at 0243 in GG. (Miller, WA)

Bayischer Rundfunk, 6085 at 0545 with pops, news in GG at 0600. (Pellicciari, CT)

GHANA—Ghana Broadcasting Corp., 4915 at 2159 with IS, timecheck, woman with news. (Maywoods, KY)

GREECE—RS Makedonias, 9935 at 2348 and 0036 in Greek with music. (Williams, TX)

Voice of Greece, 11645 at 0042 with Greek music. (Williams, TX) VOA Kavalla relay, 15265 at 1515. (Dybka, TN)

GUAM—Adventist World Radio, 9530 at 1000 with time pips, ID in EE, into RR program. (Williams, TX)

Trans World Radio, 9590 at 1127 in CC, 9785 at 1013 with CC lessons for English speakers. (Williams, TX)

GUATEMALA—Radio Chortls, 3380 at 0125 with great marimba music. (Maywoods, KY) 1127 in SS. (Williams, TX)

Radio Cultural, 3300 at 0100 with SS religious program. (Maywoods, KY) 1121 in SS and 5955 at 1139 in SS. (Williams, TX) 0633 in SS with ID and sign-off at 0635. (Pellicciari, CT)

Radio Maya de Barillas, 3324.8 at 1043 with organ music, SS. (Maywoods, KY) 3325 at 1123 in SS. (Williams, TX) 1202. (Miller, WA)

Radio Nahuala, 3360.5 at 0114 in SS. (Maywoods, KY) 1125 with marimbas. (Williams, TX)

Radio Tezulutlan, 4835 at 0215 with marimbas, ID at 0216. (Maywoods, KY) 0118 in SS. (Williams, TX) 0246 with marimbas. Native Indian language. (Miller, WA)

Radio Buenos Nuevas, (no frequency—4799-4800?—Ed.) at 0100 in SS. (Roberts, NC)

HAWAII—WWVH on 5000 with time announcements by woman. (Dybka, TN) 1000 at 1105. (Williams, TX)

KWHR, 9930 at 1102 with religious programming. (Williams, TX)

HONDURAS—Radio Internacional, 4930.6 at 0048 in SS with excited announcer. (Maywoods, KY)

Radio Luz y Vida, 3249.8 at 0257 with ID, music, religion in SS. (Maywoods, KY) 1148 in SS. (Williams, TX)

La Voz Evangelica, 4820 at 1139 with religious programming in SS. (Williams, TX) 0244 with Bible messages in SS. (Miller, WA)

HUNGARY—Radio Budapest, 5965 at 0330 with news. (Pellicciari, CT) 9835 at 0030 in HH. (Williams, TX)

ICELAND—INBS at 2300 in Icelandic on 13860. (Campbell, Iceland)

INDIA—All India Radio, 9910 at 1535 with news. Off 1545. 10330 at 1602 with music, possibly Hindi, 15075 at 1534. (Miller, WA) 9950 at 1900. (Campbell, Iceland) 11585 at 1653 in presumed Hindi, with sub-continental music, talks. Off at 1730. (Lamb, NY)

INDONESIA—RRI Surakarta, 4900 at 1319 with drama in II, religious services with gamalan in background. (Miller, WA)

RRI Jambi, 4925 at 1158 with IS. (Maywoods, KY)

RRI Sorong, 4874.6 at 1155 with woman talk, gamalan music. (Maywoods, KY)

RRI Jakarta, 9525 at 1155 with music, talk in unidentified language. (Williams, TX) 1205 with news, ID. (Northrup, MO)

IRAN—VOIRI, presumed, in AA or Farsi, on 9685 at 1138. Also on 15084 at 1110 in Farsi. (Williams, TX) 1600 with ID in Farsi. (Pellicciari, CT)

ISRAEL—Kol Israel, 9435 at 0405. (Miller, WA)

9815//15480 at 1755 with relay of Program D service in AA, with IDs, mentions of Jerusalem, AA music. (Lamb, NY) 17545 at 1000 in HH. (Campbell, Iceland)

Reshet Bet service, 15615 at 2009 in HH with music. interview. (Jeffery, NY)

ITALY—RAI, 9645 at 0030. (Campbell, Iceland) 9725 at 0155 in II. (Gillihan, AR) 11905 at 1936 with ID, news, soft-voiced YL. (Maywoods, KY)

JAPAN—Radio Japan, 5960 at 0116. (Wilden, IN) (via Canada.—Ed.) 6190 at 1148 in CC. (Williams, TX) 9610 at 1240 in JJ. (Northrup, MO)

Radio France Relay, 9650 at 1026 in CC. (Williams, TX) 15440 in FF at 0003. (Foss, AK)

BBC relay, 6120 at 1013 and 11765 at 2230 with EE ID, into JJ. (Williams, TX) 11740 at 2055 sign-off with clear ID. (Miller, WA)

JORDAN—Radio Jordan, 9830 at 2045 in AA. (Pellicciari, CT)

KAZAKHSTAN—Radio Netherlands relay, 9845

at 0031 with news. (Williams, TX)

KUWAIT—Radio Kuwait, 9840 at 2045 in AA and 11990 in EE at 2057 with sign-off. (Pellicciari, CT) 9840 at 2222 in AA. (Wilden, IN) 11900 at 1905 with occasional ID and lots of segued music. (Maywoods, KY) 2000 in EE. (Campbell, Iceland)

LIBYA—Radio Jamahiriya, 15235//15415 in AA at 2145. (Pellicciari, CT) 15415 at 2147 in AA with political and religious programming, martial music. (Miller, WA)

LITHUANIA—Radio Vilnius, 7360 at 2300 with ID, music, news. (Wilden, IN)

MALAYSIA—Radio Malaysia, Kuching, Borneo, 7160 at 1430 with country music in Malay. (Miller, WA)

MALI—China Radio International relay, 11715 at 0352 in CC. ID 0430. (Maywoods, KY) 11715 at 0040 in EE, 15120 at 2246 in SS. (Williams, TX)

MEXICO—Radio Educacion, 6185 at 0835, Mexican music. (Foss, AK) 0224 with live music, some EE announcements but badly QRM'd. (Miller, WA) 0008 in SS. (Williams, TX)

Radio Mexico International, 9705 at 2306 in SS. (Miller, WA) 1550. (Maywoods, KY)

La Voz de Vera Cruz, presumed, 9545 at 1640. Latin music. (Maywoods, KY)

Radio Mil, 6010 in SS at 0048 with music, ID. (Gillihan, AR) 0003, SS. (Williams, TX)

MOLDOVA—Voice of Russia relay, 11730 at 0048 and 15340 at 2304, both in SS. (Williams, TX)

MOROCCO—RTV Marocaine, 15345 at 1655 in AA with call-in program, Mideast music. (Maywoods, KY) 1915, AA. (Williams, TX)

VOA relay, 15445 at 1919. (Williams, TX)

MYANMAR—Defense Forces Broadcasting station, 6570 at 1112, weak, definite Burmese music. (Maywoods, KY)

NAMIBIA—Namibian Broadcasting Corp., 3270//3290 at 2252. Poor. (Maywoods, KY) Same at 2325. (Roberts, NC)

NEPAL—Radio Nepal, 5005, 1202 with drums ad infinitum. (Maywoods, KY)

NETHERLANDS—Radio Netherlands, 9720 at 0730 and 15315 at 1859. (Wilden, IN) 9845 at 2328. (Gillihan, AR) 9890 at 1403. (Zamora, NM) 9895 at 0130. (Barton, AZ) 11650 at 2000. (Campbell, Iceland)

NETHERLANDS ANTILLES—Radio Netherlands relay, Bonaire, 6060 at 1414 in SS, 9720 to Australia at 0848 and 17605 at 1926 in EE. (Williams, TX)

NEW ZEALAND—Radio New Zealand, 6100 at 1120. (Maywoods, KY) 6100 at 0945 and 1024, 15115 at 0106. (Williams, TX) 2331. (Foss, AK) 0037 with comprehensive weather forecast. (Zamora, NM)

NIGERIA—Radio Nigeria, 7255 at 0620, local songs, travelogue, program notes and frequencies at 0630. (Wilden, IN)

Radio Nigeria, Kaduna, 4770 at 0516. (Miller, WA)

NORTH KOREA—Radio Pyongyang, 6576 at 2142. Very poor. (Maywoods, KY) 7580 at 0919 in JJ, 13650 at 2315 in EE and 13760 in SS at 2303. 9977 at 1107. (Williams, TX) 11335 in SS at 1237. (Barton, AZ)

NORTHERN MARIANAS—Monitor Radio International, 9430 at 1029 with religious program. (Maywoods, KY)

KFBS, Far Eastern Broadcasting Co., 9495 at 1020 in CC. (Williams, TX)

NORWAY—Radio Norway, 15170//15340 at 1200. (Campbell, Iceland)

PAKISTAN—Radio Pakistan, 11570 at 1716 with muezzin call to prayer and commentator translating phrases into EE. (Miller, WA)

PALAU—KHBN, 15140 at 2346 with religion. (Foss, AK)

PAPUA NEW GUINEA—Radio West Sepik, 3205 at 1049 with talk, music. (Maywoods, KY)

Radio East New Britain, 3385, 1126, mention of Rabaul. (Maywoods, KY)

Radio Madang, 3260 at 1100, pidgin and EE. (Maywoods, KY)

Radio East Highlands, 3315 at 1056 with pidgin vocals. (Maywoods, KY)

Radio Manus, 3315 at 1111 with talk. (Maywoods, KY)

Radio Smbu, presumed, 3355 at 1155 in uniden-

tified language. Weak. (Williams, TX)

NBC, 4890 at 1035 with talks. (Williams, TX) 1154 with U.S. pop, time pips at 1200, off with anthem at 1202. (Wilden, IN)

PARAGUAY—Radio Nacional, 9735 at 0019 with Paraguay-Argentina soccer game, Coca-Cola commercial, SS. (Williams, TX) Sometimes ballroom dance music, sometimes soccer, sometimes presidential speeches. (Miller, WA)

Radio Encarnacion, 11939.4, man in SS over music. (Maywoods, KY)

PERU—Radio Tropical, 4935 at 0334 in SS with pops, ID and off at 0358. (Lamb, NY)

Radio Union, 6115 in SS at 0704 with Peruvian music, canned ID, slogan "transmite para todo el Peru... Union, la radio!" (Lamb, NY) 1148 with news. (Williams, TX) 0356. (Miller, WA)

Radio Nacional, 6095 at 0330 in SS. (Miller, WA)

Radio Altura, 3340 in SS at 1049 with ID, flute music. (Maywoods, KY)

Radio Atlantida, 4790 at 0209 in SS. (Maywoods, KY)

Ondas del Rio Mayo, 6802.8 at 0030 with huaynos, announcements, ID, dance music, vocals. (Paszkiwicz, WI)

Radio Mundo, 5083 at 1050 in SS. (Williams, TX)

Radio Cora, 4915 at 0949 in SS. (Williams, TX)

Radio La Hora, presumed, 4855 at 0924 with continuous time beeps. Weak, in SS. (Williams, TX)

PHILIPPINES—FEBC, 9745 at 1025 in CC, excerpts from Grand Canyon Suite. (Maywoods, KY)

VOA relay, 9505 at 2256 with ID, 1940s easy-listening music. Also 17820 at 2311 to East Asia. (Williams, TX)

Radio Veritas Asia, 9520 at 1155 in CC. (Williams, TX)

PORTUGAL—Radio Portugal International, 9570 at 2045 with sports. (Maywoods, KY) 0035 with news in PP. (Gillihan, AR) 9570//9635 at 2305 in PP. (Williams, TX) 15200 at 1800 in PP. (Pellicciari, CT)

Deutsche Welle relay, 15425 at 2350 in SS to South America. (Williams, TX)

Radio Free Europe, via Gloria on new 6170 at 0644 in Ukrainian. ID and off 0700. (Lamb, NY) 11935 at 0056 in unidentified language. (Williams, TX)

QATAR—Qatar Broadcasting Service, 11750 at 1750 in AA with ID and religious program. (Maywoods, KY)

ROMANIA—Radio Romania International, 9550 at 2130. (Campbell, Iceland)

RUSSIA—Voice of Russia in SS at 0245, 11750 at 2115. (Pellicciari, CT) 9480 at 2100. (Jeffery, NY) 9480//9880 at 1900. (Campbell, Iceland) 12050 at 0140 with jazz program. (Barton, AZ) 15400 at 1601 with QRM. (Miller, WA) 15425 at 0134 with jazz. (Foss, AK)

Radlostanslyia Golos Russi, 9795 at 1640 in RR. (Miller, WA)

Radio Nadezhda, 9490 in RR at 0018. (Williams, TX)

Radio Tikhy Okean, 15490 from Irkutsk in RR at 1835. (Williams, TX)

SAUDI ARABIA—BSKSA, 9555 at 2043 in AA. (Maywoods, KY) 9555//9870 in AA at 2100. (Pellicciari, CT) 11935 in AA at 2200. (Campbell, Iceland) 11935//11965 at 2330 in AA. 15175 at 1402 in AA. (Jeffery, NY)

SEYCHELLES—FEBA, 9810 at 1527 with religious programs. (Miller, WA)

SINGAPORE—Radio Singapore International, 9635 in presumed Malay with ID, easy-listening music. News at 1350, frequency announcements, mailing address and sign-off at 1400. (Zamora, NM) BBC relay, 6195 at 1033. Also 9740 at 1054 and 11750 at 1112. (Williams, TX) 9605 at 1355 in listed Bengali. Into listed Hindi at 1410. (Lamb, NY)

SLOVAKIA—Radio Slovakia International, 5930 at 0055 with six-note IS and Prague underneath. To ECNA. Announced 5930, 7300 and 9440. (Maywoods, KY)

SOUTH AFRICA—SABC, 3320 at 0049 with easy-listening music. (Maywoods, KY)

Radio Orange, 3230 at 3222. Slogan: "The Big O." (Roberts, NC)

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Channel Africa, 7240 at 1513. (Miller, WA) (Don't try this out east!— Ed.)

Trans World Radio, via Meyerton, 9510 at 1923 in language, EE ID, hymns, drama. (Paszkwicz, WI)

SOUTH KOREA—Radio Korea, 5965 (via England) 2200. (Campbell, Iceland) 5975 at 1007 in JJ. (Williams, TX) 6840 at 2140, QRM'd. (Maywoods, KY) 7550 in SS at 1058 with sign-off. (Barton, AZ) 15575 at 0110. (Foss, AK)

SPAIN—Radio Exterior Espana, 9540, 2300 in FF, on in EE at 0007. (Hallenbeck, ME) 0038. (Gillihan, AR) 0100. (Wilden, IN) 9620 at 0006 and 11940 at 0057 in SS. (Williams, TX)

SRI LANKA—SLBC, 9720 at 1515 with religion. (Miller, WA) 0015 with news, WYFR QRM. (Williams, TX)

Deutsche Welle relay, 11720 at 1828 in GG. (Williams, TX)

SWAZILAND—Trans World Radio, presumed, 3200 at 0404 in GG with religious talk. Faded before ID. (Lamb, NY)

SWEDEN—Radio Sweden International, 7120 at 0204, 11900 and 15400 at 1452. (Miller, WA) 15240 at 1230. (Campbell, Iceland)

SWITZERLAND—Swiss Radio International, 6135 at 0100. (Campbell, Iceland) 9885 at 0105.

(Gillihan, AR) 9905 at 0117 with news, monthly "Mystery Swiss City" contest. Into SS at 0130. (Lamb, NY) 11620 at 2222, co-channel interference from Radio Netherlands. (Miller, WA) 15505 at 2010 to West Africa. (Williams, TX)

SYRIA—Radio Damascus, 15095 at 2030 in EE. (Campbell, Iceland)

TAHITI—Radio Tahiti, 15167 at 0339 with 15-minute EE segment amid Tahitian and French. (Miller, WA)

TAIWAN—Voice of Free China, 7131 at 1018 in CC and 11745 at 1111 in JJ. (Williams, TX)

Voice of Asia, 9280 at 1020 in CC, rock and talk. (Maywoods, KY)

THAILAND—Radio Thailand, presumed, 9655 at 1049 in CC or other Asian language. (Williams, TX) VOA relay, 9585 at 1414 in CC. (Lamb, NY)

TOGO—Radio Lome, 5047 at 2335 in FF. (Roberts, NC)

TUNISIA—RTV Tunisienne, 7475 at 2030 with AA vocals. (Maywoods, KY)

TURKEY—Voice of Turkey, 2200 on 9445. (Campbell, Iceland) 2248 to 2250 close, again at 0129. (Williams, TX) 0300. (Bannar, FL)

UKRAINE—Voice of Russia, via Ukraine, 11760 at 2214 in DD to Western Europe and ECNA. (Williams, TX)

UNITED ARAB EMIRATES—UAE Radio Dubai, 15395 at 1600. Through Western Eyes. (Maywoods, KY)

UAE Radio, Abu Dhabi, 1885 at 2329. (Williams, TX)

VANUATU—Radio Vanuatu, 3945 at 0707 with local news. (Foss, AK)

VATICAN—Vatican Radio, 9605 at 0028. (Gillihan, AR) 9755 at 1027. (Williams, TX)

VENEZUELA—Ecos del Torbes, 4980 at 0256 in SS. (Wilden, IN) 0350 in SS with "futbol." (Maywoods, KY) 0948 with news in SS. (Williams, TX)

Radio Rumbos, 9659 at 1707, many mentions of "Rumbos." (Maywoods, KY) 0156 with Latin pops. (Miller, WA)

Radio Tachira, 4830 at 0330 with several IDs. (Maywoods, KY) 1028 ID in SS. (Williams, TX)

VIETNAM—Voice of Vietnam, 7250, via Russia, at 0122. (Barton, AZ) 0130 with news. (Gillihan, AR) 10059, presumed, 1142 in CC or VV. (Williams, TX)

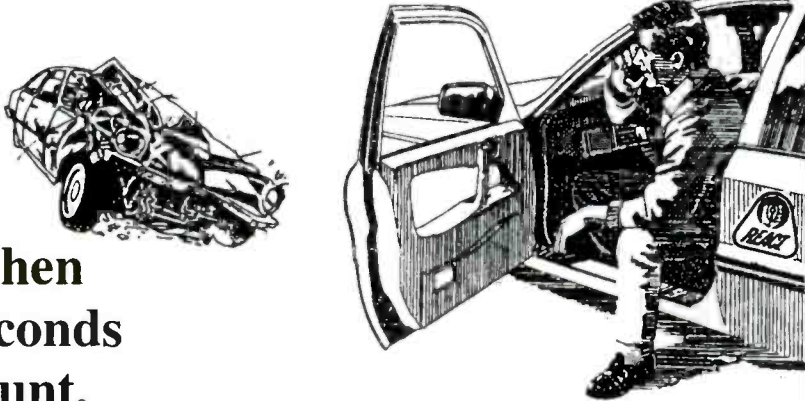
YUGOSLAVIA—Radio Yugoslavia, 9580 at 0015 with news. (Gillihan, AR) Here and //11870 at 0433 with news, music, features, culture. (Miller, WA) 9720 at 1830. (Campbell, Iceland)

ZIMBABWE—ZBC Radio Four, 3306 at 0333 in local language with African music, possible mention of Radio 4. EE ID, news. (Lamb, NY)

A mighty roar of approval to the following contributors:

Sheryl Paszkiewicz, Manitowoc, WI; Don Hallenbeck, Pittsfield, ME; Joey Gillihan, Bono, AR; Mark Northrup, Gladstone, MO; Marty Foss, Wasilla, AK; Michael S. Miller, Issaquah, WA; Steve Pellicciari, Norwalk, CT; The Maywoods DX Team, KY (Loy W. Lee, Edward Shaw, Jim McClure, Check Everman and Dr. Joel Roitman); Larry R. Zamora, Alamogordo, NM; Steve Williams, Corpus Christi, TX; Jill Dybka, Nashville, TN; Marie Lamb, Brewerton, NY; J.W. Roberts, Bernard, NC; Rick Barton, Phoenix, AZ; Sue Wilden, Columbus, IN; Alan Campbell, Iceland; Dave Jeffery, Niagara Falls, NY; David R. Bannar, Ormand Beach, FL. Thanks to each of you!

Until next month, good listening! ■



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Clandestine Communique

WHAT'S NEW WITH THE CLANDESTINES

Catch Polisario Operations From the Sahara

One clandestine not often reported yet frequently heard in North America is La Voz du Sahara Libre. It is operated by the Polisario Front, which seeks independence from Morocco for the Western Sahara. The Saharan Arab Democratic Republic was declared by Polisario in 1976. The Sahara Libre program airs over Radio Algiers at 2200-2300 on 9640 and 15215, with the latter more likely to be heard. Because they have their own QSL card, there's a fair chance of getting a reply out of this one, too. Write: Director of Information, Polisario Front, B.P. 10, El-Mouradia, Algiers, Algeria. The broadcasts are mostly in Spanish.

Another Polisario operation—this one closer to being a full station—is National Radio of the Saharan Democratic Republic. This one is occasionally active, most recently a few months ago on 11610, running in Arabic to sign-off around 0000. It sometimes is noted again later, around 0500. There is some indication that one or more Sudanese opposition groups plan more radio activity, though that might be just a reappearance of this station. We'll have to wait and see.

The semi or former clandestine Voz do Resistencia de Galo Negro (VORGAN), operated by UNITA, has been noted after 0600 on 7100.

The Voice of the Sudanese Opposition is being heard on 9024 between 1300 and 1500. But be careful because the government station, Republic of Sudan Radio, drops down from its normal 9200 channel and lands on or very near 9024 during this period in order to jam the clandestine. Incidentally, Radio SPLA, the voice of the Sudanese People's Liberation Army, has been inactive for a couple of years now. It used to be heard often in North America, but no QSL address ever could be located.

The anti-Hussein Voice of the Iraqi People is scheduled 1300 to 2357 on 9570 and variables 13675 and 15130.

The Voice of the Islamic Revolution in Iraq operates from 1430 to 1655 on 7115 and 9671.

The Voice of Mojahed may be a new operation of unknown sponsorship. It seems to operate from 0057 sign-on to closing at 0427, using several widely variable frequencies: 4440-4470, 4600-4615, 5150-5190, 5440-5470, 5720-5770, 6200-6230, 6240-6280 and

FRONT POLISARIO
LA VOIX DU SAHARA LIBRE

7-12-91

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Nous avons reçu votre rapport d'Ecoute daté du
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Cordialement,
L'Administration

Allo Algeria on 6950 KHz
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The Polisario Front's La Voix (Voz) du Sahara Libre, carried over Radio Algiers, is a pretty good verifier.

6700-6750. More reliable frequencies are listed as 6020, 6175 and 7070, all used by Iranian government radio's domestic service. The latter three Voice of Mojahed outlets carry a different program than the others so there are either two different stations involved here or two different services of the same operation.

Meantime, the Voice of Human Rights and Freedom in Iran is being heard during its 1630 to 1825 broadcast on 9270, 9380 and 11469 (variable), the latter channel probably offering the best shot for North American clandestine hunters.

The U.S. government's Radio Marti service to Cuba is operating now on 7365 from the VOA's Delano, Calif., site from 0000-0400. The 15330 channel, also from Delano, currently carries Radio Marti from 2200-0000.

A New York reader reports an interesting Cuban-related reception on 6995 upper sideband at 0213-0230, during which a man gave an ID for "Radio Gato Negro" (black cat), announced himself as Commandant David and went into a long tirade about Cuba and Castro. The signal was lost to a warbling tone at 0230. Commandant David was an active participant in anti-Castro radio years ago, during the

height of such activity. Was this the return of "David," or someone else? Or was it just a hobbyist familiar with the name and history of Commandant David, having some fun? We'd say 6995 might be a good spot to check off and on during evening hours!

One of the Korean clandestines, Voice of National Salvation, is being heard on 3480 at 1030 in Korean, parallel to 4120 and 4450, with jamming on the latter two channels. This station broadcasts to South Korea from the North.

From South to North, the Voice of the People, on 3912, is heard in Korean around 1130. Another South-based Korean is Radio Echo of Hope, heard on 3985 around 1130. All Korean clandestines are government-sponsored and none, to our knowledge, ever have issued a verification.

We'll close with this reminder: Your clandestine broadcasting information and input is very welcome! This includes station loggings, QSL news, addresses you may have run across, station schedules, information on backing organizations, transmitter locations, etc. Copies of clandestine QSLs and other related literature are most welcome for use as illustrations.

Until next month, good hunting! ■

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CIRCLE 124 ON READER SERVICE CARD

27 MHz COMMUNICATIONS ACTIVITIES

CBers Provide Unique Service in Philadelphia

Ever notice that if you catch someone preparing to do something wrong, chances are they won't do it? For example, if you see a stranger lurking around your neighbor's house when they are away and you yell, "Hey! What are you doing?" chances are the stranger is going to leave in a hurry.

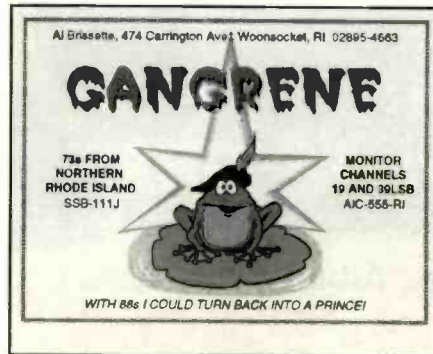
That's the idea behind a new way of helping people using CB radio, being developed by James Costello of Philadelphia.

Jim runs a non-profit organization called Radio Security System that operates in Northeast Philadelphia. Unlike organizations such as REACT or Town Watch, which provide blanket coverage over a given area, Radio Security System helps individual clients with a specific service for an agreed-upon length of time. These services are designed to provide security through the radio, give support, provide instant communications and offer a good deterrent.

Here are some examples of the assignments that Radio Security System accepts:

- Monitoring a man or woman who has to travel through a precarious or unfamiliar area. If the person needs help, RSS provides instant communications without looking for a phone or leaving the vehicle.

- Offering observation and immediate communications in child visitation situa-



Gangrene's card speaks for itself.

tions in which the mother or father may be frightened of the opposite spouse.

- Spot-checking homes and businesses when they are unattended, and notifying the appropriate persons or authorities when necessary.

- Providing observation and communications in cases of personal harassment or intimidation.

- Offering additional security and a communications link for latchkey children.

In almost every instance, the common denominator is that Radio Security System personnel are nearby on base stations or in mobile units as an extra set of eyes and

ears and to get help pronto from the authorities when needed. Most important, the RSS volunteers never physically confront anyone; they are there to observe and report through the speed of radio.

The motto of RSS: "Our radios are our weapons." Costello, a CBer since 1967, thought of the idea when a relative was involved in an abusive relationship. He figured the abuse and threats would stop if the "offender" knew someone else was watching and could report immediately to the authorities. He was right. So on Feb. 9, 1995, Radio Security Service was born.

At present, there are 31 volunteers serving in RSS, each efficiently organized into teams for street operation and dispatches from base stations. In addition, Costello makes sure his operations are well coordinated with police, local Channel 9 and Neighborhood Watch programs.

RSS relies on CB for communications. While there are sometimes problems with CB, RSS can get around unruly operators by having a code system for changing channels. At the same time, RSS can readily loan a handheld CB for use by clients without worrying about licensing problems.

At presstime, Radio Security System had undertaken more than 50 assignments on behalf of its clients, many lasting a month or more. Even more amazing, Ra-



Roger Neyens sent in his card from Luxembourg and a photo of his tower.



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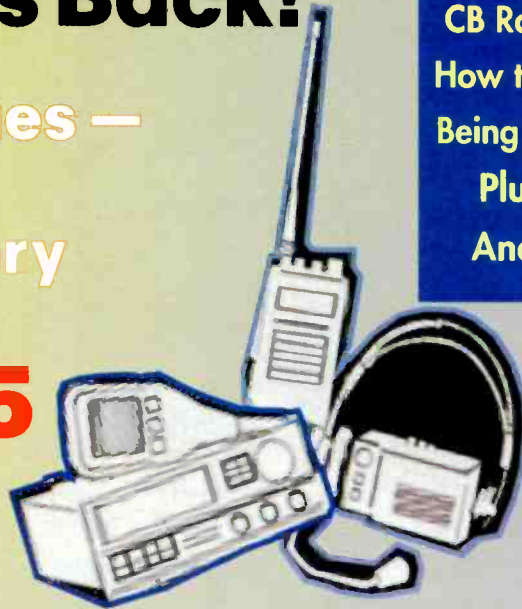
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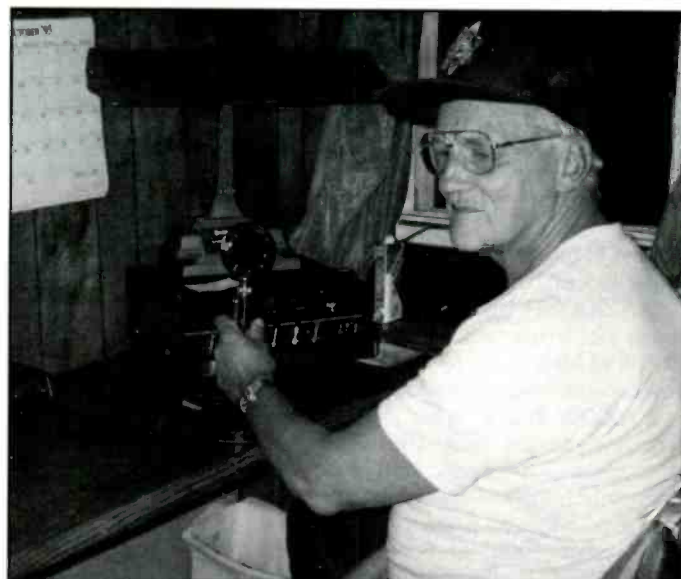
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Standing next to the command car is Jim Costello, Chief Coordinator Unit 122.



Sitting at the command desk is Chief Dispatcher, Walter Holt of Unit 202.

dio Security System never charges a cent for any of the services it provides.

If you would like to know more about Radio Security System, write to James Costello, Chief Coordinator, 6713 Hegerman St., Philadelphia, PA 19135, or phone (215) 333-7892.

On the Road Again

Occasionally when I tell someone that I am an active CBer, they look at me like I have lobsters crawling out of my ears. The next thing I know, they say something like, "Well, 10-4, good buddy!" in a fake cornpone accent and give me a nudge in the ribs, like nobody in their right mind still would be using CB. Then I tell them about the truckers...

Not long ago, I had a CB contact with a trucker that reminded me CB is a tremendous radio service. This trucker traveled from the Southwest with a load of furniture. He was pretty close to his destination near Albany, N.Y., and wanted to know exactly how to get to the warehouse where he was supposed to deliver the load.

He had the address and the phone number, and in short order I was able to supply the directions he needed. He thanked me, and I guess he got there OK. Afterward, though, I began to wonder why this trucker would drive more than 1,000 miles without clear directions to where he was going.

Then I realized there's another way to see the situation. This trucker must have known that as long as his CB was working, he could count on getting the information he needed from fellow CBers. As I thought about it and searched my memory banks for recollections of similar incidents, it became increasingly clear that this is standard operating procedure for many professional drivers—point the rig in the right

direction, and get information from CBers as you need it along the way.

The reason it works is that there are millions of CBers out there, most of them willing to help out when information is needed on the road. As I said, CB is one tremendous radio service.

Tune-Ups, Revisited

Last month, Wade Oestreich of Beatrice, Neb., asked about the subject of "tuning up CB radios," and I pointed out that you need to increase power a lot—like from 4 to 16 watts—to make a one S-unit difference in signal. As a result, I recommended operating single-sideband, in which you're allowed to operate 12 watts peak power, and putting up a beam antenna, both of which are perfectly legal.

Since then, I discovered a nifty chart in *Tomcat's Big CB Handbook* that underscores the point. It says that if you put up a beam antenna that offers, say, 12dB of forward gain, that gives you an effective signal equivalent to 190 watts SSB. Now, that's a big signal in anybody's book!

What's more, it's perfectly legal, so you can be running a really righteous signal and don't have to worry about a nasty encounter with the Friendly Candy Co. A beam antenna has one advantage that a bigger transmitter never can match: A beam helps you hear better, too!

On the other hand, Jumping Jack in Mississippi, offered the following:

"I agree (with Cookie Monster in *POP COMM*, September 1995) that the current power level is too low. I'm sure that when citizens band communications were developed that the FCC placed a realistic limit on what they thought CB could handle. Little did they know, I'm sure, that the popularity of CB would take off the way it has.

Four watts today is, of course, livable, but not too desirable....I think that a 25- to 30-watt limit is a little more sane."

Thanks, Jumping Jack, for your comments. I'll agree with you in part—I think 25 to 30 watts on SSB only is a pretty workable idea. First, it is nearly within the capabilities of current top-of-the-line SSB equipment. Second, SSB takes up less bandwidth than AM operation. As a result, it is much less likely to cause adjacent-channel interference. Third, I have rarely heard an SSB operator whose signal gave any cause for concern, even if it appeared to be quite strong.

AM, however, appears to be another story. For some reason or other, the myth has spread that more modulation means a better signal. In a sense, that's correct—you certainly don't want an undermodulated signal. But once you get to about 100 percent modulation, you are about to enter the realm of diminishing returns. Just like prune juice, there is such a thing as too much of a good thing...even modulation.

Some AM operators make a bad mistake: they clip their modulation limiters in the hope of getting a better signal. What usually happens, however, is a worse-sounding signal (caused by distortion) and an enormous amount of splatter onto adjacent channels. As a result, even though I very often operate in AM mode on Channel 9, I would not support an increase in power for AM operation, but I would be in favor of squeaky-clean SSB operation at perhaps 30 watts. I think people who clip their modulation limiters should be hung up by the eyelids, then tickled until they blink.

Until next time, please keep send your cards, letters and shack photos to me here at *Popular Communications!* ■

Washington Pulse

FCC ACTIONS AFFECTING COMMUNICATIONS

New Experimentally

The commission granted the following experimental applications:

KA2XAX, Pacific Communications Sciences Inc., to operate on frequencies in the 869-894 MHz range for demonstration of cellular equipment. FX&MO Nationwide.

KA2XEV, Motorola Inc., to operate on frequencies in the 1850-1990 MHz range to investigate the application of slow frequency-hop spread-spectrum techniques to a cost-effective personal communications system. FX&MO: Schaumburg, IL.

KA2XGK, Wolfhard J. Vogel (University of Texas), to operate on frequencies in the 1880-1900 MHz range for research of conducting propagation studies for smart antenna systems and performance evaluation of smart antenna products. FX&MO: Within 48km radius of Austin, TX.

KA2XUC, University of Wyoming, to operate on frequency 401.650 MHz research using a balloon and ARGOS satellite. MO: Conus.

KE2XNF, Orbital Sciences Corp., to operate on frequency 1702.5 MHz for fulfillment of NASA governmental contract (SEASTAR). MO: Low earth orbit.

KE2XPN, Comsat RSI Inc., to operate on frequencies in the 250-500, 500-1000, 1000-2000, 2000-4000, 4000-8000, 8000-12700, 12700-24000, and 24000-40000 MHz range for fulfillment of U.S. Army Missile Command contract. FX: Antioch Lake, IL.

KI2XCZ, North American CLS Inc., to operate on frequency 401.650 MHz to operate mobile transmitters in conjunction with ARGOS satellite transponders. MO: Conus.

KK2XGL, Allen Telecom Group, to operate on frequencies in the 806-960 MHz and 1400-2200 MHz range for development and testing a control platform operating software that includes call processing, PBX interconnectivity, vertical features and OA&M functionality. FX&MO: Lynchburg, Bedford, VA.

KK2XGS, McDonnell Douglas Radio Services Corp., to operate on frequencies in the 80-300, 300-1000, 1000-2000, 2000-4000, 4000-8000, 8000-12400, and 12400-18000 MHz range to conduct radar cross section measurements on targets in a short period of time and with minimal cost. FX: St. Louis, MO.

KQ2XBI, GTE Laboratories Inc., to operate on frequencies in the 824-849 and 869-894 MHz ranges for testing of cellular digital packet data. FX: Waltham, MA.

KQ2XBJ, Hagenuk Communications,

to operate on frequencies in the 1631.5-1634.5 and 1530-1533 MHz ranges for use of an INMARSAT-M satellite telephone for testing and demonstration to support sales of Type SP 1600B. MO: Conus.

KQ2XBL, Pulse Engineering Inc., to operate on frequencies in the 902-928 MHz range and the 2.4-2.5 GHz range to develop and test low-power transceivers compliant with Class B computing devices. MO: San Diego, CA.

KQ2XBM, Raytheon Service, Co., to operate on frequencies in the 2400-2483.5 MHz range to develop wireless local area networking equipment to allow communications between portable and mobile computing equipment operating in a variety of indoor environments. MO: Conus, Alaska, Hawaii.

KQ2XBN, Motorola Inc., to operate on frequencies in the 2400-2483.5 MHz range for development and testing of a transceiver that is low in power and small enough in size to be practical to use with subnotebook computers and a wireless LAN system. MO: Conus.

KQ2XBP, Texas Instruments Inc., to operate on frequencies in the 27.5-28.5 and 28.5-29.5 MHz range to conduct research and experimentation of transceivers, omni-directional antennas and directional antennas for development of high-quality broadband communications and to conduct demonstrations of technology. FX&MO: Conus.

KQ2XBW, Bellsouth Personal Communications Inc., to operate on frequencies in the 1850-1990 MHz range to conduct intensive propagation studies in urban and rural environments prior to the deployment of a broadband PCS Network. FX&MO: Within Charlotte, NC; Knoxville, TN; and within the states of VA & KY.

KQ2XBZ, Northern Telecom Inc., to operate on frequency 401.65 MHz for fulfillment of U.S. NSF and Naval research contracts. MO: Ocean.

KQ2XQZ, Harris Corp., to operate on frequencies in the 869.040-893.970 MHz for development of an interface to a small analog cellular system that will provide a wireless local loop. FX&MO: Norato, Marin, CA.

KQ2XTB, Harris Corp., to operate on frequencies in the 1920-1930 MHz range for development with intent to manufacture and market a wireless system adjunct to the existing Harris DTS PABX product line and to develop a generic system that will interface with any manufacturer's PABX system.

KQ2XXH, Westinghouse Communication Services Inc., to operate on frequencies in the 150.8-152, 158.2-161.6, 169.4-174, 450-470, and 2450-2483.5 MHz ranges to develop and test communication links between control station and a robotic vehicle to be sold to government agencies. MO: Within 32km radius of Oak Ridge, TN.

KU2XAB, University of Alaska, to operate on frequency 401.65 MHz to use a satellite tracking device on marine mammals in the Antarctic region. MO: Antarctic Ocean.

KU2XAD, Amoco Production Co., to operate on frequency 401.650 MHz for communication to determine the position of several drifting buoys deployed on an ice floe in order to calculate the speed and direction of drifting sea ice. MO: Antarctic Ocean.

KU2XAE, University of Hawaii, to operate on frequency 401.650 MHz for use of platform transmitter terminals to aid in studies (sponsored by NSF) of the earth as a system of interrelated physical, chemical and biological processes that act together to regulate the habitat. MO: Central N. Pacific.

KU2XAF, CTA Space Systems Inc., to operate on frequency 401.650 MHz for fulfillment of U.S. Naval Oceanographic Office contract. FX&MO: McLean, Fairfax, VA.

KU2XAG, Public Service Electric & Gas, to operate on frequency 401.650 MHz to use satellite transmitters for tracking endangered sea turtles as part of a scientific research program. MO: Delaware Bay area.

KU2XAH, University of Miami, to operate in frequencies in the 401.6488-401.6512 MHz range for fulfillment of NOAA contract. MO: Florida Keys and Bay areas, and within southeastern U.S.

KE2XHM, Douglas M. Bonham, on frequencies 219.52, 217.60 and 218.56 MHz to develop and test a new device that monitors sounds from wildlife. Fixed: Bothel, Snohomish, WA.

KQ2XUG, Global Energy Metering Service, on frequency 401.650 MHz for use of radio monitoring equipment to collect temperature, pressure, voltage, flow rate and accumulated volume data. Mobile: CONUS

KE2XHS, Radian Corp., on 449 MHz for wind profiler-radar operations at the Boulder Atmospheric Observatory. Fixed: Erie, Weld, CO.

KE2XJQ, Motorola Inc., on frequencies

461.250 and 466.250 MHz for research program to assess the impact of environmental conditions, (humidity, atmospheric layering, pollution levels, etc.) on the grade of service to various microwave data networks. Mobile: Cook, Lake, Kane, DuPage, Will and McHenry counties, IL.

KE2XJW, Lockheed Martin Corp., on frequencies 885-887 MHz and 930-932 MHz for testing cordless phones to verify operation of the ST9000 PX system and to determine feasibility of using system on various U.S. Navy ships. Fixed & Mobile: Camden, NJ.

KQ2XVQ, Pragmatic Communications Systems Inc., on frequencies 902-928, 2400-2483, 5725-5850, 174-216, 72-73 and 75.4-76 MHz for development, testing, limited field trials and demonstration of wireless communications products. Mobile: Santa Clara County & San Francisco Bay area, CA.

KG2XLV, Westinghouse Communications Services Inc., to operate on frequencies 1030 MHz and 9.7-9.9 GHz for fulfillment of U.S. Navy contract. Fixed: Anne Arundel County, MD.

KE2XKQ, Rockwell International, to operate on frequencies in the 1626-1660 MHz band for demonstrating and marketing in conjunction with COMSAT Mobile-link Services. Mobile: CONUS, Hawaii and Alaska.

KE2XJU, CBS Inc., to operate an INMARSAT land-based station in the 1626.5-1646.5 MHz band in order to gain knowledge and experience in implementing digital transmission techniques over satellite for use in news gathering and reporting. Mobile: USA.

KE2XKI, Radford Studio Center Inc., to operate on frequencies 1626.5-1646.5 MHz for use of an ABB Saturn MP Satellite Mini Phone for emergency communications where no other form of communication is available. Mobile: CONUS.

KE2XLC, Scientific-Atlanta Inc., to operate on frequencies 1626.5-1660.5 MHz for demonstration of INMARSAT standard terminals. Mobile: CONUS.

KE2XKV, Scientific Atlanta Inc., on 1626.5-1660 MHz to demonstrate INMARSAT M terminal. Mobile: U.S.

KA2XKT, University of Alaska, Fairbanks, to operate on frequencies 1626.5-1660.5 MHz to use INMARSAT for communication in remote locations. Mobile: CONUS.

KE2XJS, COMSAT Mobile Communications, to operate on frequencies in the 1626.5-1660.5 MHz band for use of Standard B maritime terminals to assist users, perform periodic testing and trouble-shooting. Fixed: Southbury, CT.

KO2XHD, Raytheon Service Co., to operate an INMARSAT terminal in the 1626.5-1646.5 MHz band for training purposes. Fixed: Seattle, WA.

KM2XPC, Chevron USA Inc., to oper-

ate on frequencies 1635.5-1645.0 MHz for use of an ABB Nera Saturn Compac T Satellite terminal for emergency communication where no other form of communication is available. Mobile: CONUS.

KE2XKF, Mobile Telesystems Inc., to operate on frequencies 1636-1645 MHz to demonstrate an INMARSAT A terminal (TCS-9700) to prospective buyers. Mobile: Within U.S.

KE2XKR, Trident Data Systems, to operate on 1636.5-1645 MHz for test and evaluation of computer data, using an INMARSAT-A terminal. Mobile: Southwestern Texas.

KE2XMH, Homestead Police Department, to operate on frequencies 2120, 2112 and 2128 MHz for program of research to study fade statistics for mobile spread spectrum communication in the S band. Mobile: Within New Mexico.

KE2XKB, Eastman Chemical Co., to operate in frequencies in the 24-24.25 GHz band to develop an RF-based level detector to determine the levels of liquids and solids in storage tanks. Fixed: Kingsport, Sullivan, TN.

KE2XKU, Abbott Laboratories, to operate on frequencies in the 24-24.25 GHz band to develop an RF-based level detector for determining the levels of liquids and solid in storage tanks. Fixed: North Chicago, IL.

Broad Changes to the Maritime Mobile Service Rules

In its Further Notice of Proposed Rule-making in PR Docket 92-257, the FCC proposed broad changes to the maritime mobile service rules that would permit VHF public coast stations to provide state-of-the-art communications services, permit the use of advanced radio techniques on board ships, and streamline certain regulations governing ship stations.

Specifically, the commission proposed to permit VHF public coast stations to provide automated interconnection between ships and the public switched telephone network. Currently, VHF marine radios may be used to place telephone calls through a coast station operator. The proposed changes would provide flexible framework for public coast stations to automate ship-to-shore and shore-to-ship communications. Further, the commission has proposed to permit all public coast stations to provide service to land vehicles, under their current coast station licenses, on a secondary basis. The proposed service to customers on land must take place on marine public correspondence channels and must not cause harmful interference to maritime communications.

In addition, the commission proposed rules permitting public coast stations to share certain private land mobile frequen-

cies. Under this interservice sharing plan, public coast stations would operate on available paired channels when located at least 80km (50 miles) from co-channel motor carrier radio service base stations and when meeting minimum separation requirements (based on transmitter power and tower height) from co-channel railroad radio service base stations. This plan would promote the more efficient use of the radio spectrum and provide additional channels, on a limited basis, to certain public coast stations.

The commission also has proposed to permit the use of advanced radio techniques to facilitate digital communications and data transmissions for maritime mobile users. The proposed changes would: require as minimum Digital Selective Calling (DSC) capability in all MF, HF and VHF marine radios manufactured in, or imported into the United States on or after February 1, 1997; permit higher speed data transmissions via narrow-band direct printing (NB-DP) equipment, so long as compatibility is maintained among all NB-DP equipment; permit the use of Automatic Link Establishment (ALE) in the HF marine and aviation bands; and permit facsimile transmissions on marine VHF channel 68 (156.425 MHz) between ship stations and between ships and private coast stations. The proposals listed above would facilitate automated calling and allow mariners to access a broader range of data communications options.

The commission proposed to streamline and promote flexibility in the maritime service rules governing ship station and private coast station licensing, coast station operator requirements and marine VHF transmitter requirements.

New Rules Concerning Operations in the 216-217 MHz Band

The FCC proposed amending the rules concerning low-power radio and automated maritime telecommunications systems operation in the 216-217 MHz band.

Specifically, the commission has proposed new rules to permit the shared use of the 216-217 MHz band, on a secondary, non-interference basis, for a new Low Power Radio Service to include law enforcement tracking systems (LETS), auditory assistance devices for the hearing-impaired and health-care assistance devices for disabled and ill persons. The commission also has proposed to allow Automated Maritime Telecommunications System (AMTS) coast stations to share this band on a secondary basis for point-to-point network control communications.

The commission stated that providing channels for auditory assistance and health-care devices would further the goals of the Americans with Disabilities Act of 1990, improve educational opportunities

Schedule of Changes in Area Codes (Subject to change)

Location	Current Code	Relief Code	Start of Permissive Period	End of Permissive Period
Chicago	708	630	1/7/95	Undetermined
Chicago	708	847	1/20/96	4/20/96
Alabama	205	334	1/15/95	5/13/95
Seattle	206	360	1/15/95	8/16/95
Houston	713	281	3/1/95	3/1/96
Phoenix	602	520	3/19/95	7/23/95
Colorado	303	970	4/2/95	10/1/95
Tampa	813	941	5/28/95	3/3/96
Virginia	703	540	7/15/95	1/27/96
Connecticut	203	860	8/28/95	10/4/96
South California	310	562	9/2/95	Not Applicable
Tennessee	615	423	9/11/95	2/26/96
Bermuda	809	441	10/1/95	9/30/96
Miami	305	954	11/95	Undetermined
Oregon	503	541	11/5/95	6/30/96
South Carolina	803	864	12/3/95	5/1/96
Atlanta	404	770	4/95	Undetermined
Dallas	214	972	2/1/96	8/1/96

for persons with disabilities and facilitate health-care services. The commission stated also that providing channels for tracking systems for stolen goods and money would benefit the public by permitting the

use of state-of-the-art law enforcement tools. Additionally, providing channels for AMTS network control will promote more efficient operations in the AMTS service; increasing marine access to state-of-the-art communications services. The commission believes each of these proposals increases spectrum efficiency by making currently unused spectrum available to meet the needs of disabled and ill persons, law enforcement agencies, as well as mariners.

Under the proposed rules, 30 25-kHz channels would be allocated to the Low Power Radio Service and 10 25-kHz channels would be allocated to the AMTS. The majority of the low-power channels would be administered under Part 95 of the commission's rules, two dedicated LETS channels would be administered under the Police Radio Service in Part 90, and the AMTS channels would be administered the Maritime Service Rules in Part 80. Further, the commission noted that these proposed services must not cause harmful interference on TV receivers within the Grade B contour of any TV Channel 13 station. The commission seeks comments regarding: whether to alternatively permit non-channelized emissions within the bands; whether the scope of eligibility for the Low Power Radio Service should be broadened; and whether the proposed technical requirements are consistent with protecting adjacent TV Channel 13 reception.

With respect to licensing, the commission stated that under this proposal, authorizations in the Low Power Radio Service, including the two LETS channels administered under Part 90, would be granted based on Metropolitan Statistical Areas (MSAs) and Rural Service Areas (RSAs), while each AMTS license would be autho-

rized under its coast station license. Applicants would apply for authorization in the Low Power Radio Service using FCC Form 600. AMTS licensees would obtain authorization using FCC Form 503. Because all low-power licensees would be sharing the 216-217 MHz band on a secondary, non-interference basis, the commission declined to place a limit on the number of authorizations per MSA and RSA or the total number of licenses a single entity may obtain. The commission is requesting comment on this proposed licensing scheme.

Crack the (Area) Codes

Until recently, the second digit of an area code for a telephone number has always been "0" or "1." This convention simplified call routing, but it limited the total number of available telephone numbers to less than 1.5 billion.

With the growth in demand for numbers due in part to the growing use of fax machines, paging services and cellular phones, all usable area codes of this format have been used. New area codes, known as interchangeable area codes, which may use any number from 2 through 9 as the second digit of the area code are being introduced. These new, interchangeable area codes expand the total number of available telephone numbers to more than six billion.


Most telephone company equipment and customer premises equipment, such as private branch exchanges (PBXs) must be modified to be able to place calls to interchangeable area codes. While much of the equipment has been modified, some has not. When equipment cannot place calls to an interchangeable area code, it may pro-

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vide a "fast busy signal"—a series of tones sounding similar to a busy signal but repeating more quickly—or play an announcement, such as "We're sorry, your call cannot be completed as dialed. Please check the number and dial again." The type of announcement or alert that a caller hears will depend on the type of telephone equipment involved.

When a change to a relief code occurs there is a permissive dialing period. During that time, both the current and relief area code may be used to reach a number that will later use the relief code exclusively. For example, during the permissive period, if someone has the number 602-555-4663 they can be reached by a calling party dialing 602-555-4663 or 520-555-4663.

Steps to Avoid Difficulties

1. If you know you will be calling someone in an area where the area code will change, confirm with that party that their number will change.

2. During the permissive dialing period, try using the new area code to confirm that your call can be completed. If the call cannot be completed:

a. If you are calling from a location where customer premises equipment, such as a PBX, may be used, contact the party responsible for telecommunications at your location to confirm that your telephone system can handle calls to the relief area code. PBXs are private telephone equipment used in business and campus settings (e.g., colleges and hospitals) to provide internal communications and connect callers to the public-switched telephone network.

b. If you are calling from a payphone, contact the payphone provider to advise them of the problem.

c. If you are calling from a residence or location that you know can handle calls to the relief area code, contact your local telephone company to advise them of the problem. This may be done by either dialing "0" or contacting them at their customer service number, typically located in the front of telephone directories.

3. If you continue to have difficulties in using the new area codes and are not able to find help at the local level, report the situation to the Federal Communications Commission at the address below. To ensure there is an accurate record of the problem, send your complaint by fax or mail.

Steps to Reduce Difficulties

Once the permissive periods ends, if you place a call to a relief area code and the call does not complete, you still may reach the party you are calling by:

a. contacting the operator by dialing "0" and asking the operator to complete the call, or

b. if the party you are calling has an 800 number, contact them through that 800 number.

You also should contact the appropriate sources as described above to inform them of the problem.

Where to Get Help

Questions regarding the introduction of interchangeable area codes can be addressed to: Jim Deak, North American Numbering Plan Administration, Bellcore, Room 1G-278, 6 Corporate Place, Piscataway, NJ 08854-4157. Phone: (908) 699-6612; fax: (908) 336-3293.

Questions to report difficulties placing calls to relief area codes, as described above, may be addressed to: Numbers, Domestic Facilities Division, Federal Communications Commission, 2025 M St., N.W., Mail Stop 1600B2, Washington, DC 20554; fax: (202) 634-6625.

Commission Reconsiders AM Expanded Allotment Plan

The commission granted, in part, several petitions for reconsideration and review of the AM Expanded Band Allotment Plan. The plan identified stations that were eligible to apply for authorizations for specific expanded band frequency allotments.

Specifically, the commission rescinded the Public Notice (DA 94-1154, released Oct. 14, 1994) which announced the allotment plan for the expanded AM band; and, denied Olmstead County Co.'s application for review of a Mass Media Bureau decision that found it ineligible to migrate to the AM expanded band. Olmstead is the licensee of KOLM-AM, Rochester, MN.

On reconsideration, petitioners advised the FCC that errors existed in the FCC's AM engineering database that was used to generate station interference improvement factors and the resulting allotment plan. The commission also found that certain database information that federal travelers information stations were protected in generating the allotment plan was in error. The petitioners raised questions concerning the proper definition of the Canadian border and other aspects of the processing procedures implemented by the commission in generating the allotment plan.

The commission, upon review, verified that certain database errors did not exist. Further, every correction to database information has the potential to affect each of the improvement factors and station allotments that were accorded the migrating stations. Therefore, the commission rescinded the allotment plan. In addition, the commission reconsidered the definition of the Canadian border used in the preparation of the first allotment plan and found that, consistent with the definition in the U.S.-Canada Working Agreement, the border is defined by the land mass.

The commission further identified and

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clarified the standards used to implement the allotment plan, then said that interested parties will be given the opportunity to comment on these matters. Once all comments have been considered, it will take any further action deemed appropriate based on the comments. The commission then will execute the relevant computer programs and revised improvement factors and a revised allotment plan will be issued.

When the allotment plan becomes final, the commission will individually notify each

licensee that was allotted a frequency and call for construction permit applications to be filed by the successful licensees. The application procedures announced in the rescinded public notice then will be followed.

Current Pay Phone Compensation Rules Generally Affirmed

The commission generally has affirmed

its earlier decisions establishing the process by which owners of pay phones may be paid by long-distance companies for originating calls. Also, in an accompanying Notice of Proposed Rulemaking, the commission seeks comment on whether certain long distance companies should pay compensation to pay phone owners on a per-call basis instead of a late rate basis.

This order generally affirmed the commission's 1993 reconsideration order, which, in turn, affirmed the 1992 Second Report and Order prescribing an interim mechanism by which owners of pay phones may be paid by long-distance companies. In addition, the commission clarified certain requirements of those rules granting a petition by Allnet that it be removed from the list of compensation payors because it does not provide "operator services," as defined by the Telephone Operator Consumer Services Improvement Act (TOCSIA).

In 1984, the commission authorized competitive entry into the pay phone market. Previously, all pay phones had been owned and operated by the LECs. Today, competitive pay phone owners offer premises owners a commission on coin and 0+ calls originating from their pay phones. The competitive pay phone owners earn revenues by reselling local and 1+ long distance service from their pay phones and by presubscribing their pay phones to IXC. Prior to 1992, the competitive pay phone owners earned no revenues when a caller "dialed around" the presubscribed carrier to reach the long distance carrier of his choice. A caller "dials around" by using an access code (such as any toll-free 800 number or 10XXX) that connects the caller to a particular long-distance company.

In April 1992, the FCC adopted rules that prescribed an interim mechanism by which competitive pay phone owners may collect a flat rate of \$6 per pay phone per month from certain IXCs for originating interstate access code calls from their pay phones. In its action, the commission has asked for comment on a per-call payment mechanism. The commission tentatively concluded that the largest IXCs, those with annual toll revenues exceeding \$1 billion, should be required to pay compensation on a per-call basis. Under this mechanism, a carrier would pay the competitive pay phone owner a certain rate for each call that a caller originates using an access code.

Action by the commission Aug. 23, 1995, by Memorandum Opinion and Order on Further Reconsideration and Second Further Notice of Proposed Rulemaking (FCC 95-374). Chairman Hundt, Commissioners Quello, Barrett, Ness and Chong. ■

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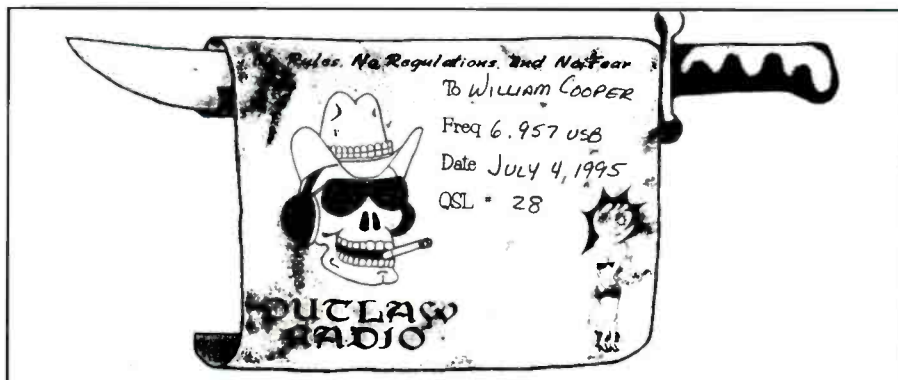
Radio Free Speech, 6955 at 2205 was very weak at the beginning but then vastly improved, says Dick Pearce of Vermont. Very professional sound, and mention that it was a test, Dick adds. Also "overlooking Missoula, Mont.," and "celebrating free speech in America on this frequency." Dick also had them at 2105, 2120 and 2313. Pat Murphy of Virginia had them from 0400-0429 close with a funny version of *The Star-Spangled Banner*, plus other funny songs and commercials. Pat says he thinks this one uses the Wellsville, N.Y., address. In a later log, Pat says the DJ gave his name as Bill O. Rights. "Free radio is not anarchy, it's constitutional." (Good to hear from you again, Pat!)

Radio Titanic, 6955 USB with a "Euro-sounding" DJ and rock music, IDs as "since 1975, we are Radio Titanic, free radio from Germany." The address given was in Germany.

Kappa Alfa Tu (KAT) Radio, 6950 USB, was heard by Pearce at 0200, announcing it as their first broadcast and coming from the animal house at the University of Wisconsin. The broadcast had Spanish-sounding music, a talk about Martians, ads for a record shop and Kmart, and talk about wine. QSL is via the A*C*E and Pirate Pages. Sign-off was with symphonic music. Notes: 2305-2341 sign-off; funny commercials, montage of old audio clips of 1930s-style music, ID as "KAT Radio, from the campus of the University of Wisconsin," and "The very first broadcast and maybe the last of KAT Radio." (Murphy)

Outlaw Radio, 6955 at 0410, was heard by James Bond, (no state given—is that your real name?) with rock music, a moaning woman, information on how to fill out a reception report and ending with air-raid siren effects. William Cooper in New York state had this at 2236-0000, claiming they had raided the Federal Communications Commission's evidence vault, where they'd gotten their equipment. Also, heard 0300-0323 with monks singing backward, girl laughing hysterically, woman moaning. (Murphy)

North American Pirate Relay Service, 6955 USB at 2248-2358, was heard by Cooper with the *Bill Cosmic Space Radio Show*, claiming to be coming from the famous Hangar 18, playing strange Swedish music, an interview with an alien, and announcing an address in Sweden. Also via NAPRS, Box 452, Wellsville, NY 14895.



William Cooper got this QSL from Outlaw Radio.

Black Rider Radio, 6955 USB at 0050, was heard by Joey Gillihan in Arizona with rock, strange sound effects and mention of the Wellsville address.

Tempered Steel, 5065 USB at 0515, heard with Death Metal music, a strange effect on the DJ's voice; address P.O. Box 1212, Fort Myers, FL 33902. Sign-off was at 0530. (Gillihan) (Maybe not a pirate? 5065 is used by WWCRC, which carries a lot of off-beat programming.—Ed.)

KNBS, 6955 at 2330-2353 close, was heard with rock, DJ Phil Musik, drug-related songs and *Fruit of the Loom News Briefs*. (Murphy)

WSKY, 6955 at 0115-0130, heard saying "not our intention to usurp the authority of any governing body." QSL requests should be addressed to the attention of "Doug Barley." Mike Richards was broadcasting live with a conversation about Doug being stopped because of all the antennas on his car. The station also was heard at 0130-0149 with similar content. (Murphy)

Radio Doomsday, 6955 at 2310, was heard with a replay of show No. 7, which had a space patrol gig and science fiction show. Listeners were asked to give themselves a round of applause. (Pearce)

RBCN (Radio Bob Communications Network) was heard on 6950 at 0200 with an O.J. Simpson trial show, but was QRM'd by Radio Amazonia. Heard was a circus nuts time machine skit based on the old west days of Dodge City. (Pearce) Also heard from 0145-0226 with O.J. program No. 5. (Murphy)

Radio Amazonia, 6955 at 0200, weak under RBCN, mentioned needing two IRCs and gave an address in Ytterby, Sweden. (Pearce) Also heard 0210-0234 with Spanish-sounding music and ID. (Murphy)

The Crooked Man, 0003-0017 on 6955 USB, IDs with a heavy echo: "This is the

Crooked Man calling." Comments heard: "They send messages to each other in restrooms." "You think I'm talking like I'm from another planet. You're right." (Murphy)

Voice of the Orient, 6955 at 2250, was heard announcing a production of the "Fox Broadcasting Group." There was talk about small-town stations being swallowed by big corporations and losing contact with the community—"Where's the diversity and public interest?" It also was said that the FCC is in the protection and propaganda racket and urged listeners to write to their congressmen or the Amateur Broadcasters Association at the Blue Ridge Summit address. (Pearce)

East Coast Radio, 6958 at 2350, announced it was Hawaii Night and a couple of Hawaiian tunes were aired. (Pearce). From 0040-0045, heard was: "This is a test broadcast of East Coast Radio." (Murphy)

RFM, 6955 at 2336-0008 close, heard was "You're listening to RFM," guitar, funny commercials and a cat lovers ad. (Murphy)


Altered States Radio, on 6955.25 at 0020, was heard with various work songs and tracks from Firesign Theater's album of 40 sound effects. (Pearce) Also heard at 0351-0413 close, with various features. (Murphy)

Voice of Helium, 6955 at 0400-0410, was heard with air-raid sirens, "This is the Voice of Helium" sound effects, "from the state of New York," several playings of *Classical Gas* and mentioned they were "broadcasting from high atop the stratosphere." (Murphy)

We're out of space. Thanks for all the reports and let's keep those nice pirate logs coming! We especially want to hear of your catches from when the FCC went on "vacation" during the six-day government shut-down in November. ■

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Handi-Chat (from page 47)

tion), a subset of SALT. The number of specialized phone directories is limited only by the available disk space, and each can hold up to 1,000 numbers, rather than the standard 200. However, adding numbers could be more user friendly.

But where Telix really stands out from the crowd is its ability to serve not merely as a host, but as a full-fledged bulletin board system. The shareware version limits the maximum number of file bases to 10, each containing just 99 files. Additionally, the commercial version includes some special utilities to facilitate system operation. Nevertheless, the shareware version allows the user to sample all the power and flexibility of a BBS—including 10 security levels, password protection and a doorway facility. The price for U.S. residents is \$44. The shareware version comes in four archived files.

Well, the clock appears to have caught us again. Keep those letters coming. Once again, our mailing address is HandiChat, Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2909, or via the Internet at POPCOMM@aol.com.

Thoughtwaves

(from page 5)

house current and use the house's wiring to send the signal to the switches. By plugging in other control devices around the house, I also can control appliances, lamps and even Christmas lights with ease! Ah, life is so easy with radio.

The garage has a lot of RF, too, I've come to realize. When I want to enter our locked van, or I want to unlock the van's back doors for the boys to get in or open the back hatch to load or unload, all I have to do is push a button. A 300-MHz radio signal is sent to the vehicle, whether I am at home or in the parking lot at the mall. The signal is decoded and a door is unlocked. I can lock the car in the same fashion, too. And to reassure me that the car is locked, the van's horn honks. All with a UHF radio signal!

As my family approaches our home, we push another radio transmitter button and a 310-MHz radio signal opens either garage door. I haven't had to lift a garage door in more than a decade. Radio signals do all the work for me. Handy little buggers, aren't they?

I thought this was the ultimate use of radio signals when I decided to employ it in our home—the radio-controlled doorbell! When the regular transformer-style electric doorbell died in our home, I decided that ripping the walls apart to find the transformer wasn't worth the effort. For less than \$20, you can buy a 300-MHz radio transmitter that you mount next to your door. When the button is pushed, the UHF radio signal is sent to a receiver inside your home that sounds like a doorbell! Every once in a while, the darn thing will ring on its own and no one will be at the door; it must be military aircraft setting off the blasted thing. But I think it is such a neat device that I've picked up one for the back door, too. Maybe the garage door into the house needs a UHF transmitter as well.

Whoever would have thought that radio signals can control so much of your life. They add comfort and make life easier. I'm not tied down to my desk to take phone calls. I don't have to run to open the garage door when the wife comes home (but if the garage door doesn't open with the remote, she'll call on the radio to have me scramble to open the door!). I can keep an ear on the kids. I can even take the doorbell receiver into the back yard and know when UPS is at the front door with a delivery. Amazing stuff. I'm running under radio control. And I'm not complaining!

73, Chuck

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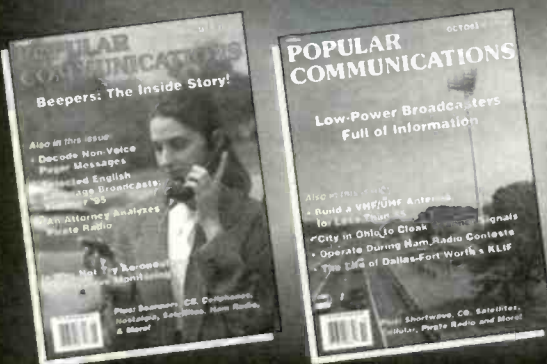
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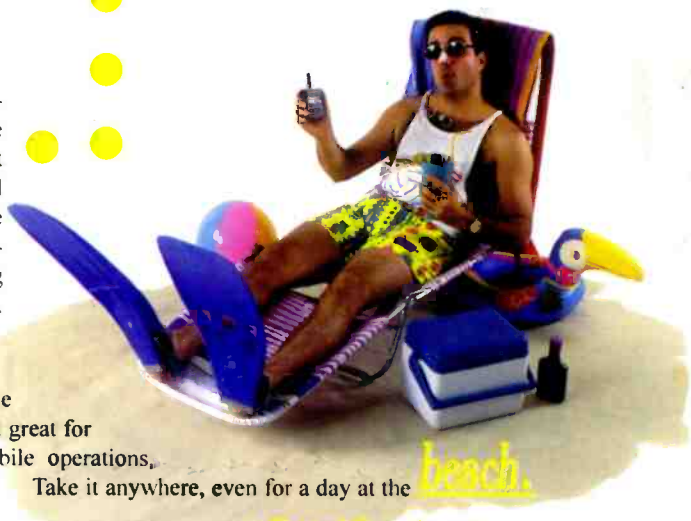
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